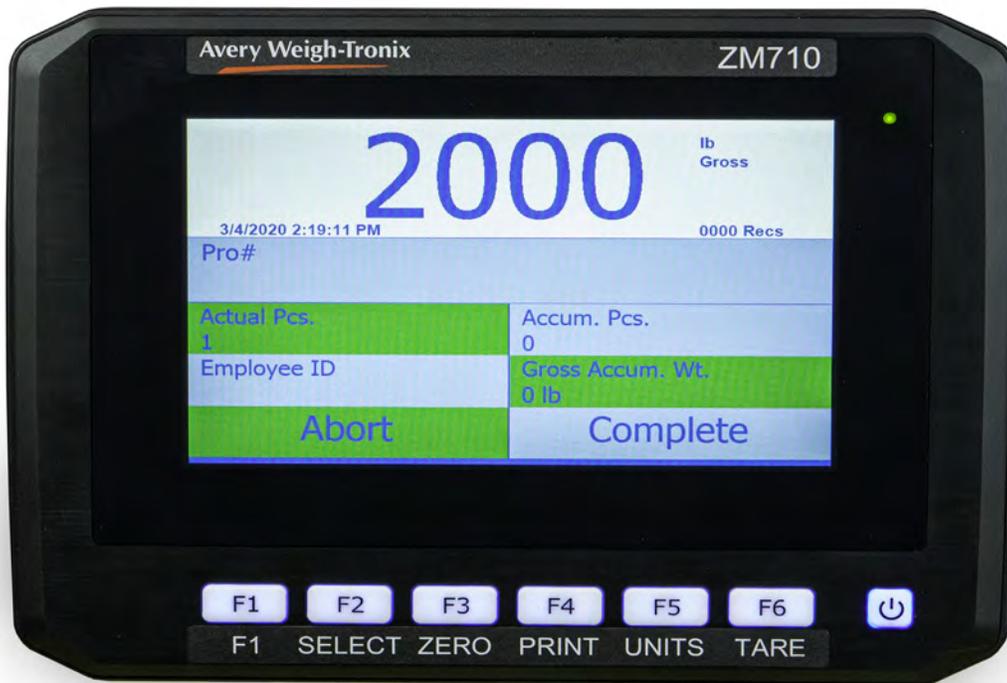


## ZM710 Forklift Scale Instrument



## User Instructions

original instructions

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# 1 Daily Operation Quick Reference

Below is a brief overview of how to use this system during a work shift. See *Operations in Standard Mode* on [page 18](#) for complete instructions.



---

*To turn the instrument on, start the forklift and press the **ON/OFF** key until the keys light up blue and the power light turns green.*

---

1. At start of shift, press the Employee ID field and enter the employee ID number.
2. Enter a PRO number using the bar code scanner or press the **Pro#** field and key it in with the numeric keypad. Press **Enter**.
3. Key in the number of pieces in the PRO# if different than the default value of 1. Press **Enter**.
4. Key in the declared weight listed on the shipping papers. Press **Enter**.
5. Weigh the pieces contained in that PRO# and press the **Select** key.
6. Press **Complete** when all pieces in a PRO# have been stored.
7. Enter a new PRO# and repeat until the shift ends or until you are required to download the stored information.

## 2 General information and warnings

### 2.1 About this manual

---

This manual is divided into chapters by the chapter number and the large text at the top of a page. Subsections are labeled as shown by the 1 and 1.1 headings shown above. The names of the chapter and the next subsection level appear at the top of alternating pages of the manual to remind you of where you are in the manual. The manual name and page numbers appear at the bottom of the pages.

#### 2.1.1 Text conventions

---

Key names are shown in **bold** and reflect the case of the key being described. This applies to hard keys and onscreen or soft keys.

Displayed messages appear in ***bold italic*** type and reflect the case of the displayed message.

#### 2.1.2 Special messages

---

Examples of special messages you will see in this manual are defined below. The signal words have specific meanings to alert you to additional information or the relative level of hazard.



---

**ELECTRICAL WARNING!**  
THIS IS AN ELECTRICAL WARNING SYMBOL.  
ELECTRICAL WARNINGS MEAN THAT FAILURE TO FOLLOW SPECIFIC PRACTICES OR PROCEDURES MAY RESULT IN ELECTROCUTION, ARC BURNS, EXPLOSIONS OR OTHER HAZARDS THAT MAY CAUSE INJURY OR DEATH.

---



---

**CAUTION!**  
*This is a Caution symbol.*  
***Cautions give information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.***

---



---

**NOTE:** *This is a Note symbol. Notes give additional and important information, hints and tips that help you to use your product.*

---

## 2.2 Installation

---



---

**DANGER: RISK OF ELECTRICAL SHOCK. NO USER SERVICEABLE PARTS. REFER TO QUALIFIED SERVICE PERSONNEL FOR SERVICE.**

---

### 2.2.1 Safe handling of equipment with batteries

---



---

**CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

---

---

**ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie, remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.**

---

## 2.3 Routine maintenance

---



---

**IMPORTANT: This equipment must be routinely checked for proper operation and calibration. Application and usage will determine the frequency of calibration required for safe operation.**

---

Always turn off the machine and isolate from the power supply before starting any routine maintenance to avoid the possibility of electric shock.

Make sure that it is placed securely on a flat and level surface.

## 2.4 Cleaning the machine

---



**Table 2.1 Cleaning DOs and DON'Ts**

DO	DO NOT
Wipe down the outside of standard products with a clean cloth, moistened with water and a small amount of mild detergent	Attempt to clean the inside of the machine
	Use harsh abrasives, solvents, scouring cleaners or alkaline cleaning solutions
Spray the cloth when using a proprietary cleaning fluid	Spray any liquid directly on to the display windows

## 2.5 Training

---

Do not attempt to operate or complete any procedure on a machine unless you have received the appropriate training or read the instruction books.

To avoid the risk of RSI (Repetitive Strain Injury), place the machine on a surface which is ergonomically satisfactory to the user. Take frequent breaks during prolonged usage.

## 2.6 Sharp objects

---

Do not use sharp objects such as screwdrivers or long fingernails to operate the keys.

## 2.7 FCC Statement

---

### **United States**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# 3 Introduction

## 3.1 Product Introduction

---

The ZM710 Instrument with touchscreen technology can be paired with the digital FLSC scale carriage and FLJ 100 digital junction box to make a completely digital forklift scale system. You can weigh, count and store information and, with the optional wireless communication, transmit that information to a receiver attached to a computer.

This manual explains the user setup and operation of the ZM710. It covers the standard application which comes on the instrument.

## 3.2 Front Panel, Connections and Keys

---

The ZM710, shown in Figure 3.1, has seven keys and a full color display with touch sensitive screen. Touch the screen to select an underlying key or field.



---

*The screen is touch sensitive. When instructions state to **highlight** an item, use the arrow keys to move the highlight bar to that item. When the instructions say to **select** an item, touch the up or down arrow to highlight that item, then touch the **Enter** key.*

---

### 3.2.1 Front Panel

---

Figure 3.1 shows the front panel of the ZM710 Instrument.

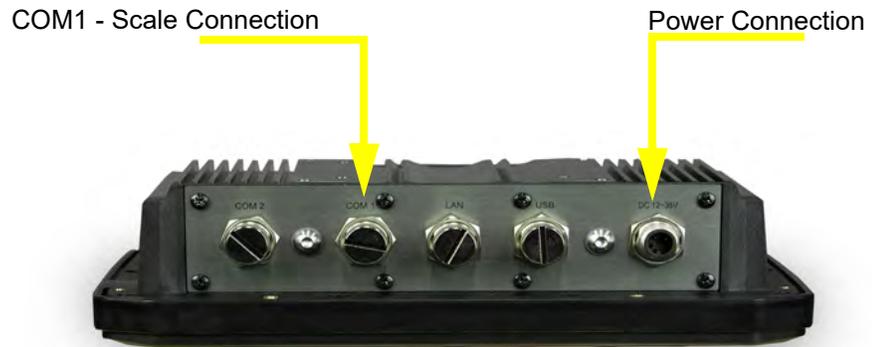


**Figure 3.1 ZM710 front panel**

There is a power saving standby mode and a shutdown mode. The default for the standby mode is 5 minutes of scale and front panel inactivity. Touch the screen to restore normal operation. The default for the shutdown mode is 4 hours. After that, the ZM710 will shut itself off. To power up the instrument, press the **ON/OFF** key until the keys light up blue and the power light turns green.

### 3.2.2 ZM710 Connections

Figure 3.2 shows the bottom of the ZM710 Instrument.



**Figure 3.2 ZM710 Connections**

Note the POWER port is on the right and the COM1 port, where the scale connects, is in the middle. Be sure the power cable and scale interface cable connectors are tight before you begin using the instrument.



---

*If your system uses the FLW 100 wireless carriage option, be sure to charge the battery pack for 6-7 hours before using.*

---

### 3.2.3 Front Panel Keys

**ON/OFF** key To power up the instrument, press the **ON/OFF** key, shown below, until the keys light up blue and the power light turns green. See *Upon Power Up on page 13*. To power down the instrument, press and hold the **ON/OFF** key for 5 seconds and then release. The instrument will power down. See *To Power Off on page 13*.



**F1** key Press and hold the **F1** key until the password screen appears. For instructions on using the alphanumeric touchscreen, see *Entering Alphanumeric Values on page 14*.

**Select (F2)** key Press the **Select** key to store the active transaction. Between transactions, the weight on the scale must fall below the pre-programmed amount (default is 50 lbs) before the next transaction can be stored.

**Zero (F3)** key Press the **Zero** key to zero the scale.

**Print (F4)** key Press the **Print** key to print.

**Units (F5)** key Press the **Units** key to change the unit of measure.

**Tare (F6)** key Press the **Tare** key to tare.



---

*The Print, Units, and Tare keys must be configured before use.*

---

### 3.2.4 Display Symbols, Icons and Messages

On the display, to the right of the weight reading, several things can appear; words, symbols or icons. They are explained below.

**BUSY** At various times you will see popup boxes showing the system is busy. These will disappear after the process is complete.

~ This symbol appears when there is motion on the scale. When the weight is stable, this symbol will disappear. Transactions and scale functions will only operate when the scale is stable.

**OVER TIP** The FLJ 100 is tipped beyond its ability to compensate for the angle. The scale will not weigh accurately in this condition.

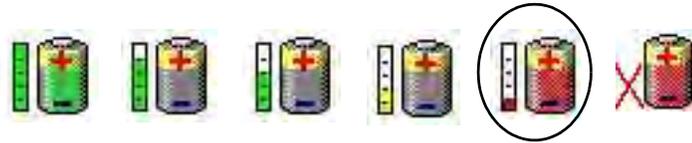
**XXXX Recs** This is the number of transaction records stored in memory. This will automatically decrement when communication is established between the ZM710 and the host computer.

**NO COMM** This means there is no communication with the FLJ 100 junction box. Check the interface connections if this happens and power off the ZM710 and then repower it.

**UNDER LOAD** Scale is below the configured underload range.

**OVER LOAD** Scale is above the configured overload range.

<b>&gt;0&lt;</b>	Scale at center of zero.
<b>lb / kg / custom</b>	The current unit of measure.
<b>Gross or Net</b>	Tells current scale mode; Gross weighing or Net weighing.
<b>Battery icon</b>	A battery icon appears on the right side of the screen when the wireless carriage option is installed. As battery power drops, the icon changes, as shown below, until the circled icon flashes. When this occurs, charge the carriage battery immediately. If the icon on the right appears, no battery information is being received.



<b>Wireless Scale icon</b>	There are three possible states for the wireless scale icon which appears on the right side of the display: red, green and off. The icons are shown below. Red occurs during instrument startup (normal), or when radios are communicating with each other but a problem exists between the carriage radio module and the FLJ 100 junction box. Green means carriage and instrument are communicating and data is being transferred. If there is no icon showing, the radios are not talking to each other.
----------------------------	---



### 3.2.5 Upon Power Up

When you first power up the ZM710, the startup process will run, followed by the main operations screen shown below.



The white section of the screen shows:

- weight on the scale
- unit of measure
- weighing mode
- center-of-zero (>0<) or motion annunciator (~)
- date and time
- number of records or transactions stored (**Recs**).

The lower portion of the screen shows information fields for:

- **Pro#** (Pro Number),
- **Act. Pcs.** (actual pieces)
- **Accum. Pcs.** (accumulated pieces)
- **Employee ID** number
- **Accum. Wt.** (accumulated weight).

Touch the **ABORT** field to abort a PRO# and remove all records associated with it. Touch the **COMPLETE** field to mark the PRO# as complete in the database and to clear the old PRO# information from the screen.

For complete information on using the application, see *Operations in Standard Mode on page 18*.

### 3.2.6 To Power Off

To power down the instrument, press and hold the **ON/OFF** key for 5 seconds, then release. The ZM710 will process the shutdown command and power off.



*The ZM710 has an auto-sleep and an auto-shutdown timer. The instrument will go into sleep mode after a preprogrammed period of time. A change in weight or touching the screen will waken the instrument. If the auto-shutdown mode is enabled and the system turns off, repower using the normal power up procedure.*

### 3.3 Entering Alphanumeric Values

---

The alphanumeric entry screen, shown in Figure 3.3, appears often during setup and use of the ZM710 instrument. The name of the item being entered appears in the green bar at the top of the display. This example shows **Pro#**. This section is a lesson in how to use this screen.



**Figure 3.3** Alphanumeric entry screen.



---

*You have 10 seconds (default) after an alphanumeric entry screen appears to start keying in characters or the display goes back to the previous screen.*

---

This screen mimics cell phone rules for numeric or text entry. Follow these rules to enter an alpha, numeric or alphanumeric value:

1. Touch a blue, numeric key to enter the number.
2. The cursor automatically advances to the next position any time you wait for two seconds or more.
3. If you repeatedly touch the same key before the cursor advances, the display shows each successive number or alpha character on the key. For example: Press the **6** key three times in rapid succession and the **N** appears on screen. First the **6**, then the **M** and then the **N**.
4. If you want to enter the same number repeatedly, you must hesitate two seconds between key presses. You can speed up this process by pressing the **Adv** key between each numeric key to force the cursor to advance to the next position. If you are entering numbers in a numeric only screen, the two second wait is not necessary.

5. Press the **F1** key to switch the alpha characters on the keys to lower case letters. See Figure 3.4 below. Press the **F1** key again to return the display to upper case letters.



**Figure 3.4 Lower case letters**



---

Use the bracket under the 0 to enter a blank space in a text or numeric string.

Some fields will only accept numeric characters. The other keys or alpha characters are unavailable in these instances.

The +/- and . (decimal) keys will only work in applicable data entry situations. The +/- key will make a positive number into a negative value and vice versa. A - (negative) sign will appear but not a + (positive) sign.

---

6. Press the **Esc** key to exit this entry screen and return to the previous screen. If you press the **Esc** key, the instrument will retain the previous value of the field that was being edited.
7. Press the **Clear** key to erase the last character entry.
8. Press the **Adv** key to advance the cursor to the next position.
9. When you are finished entering characters, press the **Enter** key to save the data.

### 3.3.1 Open Pro Feature

Open Pro is a list of pro numbers that have not been completed. The list can show up to 30 open pro numbers. Each pro number will retain Accum., Pcs, Gross Accum., and Wt. information when it is accessed again.

To access:

1. Press the **Pro#** field shown on the screen below.

The screenshot shows a screen with a large blue '0' in the top right corner. To its right, the text 'lb Gross >0<' is displayed. Below the '0', the date and time '09/09/2013 03:58PM' and '0001 Recs' are shown. A 'Pro#' field is highlighted in light blue. Below this, there are two columns of data: 'Actual Pcs.' with a value of '1' and 'Accum. Pcs.' with a value of '0'. The next row shows 'Employee ID' and 'Gross Accum. Wt.' with a value of '0 lb'. At the bottom, there are two buttons: 'Abort' (green) and 'Complete' (light blue).

2. At the Pro# entry screen, shown below, press the **Select** key.

The screenshot shows a screen with a green header bar containing 'Pro#'. Below the header is a numeric keypad with the following keys: 'Esc', 'Clear' (with a left arrow), '+/-', a blue square key, 'Adv' (with a right arrow), and 'Enter' (with a right arrow and a left arrow). The numeric keys are: '6' (MNO), '7' (PQRS), '8' (TUV), '9' (WXYZ), and '0' (with a left arrow). The bottom row of keys is: '1' (@), '2' (ABC), '3' (DEF), '4' (GHI), and '5' (JKL).

3. A list of open Pro# will be displayed, as shown in the example below.



4. To remove a Pro# from the list, simply complete the Pro# and it will be removed.

## 4 Operations in Standard Mode

### 4.1 Startup and Entering the Employee ID

---

1. Start the lift truck.
2. Press the **ON/OFF** key until the keys light up blue and the power light turns green.

The screen shown in Figure 4.1 will be displayed with the last active employee ID number displayed.

The screenshot shows a digital display interface. At the top right, a large blue '0' is displayed next to the text 'lb Gross >0<'. Below this, the date and time '07/28/09 04:25PM' and '0000 Recs' are shown. The main area contains several fields: 'Pro#' (empty), 'Act. Pcs.' with the value '1', 'Accum. Pcs.' with the value '0', 'Employee ID' with the value '987', and 'Gross Accum. Wt.' with the value '0 lb'. At the bottom, there are two large buttons: 'Abort' and 'Complete'.

**Figure 4.1 Startup screen**

Field descriptions on the starting screen:

- |                    |   |
|--------------------|---|
| <b>Pro#</b>        | Press this field to enter a new PRO# manually or scan a bar code  |
| <b>Act. Pcs.</b>   | Press this field to change the number of actual pieces being lifted in one lift.                                  |
| <b>Accum. Pcs.</b> | This field shows the number of accumulated pieces (skids) stored for this transaction                             |
| <b>Employee ID</b> | Press this field to enter an employee ID number. This can be typed in or scanned from a bar code.                 |
| <b>Accum. Wt.</b>  | This field shows the accumulated weight of the pieces (skids) stored for this transaction.                        |
| <b>ABORT</b>       | Press this field to abort the last PRO# transaction.  |
| <b>COMPLETE</b>    | When all the pieces (skids) are stored for a PRO#, press this field to mark the PRO# as complete in the database. |

3. The driver must enter their employee ID number when a shift starts. To do this, press the **Employee ID** field and key in the number or scan an ID bar code. Press **Enter** to accept the number...

The screen returns to the one shown in Figure 4.1 but with the ID number now displayed in the field.

## 4.1.1 Processing a PRO#

---



---

*If there is an open PRO# that has not been completed, see [Open Pro Feature on page 16](#).*

---

1. Enter the PRO#. To do this, scan in the bar code of the PRO#. If there is no bar code or it is unreadable, press the **Pro#** field, key in the number, and press **Enter** to accept the number...

The alphanumeric screen appears with **Est. Pcs.** listed at the top.



---

*When you manually enter a value, you must key it in and press the **Enter** key to save the value. If no entry is made within 10 seconds (default), the screen returns to the main operation screen.*

---

2. Type in the estimated number of pieces or skids declared on the Bill of Lading (default is 1) and press **Enter**.

The alphanumeric screen appears with **Est. Wt.** listed at the top.

3. Type in the declared weight from the bill of lading and press **Enter**.

The screen returns to the opening screen with the PRO# listed in the **Pro#** field.

4. If you are lifting more than one piece (skid) in the PRO# at one time, press the **Act. Pcs.** field and enter the total number of pieces or skids being lifted. Press **Enter** to accept.

The display will show the number you entered in the **Act. Pcs.** field.

5. Make sure the forks of the lift truck are off the ground and empty, then press the **Zero** key.

6. Lift the piece or pieces and, when the weight reading is stable, press the **Select** key...

The display briefly shows **Transaction Stored** then returns to the main screen with the current weight, the PRO#, the accumulated number of pieces weighed, and the accumulated weight displayed.

7. Remove the pallet, zero the scale if necessary, and repeat steps 4 - 6 if there are more pieces in the PRO#.



---

*After a weight is stored using the **Select** key, the pallet must be removed and the weight on the scale must fall below the programmed minimum before the weight of the next pallet will be accepted. 50 lbs is the default value.*

---

8. When all the pieces in the PRO# have been stored, press the **COMPLETE** field on the screen.

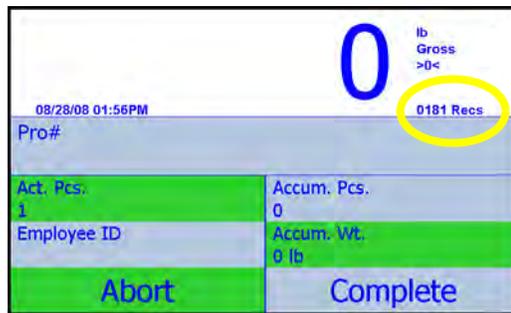
**Are You Sure You Want to COMPLETE this PRO#?** appears on the display.

9. Select **No** to continue using the same PRO# or select **Yes** to accept.  
 If you choose **Yes**, this completes the PRO# and clears all information for the PRO# from the display.
10. Repeat steps 1 - 9. The system is now ready to work on the next PRO#.

### 4.1.2 Stored Data / Out of Wireless Network Range

The ZM710 stores data for downloading later by a connection to one of the COM ports. If using wireless networking, the information will be downloaded automatically anytime the radio is in range and communicating with a compatible host device.

Whenever the ZM710 Instrument is out of wireless network range, reweigh data is stored in memory until the unit is back in range. This feature also allows for temporary computer upgrades/outages to occur without affecting reweigh operations.



In the illustration above, with a specific protocol in use, notice the **0181 Recs** (circled in yellow for reference). This tells you that there are 181 stored records or transactions in the database. Once the truck is in wireless network range, it will start automatically transmitting records and the **Recs** will start to count down. This means the records have successfully transferred to the main computer.



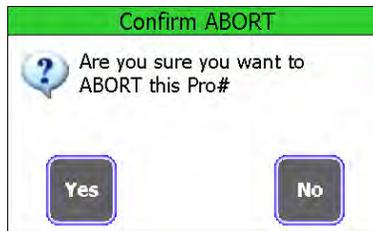

---

*The ZM710 software is not set up to automatically connect to the wireless network. Please refer to your service provider to set this up.*

---

### 4.1.3 Aborting a PRO#

Press the **ABORT** field to abort the last PRO# transaction. The following screen is displayed:



Press **No** if you want to continue using the current PRO#. Press **Yes** if you want to delete all information saved so far for the current PRO#. See the note below.



---

***WARNING: Be sure you want to delete the PRO# information before pressing the YES key. As soon as the key is pressed, the information is deleted.***

---

# 5 Operations in Counting Mode

The counting application allows you to count items of uniform weight after sampling a known quantity of the items or keying in a known piece weight. This application is explained below.

## 5.1 Start Up and Entering the Employee ID

---

1. With the ZM710 configured for the Count application, start the lift truck. If the Count application is not active, consult with your supervisor.
2. Press the **ON/OFF** key until the keys light up blue and the power light turns green.

After the startup routine, the screen shown in Figure 5.1 will be displayed with the last active employee ID number displayed.



**Figure 5.1 Counting application startup screen**

Field descriptions on the starting screen:

<b>Part Number</b>	Press this field to enter a new part number manually or scan a part number bar code
<b>Piece Weight</b>	Press this field to set a value for a known piece weight.
<b>Piece Count</b>	This field shows the number of pieces on the scale using the active piece weight and the displayed weight.
<b>Accum. Pieces</b>	This field shows the number of accumulated pieces stored for this part number.
<b>Oper ID</b>	Press this field to enter an operator ID number. This can be typed in or scanned from a bar code.
<b>Tare</b>	Press this field to tare the weight from the scale. To remove the tare, clear all weight from the scale and press the <b>Tare</b> field.
<b>SAMPLE</b>	Press this field to get a piece weight by sampling a known number of pieces.
<b>COMPLETE</b>	When all the pieces are accumulated for a part number, press this field to clear the PN from the database and clear the information from the screen.

3. The driver must enter their operator ID number when a shift starts. To do this, press the **Oper ID** field and key in the number or scan an ID bar code. Press **Enter** to accept the number...

The screen returns to the one shown in Figure 5.1 but with the ID number now displayed in the field.

### 5.1.1 Performing a Counting Operation

1. Enter the part number. To do this, scan in the part number from a bar code or, if there is no bar code or it is unreadable, press the **Part Number** field, key in the number and press **Enter** to accept the number...

The main screen reappears. If this PN exists in the database, the stored piece weight for this PN becomes the active piece weight. If there is no piece weight for this PN, follow the steps in [Establishing a Piece Weight](#) below.

#### Establishing a Piece Weight

There are two ways to establish a piece weight; key in a known piece weight or sample a known number of pieces.



---

*Piece weights less than 1 lb can give inconsistent results.*

---

#### Entering a Known Piece Weight

If you know the piece weight, press the **Piece Weight** field, key in the weight on the entry screen and press **Enter** to accept it. That piece weight is now active and stored in the database with the active part number.

#### Sampling to Obtain Piece Weight

To perform a sample operation, press the **SAMPLE** field, key in the number of items you will sample and press **Enter**. The screen prompts you to **Add** or **Remove** (for negative sampling) the number of items you keyed in. Place the items on the scale (or remove them if you are doing negative sampling) and press the **OK** key. The piece weight is calculated and the screen returns to the main operating screen with the new piece weight active.



---

*When you manually enter a value you must key it in and press the **Enter** key to save the value. If no entry is made within 10 seconds (default), the screen returns to the main operation screen.*

---

2. Make sure the forks of the lift truck are off the ground and empty, then press the **Zero** key.
3. If you need to tare a container, place it on the forks and press the **Tare** field.

The weight is tared from the scale.

4. Place the pieces to be counted on the scale...

The display shows the weight of the objects and the piece count.

5. Press the **Select** key to store the count in the transaction database and add it to the accumulated total for the part number. This also prints the default print format (Format 2) out COM 2. The format shows time, date, part number, net weight and the count. See Figure 5.2.

```
Time: (chosen time format)
Date: (chosen date format)

ID: #####
Net Weight: XXXXX lbs
Count:      XXXXX pcs
```

**Figure 5.2 Example of the count print format**

6. Remove the pieces and repeat the process until all the items for this part number are counted.



---

*After a count is stored using the **Select** key, the items must be removed and the gross weight on the scale must fall below the programmed minimum value (gross zero band) before the weight of the next items will be stored. 50 lbs is the default value.*

---

7. When all the pieces in the part number have been stored, press the **COMPLETE** field on the screen.  
**Are You Sure You Want to COMPLETE this Part Number?** appears on the display.
8. Select **No** to continue using the same part number or select **Yes** to accept.  
If you choose **Yes**, this completes the part number and clears all part number information from the screen and from the part number database. Your counting transactions are still in the transaction database and can be viewed or downloaded, as needed.
9. Repeat steps 1 - 8. The system is now ready to work on the next part number.
10. To remove a tare, clear all weight from the scale and press the **Tare** field.



# 6 Operations in Checkweighing Mode

## 6.1 Introduction

---

Checkweighing is used to quickly compare the weight on the scale to a set target weight or a range of acceptable weight. This chapter explains the setup and use of this application. Be sure your system is set to the Checkweighing application before starting. If the Checkweigher application is not active, consult with your supervisor.

An example of the Checkweighing application's default screen is shown in Figure 6.1.



**Figure 6.1 Checkweighing sample screen**

Below are the displayed fields and their functions:

<b>Pro Number</b>	Press this field to manually key in a new Pro Number.
<b>Oper ID</b>	Press this field to enter the Scale Operator ID.
<b>Gross Accum Weight</b>	This field shows the total accumulated gross weight and is updated every time the <b>Select</b> key is pressed.
<b>OVER</b>	Press this field to enter the Over value if using Over & Under entry.
<b>TARGET</b>	Press this field to enter the Target Weight if using the Target weight with $\pm$ tolerance.
<b>UNDER</b>	Press this field to enter the Under Value if using the Over & Under entry.
<b>Complete</b>	Press this field to complete a Pro Number.

## 6.2 Checkweighing Setup

---

You can set up the checkweighing function in two ways: Set over and under values (see *Setting Over/Under Values on page 27*) or set a target weight with tolerances (see *Setting Target Weight with Tolerances on page 28*).

### 6.2.1 Setting Over/Under Values

---

To use the Over/Under method, follow these steps:

1. Press the **OVER** key...  
The numeric entry screen appears.
  2. Key in the upper acceptable weight value and press the **Enter** key...  
The main screen is displayed.
  3. Press the **UNDER** key...  
The numeric entry screen appears.
  4. Key in the lower acceptable weight value and press the **Enter** key...  
The main screen is displayed.
- Any weight placed on the scale that is between the two values entered is considered an acceptable weight and the **TARGET** field turns green, as shown below:



- If the weight on the scale is below the UNDER value, the **UNDER** field will turn yellow, as shown below:



- If the weight on the scale is above the OVER value, the **OVER** field will turn red, as shown below:



#### Example:

Set Over value to 2000 lb.

Set Under value to 1900 lb.

Place a weight on the scale and the display will show if it is over, under or acceptable.

## 6.2.2 Setting Target Weight with Tolerances

To use the Target Weight method, follow these steps:

1. Press the **TARGET** key...  
The numeric entry screen appears.
2. Key in the acceptable weight value and press the **Enter** key...  
The screen prompts for a  $\pm$  weight tolerance value.
3. Key in a value and press **Enter**...  
The main screen is displayed.

### Example:

Set target weight to 1500 lb.

Set tolerance to  $\pm 250$  lb.

When a weight is placed on the scale, if it is between 1250 lb and 1750 lb, the **TARGET** field will turn green to show this is an acceptable weight. If the weight falls over or under this range, the appropriate field will change color, as shown below:



## 6.3 Typical Checkweighing Operation

### 6.3.1 Start Up and Entering the Operator ID

1. With the ZM710 configured for the Checkweighing application, start the lift truck.
2. Press and hold the **ON/OFF** key on the ZM710 until the keys light up blue and the power light turns green.
3. After the startup routine, the screen in Figure 6.2 appears. If an operator ID is active, it will be shown in the **Oper ID** field.



Figure 6.2 Main checkweighing screen

4. Scan or key in a new **Oper ID** number if needed.

5. Scan or key in a new **Pro Number**.
6. Use one of the two methods described earlier in this chapter to set up the system for checkweighing.
7. Weigh the pallets and the display will clearly show if the weight is acceptable, over or under the values set.
8. Press the **Select** key to save the weighment.

If the weight is successfully stored, the following is displayed:



9. Repeat step 7 for each pallet in the Pro number. The weight on the scale must fall below the minimum (default is 100 lbs/50 kg) before the next weighment can be stored. If you press the **Select** key in this situation, the following message is displayed.



10. When finished, press the **Complete** field to mark the Pro Number as complete in the database...

The following dialog box appears:



11. Press the **Yes** key to confirm the Pro number is complete.

# 7 Calibration Validation

## 7.1 Daily Validation Procedure

---

Each facility should have a test weight of a known value. That weight needs to be lifted daily to validate the scale calibration and assure legal-for-trade status. Follow the steps in this section to perform the calibration validation.

### 7.1.1 Accessing the Menu

---

Follow these steps to access the Supervisor Management menu.

1. Press and hold the **F1** key until...

The screen shown in Figure 7.1 is displayed:



Figure 7.1 Password entry screen

2. Key in the number 1793. Refer to *Entering Alphanumeric Values* on page 9 for instructions on entering numeric characters. Press the **Enter** key...
3. The display shows the **Supervisor Management** menu, shown in Figure 7.2.

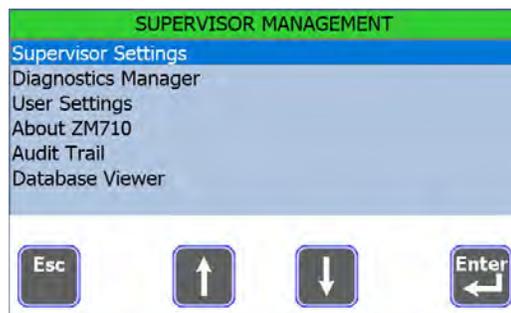


Figure 7.2 Supervisor Management screen

4. Highlight the **Supervisor Settings** item and press the **Enter** key. The screen shown in Figure 7.3 is displayed.

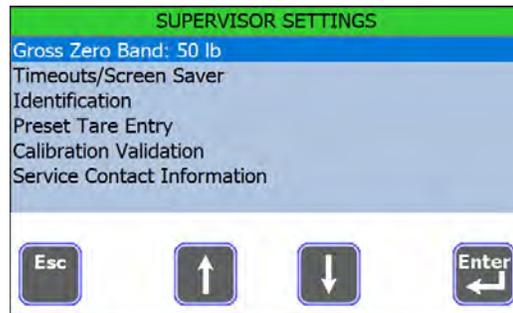


Figure 7.3 **Supervisor Settings** list

5. Highlight the **Calibration Validation** item and press the **Enter** key...  
The screen shown in Figure 7.4 is displayed:

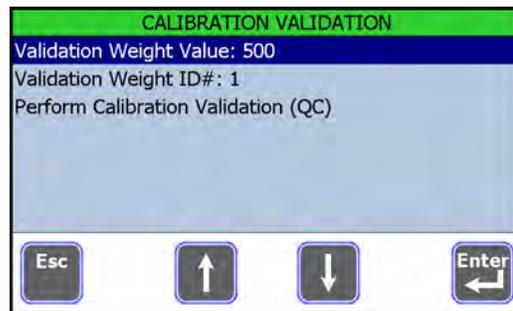


Figure 7.4 **Calibration Validation** screen

The validation weight value and ID # are shown.



---

To change the **Validation Weight Value**, highlight that line and press the **Enter** key. Key in a correct weight value and press the **Enter** key.

---

6. Highlight **Perform Calibration Validation (QC)** and press the **Enter** key...  
The screen shown in Figure 7.5 is displayed:



Figure 7.5 **Quality Control** screen

7. Follow the screen prompt; lift the weight, wait for the weight reading to become steady and press the **OK** key...  
The screen returns to the one shown in Figure 7.4.
8. Press the **Esc** key three times and press the **Yes** key when asked to save the changes...  
The screen returns to normal operating mode.
9. If the recorded weight is not within specs, the unit needs to be taken out of service until a calibration can be performed.

## 8 Menu Access and Use

The ZM710 instrument has a password protected menu called the **User Management** menu. The password for this menu is 111. There are four modules in the **User Management** menu for users in the United States.

Think of a module as a submenu or container for related items of scale configuration. Available modules are shown in Figure 8.1.

Contact your service provider for information on other password protected menus.

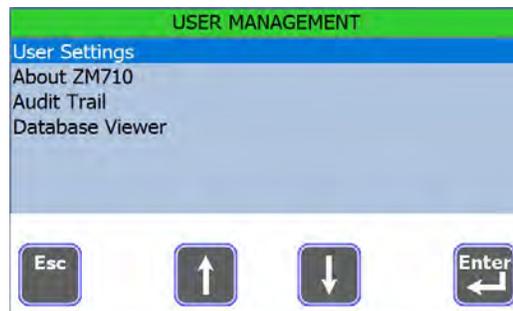


Figure 8.1 **User Management** menu screens

### 8.1 Accessing the Menus and Modules

---

Follow these steps to access the menus and their modules.

1. Press and hold the **F1** key until...

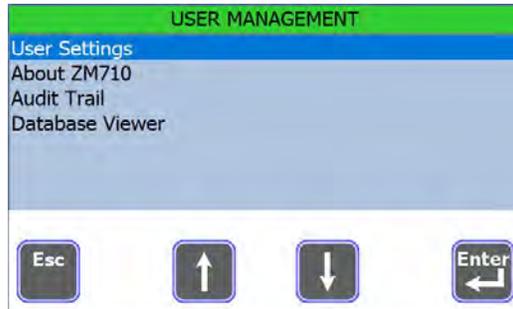
The password entry screen shown in Figure 8.2 is displayed:



Figure 8.2 Password entry screen

2. Key in the password for the **User Management** menu (111 is the default password). Refer to *Entering Alphanumeric Values on page 14* for instructions on entering numeric characters. Press the **Enter** key...

One of the displays shown in Figure 8.3 appears, depending on your area of operation.



**Figure 8.3 User Management menu**

3. To access a module, use the arrow keys to highlight the desired module and press the **Enter** key.



---

*Anytime you exit a menu to return to normal operating mode, you are asked if you want to save any changes that have been made. You can choose **Yes**, **No**, or **Cancel**. Choose **Yes** to save changes, choose **No** to disregard any changes made while in the menu or press **Cancel** to stay in the menu.*

*The one exception to this is the Time and Date window. When you accept a new setting for time and date, that change takes place immediately and is unaffected by the **Yes**, **No**, **Cancel** choice.*

---

Each module is explained in the following sections.



---

*The screen is touch sensitive. When instructions state to **select an item**, use the up or down arrow to highlight that item and press the **Enter** key.*

---

## 8.2 Overview of the Modules in the User Management Menu

---

When you access the **User Management** menu, there are four modules in this menu for operation in the United States. Below is a brief overview of each module followed by in-depth information on each.

**User Settings** The **User Settings** module allows you to set the date and time, set the display contrast, set the speaker volume, set the keyboard repeat rate, view the phone number for a service contact and see the seal switch status. See *User Settings Module* [on page 36](#) for full instructions.

**About ZM710** The **About ZM710** module lets you view part number and software version information about the ZM710. See *About ZM710 Module* [on page 38](#) for full details.

**Audit Trail** The **Audit Trail** module lets you choose to see the **Audit Trail Viewer** and the **Audit Counter Viewer**.

The **Audit Trail Viewer** displays the number of times the scale has been configured and the details of these configurations. This information may be useful when communicating with authorized service personnel or weighing certification inspectors. Use the scroll bars and up or down arrow keys to view all the data. This list cannot be changed or deleted. See *Audit Trail Module* [on page 38](#) for full details.

The **Audit Counter Viewer** shows the number of calibrations the instrument has experienced and the date and time of the last calibration change.

**Database Viewer** The **Database Viewer** module displays the database and all stored transactions that have occurred. The user cannot change any information in the database. See *Database Viewer Module* [on page 42](#) for full details.

## 8.3 User Settings Module

---

Use the steps in *Accessing the Menus and Modules* on page 33 to access the **User Settings** module.

When you access this module, you will see the screen shown in Figure 8.4.



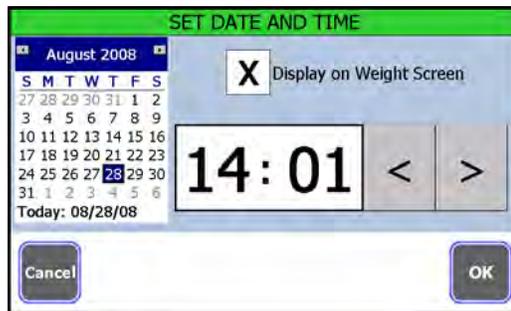
**Figure 8.4** Items in the *User Settings* module

Each item in this module is explained below.

### 8.3.1 Date and Time

---

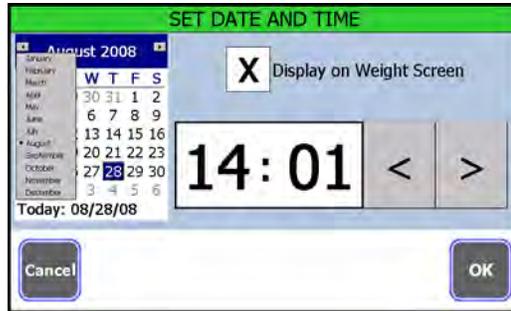
Select **Date and Time** and the display in Figure 8.5 appears.



**Figure 8.5** Date and Time entry screen

Press the hour to highlight it, then click the left or right arrow to decrease or increase the value. Repeat for minutes. Time is always set as military time (24 hour) but displayed on the main screen as 12 or 24 hour clock time, depending on configuration.

Press on the screen and set the current date. You can click on the month and a drop down list appears. Click on the current month. See Figure 8.6.



**Figure 8.6 Month drop down list**

You can also click on the year and increase or decrease the value with the small arrows which appear. If you click on the year and have an attached USB keyboard, you can type in the year directly on the keyboard and press the **Enter** key on your keyboard to accept the value.

Click the left or right arrows at the top of the calendar page to scroll month by month.

Click on the current day of the month.

An **X** in the **Display on Weight Screen box** means the time and date will appear on the operator mode screen. Press the box to remove the **X** if you don't want time and date shown.

Press **OK** to accept the date and time and return to the main menu.

### 8.3.2 Speaker Volume

Select this item to set the speaker volume in the instrument. A slider bar appears. See Figure 8.7.



**Figure 8.7 Volume slider bar**

Click and drag the slider button to move it left or right to increase or decrease the volume. A tone will sound with each step of the slider to indicate the sound level for that setting. Click **OK** to accept and return to the previous screen.

### 8.3.3 View Service Contact

Select this item to see contact information for your service provider. This can be changed in a password protected menu. Contact your service provider for information.

Press **OK** to return to the main menu.

Press the **Esc** key in the **User Settings** screen to return to the **User Management** menu. Pick another module or press **Esc** to return to the default startup screen. If you press **ESC**, you will be asked if you want to save changes. Choose **Yes** to save changes and return to the main screen, choose **No** to return to the main screen without saving the changes or press **Cancel** to return to the menu screen.

## 8.4 About ZM710 Module

---

1. Use the steps in *Accessing the Menus and Modules* on page 33 to access the **About ZM710** module.
2. When you choose **About ZM710**, a display similar to the one shown in Figure 8.8 appears.



Figure 8.8 About ZM710 screen

This display shows you the Avery Weigh-Tronix company name, the model number, the part number, the version of software in the instrument, etc.

3. Press **OK** to return to the **User Management** menu.

Pick another module or press **Esc** to return to the default startup screen. If you press **ESC**, you will be asked if you want to save changes. Choose **Yes** to save changes and return to the main screen, choose **No** to return to the main screen without saving the changes or press **Cancel** to return to the menu screen.

## 8.5 Audit Trail Module

---

Use the steps in *Accessing the Menus and Modules* on page 33 to access the **Audit Trail** module.

When you access this module, you will see the two choices shown below in Figure 8.9.



Figure 8.9 Audit Trail choices

Choose **Audit Trail Viewer** or **Audit Counter Viewer**.

If you choose **Audit Trail Viewer**, a screen similar to the one in Figure 8.10 appears.

Record ID	Date	Parameter	Old Value	New Value
15	2/27/2020 2:58 PM	Gravity Factor	0.00000000	9.80
18	2/27/2020 2:58 PM	Corner Coefficient 8	0.00000000	0.00
17	2/27/2020 2:58 PM	Corner Coefficient 7	0.00000000	4.40
16	2/27/2020 2:58 PM	Corner Coefficient 6	0.00000000	-4.40
15	2/27/2020 2:58 PM	Corner Coefficient 5	0.00000000	0.00
14	2/27/2020 2:58 PM	Corner Coefficient 4	0.00000000	0.00
13	2/27/2020 2:58 PM	Corner Coefficient 3	0.00000000	4.40
12	2/27/2020 2:58 PM	Corner Coefficient 2	0.00000000	-4.40

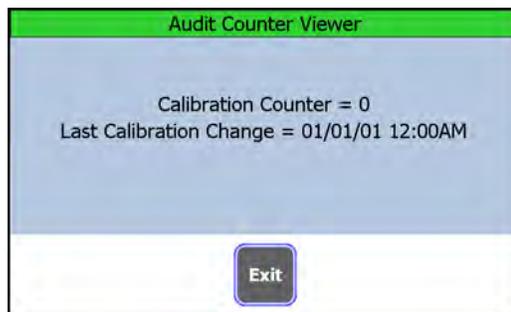
**Figure 8.10 Audit Trail screen**

This lists the record ID, date and time, parameter and old and new values of changes that have been made to the instrument.

Press and drag the scroll bars or press the **Page UP** and **Page DOWN** keys to move left/right/up/down through the information.

Press the **Print** key to print the record to a connected peripheral device. See the information in *Print Output from Audit Trail Screen* on page 40 for serial output format.

If you choose **Audit Count Viewer**, a screen similar to the one in Figure 8.11 appears.



**Figure 8.11 Audit Counter Viewer screen**

This lists the number of calibrations the instrument has experienced and the last date and time of the calibration.

## 8.5.1 Print Output from Audit Trail Screen

If you press the **Print** key in the Audit Trail screen, and if output is configured for comma delimited output, the serial output string is in this format:

```
RecordID,Date,ParameterID,OldValue,NewValue\r\n
```

**\r = Carriage return**

**\n = Line feed**

Here is a sample report:

```
Record Number: 32,05/13/08 11:48AM,SOFTWARE VERSION,0.0.56.1,0.0.58.0
Record Number: 31,05/13/08 11:45AM,SOFTWARE VERSION,0.0.57.2,0.0.56.1
Record Number: 30,05/13/08 11:05AM,FLJ 100 Serial Number,0,987987987
Record Number: 29,05/13/08 11:05AM,SOFTWARE VERSION,0.0.56.1,0.0.57.2
Record Number: 28,05/13/08 10:54AM,SOFTWARE VERSION,0.0.57.2,0.0.56.1
Record Number: 27,05/12/08 03:05PM,Scale.OutputCounts3,-2500,0
Record Number: 26,05/12/08 03:05PM,Scale.OutputCounts2,-2500,0
Record Number: 25,05/12/08 03:05PM,Scale.OutputCounts1,-2500,0
Record Number: 24,05/12/08 02:22PM,SOFTWARE VERSION,0.0.56.1,0.0.57.2
Record Number: 23,05/06/08 12:30AM,SOFTWARE VERSION,0.0.55.0,0.0.56.1
Record Number: 22,05/01/08 03:24PM,Scale.OutputCounts3,-2500,0
Record Number: 21,05/01/08 03:24PM,Scale.OutputCounts2,-2500,0
```

If output is **not** configured as comma delimited, the serial output is in this format:

```
"Audit Trail Report\r\n"  
"=====\r\n"  
"\r\n"
```

Each record would be output as shown below:

```
"Record Number: \r\n"  
"ParameterID "\r\n"  
"Date: \r\n"  
"Time: \r\n"  
"Old Value: \r\n"  
"New Value: \r\n"  
"\r\n"
```

**\r = Carriage return**

**\n = Line feed**

Here is a sample of the non-comma delimited output:

```
Audit Trail Report  
  
=====  
  
Record Number: 32  
SOFTWARE VERSION  
Date: 05/13/08  
Time: 11:48AM  
Old Value: 0.0.56.1  
New Value: 0.0.58.0
```

```
Record Number: 31  
SOFTWARE VERSION  
Date: 05/13/08  
Time: 11:45AM  
Old Value: 0.0.57.2  
New Value: 0.0.56.1
```

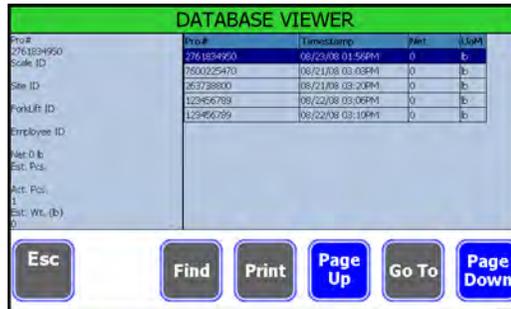
Press **Esc** or **Enter** to exit the Audit Trail screen and return to the **USER MANAGEMENT** screen.

Pick another module or press **Esc** to return to the default startup screen. If you press **ESC**, you will be asked if you want to save changes. Choose **Yes** to save changes and return to the main screen, choose **No** to return to the main screen without saving the changes or press **Cancel** to return to the menu screen.

## 8.6 Database Viewer Module

Use the steps in *Accessing the Menus and Modules* on page 33 to access the **Database Viewer** module.

When you access this module, you will see the information currently stored in the database. A sample screen for the database is shown in Figure 8.12.



The screenshot shows a window titled "DATABASE VIEWER". On the left side, there is a list of field names: Proc#, Scale ID, Site ID, ForkLift ID, Employee ID, Net. D. b, Est. Pcs., Act. Pcs., Est. Wt. (b), and 0. The main area of the window contains a table with the following data:

Proc#	Timestamp	Print	Usr#
2761834960	08/20/08 01:55PM	0	b
7500225470	08/21/08 03:03PM	0	b
263738900	08/21/08 03:20PM	0	b
129656789	08/22/08 03:06PM	0	b
129656789	08/22/08 03:10PM	0	b

At the bottom of the window, there are six buttons: Esc, Find, Print, Page Up, Go To, and Page Down.

**Figure 8.12 Database Viewer screen**

Use the keys to:

- Esc** Press **Esc** to return to previous screen
- Find** Press **Find** to bring up a text search dialog box
- Print** Press **Print** to print the database to a connected peripheral. See the information in *Print Output from Database Viewer* on page 43 for serial output format.
- Page Up** Press **Page Up** to move the highlight bar up the database list
- Go To** Press **Go To** to access a particular record number. This is convenient for moving quickly through a large database.
- Page Down** Press **Page Down** to move the highlight bar down the database list.

After you press **ESC**, pick another module or press **Esc** to return to the main screen. If you press **ESC**, you will be asked if you want to save changes. Choose **Yes** to save changes and return to the main screen, choose **No** to return to the main screen without saving the changes or press **Cancel** to return to the menu screen.

## 8.6.1 Print Output from Database Viewer

If you press the **Print** key in the Database Viewer screen, and if output is configured for comma delimited output, the serial output string is in this format:

```
"Database Report\r\n"
"=====\r\n"
"\r\n"

{
"ID: \r\n"
"ProNumber: \r\n"
"RecordType: \r\n"
"ScaleID: \r\n"
"CarriageID: \r\n"
"SiteID: \r\n"
"ForkLiftID: \r\n"
"EmployeeID: \r\n"
"Length: \r\n"
"Width: \r\n"
"Height: \r\n"
"User1: \r\n"
"User2: \r\n"
"User3: \r\n"
"User4: \r\n"
"User5: \r\n"
"User6: \r\n"
"TareDescription: \r\n"
"UnitOfMeasure: \r\n"
>Date: \r\n"
"Gross: \r\n"
"Tare: \r\n"
"Net: \r\n"
"\r\n"
}
"=====\r\n"
\r = Carriage return
\n = Line feed
```

Here is a sample report:

=====  
Database Report  
=====

ID: 1  
ProNumber: 1  
RecordType: 0  
ScaleID: 0  
CarriagelD: 0  
SiteID: 0  
ForkLiftID: 0  
EmployeeID: 111  
Length: 0  
Width: 0  
Height: 0  
User1: 0  
User2: 2  
User3: 0  
User4: 0  
User5: 0  
User6: 0  
TareDescription:  
UnitOfMeasure: lb  
Date: 01/29/01  
Gross: 500  
Tare: 0  
Net: 500

## 9 Available Options

Figure 9.1 shows the available options for the ZM710. Following is a brief description of each.



**Figure 9.1 Available options for the ZM710**

### 9.1 FLW 100 Wireless Carriage

---

The FLW 100 wireless carriage option eliminates the interface cable between the carriage and the ZM710 instrument. The component parts are shown in Figure 9.2.



**Figure 9.2 FLW 100 Wireless carriage components**



---

*If your system uses the FLW 100 option, be sure to charge the battery pack for 6-7 hours before using.*

---

**Figure 9.3 RM 310 radio**

## 9.2 Bar Code Scanners

---

You can attach an optional bar code scanner to the ZM710. Figure 9.4 shows two styles.



**Figure 9.4 Bar code scanners**

## 9.3 FLP 100 Power Conditioner

---

The FLP 100 power conditioner takes voltages between 24 and 72 volts, usually found on battery powered forklifts, and brings the voltage down to a level usable by the ZM710, between 12 and 36 volts. See Figure 9.5.



**Figure 9.5 FLP 100 power conditioner**

# Daily Inspection Checklist for Forklift Scale

This list covers wired, wireless, digital and analog carriages.

## Mechanical

- Check scale carriage for loose, worn, bent, broken or missing components.
- Inspect forks for damage.
- Check locking pins on forks for proper function.
- Make sure wire egress and junction box guards on digital carriage are fastened properly.
- Make sure junction box cover on analog scale is in place with all fasteners.
- Check center pin located on top of back carriage for wear. Replace if edges are worn, bent, broken or missing.
- Check that the fastener(s) for the center pin is in place.
- Check clamp fasteners at the bottom of scale carriage.
- Check Weigh Bar fasteners on back of scale carriage.
- Make sure instrument mounting is secure.
- Check instrument isolation mounts are not loose or cracked.
- Check and adjust the forklift chain so the heels of the forks have 1/2" to 1" of clearance from the floor when the carriage is down and the mast is vertical.

## Electrical

- Make sure the power cable to the instrument is routed and fastened out of harms way.
- Tighten all cable connections at the instrument.
- Inspect that all cable clamps and cable ties are secure.
- Inspect the power cable to the instrument for nicks, cuts or wear.
- Remove excess and reconnect the retractile cable between the scale and instrument if it is stretched.
- Check that the instrument is active with applied power.
- Make sure cable connections from any peripheral devices are tight.

## Scale System

- Check battery pack charge for wireless scale carriage to instrument.
- Make sure the instrument will show zero weight with forks raised, empty and upon pressing the **ZERO** key.
- Apply a load to the scale to make sure the instrument is receiving a weight value from the scale carriage.





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