IQ 6200/6500

Counting Scales

Installation Manual

RICE LAKE WEIGHING SYSTEMS

Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

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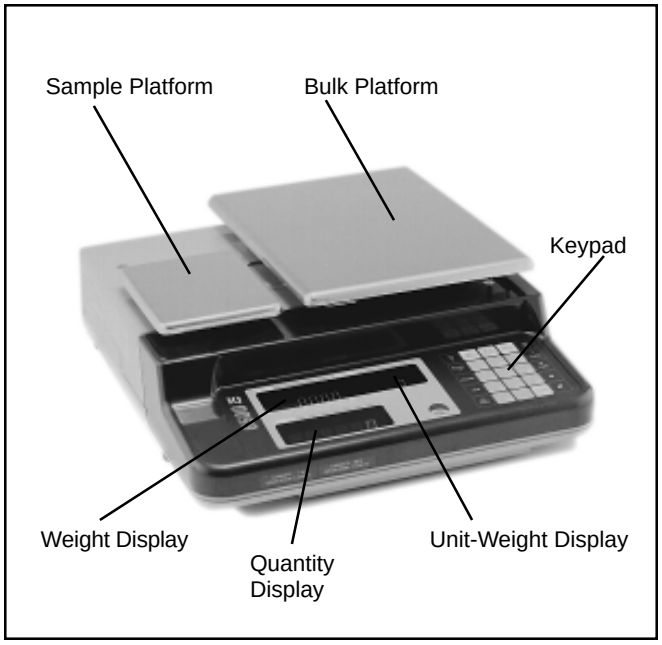
About this Manual

This manual contains operating procedures for the IQ6200, IQ6500, and IQ6500 dual counting scales and provides the user with all the information necessary for set-up and operation. This manual is organized based on the procedures you will likely follow when setting-up and using your counting scale. When information is applicable to all three scales you will see the term "IQ6200/6500". If information is specific to only one type of scale, a single name "IQ6200" or "IQ6500" appears. (IQ6500 includes the dual scale unless otherwise noted.) Keypad keys are shown in bold uppercase characters.

1.0 Introduction

The IQ6200/6500 counting scales offer practical solutions to a full range of precision counting applications. There are a variety of models available ranging from a weight capacity of 0.5 through 150 pounds utilizing an internally mounted load cell; there is also a full range from 0.5 through 60,000 pounds on an optional external second channel. Other features, such as 100-item memory, over/under weight and quantity checking capability based on programmable setpoint data, and the IQ6200's optional battery power for stand-alone counting applications make the IQ series an obvious and practical choice for your parts counting needs.



IQ6500 Dual Counting Scale

Counting scale accuracy is primarily determined by the following factors:

- Sample size (number of pieces)
- Total sample size as a percentage of full scale capacity
- Piece to piece weight variation

Sample weight is the most common cause of parts counting inaccuracy because operators tend to use the minimum number of sample pieces. For example, on an IQ6500 with a sample of 10 pieces and a total sample weight of 0.2% of full scale capacity, sample weight resolution is plus or minus (±) 1 part in 1000. This will give you a counting error of ±0.1 or higher. Increasing the total sample weight to 0.5% of full scale capacity (25 pieces) would lower the counting error to ± 0.04 or higher. Weight display resolution does not affect the counting accuracy of your IQ6500. Displayed weight resolution is up to 1 part in 10,000.

On an IQ6200, a sample of 10 pieces and a total sample weight of 0.2% of full scale capacity would provide a sample weight resolution of (±) 1 part in 150 and a counting error of ±0.66 or higher. Increasing the total sample weight to 0.5% of full scale capacity would lower the counting error to ±0.26 or higher.

There is a direct relationship between piece to piece weight variation and counting accuracy. To achieve maximum efficiency from your counting scale, the sample piece weight should be as close as possible to the average piece weight.

1.1 Scale Resolution

Counting scales specify two types of resolution:

- Weight (or external)
- Counting (or internal)

Weight resolution is displayed in increments of the full scale capacity which is divided into weight increments. For example, a 5-lb. scale divided into 10000 weight increments would display weight with 0.0005 lb. incremental elements (10000 divisions x 0.005 lb. = 5.0 lbs.).

Counting resolution is based on the internal resolution of the scale. The weight and counting resolutions for the IQ6200/6500 scales are found in Section 6.2.

1.2 Choosing the Best Sample

To choose a sample that will give you the greatest accuracy:

- The smallest part to be counted must be greater than one counting resolution of the scale.
- A 10-piece sample of the smallest part must weigh more than .1% of the scale's capacity to be accepted.
- The gross capacity of the scale should be greater than the heaviest box of any part to be counted.

2.0 Installation and Start-Up

For information about installing and operating optional equipment, see Section 9.

2.1 Unpacking and Inspecting

Each component of the IQ6200/6500 system is packed in a specially designed carton. Remove each component from its carton, separate the component from its polystyrene shell assembly, and set the assembly aside. Inspect the carton interior and inner panels to be sure that all accessories have been removed from the carton. Be sure to replace all packing materials within the carton set. Store the carton set in a secure area so it is available whenever shipment of the scale is required.

Immediately after unpacking, a visual inspection of the instrument should be performed. The shipper and Rice Lake Weighing Systems should be notified immediately if any damage occurred during transportation. Instructions for assessment of damage and further procedures will then be determined.

2.2 Repacking

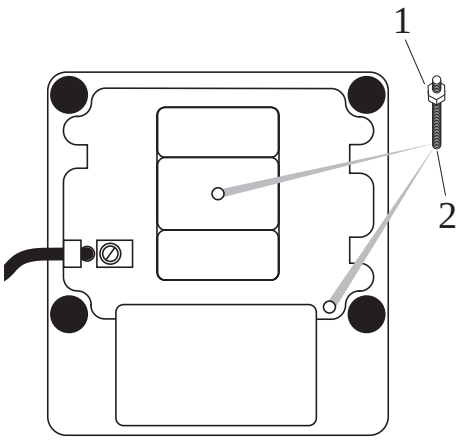
If the IQ6200/6500 counting scale must be returned for modification, calibration, or repair, be sure that it is properly packed with sufficient cushioning materials and that it is locked to prevent damage to the load cells (see Section 2.3).

Whenever possible, the original carton assembly should be retained for this purpose. Any damage caused by improper packaging will not be covered by warranty.

2.3 Unlocking and Locking

Your IQ6200/6500 scale is delivered in a locked position to prevent damage to the load cells during shipment. Use the following procedure to unlock the scale.

1. On underside of scale, use wrench to remove nut (1).
2. Use allen wrench provided with scale to turn bolt (2) in a counterclockwise direction and remove. Two nuts and two bolts must be removed on an IQ6500 dual scale as shown in diagram to right.



Nuts and bolts should be taped to the bottom of the scale or stored in some other safe location for possible future shipment. **Scales must be locked prior to shipment**

2.4 Setting-Up

1. Place scale on a level surface.
2. While watching level bubble guide on front of scale, level scale using adjustable legs.

2.5 Powering-Up the IQ6200

The IQ6200 can be operated from an AC adaptor cord or with an optional rechargeable battery pack (DC power) that allows the unit to be completely portable. A fully-charged battery allows approximately 11 hours of continuous operation and then requires approximately 8 hours of recharging. The battery will recharge when the AC adaptor cord is plugged in regardless of whether the scale is on.

To power-up the IQ6200 with the AC adaptor cord:

1. Plug AC adaptor cord into a grounded AC 117 VAC receptacle.
2. Press **ON/OFF** and allow scale to warm up for 10 minutes. The display momentarily shows revision number, shows all digits from 0 to 9 in a “count-up” mode, goes blank, shows all 8s, and then enters regular weighing mode.

To power-up the IQ6200 with the battery option:

1. Remove AC adaptor cord from back of scale.
2. Press **ON/OFF** and allow scale to warm up for 10 minutes. The display momentarily shows revision number, shows all digits from 0 to 9 in a “count-up” mode, goes blank, shows all 8s, and then enters regular weighing mode.

Note:
If the scale displays erratic data, it may be caused by a power transient. Turn the scale off and momentarily unplug it from the wall outlet. Then restart by plugging the scale back in and pressing **ON/OFF**. The scale will go through a display check, and no warm up is needed.

2.5.1 Sleep Time Function

The IQ6200 includes a "sleep time" function that turns the scale off after a preset number of minutes if the scale is undisturbed (no keys are pressed and no weight is placed on the platform). This function works with AC or DC power and helps to prolong battery life when the battery is being used. The default (factory) setting is five minutes.

To set the sleep time:

1. Press **MODE**.
2. Use keypad to enter number of minutes, 01 to 99, until scale powers down. Entering "00" causes continuous operation.
3. Press +.
4. Press **MODE**. The displays return to weighing mode.

To check sleep time settings:

1. Press **MODE**.
2. Press +. Weight display shows P-oFF and Quantity display shows XX, with XX being number of minutes before power-down.
3. Press **MODE**. The displays return to weighing mode.

2.6 Powering-Up the IQ6500

1. Plug AC power cord into a grounded 115 VAC receptacle.

Caution **If a second channel preamp has been installed, be sure that an external platform or a "dummy plug" is plugged in to the second channel.**

2. Press **ON/OFF**, and allow scale to warm up for 10 minutes. The display momentarily shows revision number, shows all digits from 0 to 9 in a "count-up" mode, goes blank, shows all 8s, and then enters regular weighing mode.

Notes:

- If the scale has been connected to power while in the off condition, no warm-up is necessary.
- When the scale is plugged in but not turned on, the Insuff. lamp is lit.
- If the scale displays erratic data, it may be caused by a power transient. Turn the scale off and momentarily unplug it from the wall outlet. Then restart by plugging the scale back in and pressing **ON/OFF**. The scale goes through a display check, and no warm up is needed.

2.7 Setting Date and Time on the IQ6500

You can set the date and time that you want to appear on IQ6500 print tickets. The IQ6200 does not use this function. To set the date and time:

1. Press **MODE**.
2. Use keypad to enter date and time in the format *mmddyyhhhh*, where *hhhh* is the time in 24-hour format (0000 is 12:00 a.m., 2300 is 11:00 p.m.). For example, to set the date and time for May 1, 1997 at 9:45 p.m., enter: *0501972145*.
3. Press **DATE**.
4. Press **MODE** twice to return to weighing mode.

To view the current date and time setup:

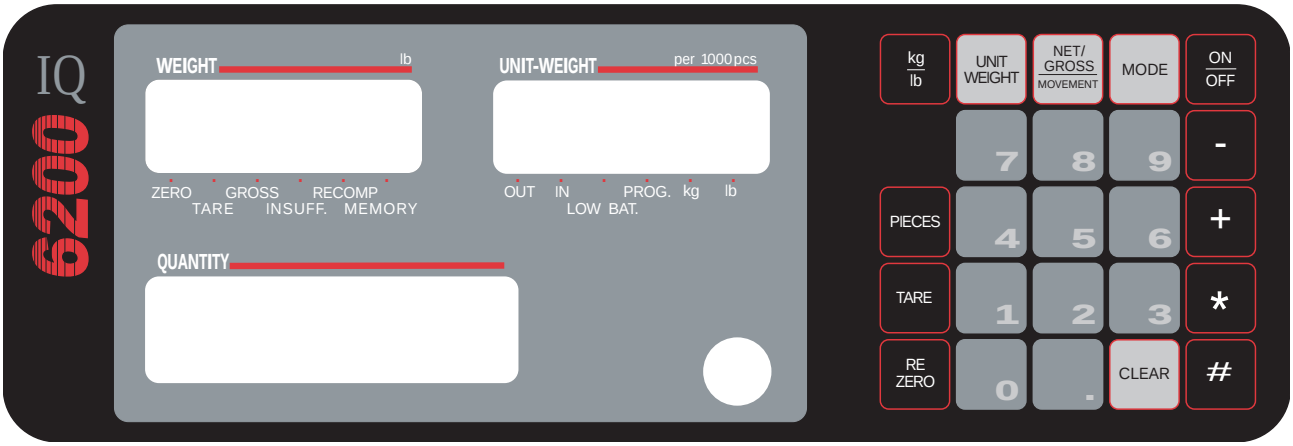
1. Press **MODE**.
2. Press **DATE**. The date is shown in the upper displays, time is shown in the Quantity display.
3. Press **MODE** twice to return to weighing mode.

3.0 Configuration

Sections 3.1 and 3.2 show and describe the keypads and display panels for the IQ6200 and IQ6500 scales.

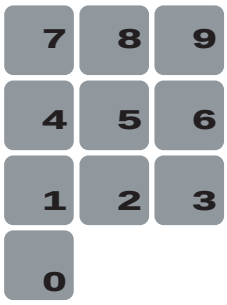
3.1 IQ6200 Keypad and Display Panel

The following figure shows the IQ6200 display panel and keypad.



3.1.1 IQ6200 Keypad

The following table identifies the IQ6200 display keys and their functions.



Numeric Keypad

These keys let you enter numeric values in the system. Normally, you key a number and then press a function key. Each digit appears on the display screen as entered.

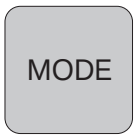
If you make a mistake entering a number, press **CLEAR** to erase a single digit. Continue pressing **CLEAR** to erase the remaining digits as necessary.

Clear

Clears keyed-in data from the display starting with the last digit entered.

. (decimal)

Used to correctly enter numbers by showing the decimal point. *A numeric value must be entered before the decimal point.* For example, .250 would be entered as “0.250”. Also used to display the code number currently in use.



Mode

Toggles between the operating mode and the program mode. The PROG lamp is lit when the scale is in program mode and the Weight display reads ProG. The Quantity display shows the letter “C” and the total number of codes in memory.

Rezero

Eliminates weight from the Weight display with no tare in the system and causes it to show a true 0. The rezero button will not function when the indicator is in motion.

Tare

Zeroes the weight display by placing a displayed weight into the tare register. The system must be in a standstill condition before a tare can be registered. The tare register is normally used to store a value such as a container weight.

Pieces

Sets the number of sample pieces. Press after placing your 10-piece sample on the platform or keying in the sample size number with the numeric keys. On multichannel units, the correct scale must be selected.

kg - lb

Toggles the display between pound (lb) and kilogram (kg). The scale powers up in the pound mode.

Unit Weight

Used to enter weight per 1000 count of pieces or is pressed after you enter a weight value using the keypad.

When entering an average piece weight, remember to enter the total weight of 1000 pieces. This method provides an additional three decimal places of resolution in piece count calculations. For example, the weight per 1000 count of pieces weighing 0.1 lb each would be 100.0 lb (0.1 x 1000).

Net/Gross - Movement

Toggles between net weight and gross weight display modes. In the gross display mode the gross weight is displayed, the gross annunciator is lit, and a computation of piece weight is not available. A tare must be in the system to enter the net mode. In the net mode, the tare annunciator is lit.

On - Off

Powers up and powers down the scale.

- (minus)

Used to subtract parts in an accumulation operation.

+ (plus)

Used to add parts in an accumulation operation.

* (total)

Used to total an accumulation operation and exit the program mode.

(code)

Used to enter product code numbers, enter parts into the scale inventory, and remove existing parts.

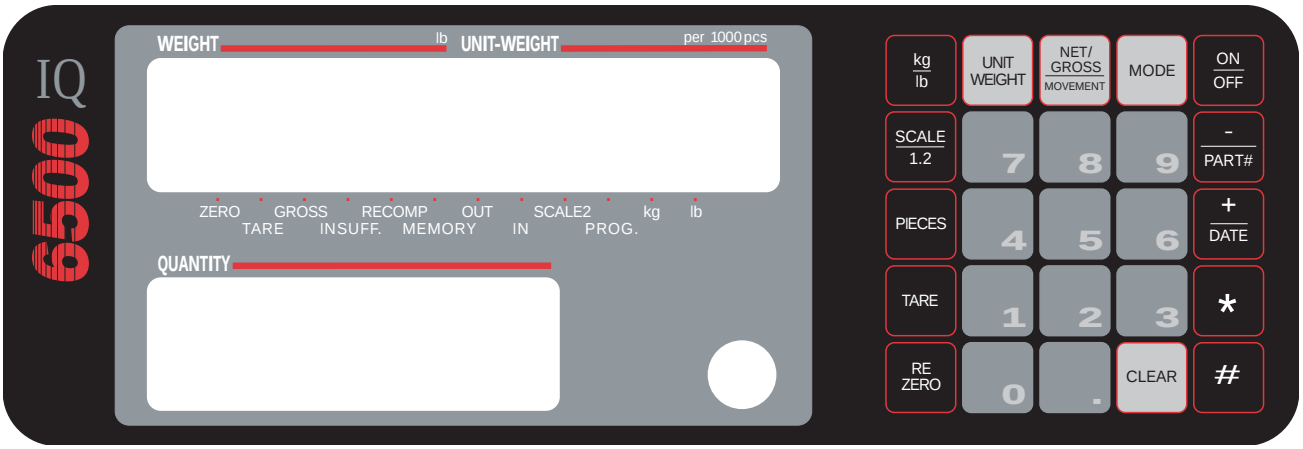
3.1.2 IQ6200 Indicator Lamps

Use the following table to identify display indicator lamps that may be illuminated during operation.

Lamp	Meaning
ZERO	Scale is within 1/4 division of true zero
TARE	Presence of a tare weight
GROSS	Gross weight is shown
INSUFF	Sample size is too small
RECOMP	Unit weight may be recalculated by pressing **PIECES**
MEMORY	An accumulated total is in memory
OUT	Quantities being removed from inventory total
IN	Quantities being added to inventory total
LOW BAT	Scale battery power is low
PROG	Scale is in program mode
kg	Scale weighing in kg
lb	Scale weighing in lbs

3.2 IQ6500 Keypad and Display Panel

The following figure shows the IQ6500 display panel and keypad.



3.2.1 IQ6500 Keypad

Most of the keys on the IQ6500 also exist on the IQ6200. The following table identifies the keys that are unique to the IQ6500. See the IQ6200 keypad table for the remaining keypad descriptions.

Scale - 1.2

Toggles between the two platforms on an IQ6500 dual scale or between the main platform and a remote scale.

*** (total)**

Uses include totaling an accumulation operation, exiting the program mode, and initiating the print function.

– / PART#

Used to subtract parts from an accumulation operation or view an alternate part number.

+ / DATE

Used to add parts from an accumulation operation or set the date and time in the program mode.

3.2.2 IQ6500 Indicator Lamps

Use the following table to identify display indicator lamps that may be illuminated during operation.

Lamp	Function
ZERO	Scale is within 1/4 division of true zero
TARE	Presence of a tare weight
GROSS	Gross weight is shown
INSUFF	Sample size is too small
RECOMP	Unit weight may be recalculated when lit by pressing the **PIECES** key
MEMORY	An accumulated total is in memory
OUT	Quantities being removed from inventory total
IN	Quantities being added to inventory total
SCALE2	Scale 2 in use
PROG	Scale is in program mode
kg	Scale weighing in kg
lb	Scale weighing in lb

3.3 Initial Performance Testing

Use the procedures in this section to test your IQ6200/6500 keypad and display prior to its initial use. The procedures verify proper operation of the scale's keypad and displays. Tests are available for the following functions:

- Key Entry of Unit Weight
- One-Touch Tare
- Digital Tare Entry
- Weight, Unit Weight, and Quantity Displays
- Accumulation
- User-Determined Sample

3.3.1 Unit Weight Display and Unit Weight Key Entry

1. Press **0**, then **UNIT WEIGHT** to clear any unit weight.
2. Press **1** five times, then **UNIT WEIGHT** once. The Unit Weight display now shows 11111.
3. Press **0**, then **UNIT WEIGHT** to clear the display.
4. Repeat for each number (2, 3....0).
5. Check decimal entry by entering 12.34, then press **UNIT WEIGHT**.

3.3.2 One-Touch Tare

1. Press **0**, then **TARE** to reset any tare.
2. Press **REZERO** to re-zero scale.
3. Place empty container on scale, then press **TARE** once. The Weight display should now show zero with empty container on scale.
4. Remove container. With nothing on the scale, press **TARE** to reset tare to zero.

3.3.3 Digital Tare Entry

1. Press **0**, then **TARE** to reset any tare.
2. Press **REZERO**. After resetting, displays show zero.
3. Use keypad to enter number 0.2, then press **TARE**. For digital tare entry, decimal must be in appropriate place as they would be displayed in Weight display. For example, .250 would be entered as "0.250", not ".250". The Weight display shows weight entered with a negative sign indicating that it is a tare weight.

3.3.4 Weight, Unit Weight, and Quantity Display

1. From previous step, there should be a tare weight showing in Weight display. If it has been accidentally cleared out, re-enter weight since Quantity display will not be activated unless a weight is displayed.
2. Enter number 123 through keypad and press **PIECES**. The display shows all dashes momentarily and then an accuracy number such as ACC 99.98 (99.98%) is displayed on the Weight and Unit Weight displays. After a moment, 123 appears in Quantity window, and a unit weight is also computed and displayed. This operation takes a few seconds.

   Note:
   The accuracy number function can be turned off (default setting) using SPEC09. For more information, see Section 6.0, Setting Configuration.

3.3.5 Accumulation

After the previous step, the Quantity display shows 123.

1. Press +. Blank lines are momentarily shown, then Unit Weight display shows 123. The Quantity display shows totAL. The memory lamp glows. After a moment, scale resumes operation mode. Since weight and unit weight have not been changed, Quantity display continues to show 123.
2. Press + again. The Weight display momentarily goes blank, Quantity display shows totAL, and Unit Weight display shows accumulated value of 246.
3. Press ***** to clear memory. The Memory lamp goes out.

3.3.6 Fixed Sample

After the previous test, the Weight display shows -0.2.

1. Press **0**, then **UNIT WEIGHT**. The unit weight is cleared.
2. Press **PIECES**. The Quantity display shows 10 and a unit weight is displayed.
3. Press **TARE** to clear tare weight.

4.0 Operating Instructions

This section provides detailed instructions for operating your IQ6200/6500. Basic to all counting procedures is the requirement to establish the average unit weight of the parts to be counted. Typically this is done by taking a representative sample quantity of the parts, determining the total weight of that sample, and then obtaining the average unit weight by computation. The IQ6200/6500 does this all in one step. The IQ6200/6500 permits determination of average part weight to a very precise value by combining the following computational functions:

- Insufficient sample level protection
- Selectable accuracy enhancement by recomputation

4.1 Determining a Unit Weight

To determine a unit weight:

1. From net weighing mode, put a sample number of pieces, 10 or more, on platform. If the pieces being counted are small, count out the sample in your hand, then place all of the sample pieces on the scale at the same time.
2. If you used a sample of 10, press **PIECES** (this key defaults to 10). If you used a sample number other than 10, key-in number of sample pieces with numeric keys, then press **PIECES**. The unit weight per 1000 pieces is displayed on Unit Weight display.

4.1.1 Insufficient Sample

When sample pieces are put on the platform and the number of pieces is not sufficient, the Insuff lamp is lit. The Add line, followed by the number of pieces to add, appears in the Weight display when **PIECES** is pressed. This means that the weight of the sample is insufficient for the scale to make an accurate calculation. An example would be trying to weigh something as light as 10 paper clips on a 50 lb. IQ6200/6500 scale. You can override this message by pressing **PIECES** a second time without adding additional parts. However, using an insufficient sample may adversely affect scale accuracy.

To correct an insufficient sample, add the number of pieces requested and press **PIECES**. The weight, unit weight, and quantity of the item appears in each display.

The Insuff lamp normally lights when the sample weight is less than 0.1% of full scale capacity. To verify or change the threshold at which the Insuff lamp lights, do the following:

1. Press **MODE**. Hold **REZERO** and press **PIECES**.
2. The display should show the value 0.1 for normal operation. To change the Insuff lamp threshold, enter a value between 0.0 (off) and 0.9 (lamp on if sample is less than 0.9% of full scale capacity).
3. Press **MODE** twice to exit.

4.1.2 Improving Unit Weight with Recomputation

When the unit weight is developed through sampling, the accuracy of that computation can be improved by increasing the sample size using the recompute feature. This function works only when the RECOMP annunciator is on.

For pieces with a large weight variance, the average unit weight can be more precisely determined by using a large quantity in the sample. The scale determines the recompute range based on the existing sample. To recompute a sample:

1. Determine the unit weight by the normal sampling procedure.
2. If the initial sample fits the recompute criteria, then an additional group of parts, usually one to three but up to eight times the initial sample size, may be placed onto the platform. Any number of parts will suffice if the recompute light remains on. If the light goes out, remove some parts until the light is on again.
3. After placing the additional parts onto the platform, press **PIECES**. The scale recomputes the average unit weight based on the total sample.

This procedure may be repeated by adding more parts (within the recompute ranges) up to the limit of scale capacity.

Note:
The precision of the recompute range is determined by a formula which incorporates the initial sample piece weight, sensitivity, and statistical error correlation factors. The recomputation function cannot be used for parts with very small unit weights.

4.1.3 Entering a Known Unit Weight

A known unit weight can be entered directly through the keypad using the numeric and decimal keys and then completed by pressing **UNIT WEIGHT**. To reset the unit weight to zero, press **0** followed by **UNIT WEIGHT**.

4.1.4 Using the IQ6500 Dual Scale

The functionality of the IQ6500 dual scale is apparent when determining unit weights. The intention is to perform sample weighing on the small platter because its 1.0 or 2.5 lb. capacity obtains a very accurate per piece weight. You can then use the **SCALE/1.2** key to transfer to the large platform and perform bulk weighing *based on the sample obtained from the small platform*. Note that the sample does not accumulate into the bulk, and you can use either platform to sample and count.

4.2 Parts Counting

Once the unit weight has been developed by any of the methods in Section 4.1, the bulk quantity may be counted by one of the following procedures.

4.2.1 Counting Parts on the Scale Platform

After the unit weight is determined, additional parts may be placed onto the platform, and the correct weight and quantity will be displayed. The original sample may be left on the scale, and the displayed weight and quantity will be the total.

4.2.2 Counting Parts into a Container

Place the empty container onto the platform. Press **TARE** to tare off the weight of the container. As parts are added into the container, the Quantity display shows the parts count.

4.2.3 Counting Parts in a Pre-Filled Container

If the weight of the container is known, the following procedure can be used to count the number of parts in the container:

1. Placed filled container on platform, then press **TARE**.
2. Remove a 10-piece sample from the container then press **PIECES**. To use a sample size other than 10, key in the number of parts then press **PIECES**.
3. Key in the container weight and press **TARE**. The Quantity display will show the number of parts remaining in the container.

4.3 Negative Parts Counting

This feature counts the parts quantity as you *remove* them from a bulk container on the platform (see SPEC08). To perform negative parts counting:

1. Place the container (with parts) on the platform
2. Press **REZERO**.
3. Take a 10-piece sample from the container and press **PIECES** (or key in the number if other than 10 and then press **PIECES**). The Quantity display shows a count of 10 (or quantity entered).
4. Remove parts from the container and watch the Quantity display count up from 10.

4.4 Accumulation

To accumulate a parts count from a series of containers:

1. After a count has been developed, press + to store the displayed quantity in memory. The Quantity display shows totAL, the Memory lamp is lit, and the memory sub-total is displayed in the upper display. After a moment, the scale returns to the normal mode.
2. Repeat procedure for each container.

To clear the memory after a series of accumulation entries, press ***** after the last +. This cancels the stored memory (the memory lamp goes out).

If an entry must be deleted from the accumulated total, place the correct quantity on the scale or key in the quantity to be subtracted and press –.

Note:
The IQ6200/6500 counting scale accumulates up to 999,999.

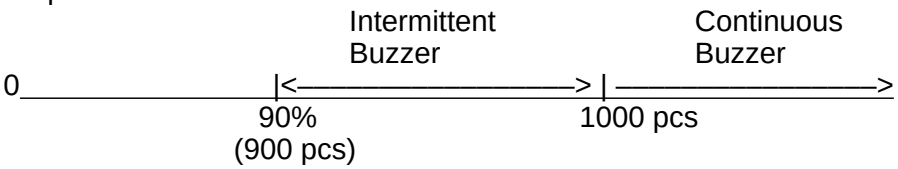
4.5 Programming Setpoints

The IQ6200/6500 can utilize setpoints or continuous audible alarm points to alert the operator to a predetermined weight or quantity and an intermediate alarm to warn of its approach as weight is placed on the scale.

You can program setpoints to operate on all items being weighed or counted (spec code selectable) or they can be specific to each code number. If no code number is selected or the code number selected has no setpoint programmed, the general setpoint is enabled.

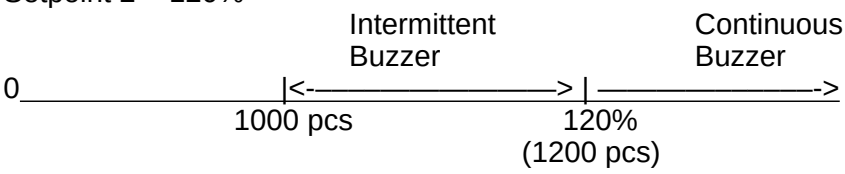
Setpoint 1 in Example 1 sounds continuously when the target weight or count is reached.

Example 1 Setpoint 1 = 1000 pieces
SPEC16 0000 Setpoint 2 = 90%



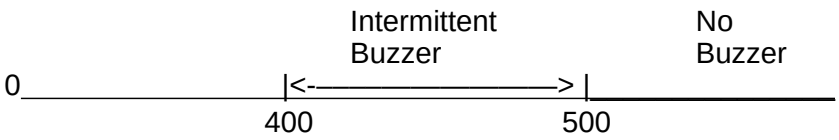
Setpoint 2 in Example 2 is a pre-alarm percentage of setpoint 1 and will sound an intermittent beep to indicate the approach or departure of setpoint 1.

Example 2 Setpoint 1 = 1000 pieces
SPEC16 0000 Setpoint 2 = 120%



Setpoint 1 in Example 3 is the under setpoint and sounds intermittently until it reaches the over setpoint (2).

Example 3 Setpoint 1 = 500 pieces
SPEC16 0100 Setpoint 2 = 400 pieces



To program general setpoints:

1. Press **MODE**. The Weight display shows ProG.
2. While holding **REZERO**, press + key (release REZERO). The Quantity display shows SEt 1.
3. Enter target weight or count. Whether weight or count setpoints are used depends on initial specification program of scale. The default is count setpoints. For more information, see default specs in Section 6, Setting Configuration. Weights must be entered exactly as they appear in Weight display, for example 10.000, not 10.
4. Press +. The Quantity display shows SEt 2.
5. Key in setpoint pre-alarm percentage.
6. Press +, then press **MODE** twice to return to normal operation.

Note:
To clear general setpoints, proceed as above but enter 0 for Set 1 and Set 2. Entering the setpoint mode clears the unit weight setting. See Section 9.4 for more information about setpoint outputs.

4.6 Parts "In-Out" Operation

You can enter parts into the scale inventory and remove existing parts using the following procedures. See Section 5.0, Data Storage, for information on programming code numbers. To enter parts:

1. Enter parts code number.
2. Press #.

   Note:
   If the code number has not been programmed into memory, the Quantity display shows "not F". Press **CLEAR**.
3. Place empty container equal to tare weight on platform.
4. Press # twice to set IN lamp on.
5. Place parts to be added to inventory on platform.
6. Press ***** to enter that quantity.
7. To return to normal operation, press **MODE** twice.

To remove parts:

1. Enter parts code number.
2. Press #.
3. Place empty container tare weight on platform.
4. Press # key to set the OUT lamp on.
5. Place parts to be taken from inventory on platform.
6. Press ***** to subtract that quantity from inventory.
7. To return to normal operation, press **MODE** twice.

4.7 Sample and Count

1. Verify desired sample scale is selected (generally scale 1) and all displays are showing 0. If Unit Weight display does not show 0, press **0** and then **UNIT WEIGHT**. If Weight display does not show 0, press **REZERO**.
2. Add samples, being sure to enter number of samples if other than 10.
3. Press **PIECES** and wait for a count to appear.
4. Enter tare weight of container and add a full container of parts.

4.8 Operation Quick Tips

Task	Procedure
Tare out an empty container	Place an empty container on platform and press **TARE**
Enter a known tare weight	Enter tare weight as it would appear in weight display and press **TARE**
Change to gross weight display	Press **NET/GROSS**
Change display to net weight	Press **NET/GROSS**
Compute a unit weight	Place 10 pieces on scale and press **PIECES** or Place an arbitrary number of pieces on platform, use the keypad to enter quantity used, and press **PIECES**
Recompute a unit weight (if the RECOMP light is on after pieces are added)	Add a number of pieces to the sample and press **PIECES**
Enter a known unit weight	Enter weight (per 1000 pieces) and press **UNIT WEIGHT**
Clear a unit weight in the display	Enter 0 and press **UNIT WEIGHT**
Accumulate a quantity (temporary)	With first quantity on platform, press **+**. When display returns to weighing mode, clear scale and count second quantity. Repeat until all items have been counted. Press ***** to clear. If a mistake is made during accumulation, press **–** to delete that quantity.

4.9 Access Codes

The following table summarizes the access codes for various IQ6200/6500 functions. To use the listed access codes, hold down **REZERO** while entering the code:

Code	Function	More Information
8 7 1 5	Enter calibration mode	Section 7.0
1 4 1	Set configuration (Enter SPEC codes)	Section 6.0
2 3 2	Change data/parity/stop bits (IQ6500 RS-232 connections)	Section 9.2
2 8 4	Check calibration/counting mode lockout switch status	Section 7.0
2 9 0	Set starting ticket sequence number (IQ6500 printing)	Section 9.3.4
* * +	View raw A/D count without affecting calibration	—

5.0 Data Storage

Code numbers allow you to store information for the weighing applications you use the most. This eliminates the need to continually re-enter data for weighing applications that are used on a regular basis. You can program up to 100 code numbers on your IQ6200/6500. Each code number can store the following data:

- Code or ID number
- Tare weight
- Unit weight
- Part number
- Inventory
- Setpoint

A form designed to assist you when entering code number data appears in Section 12.1.

To program a code number and related data, use the following procedure. Only the code number must be entered; the other information is optional:

1. In weighing mode, press **MODE**. The PROG lamp in Unit Weight display is lit.

   Note:
   If the memory lamp is lit, you cannot enter the program mode. Press ***** to clear the memory.
2. Use keypad to enter a code number (up to 12 digits) and press **#**. All displays show 0. If Quantity display shows CLEAr, number is already in memory. Press **CLEAR** to delete number from memory, or **#** to modify.
3. If required, enter a tare weight (up to 5 digits) and press **TARE**.
4. If required, enter a unit weight (up to 5 digits) and press **UNIT WEIGHT**. Or place a sample number of pieces on scale, enter quantity of pieces using keypad, and press **PIECES**. The scale calculates unit weight.
5. If required, enter an alternate part number. The alternate part number (the term “alternate” does not appear on the weight ticket) can be numeric or alphanumeric. For example, if you are associating a part number with 1/2" bolts, you could have the term 1/2BOLTS appear on the weight ticket. See SPEC15 bit 0 in the IQ6500 set-up table in Section 6 to control the numeric or alphanumeric option.

   To enter a *numeric* part number, enter up to 12 digits and press **-/PART#**.

   To enter an *alphanumeric* part number:

   a. From program mode, press **PART#**.
   b. Enter a two-digit numeric that represents the first character of your part number. The character code list in Appendix 12.2 lists the two-digit numerics and the characters that each represents.
   c. Press **+**.
   d. Repeat steps b and c until your alternate part number is complete.
6. If required, enter inventory quantity, then press **NET/GROSS**.
7. If setpoints are required for this item:

   a. Press **+**. SEt 1 appears in Quantity display. Key in setpoint value (5 digits). Weights must be entered exactly as they appear in Weight display. For example; 10.000, not 10.
   b. Press **+**. SEt 2 appears.
   c. Key in desired pre-alarm percentage.
   d. Press **+**.
8. Press ***** to complete programming for this code item. Repeat steps 2 through 8 as required for additional code numbers.
9. When all code numbers are entered, press **MODE** to return to weighing mode.

5.1 Programming Unit Weight for a Code Number in Weighing Mode

1. In weighing mode, key in code number and press **#**. The displays respond with preprogrammed information. If code number entered has not been programmed into memory, Quantity display shows "not F". If code number is to be entered into memory, press **#** to enter it, or press **CLEAR** to clear display.
2. Enter unit weight (if known) with keypad. If unit weight is not known, use sample procedure at beginning of this section.
3. Press **UNIT WEIGHT**. The new code number and its associated unit weight are now in memory. All other items for this code number must be entered while in program mode.
4. Press **MODE**. The Weight display shows ProG.
5. Enter code number and press **#**. The Quantity display shows CLEAr.
6. Press **#**. Enter other values as above.

5.1.1 Reviewing Code Numbers Already in Memory

1. Press **MODE**. The Weight display shows ProG. The Quantity display shows letter C and total number of codes in memory.
2. Press **#**. The first code is shown in Weight display. The Quantity display shows C 1.
3. Press **+**. The second code is shown in Weight display. The Quantity display shows C 2. Pressing **+** advances to next code, pressing **-** goes to previously displayed code.
4. Press **MODE** twice to exit and return to weighing mode.

5.2 Check or Change Code Number Data

1. Press **MODE**.
2. Enter code number.
3. Press # twice.
4. See the following table for valid options.

To check:	Press:
Set 1	**+**
Set 2	**+** (again)
Alternate Part Number	**PARTS#**
Inventory	**NET/GROSS**

5. Press ***** to save information.
6. Press **MODE** to return to weighing mode.

Note:
If a tare weight has been programmed, it will be displayed in Weight display after step 3 above. Pressing **TARE** will erase tare value and set it to 0. Do not press **TARE** if the preprogrammed value is correct.

5.2.1 Printing Code Number Formats

If your IQ6500 is connected to a tape printer, you can print the format of any code number in memory.

1. From weighing mode, press **MODE**. The number of code numbers is displayed in the Quantity window.
2. Press ***** to print each code number and its associated data.
3. Press **MODE** to return to weighing mode.

To print ticket in weighing mode:

1. Enter the code number you want to print, then press **#**.
2. Add weight or sample to be counted.
3. Press **+** to add to accumulation, **–** to subtract from accumulation.
4. Press ***** to print accumulated total.

5.3 Delete Items from Memory

The following sections contain procedures for deleting items from the memory of your IQ6200/6500.

5.3.1 Deleting a Particular Code

1. Press **MODE** to enter program mode.
2. Enter code to be deleted.
3. Press **#**, then press **CLEAR**.
4. Press **MODE** to return to weighing mode. The selected code is deleted.

5.3.2 Deleting Entire Memory

Notice:
This procedure erases all unit weights, inventories, setpoints, tare weights, code numbers and part numbers.

1. Press **MODE** to enter program mode.
2. Press and hold **REZERO** while pressing "**.**" twice, then press **0**. Release **REZERO**.
3. Press **CLEAR**.
4. Press **MODE** to return to weighing mode.

5.3.3 Deleting All Inventory Values from Memory

1. Press **MODE** to enter program mode.
2. Press and hold **REZERO** while pressing "**.**" twice, then press **1**. Release **REZERO**.
3. Press **CLEAR**.
4. Press **MODE** to return to weighing mode. All inventory values are deleted.

5.3.4 Deleting All Unit Weights from Memory

1. Press **MODE** to enter program mode.
2. Press and hold **REZERO** while pressing "**.**" twice, then press **2**. Release **REZERO**.
3. Press **CLEAR**.
4. Press **MODE** to return to weighing mode. All unit weights are deleted.

5.3.5 Deleting All Tare Weights from Memory

1. Press **MODE** to enter program mode
2. Press and hold **REZERO** while pressing "**.**" twice, then press **3**. Release **REZERO**.
3. Press **CLEAR**.
4. Press **MODE** to return to weighing mode. All tare weights are deleted.

5.3.6 Deleting All Part Numbers from Memory

1. Press **MODE** to enter program mode.
2. Press and hold **REZERO** while pressing "**.**" twice, then press **4**. Release **REZERO**.
3. Press **CLEAR**.
4. Press **MODE** to return to weighing mode. All inventory part numbers are deleted.

6.0 Setting Configuration

Setting configuration allows you to easily modify the functionality of your IQ6200/6500. Use the tables in this section to view the options you can modify. For example, if you wanted the auto recomputation function to work on your IQ6500, you would go to the IQ6500 spec table and find SPEC08. Go across the row and see that bit 1 of SPEC08 controls the recomputation function. The default configuration for SPEC08 is 1000, which means that the auto recomputation function is off. To turn it on, you would change the bit string to 1010.

To enter the configuration mode:

1. Press and hold **REZERO** and enter **1 4 1**. SPEC00 appears in Weight display and configuration of four bits (for SPEC00) appears in Quantity display. Bit 3 is left-most digit in Quantity display.
2. Use keypad to enter new bit string for spec number. You must enter all four bits starting with bit 3.
3. Enter new bit string into memory by pressing **+** to advance to next spec code before exiting configuration mode. You can change multiple bit strings before exiting. To go back to previous spec code, press **-**. To exit configuration mode press ***** and then **MODE**, or press **MODE** twice.

6.1 Configuring Grads and Decimal Positions

SPEC00 through SPEC03 set the graduations (grads) and number of decimal positions for the IQ6200 and IQ6500 scales.

SPEC00 sets the number that the scale is to count by—1, 2, 5, or 10. The value 10 is used for applications using a dummy zero.

SPEC01 sets the number of positions displayed to the right of the decimal point.

SPEC02 and SPEC03 are used to set the grads and decimal positions for scale 2 on the IQ6500.

The values specified must not exceed the weight resolution for the capacity of the scale. The weight resolution for the scale determines the maximum grads and decimal positions that can be specified. To determine weight resolution for the scale you are configuring, see the capacity/resolution tables in Section 6.2.

Examples:

1. The weight resolution for an IQ6200 with a capacity of 15 lb. is 0.002.

   To make the most precise measurements for this capacity, set SPEC00 to count by 2 (0.002, 0.004, 0.006, and so on; SPEC00=0000) and set SPEC01 to allow three decimal places (0.000 format; SPEC01=0011).

   To set this scale to count by hundredths of a pound, set SPEC00 to 1 (SPEC00=0001) and set SPEC01 to show two decimal places (0.00 format; SPEC01=0010).
2. The weight resolution for an IQ6200 with a capacity of 60 lb. is .01.

   To make the most precise measurements for this capacity, set SPEC00 to count by 1 (.01, .02, .03, and so on; SPEC00=0001) and set SPEC01 for two decimal places (0.00 format; SPEC01=0010).
3. The weight resolution for an IQ6500 with a capacity of 1.0 lb is 0.0001.

   To make the most precise measurements for this capacity, set SPEC00 to count by 1 (0.0001, 0.0002, 0.0003, and so on; SPEC00=0001) and set SPEC01 to allow four decimal places (0.0000 format; SPEC01=0100).

   To set this scale to count by hundredths of a pound, set SPEC00 to 1 (SPEC00=0001) and set SPEC01 to show two decimal places (0.00 format; SPEC01=0010).

6.2 Configuring Display Resolution

SPEC04 sets the display resolution for the IQ6200 and IQ6500 scales. The following tables show the display resolutions available for each scale capacity. Units are switchable from lb. to kg. and can be programmed to primarily weigh in lb., kg., g., oz., ozt, or dwt. IQ6500 scales with a capacity of 0.5 to 100 lbs. have both internal and external mounting capabilities, while scales from 250 to 50000 lbs. are external only.

6.2.1 IQ6200 Display Resolution

The following table lists the weight and counting resolution capabilities for IQ6200 counting scales. Use the table to select the display resolution specified for SPEC04.

Capacity (lb)	Weight Resolution	Display Resolution	
		1 / 6000	1 / 3000
1.5	0.0002	0.0002	0.0005*
3	0.0005	0.0005	0.001
6	0.001	0.001	0.002
15	0.002	0.002	0.005*
30	0.005	0.005	0.01
60	0.01	0.01	0.02
150	0.02	0.02	0.05*
* Denotes a display resolution of 1 / 7500			

6.2.2 IQ6500 Display Resolution

The following table lists the weight and counting resolution capabilities for IQ6500 counting scales. Use the table to select the display resolution specified for SPEC04.

Capacity (lb)	Weight Resolution	Display Resolution		
		1 / 10000	1 / 5000	1 / 2500
0.5	0.0001	0.00005	0.0001	0.0002
1.0	0.0001	0.0001	0.0002	0.0005**
2.5	0.0002	0.0002*	0.0005	0.001
5	0.0005	0.0005	0.001	0.002
10	0.001	0.001	0.002	0.005**
25	0.002	0.002*	0.005	0.01
50	0.005	0.005	0.01	0.02
100	0.01	0.01	0.02	0.05**
200	0.02	0.02	0.05	0.1**
250	0.02	0.02*	0.05	0.1
500	0.05	0.05	0.1	0.2
1000	0.1	0.1	0.2	0.5**
2000	0.2	0.2	0.1	1**
2500	0.2	0.2*	0.5	1
5000	0.5	0.5	1.0	2
10000	1.0	1.0	2.0	5**
25000	2.0	2.0*	5.0	10
50000	5.0	5.0	10.0	N/A
* Denotes a display resolution of 12500 ** Denotes a display resolution of 2000				

6.3 IQ6200 Configuration

The following table shows the IQ6200 grads and decimal values for spec numbers 00 through 03.

Spec No.	Grads	Bit 3	Bit 2	Bit 1	Bit 0
SPEC00	1	0	0	0	1
	2	0	0	0	0
	5	0	0	1	0
	10	0	0	1	1
SPEC01	Decimal	Bit 3	Bit 2	Bit 1	Bit 0
	0	0	0	0	0
	0.0	0	0	0	1
	0.00	0	0	1	0
	0.000	0	0	1	1
	0.0000	0	1	0	0
SPEC02	Not Used				
SPEC03	Not Used				

The following table shows the values for IQ6200 spec numbers 04 through 22.

Spec No.	Default	Bit 3	Bit 2	Bit 1	Bit 0
SPEC04	0000	Not Used	Not Used	Display resolution 00=1/6000 or 1/7500, 01=1/3000	
SPEC05	0000	Recomputation lamp 0=Add pcs, 1=Auto	ZERO lamp 0=Gross, 1=Net	Scale start 0=Auto, 1=Manual	Start range 0=Any, 1=+2%
SPEC06	0000	Tare reduction 0=Yes, 1=No	Accumulate tare 0=Yes, 1=No	REZERO in tare 0=Yes, 1=No	Zero tracking in tare 0=Yes, 1=No
SPEC07	0000	Not Used	Digital tare 0=Yes, 1=No	Not Used	
SPEC08	1000	Negative counting 0=No, 1=Yes	Sample resolution 0=10x, 1=20x	Auto recompute 0=No, 1=Yes	Tare range 0=Full scale, 1=5%
SPEC09	0001	Not Used		Unit wt memory update 0=No, 1=Yes	Accuracy display 0=No, 1=Yes
SPEC10	1000	Weight units 00=Calibrated units only, 01=kg, 10=lb		Blank negative weight 0=Gross, 1=Net	Displayed negative weight 0=Yes, 1=No
SPEC11	0000	Not Used			
SPEC12	0000	Not Used			
SPEC13	0000	Not Used			Display cancel 0=Auto, 1=Manual
SPEC14	0000	Not Used			Display inventory using NET/GROSS key 0=No, 1=Yes
SPEC15	1000	General setpoint 0=No, 1=Yes	Not Used		
SPEC16	0000	Item setpoint 0=No, 1=Yes	Setpoint type 000=Quantity, 001=Weight, 010=Over-Under Weight, 100=Over-Under Quantity		
SPEC17	0000	Not Used			
SPEC18	0000	Not Used			
SPEC19	0000	Not Used			
SPEC20	0000	Not Used			
SPEC21	Checksum (cannot be changed)				
SPEC22	BCC sum (cannot be changed)				

6.4 IQ6500 Configuration

The following table shows the grads and decimal values for IQ6500 spec numbers 00 through 03. Values for SPEC numbers 04 through 22 are shown on the following page.

Spec No.	Grads	Bit 3	Bit 2	Bit 1	Bit 0
SPEC00 (Scale #1)	1	0	0	0	1
	2	0	0	0	0
SPEC02 (Scale #2)	5	0	0	1	0
	10	0	0	1	1
	Decimal	Bit 3	Bit 2	Bit 1	Bit 0
SPEC01 (Scale #1)	0	0	0	0	0
	0.0	0	0	0	1
SPEC03 (Scale #2)	0.00	0	0	1	0
	0.000	0	0	1	1
	0.0000	0	1	0	0

The following table shows the values for IQ6500 spec numbers 04 through 22.

Spec No.	Default	Bit 3	Bit 2	Bit 1	Bit 0
SPEC04	0000	Number of Channels 0=1 channel, 1=2 channel	Not Used	Display resolution 00=1/10000 or 1/12500 01=1/5000 10=1/2500	
SPEC05	0000	Recomputation lamp 0=Add pcs, 1=Auto	ZERO lamp 0=Gross, 1=Net	Scale start 0=Auto, 1=Manual	Start range 0=Any, 1=+2%
SPEC06	0000	Tare reduction 0=Yes ,1=No	Accumulate tare 0=Yes, 1=No	REZERO in tare 0=Yes, 1=No	Zero tracking in tare 0=Yes, 1=No
SPEC07	0000	Not Used	Digital tare 0=Yes, 1=No	Not Used	
SPEC08	1000	Negative counting 0=No, 1=Yes	Sample resolution 0=10x, 1=20x	Auto recompute 0=Yes, 1=No	Tare range 0=Full scale, 1=5%
SPEC09	0001	Not Used		Unit wt memory update 0=No, 1=Yes	Accuracy display 0=No, 1=Yes
SPEC10	1000	Weight units 00=Calibrated units only, 01=kg, 10=lb		Blank negative weight 0=Gross, 1=Net	Displayed negative weight 0=Yes, 1=No
SPEC11	0000	Not Used			
SPEC12	0000	Print on (+) or (–) 0=No, 1=Yes	Not Used	Printer type 0=TM300, 1=SP2000, TM290II, TM-295	Not Used
SPEC13	0000	Not Used			Display cancel 0=Auto, 1=Manual
SPEC14	0000	Not Used			Display inventory using NET/GROSS key 0=No, 1=Yes
SPEC15	1000	General setpoint 0=No, 1=Yes	Setpoint TTL 0=No, 1=Yes	RS232 input 0=No, 1=Yes	Part number type 0=Numeric, 1=Alphanumeric
SPEC16	0000	Item setpoint 0=No, 1=Yes	Setpoint type 000=Quantity, 001=Weight, 010=Over-Under Weight, 100=Over-Under Quantity		
SPEC17 Rev 6.357	0000	Computer output 00=No output 01=Continuous output 10=Output on print only		Input with header 0=No, 1=Yes	Pen reader connection 0=No, 1=Yes
SPEC17 Rev 6.359	0000	Computer output 00=TM-290II or TM-295 with paper release character 01=Continuous Condec format 10=SP2000 with no paper release character		Input with header 0=No, 1=Yes	Pen reader connection 0=No, 1=Yes
SPEC18	0000	Allegro printer 0=No, 1=Yes	Not Used	Print bar codes with headers 0=No, 1=Yes	Any printer activated 0=No, 1=Yes
SPEC19	0000	Not Used	Scale 1 A/D board settings 0=normal offset (–18.5 to 20.5 mV) 1=high range (–22 to 25 mV)		00=normal integration rate 01=high integration rate 10=med integration rate 11=low integration rate
SPEC20	0000	Not Used	Scale 2 A/D board settings 0=normal offset (–18.5 to 20.5 mV) 1=high range (–22 to 25 mV)		00=normal integration rate 01=high integration rate 10=med integration rate 11=low integration rate
SPEC21	Checksum (cannot be changed)				
SPEC22	BCC sum (cannot be changed)				

6.5 IQ6500 Second Channel Setup

For second channel operation, configure the unit using the spec codes. SPECs 02, 03, and 04 are used for second channel setup. Use the IQ6500 display resolution chart (Section 6.2.2) in conjunction with the IQ6500 spec tables in Section 6.4 to determine settings for SPEC02 (Grads) and SPEC03 (Decimal).

For example, you would perform the following steps if you were attempting to connect a 2000 lb. capacity external scale to your IQ6500.

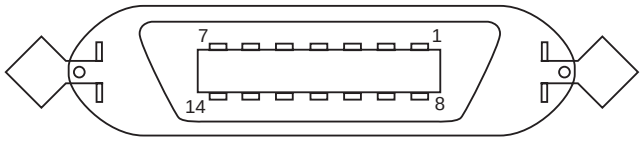
1. Determine the current display resolution using the IQ6500 spec table in Section 6.3 and viewing SPEC04, bits 1 and 0. For our example, we'll say SPEC04 is set at xx00, or 1/10,000.
2. Find the 2000 lb. capacity scale in the chart above and move across to the next column (1/10,000). The display resolution is 0.2. This value is used to set both SPEC02 and SPEC03.
3. Find SPEC02 in the IQ6500 spec table (Section 6.3). For a display resolution of 0.2, use 2 as the grads value. Move across the column and see that SPEC02 should be set to 0000.
4. Find SPEC03 in the IQ6500 spec table. For a display resolution of 0.2, use 0.0 (one decimal position) as the decimal value. The spec table shows that SPEC03 should be set to 0001.

To enable the second channel option, SPEC04 bit 3 must be set to 1.

Note: To calibrate, SCALE must be set to scale 2. See Section 7.0 for calibration procedures.

Second Channel 14-pin Configuration

Configuration for connector pin, Part #32375.



Pin Number	Function
1	+ Sense
2	– Sense
3	+ Excitation
4	– Excitation
5	Shield
6	+ Signal
7	– Signal
others	not used

7.0 Calibration

The calibration procedure maintains the scale accuracy within specifications and can serve as a performance test procedure. Your IQ6200/6500 scale should be on for 30 minutes before attempting to calibrate. Use the following procedure to calibrate:

1. To enter calibration mode, press and hold **REZERO** while entering **8 7 1 5** on the keypad. The Quantity window displays the raw count.

   If the unit will not allow you to enter calibration mode, the calibration lock-out switch may be ON. To find out, hold down **REZERO** and enter **2 8 4**. If the lock-out switch is ON, contact the factory for assistance.
2. Use **+** or **–** to adjust raw count as close to 30,000 as possible.
3. With no weight on the scale, press **REZERO**.
4. Add known weight to scale. At 100% capacity, quantity window should show values close to those listed below:

IQ6200	105,000, except for capacities of 1.5, 15, 150, 1500, or 150,000 lb. IQ6200s configured for these capacities should show a raw count value close to 90,000.
IQ6500	530,000

   Known weights other than pounds and kilograms can be used. See SPEC10 bits 2 and 3 in Section 6. If bits 2 and 3 are 00, scale will not change from type of unit used to calibrate it.
5. Using **TARE** to increase or **PIECES** to decrease, adjust span count as close as possible to the value shown above.
6. Remove weight from scale. If necessary, readjust zero raw count to 30,000.
7. Press **REZERO**.
8. Repeat steps 4—7 until both zero and span readings are as close as possible to the desired values.
9. Add known test weight to scale for final span calibration.
10. Enter value of weight on scale, including decimal places, using numeric keypad (for example, 50.000).
11. Press ***** to calibrate span.
12. Press **MODE** twice to exit calibration mode.

8.0 Display Messages

The following table shows the messages that are displayed during operation of the IQ6200/6500.

Message	Description
—Add XX	Sample size is too small
All CLEAr	Clearing all items in memory
C XX	Number of items in memory
CH XX	Checking part code
CLEAr	Clearing one item in memory
dA - XX - XX - XX (IQ6500 only)	Setting date and time
(printer) Comm on (IQ6500 only)	(printer) Printer on
(printer) Comm off (IQ6500 only)	(printer) Printer off
Err - (IQ6500 only)	Error during data transfer
InSUFS	Setting insufficient sample size
InVEnt CLEAr	Clearing inventory data
Lo-Err	Zero is out of range on the low side
L-YEAr (IQ6500 only)	Setting Leap Year constant
P-no CLEAr	Clearing part number
P-oFF (IQ6200 only)	Setting “sleep” time for battery option
ProG.	In programming mode
SEt 1	Setting setpoint 1
SEt 2	Setting setpoint 2
SPEC XX	Setting Spec Data
t-C XX XX (IQ6500 only)	Programming alpha/numeric part number
tArE CLEAr	Clearing tare weight in memory
totAL XXXX	Doing “+” “–” accumulating operation
through - C XX XX (IQ6500 only)	Programming alpha/numeric part number
UnIt CLEAr	Clearing unit weight in memory
UP-Err	Zero is out of range on the high side
UEr - XXXX	Software version number (only appears after scale is plugged into AC power and turned on)

9.0 Optional Equipment

The following option is available for the IQ6200 series:

- Rechargeable battery pack

The following options are available for the IQ6500 series:

- Remote input channel
- Bi-directional RS-232 communications port (required for all of the accessories listed below)
- Bar code input using a laser or pen scanner
- Setpoint TTL outputs for process control
- Ticket printer
- Tape printer
- Thermal label printers

To obtain more information than is offered in this section or to retrofit your scale, please consult your Rice Lake Weighing Systems distributor.

9.1 Bar Code Input

Bar code input is available using either a laser scanner or a wand (or pen) scanner. The laser scanner allows non-contact, instantaneous, accurate input of unit weight, tare weight, and ID code.

Scanners connect to the circular DIN connector marked “bar code” in the rear of the scale. The pen reader is an economical way to use the accuracy and speed of bar code data input when contact scanning is available. Be sure to verify the correct settings on SPEC17, bits 1 and 0.

9.2 RS-232 Communications Port

The bi-directional RS-232 port can be used to communicate with a computer for database handling. This is the 25-pin rectangular connector located in the rear of the scale. The following sections describe RS-232 specifications, configurations, and installation.

Notes:
Custom software may be available to fit your needs. See your RLWS distributor for information.

9.2.1 Connector Type

The following connector pins are found on the RS-232 25-pin D-type and 8-pin DIN connectors:

25-pin Connector		8-pin RS-232 Connector	
1 - F. gnd.	Frame ground	1 -	
2 - TXD	Transmit data	2 - Gnd	Ground
3 - RXD	Receive data	3 -	
4 - RTS	Request to send	4 - RXD	Receive data
5 - CTS	Clear to send	5 - TXD	Transmit data
6 - DSR	Data set ready	6 - CTS	Clear to send
7 - S. gnd.	Signal ground	7 - RTS	Request to send
8 - RLSD	Receive line signal detector	8 -	
20 - DTR	Data terminal ready		

9.2.2 Baud Rate Selection

The baud rate range is 300 to 9600 and is adjusted by setting one of six jumpers on the board TPB-1670. Only one jumper may be installed at any time.

Jumper	Baud Rate (bps)
JP-1	1200
JP-2	2400
JP-3	9600
JP-4	4800 (default)
JP-5	300
JP-6	600

9.2.3 Data Format

The following table describes the default RS-232 data format:

Type	Setting
Data bits	7
Parity bit	even
Stop bits	1

To change the RS-232 data format, press **MODE** to enter program mode, then press and hold **REZERO** and enter **2 3 2**. Use the **+** and **–** buttons to toggle between selections for the data, parity, and stop bits parameters. Press ***** to store the selected value and advance to the next parameter.

9.2.4 Data Output Format

Each output data frame consists of a number of data fields. Each data field consists of an identifier character (header), the information data, and a termination character return (<CR>). The header of each field describes the subsequent data up to the carriage return character. The line feed (<LF>) is used as the end of record indicator. Data output can be set for continuous data stream or for output by pressing the ***** key (default setting).

Valid data fields for standard operation mode:

Header	Information Data	Termination Char.
<3>	<idcode>	<CR>
<M>	<part number>	<CR>
<K>	<inventory>	<CR>
<G>	<setpoint>	<CR>
<H>	<setpoint%>	<CR>
<A>	<gross weight>	<CR>
<0>	<net weight>	<CR>
<1>	<weight/1000>	<CR>
<4>	<tare weight>	<CR>
<2>	<quantity>	<CR>
<C>	<date>	<CR>
<B>	<weight status>	<CR>
<LF>		

Valid data fields for data storage mode:

Header	Information Data	Termination Char.
<3>	<idcode>	<CR>
<M>	<part number>	<CR>
<1>	<weight/1000>	<CR>
<K>	<inventory>	<CR>
<4>	<tare weight>	<CR>
<G>	<setpoint>	<CR>
<H>	<setpoint%>	<CR>
<LF>		

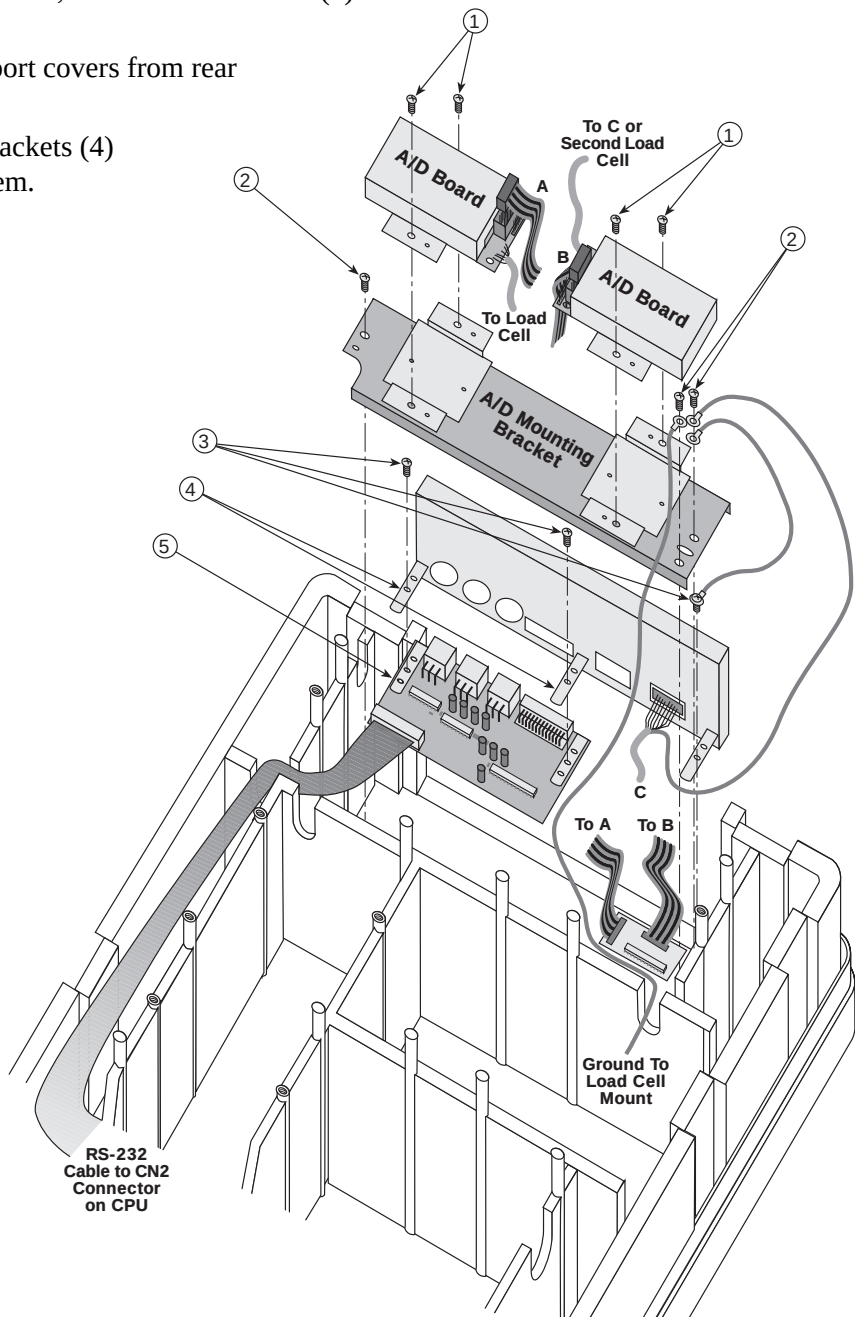
9.2.5 Data Input Format

Input can be selected with or without headers. The default setting is with headers. Valid input data fields are ID Code, Unit Weight, and Tare Weight. Headers are used to identify the type of data input to the scale. If headers are not used, the data input is assumed to be ID Code. Valid input data is the same as the output data in Section 9.2.4.

9.2.6 RS-232 Installation Instructions

Use the following procedure to install an RS-232 connection on your IQ6500.

1. Remove platter and four screws at center of platter support. Remove platter support.
2. Remove case cover by removing six screws on top and two screws under front edge of scale.
3. Unplug connectors (A and B).
4. Remove two screws (1) from each A/D board. Lift each board out and gently place them on top of load cell.
5. Noting placement of ground wires, remove three screws (2) from A/D mounting bracket. Remove mounting bracket.
6. Noting placement of ground wire, remove three screws (3) from back panel.
7. Carefully push out RS-232 port covers from rear panel.
8. The middle and right side brackets (4) have metal spacers under them. Remove these spacers and mount RS-232 board (5) as shown under the brackets.
9. Route RS-232 cable as shown to main board CPU in connector CN2. Use wire ties to secure cables safely away from case edges and load cell compartment. This connector is keyed and will only fit one way.
10. Reassemble scale being careful not to pinch any wires between case cover and base.
11. Set specification codes to activate appropriate output ports.



9.3 IQ6500 Printer Configuration

With the RS-232 option installed you can use a ticket, tape, or bar code label printer to record scale activity. The IQ6500 allows you to print from the weighing mode or program mode. You would print from the weighing mode when performing an actual counting operation, while printing from the programming mode is used to check for item memory. Both modes produce a print ticket or tape. The ***** key is used to activate the print function.

9.3.1 Pin Connections

The table at right lists the pin connections used for most printers attached to the IQ6500. Use the standard D-SUB connections listed for TM-300, TM-290II, TM-295, SP2000, and SP2200 printers.

The table also lists pin connections for Allegro printers attached using the 8-pin DIN connector and running software version 6.359 and for Eltron printers attached using the 25-to-9 pin Eltron interface cable.

See Section 12.3 for more information about the Eltron printer interface option.

Printer Connection	Printer Pins		IQ6500 Pins	
Standard D-SUB	RXD	3	2	TXD
	GND	7	7	GND
DIN-8 for Allegro printers using Version 6.359	RXD	3	5	TXD
	GND	7	2	GND
			6-7	Jumper
25-to-9 pin D-SUB, cable PN 41279, for Eltron interface	TXD	2	3	RXD
	RXD	3	2	TXD
	CTS	5	8	CTS
	DSR	6	6	DSR
	GND	7	5	GND

9.3.2 Spec Code Settings

The following table shows the recommended spec code settings for printers commonly attached to the IQ6500 counting scale. Certain printers require different SPEC code settings, depending on the version of IQ6500 software used.

Printer	Software Version	IQ6500 SPEC Settings			Printer DIP Switches
		SPEC12	SPEC17	SPEC18	
TM-300	All	1000	0000	0001	1, 2, 3 8, 9, 10 OFF (down); all others ON
TM-290II	All	1010	0000	0001	
TM-295	All	1010	0000	0001	
SP2000	6.357	1010	0000	0001	SW2-2 ON; all other switches OFF
	6.359	1010	1000	0001	
SP2200	All	1010	1000	0001	SW1-1 ON; SW1-2, SW1-3 OFF
Allegro	6.357	1000	0000	1011	3 and 4 ON; all others OFF
	6.359	1000	0000	1011	All switches OFF
Eltron	All	1000	0000	1001	—

See Section 6.0, Setting Configuration, for more information about configuring spec codes.

The IQ6500 is shipped with the baud rate set at 4800 baud; if the IQ6500 baud rate is changed, the printer DIP switch settings must be adjusted so that the baud rates specified for the scale and printer match. See Section 9.2.2 for information about changing the IQ6500 baud rate.

9.3.3 Sample Tickets

The following examples show weighing mode and program mode tickets from a TM-300 tape printer. The TM-290II, TM-295, SP-2000 and SP2200 printers all provide the ticket format as the TM-300.

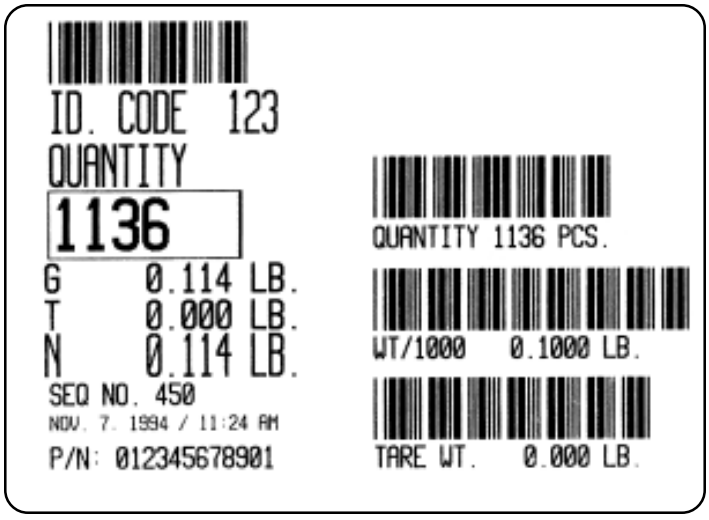
```
JAN. 16, 1995 / 9:00 AM
ID. CODE:      111
P/N:           0264FFD78901
GROSS WEIGHT:     0.1016
TARE WEIGHT:      0.0000
NET WEIGHT:       0.1016
UNIT WT/1000:     0.1000
QUANTITY:       1016 PCS.
SEQ. NO.:       475
```

Sample weighing mode weight ticket

```
JAN. 16, 1995 / 9:00 AM
ID. CODE:      111
P/N:           0264FFD78901
GROSS WEIGHT:     0.1016
TARE WEIGHT:      0.0000
NET WEIGHT:       0.1016
UNIT WT/1000:     0.1000
QUANTITY:       1016 PCS.
SEQ. NO.:       475
```

Sample program mode weight ticket

The example below shows an Allegro printer label. Standard label size is 3 x 4 1/2 in.



Sample Allegro printer ticket (not to scale)

9.3.4 Setting the Ticket Sequence Number

You can set the sequence number printed on each ticket for purposes of tracking the number and order of tickets printed. To reset the sequence number:

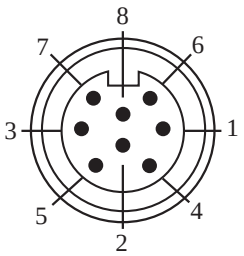
1. From weighing mode, press **MODE**.
2. Press and hold **REZERO** while entering **2 9 0** from keypad. *S-no* appears.
3. Press **CLEAR**. The Unit Weight display should read 0.
4. Leave at 0 or use keypad to enter a number from one to six digits in length.
5. Press **MODE** twice to return to weighing mode.

The ticket sequence number can be reset at any time.

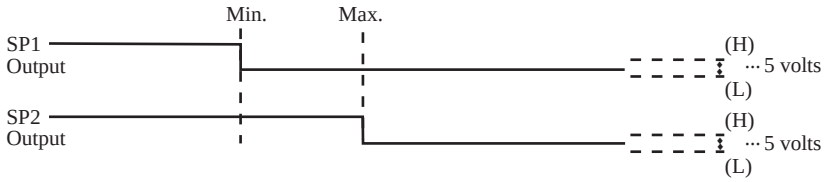
9.4 Setpoint Outputs

Two setpoint outputs are available as open-collector transistor transistor logic (TTL) level outputs for driving relays on the RS-232 option. The outputs are available on the circular connector on the rear of the scale marked “setpoint” and are configured by setting SPEC15 bit 2 and SPEC16 bits 0–3. See Section 6.0 for more information about configuring SPEC codes.

Pin Number	Signal
2	GND
3	SP1
4	SP2
Others	Not used



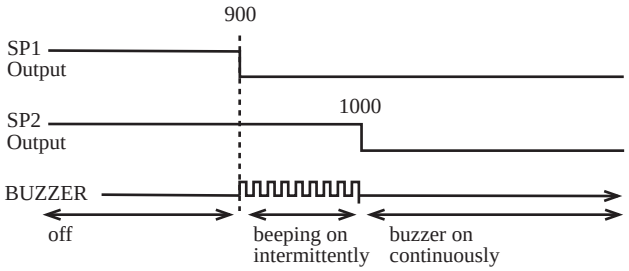
The following figure shows the minimum and maximum levels of the two setpoint outputs, SP1 and SP2.



The following figures provide examples of using the setpoint outputs.

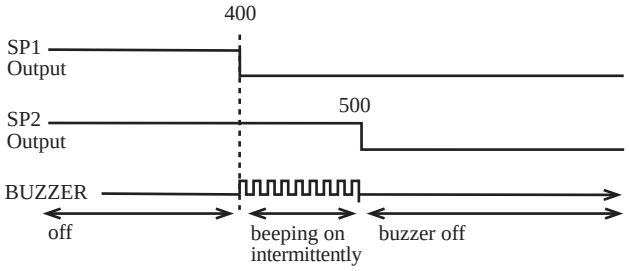
Example 1

- Example 1 uses a standard quantity setpoint of 1000 pieces (SP2) with a percentage pre-alarm of 90 percent or 900 pieces (SP1). SPEC16 must be set at 0000.



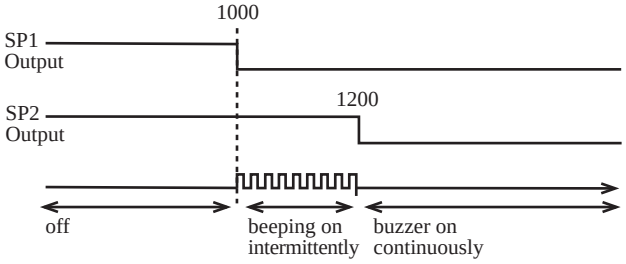
Example 2

- Example 2 uses an over/under quantity arrangement where SP1 is 500 pieces and SP2 is 400 pieces. SPEC16 must be set at 0100.



Example 3

- Example 3 uses an alarm set for 120 percent (SP2) of 1000 pieces (SP1). SPEC16 must be set at 0000.



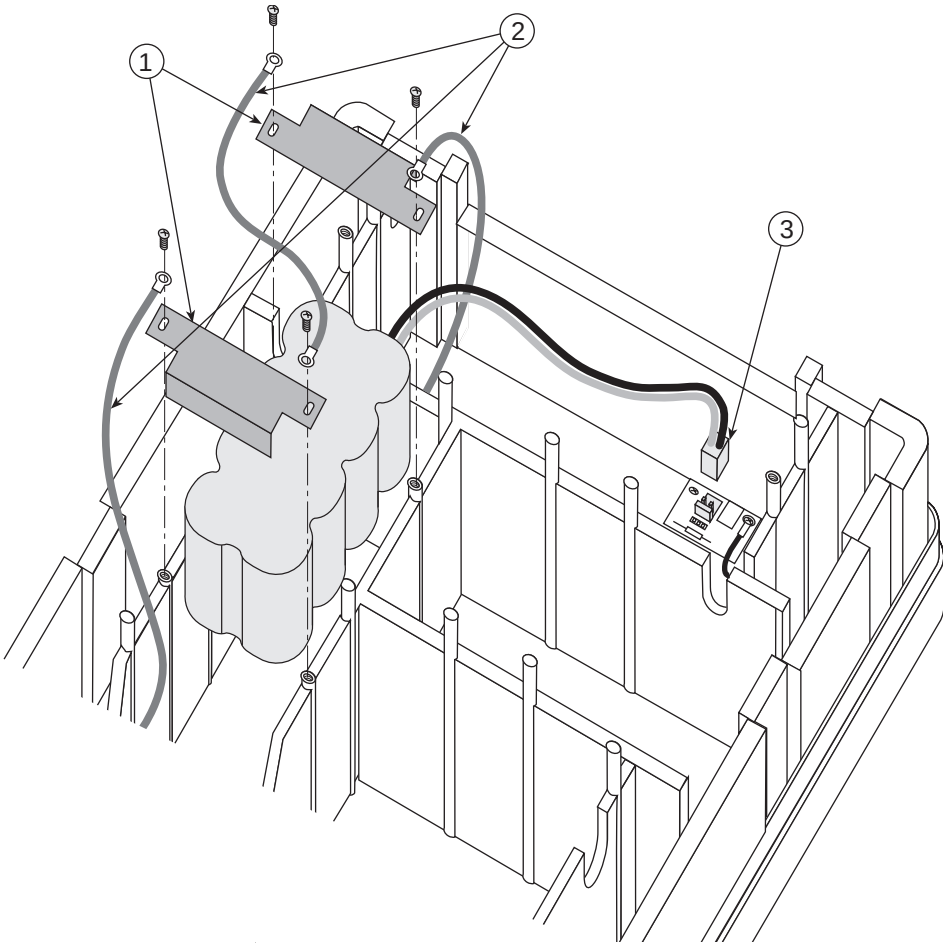
9.5 IQ6200 Battery Pack Installation

1. Gently lift and remove platform.
2. Remove four screws at center of platform support. Remove platform support.
3. Remove six screws from top covers (two in keypad section and four in main).
4. Remove two screws from front underside of scale (one in each corner) and remove main cover.
5. Remove two screws at top of each battery support (1). Note placement of ground wires (2) for reinstallation.
6. Place battery pack in compartment, as shown, with wires at top of battery towards rear of scale.
7. Replace supports (1) and ground wires (2). Do not allow wires to be pinched under supports.
8. Route wires as shown and plug connector (3) into board TPB-1677.

   ⚠ Caution

   Plugging battery in with connector reversed can cause permanent damage to battery pack and scale.

9. Verify that scale (AC adaptor) is unplugged. Turn scale on to check battery operation.
   - If scale operates properly, reassemble scale and use accordingly.
   - If scale does not operate, recheck wiring and try again. If scale still does not operate, plug in scale. If scale works with the power cord plugged in, turn scale off, reassemble scale, and allow battery to charge (8 to 12 hours is recommended).
   - If scale does not operate with power cord, disconnect cord and battery and call authorized factory service representative.



10.0 Maintenance

This section contains information about IQ6200/6500 maintenance. Preventive maintenance consists of periodically cleaning the external surfaces of the scale and should be performed as often as operating conditions warrant. Service or repair should be attempted by qualified personnel only, and only when it has been positively determined that the counting scale requires such service. All service should be done in a clean, dry, dust-proof area. See Section 13, IQ6200/6500 Limited Warranty, for more information on service and repair.

Warning

Do not attempt any service while the scale is connected to the power cord.

10.1 External Maintenance

The exterior surfaces of the counting scale can be cleaned using soap and water. However, extreme caution should be used so that no water penetrates the electrical or mechanical sections. A damp cloth or sponge is suggested.

Caution

Never use acetone, MEK, or similar solvents on the plastic housing as they will etch these surfaces. For grease or other difficult spots, a chlorothane or naptha based cleaner may be used. Never use solvents on the front or rear panels.

Accumulations of dust or dirt particles between the pins of the connectors may be removed by using dry forced air or a small dry brush.

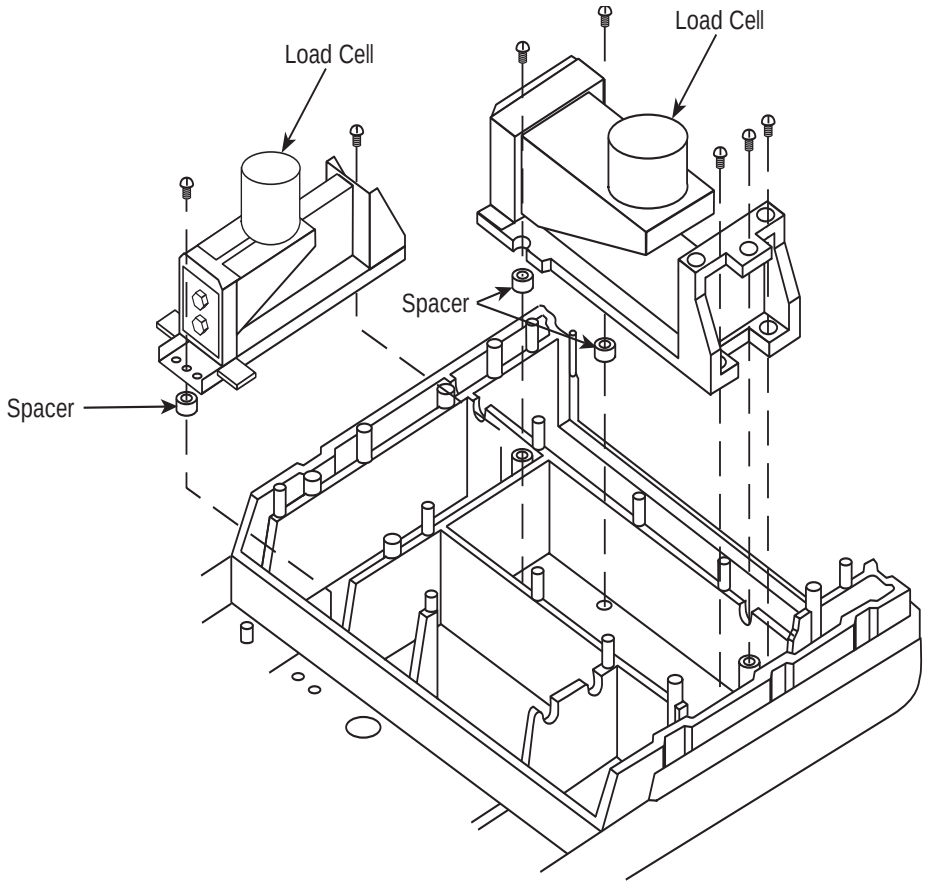
10.2 Internal Maintenance

Internal maintenance is not normally required. If needed, maintenance should only be attempted by a qualified, authorized service technician. However, you should perform both an electrical test and an accuracy test every six to twelve months. For an electrical test, follow the procedures in Section 3.3.

The scale weighing accuracy can be determined by applying known weights to the platform. Because of the scale's very high accuracy, only weights that are certifiably more accurate than the scale's specifications (NBS class "F" or higher) should be used in testing for accuracy. Rice Lake Weighing Systems is a certified manufacturer and testing laboratory for test weights.

10.3 Load Cell Replacement Procedure

1. Disconnect power to scale.
2. Remove platter.
3. Remove four spider assembly screws, then remove spider assembly. For dual platter scales, repeat for second spider assembly.
4. Remove two bottom and two top screws holding front panel.
5. Slide front panel forward to disengage tabs on cover.
6. Remove plastic cover (4 screws) under spider assembly.
7. Remove ground cables (one screw per assembly).
8. Remove hold-down screws from load cell assembly. For dual platter scales, remove 5 screws for the large load cell and 4 screws for the smaller load cell. One hold-screw for the smaller cell is also a ground wire screw and should already be removed.
9. Lift out mounting assembly. For dual platter scales, remove spacers under rear of the large load cell mounting assembly.
10. Unsolder load cell wires (color-coded guide on board). Overload screws should not need adjustment even if recalibrating to a different capacity.
11. Reverse procedure for reassembly.



11.0 Specifications

The following sections list specifications for the IQ6200 and IQ6500 counting scales. See Section 6.2 for display resolution information. Technical specifications for the IQ6500 dual scale are the same as the single platform IQ6500 with the exception of the platform size.

11.1 IQ6200

Displays	
Weight	5 digits
Unit Weight	5 digits
Quantity	6 digits
Display Resolution	1/7500 for 1.5, 15, 150 lb; 1/6000 for all others
Internal Resolution	1/75000 for 1.5, 15, 150 lb; 1/60000 for all others
Power Supply	AC adaptor 12VDC 1.2A
Operation Temperature Range	-10° to 40°C/14° to 104°F
Max Memory	100 Items
Each item with:	
Code No:	Max 12 digits
Part No:	Max 12 digits
Tare Weight:	Max 5 digits
Unit Weight: (per 1000 pcs)	Max 5 digits
Inventory:	Max 6 digits
Set Point (weight or count)	Max 5 digits
Set Point % Alarm:	0 - 999.99%
External Dimensions	70mm x 420mm x 120mm (14 1/2" x 16 1/2" x 4 3/4")
IQ6200 Platform Size	
1.5 lb/600 g	6" x 8"
3.0 lb/1.5 kg	7" x 10"
6 lb/3 kg - 150 lb/60 kg	12" x 14"

11.2 IQ6500

Displays	
Weight	5 digits
Unit Weight	5 digits
Quantity	6 digits
Display Resolution	1/10000, 1/5000, 1/2500
Display Update Rate	8 updates/sec
Internal Resolution	1/500,000
Power Supply	117VAC, 50/60HZ
Operation Temperature Range	-10° to 40°C/14° to 104°F
Max Memory	100 Items
Each item with:	
Code No:	Max 12 digits
Part No:	Max 12 digits
Tare Weight:	Max 5 digits
Unit Weight: (per 1000 pcs)	Max 5 digits
Inventory:	Max 6 digits
Set Point (weight or count)	Max 5 digits
Set Point % Alarm:	0 - 999.99%
External Dimensions	70mm x 420mm x 120mm (14 1/2" x 16 1/2" x 4 3/4")
IQ6500 Platform Size	
1 lb/500 g	6" x 8"
2.5 lbs/1 kg	7" x 10"
5-100 lbs/2.5-50 kg	12" x 14"
IQ6500 Dual Scale Platform Size	
Sample	4" x 6"
Bulk	9" x 12"

12.0 Appendix

12.1 Code Number Form

You may want to make photocopies of the following form and use them to record information for each code number prior to entering the information in the memory of your IQ6200/6500.

	1	2	3	4	5	6	7	8	9	10	11	12
Code or ID Number												
Tare Weight (include decimal)												
Unit Weight (include decimal)												
Part Number												
Inventory												
Setpoint Quantity												

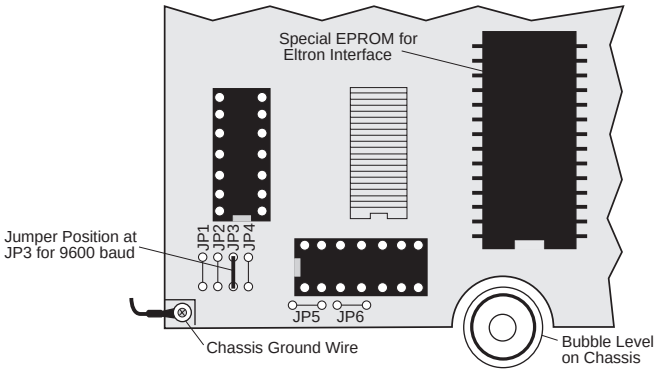
12.2 Character Code List

The following table contains two-digit numerics used to enter alphanumeric part numbers.

Numeric	Character	Numeric	Character	Numeric	Character
00	space	27	,	54	Ø
01	A	28	.	55	Ā
02	B	29	-	56	Ē
03	C	30	0	57	Å
04	D	31	1	58	Γ
05	E	32	2	59	Δ
06	F	33	3	60	θ
07	G	34	4	61	Λ
08	H	35	5	62	Ξ
09	I	36	6	63	Π
10	J	37	7	64	Σ
11	K	38	8	65	Φ
12	L	39	9	66	ψ
13	M	40	@	67	Ω
14	N	41	!	68	“
15	O	42	”	69	+
16	P	43	#	70-71	not used
17	Q	44	$	72	:
18	R	45	%	73	*
19	S	46	&	74-95	not used
20	T	47	/	96	?
21	U	48	(	97	→
22	V	49	)	98	←
23	W	50	’	99	CR
24	X	51	Æ		
25	Y	52	Ä		
26	Z	53	Ø		

12.3 Eltron Printer Interface

The Eltron printer interface option, PN 41278, allows the IQ6500 counting scale to connect to all Eltron printers except models LP 2022 and LP 2042. The factory-installed option consists of a custom EPROM for the IQ6500 and a 25-to-9 pin D-SUB interface cable, PN 41279. The baud rate for the IQ6500 is set to 9600 bps by changing the jumper as shown in the figure below.



See Section 9.3 for information about interface cable pin connections and spec code settings for the Eltron printer interface.

IQ6200/6500 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one (1) year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS'S SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.

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