

Competitor Series[®]

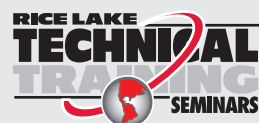
*Body Composition Scale
Model D1000 Series
Version 1.0*

Installation & Operation Manual



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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com or obtained by calling 715-234-9171 and asking for the training department

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About This Manual



This manual can be viewed and downloaded from the Rice Lake Weighing Systems website at www.ricelake.com.

1.0 Safety

There are certain precautions that should be taken to prevent personal injury to the user and damage to your device. Follow instructions for installation and usage. The manufacturer is not responsible for any damage or injury from incorrect operation or manipulation by the user.

The results from using this device require an expert's analysis and cannot and should not be used to prescribe or cure based on the user's judgment. It is strongly advised to consult with a medical doctor.

If any problem occurs during the operation, turn off the device first and follow the instructions in the manual. If the problem remains, contact Rice Lake Weighing Systems.

1.1 Safety Signals

Safety Signal Definitions:



Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death.



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.



Indicates information about procedures that, if not observed, could result in damage to equipment.

1.2 Safety Precautions

This device is designed and manufactured on the basis of the International Standard for Medical Equipment.



Do not operate or work on this equipment unless you have read and understand the safety information and instructions in the manual. Please follow these instructions carefully. Contact any Rice Lake Weighing Systems dealer for replacement manuals. Proper care is your responsibility.

General Safety



Failure to follow the instructions or heed these warnings could result in serious injury or death.

Inside of the device must be handled only by a qualified trained person. The customers must not touch or handle the inside of this device under any circumstance. It may cause an electric shock or a flame out.

This device should not be used in the following cases:

- *Anyone who has implanted metallic materials like a pacemaker, defibrillator, stent, and metal suture in the heart, etc.*
- *Anyone who is equipped with the devices making electric signals such as an artificial heart and heart lung machine, etc.*
- *Anyone who is connected to a liquid-filled catheter or other electronic equipment with good conductivity.*
- *Anyone who falls under the cases below may face danger or may not acquire exact results due to disturbance of the electric signals.*
 - Using electronic stimulators for various purposes.*
 - Being injected with electric currents or connected to operating devices: ECG, EMG, EEG, etc.*
 - Under the treatment or tests that are recognized as having the similar risk described above by a doctor.*

Please consult with a doctor before using this device in any case below.

- *Any woman taking contraceptives*
- *Any woman who is/or suspects that she is pregnant.*
- *Anyone who can be damaged physically by even a small amount of electric stimulation.*
- *In case of using electric or electronic devices with good conductivity.*

Do not touch signal input, signal output or other connectors, and the patient simultaneously.

The power cable should be pulled out after the power switch is turned off.

Do not operate this device with wet hands. It can cause electric shock.

The power switch in the main unit should be turned off when this device is connected to other equipment.

The person who has implanted electrical devices can be exposed to unavoidable shock by leaking current or potential difference between two surfaces of conductive materials if there are any other electrical appliances near this device. To protect people from those risks, the adapter offered with this device should be used.

Do not open or disassemble this unit without consent of your local distributor or our company.

If the result is abnormal or strange, you should consult with a doctor or an authorized expert.

Do not allow minors (children) or inexperienced persons to operate this device.

Do not use in the presence of flammable materials.

Do not make alterations or modifications to the scale.

Do not drop the device or subject it to violent shocks.

Operating at voltages and frequencies other than specified could damage the equipment.

To avoid cross contamination, the scale should be cleaned regularly.

Avoid contact with excessive moisture.

Additional Safety Precautions



Failure to follow the instructions or heed these warnings could result in serious injury or death.

The following precautions must be observed for customer's safety.

- *This device has been adjusted to the optimal performance at the time of factory release.*
- *Do not attempt to modify or adjust any preset controls or switches except those specified in this manual for operation. If any modification is needed, ask your local distributor for service.*
- *If you have any trouble with this device, turn it off immediately and contact your local distributor for assistance.*
- *Avoid the following environments in using and storing this device.*
 - *Where the ambient temperature falls below -4°F or exceeds 140°F for storage (-20°C or exceeds 60°C) for storage.*
 - *Where the ambient temperature falls below 50°F or exceeds 104°F (10°C or exceeds 40°C) for use.*
 - *Where the atmospheric pressure falls below 70 kPa (700 mbar) or exceeds 106 kPa (1060 mbar).*
 - *Where the humidity falls below 30% or exceeds 75% for use.*
 - *Where the humidity is over 95% for storage.*
 - *Where this device is exposed to water stream or splashing water.*
 - *Where this device is exposed to dust.*
 - *Where this device is exposed to high-density oil vapor.*
 - *Where this device is exposed to a salty atmosphere.*
 - *Where this device is exposed to explosive gases.*
 - *Where this device is exposed to excessive shock or vibration.*
 - *Where this device is inclined over 10 degree of an angle.*
 - *Where this device is exposed to direct sunlight.*

- Power should be supplied through the adapter and the cable offered with this device. The accessories for power supply should be the ones compatible with International Standard. The accessories connected to the analog and digital interfaces are certified by the respective IEC standards. (e.g. IEC 950 to data processing equipment, IEC 60601-1 to medical equipment and system standard EN 60601-1-1:1995). In case of scrapping this device, it should follow the related laws and regulations.
- If this device has been exposed to foreign materials or exceptional environments, it should be checked before use.
- In case of using this device after a long period of non-use, it should be checked carefully before use.
- Observe general precautions on using electric devices and the things specified in this manual.
- The device must not be cleaned with lubricant or alcohol-based products. Plate electrode and coating can be peeled off. Use a dry cloth or wet tissue.



CAUTION In case of mechanical failure, please contact Rice Lake Weighing Systems.



Important This equipment has been tested and found to comply with the limits for medical devices to the IEC 60601-1-2:1994. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
- Consult the manufacturer or field service technician for help.

Classifications:

- Type of protection against electric shock: Class I Equipment
- Degree of protection against electric shock: Type BF Applied Parts
- Degree of protection against the ingress of water: IPX0
- Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

1.3 Safety and Information Symbols

The International Electro-technical Commission (IEC) has established a set of symbols for medical electrical equipment, which classify a connection or warning any potential hazard.

The classification of symbols is as follows.



Isolated patient connection (IEC 60601-1-1:1995 Type BF (Body Protected))

This means that the input connectors are suitable for connection to humans provided there is no direct electrical connection to the heart.



This symbol identifies a safety note. Make sure you understand the function of the device before using. This symbol is described in appropriate operating manual where it is necessary to follow specified instructions and safety is involved.



Identifies equipotential ground (IEC 417-5021). This symbol is used in applications where it is important to indicate to the operator that two or more accessible functional earth terminals or points are equipotent. More for functional purposes than for safety purposes the protective conductor terminal is placed at the device earthlings point.



This symbol is an inside system. It identifies the point where the safety ground of the system is fastened to the chassis.



Waste Electrical and Electronic Equipment (WEEE). The device could be sent back to the manufacturer for recycling or proper disposal after their useful lives. Alternatively the device shall be disposed in accordance with national laws after their useful lives.



Alternating current



Direct current



OFF (only for a part of the equipment).



ON (only for a part of the equipment).

2.0 Introduction

The Competitor Series comes in three models:

- D1000-3, Full Body
- D1000-2, Hand to Hand
- D1000-1, Foot to Foot



The Competitor Series is a body scanning device that measures the impedance of the human body by Bioelectrical Impedance Analysis (B.I.A.). Using the impedance value and personal data (height, age, gender, weight), it provides:

- Mass of body fat — Weight
- Lean body mass — L.B.M.
- Total body water — T.B.W.
- Intra-cellular water — I.C.W.
- Extra-cellular water — E.C.W.
- Body mass index — B.M.I.
- Percent of body fat — P.B.F.
- Basal metabolic rate — B.M.R.
- Segmental lean body mass of five body parts (trunk, right arm, left arm, right leg, and left leg).



Note *This applies only to the full body model (D1000-3) of the Competitor Series and is shown in Figure 2.2 on page 7.*

The B.I.A. method is a way to analyze body composition by measuring the resistance generated from the human body when harmless alternating current flows through the body. It can be used not only to diagnose obesity but also to prevent secondary diseases caused by obesity.

The Competitor Series measures body resistance with a tetra-polar electrode technique. With the touch type electrode, body resistance can be measured by holding the electrode, stepping on the electrode or touching the ankle.

2.1 About Body Composition

In physical fitness, body composition is used to describe the percentages of fat, bone and muscle in human bodies. Because muscular tissue takes up less space in our body than fat tissue, our body composition, as well as our weight, determines how lean our body is. Two people of equal height and body weight may look completely different from each other because they have a different body composition.

The following points describe things about body composition, its makeup and about the measuring process and are explained in further detail below.

- Body Composition
- Obesity
- Necessity of Body Composition Analysis
- Waist to hip ratio

Body Composition

The human body consists of body fat and lean body. Lean body means non-fat constituents of the human body like body water, muscles, and bones.

Body water is divided into intra- and extra-cellular water and the ratio between them is controlled and maintained within a certain range. Body fat is piled beneath the skin and between abdominal organs. Body fat is hydrolyzed to make energy needed for normal physiological functions when energy supplies through food intake is not sufficient, but excessive fat in the body itself is a kind of disease and causes lifestyle diseases.

Healthy people maintain the balance of body composition in a steady proportion but unhealthy people fail to keep this balance. When the balance in body composition is broken, diseases like obesity, malnutrition, osteoporosis, etc. can occur.

Obesity

Various methods can be used to assess obesity but the key factor in obesity assessment is the amount of fat accumulated in the body.

In general, obesity is defined as the state of not only excessive weight compared with height (visible obesity) but also excessive body fat compared with weight (invisible or visible obesity).

Strictly speaking obesity is the state that body fat occupies considerably high ratio to weight.

Necessity of Body Composition Analysis

Body Composition Analysis is a good indicator to find possible health problems. Body composition analysis enables professionals to find obesity or an imbalance in body composition at early stages and helps subjects keep their body healthy. The Competitor Series is a useful preventive diagnostic device.

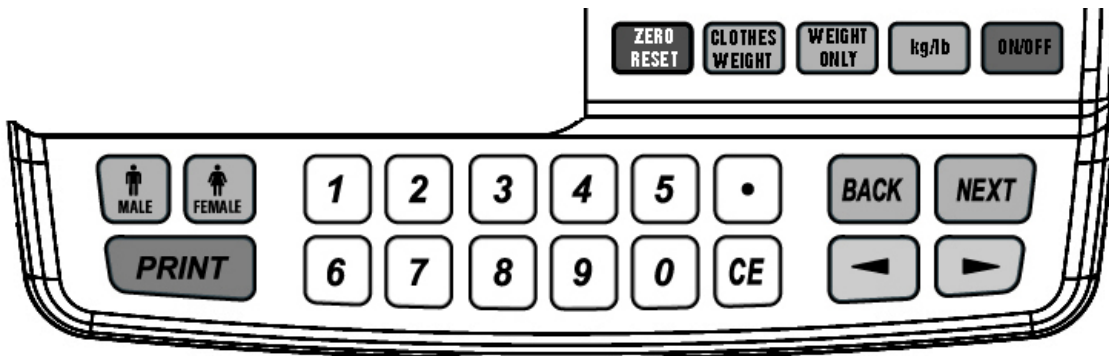
Waist to Hip Ratio

Waist to hip ratio (W.H.R.) shows the distribution of fat stored in one's abdomen and hips. It is simple but useful to assess body fat distribution. Body fat is stored in two distinct ways. They are often called 'apple' and 'pear' type. Apple type shows bigger girth of waist than hip and pear type has bigger girth of hip than waist. If body fat in the abdomen increases more, the risk to cardiovascular diseases, diabetes, etc. becomes higher.

Segmental Analysis

This device analyzes lean body mass of five body parts; trunk, right arm, left arm, right leg, and left leg. This function can be used as an assessment tool to evaluate the result of exercise or rehabilitation treatment. Segmental analysis is available only in the full body model (D1000-3) and is illustrated in the printout shown in Figure 2.2.

2.2 Keypad Functions



| Key | Description |
|-----|---|
| | Adjusts the scale to 0 |
| | The user can input the weight of clothes. 0-9.9 lb (0-5.5 kg) |
| | Allows the device to operate in scale mode. Press the button for two seconds and it will display BCA or SCALE on the display screen. Note <i>If clothing weight is already entered, that weight will automatically be deducted from the total weight.</i> |
| | Toggles between kilograms and pounds. Press and hold to toggle between the two and wait for a chime to signal the switch. |
| | Used to turn the scale ON or OFF |
| | Numeric keys used to enter values |
| | Used to select gender |
| | Prints a ticket and will reprint another ticket when in BCA mode |
| | Decimal |
| | Clear key when entering a numeric value |
| | Allows for additional menu navigation when in the setup menu and can be used to switch from male to female |
| | Used to exit out of a selected setup menu option or exit out of system setup menu |
| | Used to store a selected value |

Table 2-1. Keypad Functions

2.3 Digital Display

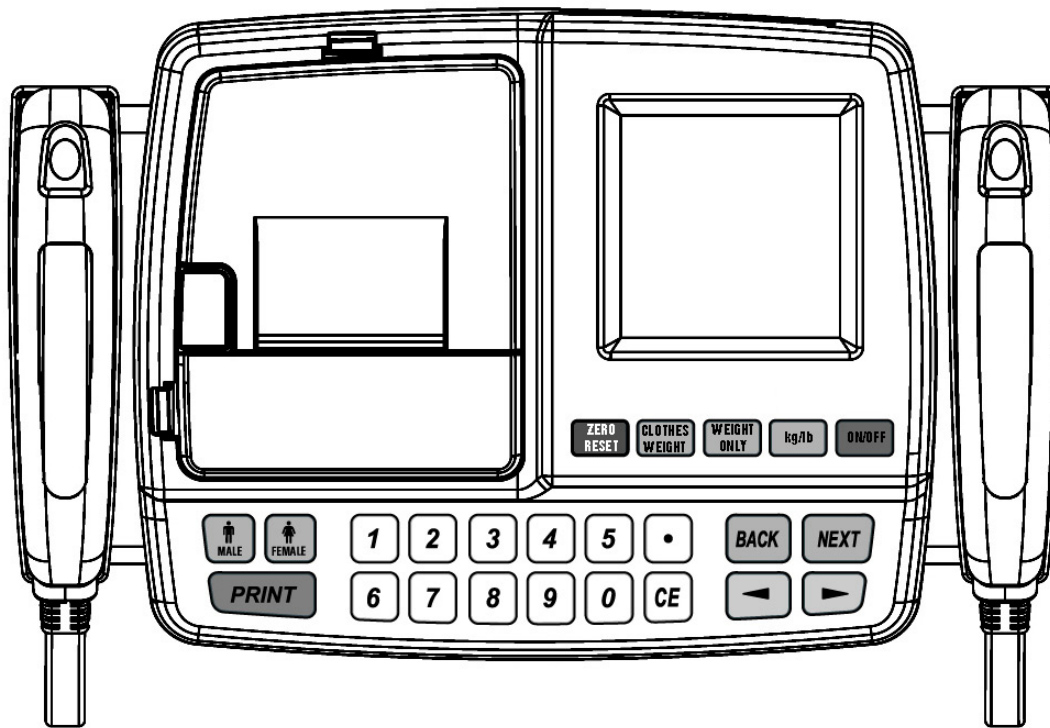


Figure 2-1. Top View of the Digital Display (Shown with Hand Electrodes)

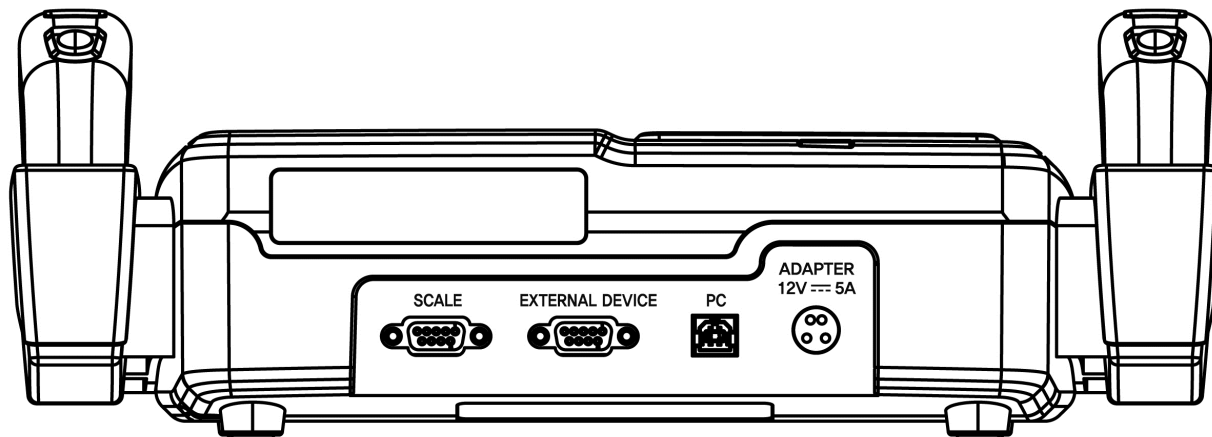


Figure 2-2. Back of Digital Display Unit

2.4 Scale Base

The scale base consists of:

- Four plate electrodes that measure weight. The plate electrodes measure impedance which is how fast electrical ohms travel through the body. This scale base is only available in the D1000-3 (Full Body) and D1000-1 (Foot to Foot) models.



Figure 2-3. Scale Base (Shown D1000-3 and D1000-1 Models)

2.5 Handle Electrode

The handle electrode is a hand held device that measures the impedance of the body by flowing low levels of electric current.

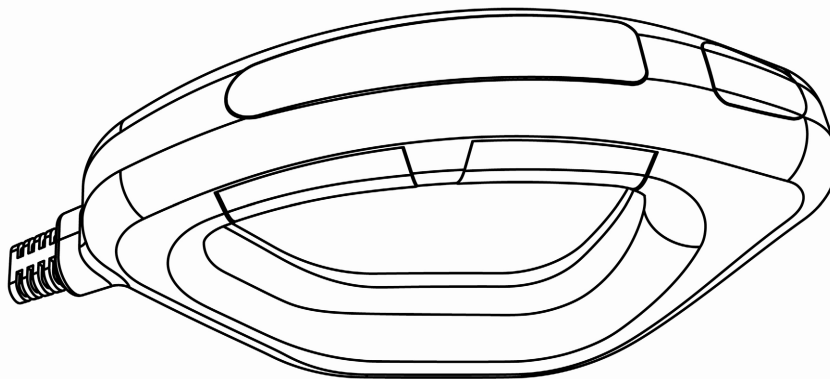


Figure 2-4. Handle Electrode

3.0 Installation and Setup

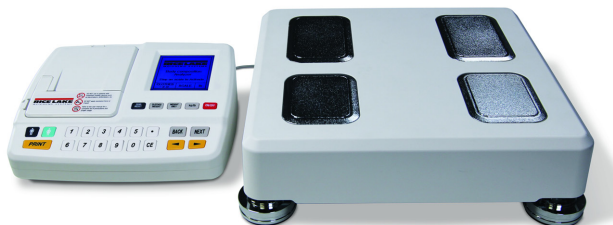
3.1 Unpacking

The Competitor Series comes with the following components depending on which model is purchased.

D1000-3 Full Body scale base and digital display



D1000-1 Foot to Foot



D1000-2 Hand to Hand held display



Optional Column



Immediately after unpacking, visually inspect the Competitor Series scale to ensure all components are included and undamaged. The shipping carton should contain the scale base, hand held display, and this manual. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately and keep the original packaging material for inspection by the carrier's representative. It is also helpful in the claim process to take pictures of the condition of the packaging and damage.

If the Competitor Series scale must be returned for modification or repair, it must be properly packed with sufficient packing materials. Whenever possible, use the original carton when shipping the scale back.

! **Important** *Damage caused by improper packaging is not covered by the warranty.*

3.2 Scale Base Assembly

3.2.1 Leveling The Scale Base

Ensure the scale is placed on a flat, level surface. Thin carpeting is acceptable but a hard surface works best. Turn the feet in or out until the scale level bubble is centered in the middle of the circle.

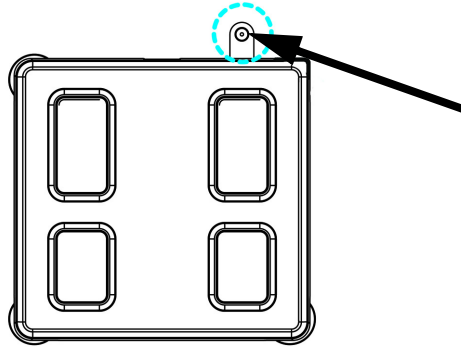


Figure 3-1. Center Leveling Bubble

3.3 Digital Display

Place the digital display on a table or other sturdy surface.

If connecting the digital display to the optional column, see Section 3.8 on page 13 to view assembly instructions.

3.4 Power Supply Connections

Refer to Figure 3-2 to connect the power supply to the Competitor Series scale.

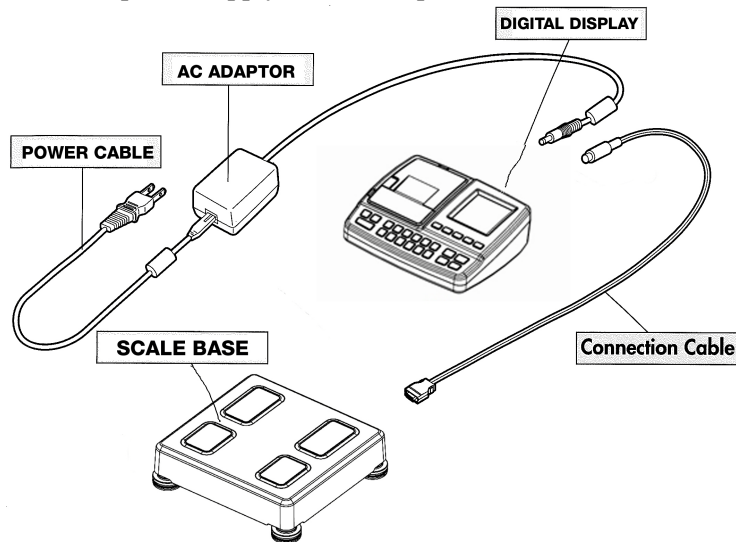


Figure 3-2. Competitor Series Component Parts

Connect the 12V AC adapter to the adapter port placed on the rear panel of the digital display. After the cable is connected press the ON/OFF button on the keypad.

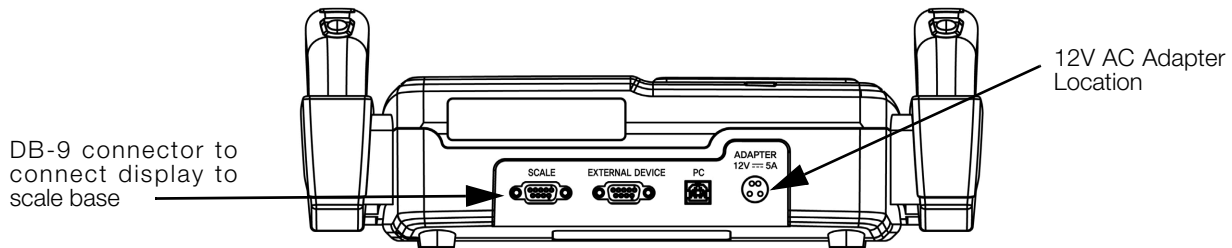


Figure 3-3. Digital Display Connections on the Back

3.5 Connecting the Digital Display to the Scale Base

Connect the digital display to the scale base using the supplied DB-9 connector. Connect the six foot length of cable into the back of the scale base labeled “Scale” on the back of the unit as shown in Figure 3-3 on page 11.

3.6 Replacing Thermal Printer Paper

Use the following steps to replace the thermal printer paper in the digital display unit. Replacement thermal printer paper (Rice Lake part number 75947) can be purchased by going to www.ricelakehealth.com.

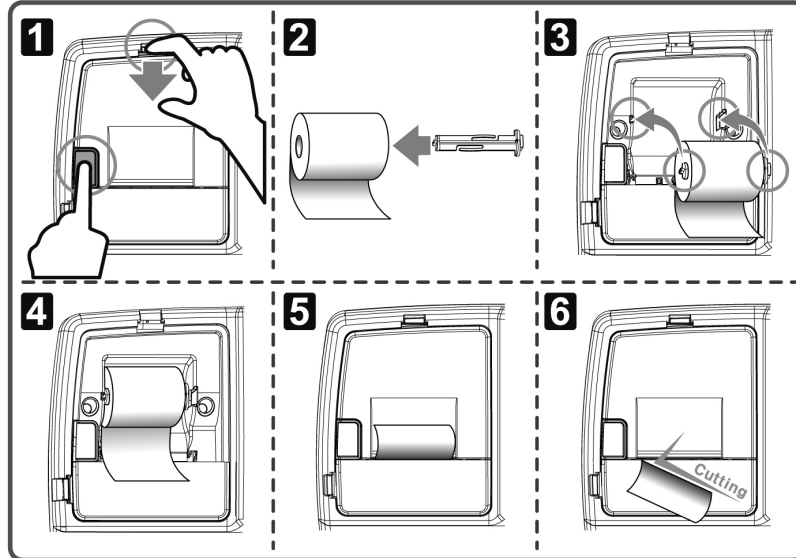


Figure 3-4. Replacing Thermal Paper in Printer Unit

1. Replace thermal paper while the power is on.
2. Pull the top button up. Then press the side button. Open the upper printer cover.
3. Put the roller into the center hole of the thermal paper.
4. Insert the thermal paper with the roller into the holder as shown in the picture.
5. Take the edge of the paper out and pull paper past the cover.
6. Close the cover.
7. It automatically cuts the paper.

3.7 Jammed Printer Paper Removal

Use the following steps if the printer paper gets jammed in the unit.

1. If the thermal paper gets jammed pull the lower printer cover up as shown in Figure 3-5 and press the jam button located inside the printer.
2. Remove the jammed paper.

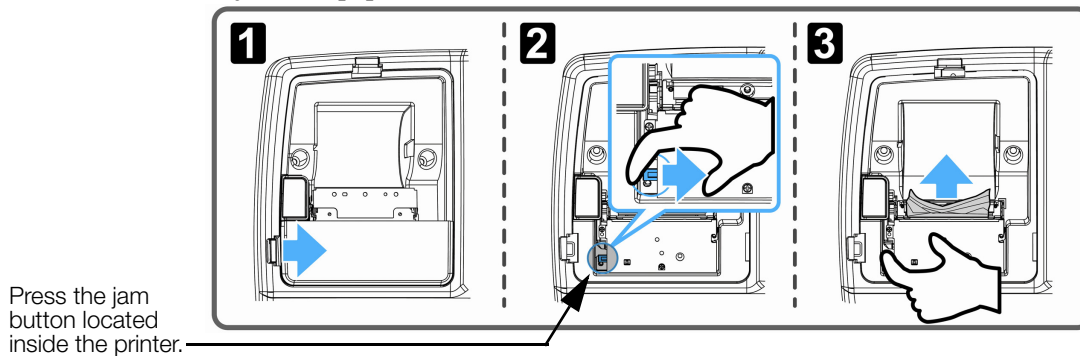


Figure 3-5. Jammed Printer Paper Removal

3.8 Optional Column Installation

The Competitor Series scale has an optional column that can be purchased. Use the following steps to install the optional column.



Note It is recommended using two people to install the optional column.

1. Use the component parts shown in Figure 3-6.

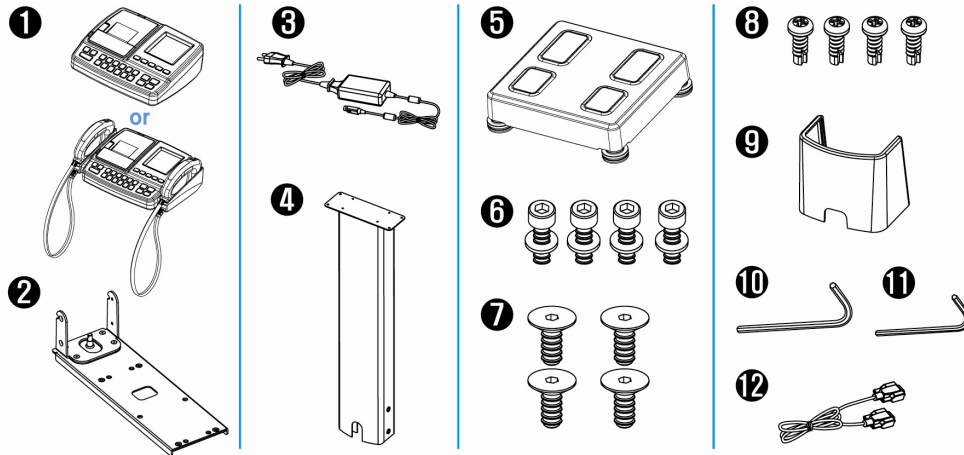


Figure 3-6. Optional Column Components

| Key Number | Description (quantity) |
|------------|---|
| 1 | Digital display (1) |
| 2 | Digital display mounting bracket (1) |
| 3 | AC adapter (1) |
| 4 | Optional column (1) |
| 5 | Scale base (1) |
| 6 | M6 Socket head cap screw and washer (4) |
| 7 | Cap screw, heck socket flat w/ countersunk head (4) |
| 8 | Machine screw, pan head 6-32 x 5/8 (4) |
| 9 | Column cover assembly (1) |
| 10 | Allen wrench, 4 mm (1) |
| 11 | Allen wrench, 5 mm (1) |
| 12 | DB-9 cable (1) |

Table 3-1. Optional Column Assembly Parts

2. Fasten the DB-9 scale base cable as shown in Figure 3-7

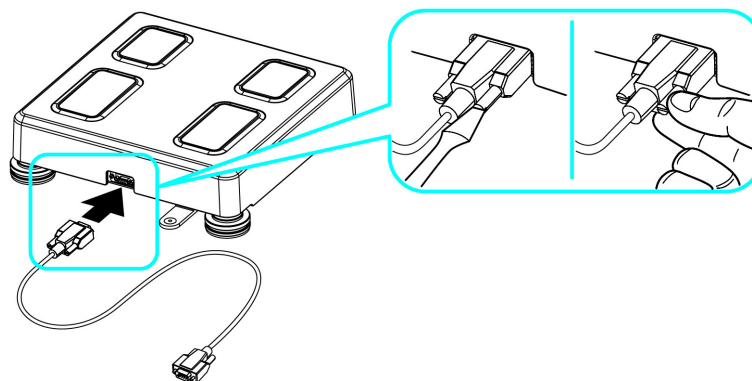


Figure 3-7. Fasten Weight Scale Cables

3. Assemble the mounting bracket by aligning the bolt holes located at the bottom of the weight scale and using a 5 mm Allen wrench (provided).

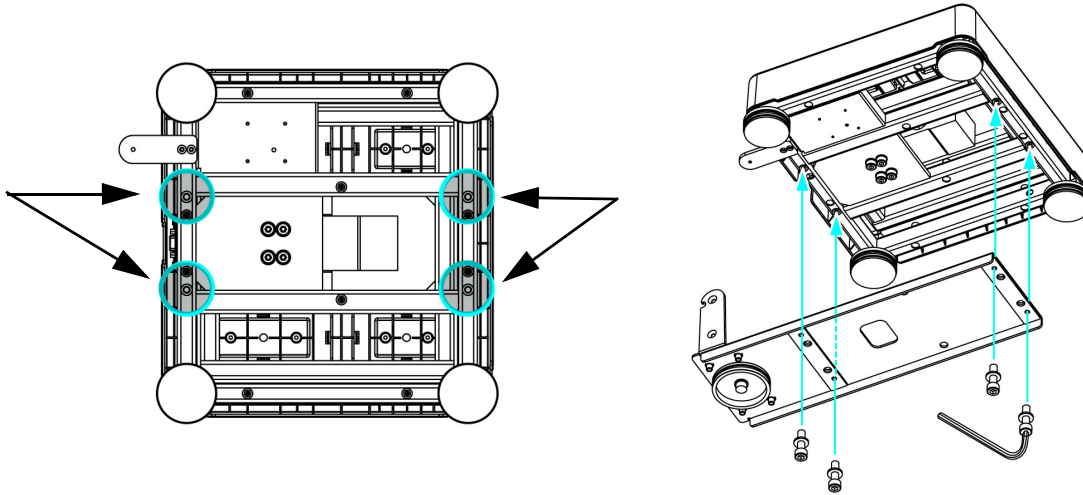


Figure 3-8. Attach Mounting Bracket

4. Attach the digital display to the column using a screwdriver to attach the display with four bolts as shown on the left hand side of Figure 3-9.

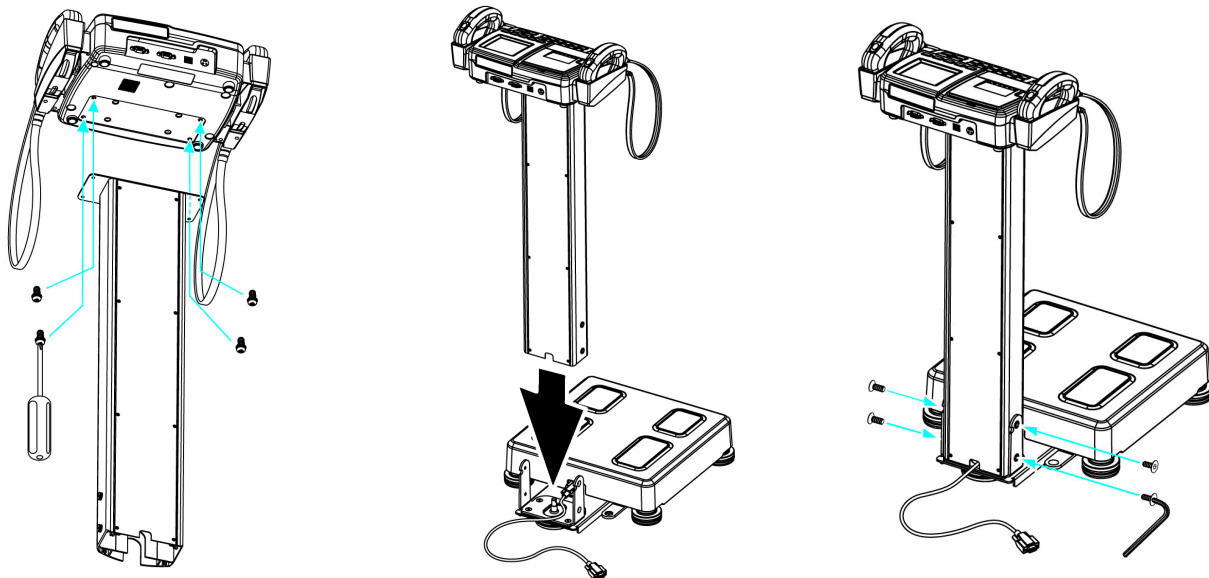


Figure 3-9. Column Attachment

5. Place the scale base on a flat and level surface.
6. Insert the column into the bracket, making sure that the cable is out of the column as shown in the center illustration of Figure 3-9.
7. Insert plate bolts into the holes as shown in the right hand picture of Figure 3-9. Fasten the bolts using a 4 mm Allen wrench (included).

3.9 Column Cover Assembly

Insert the column cover as shown in Figure 3-10.

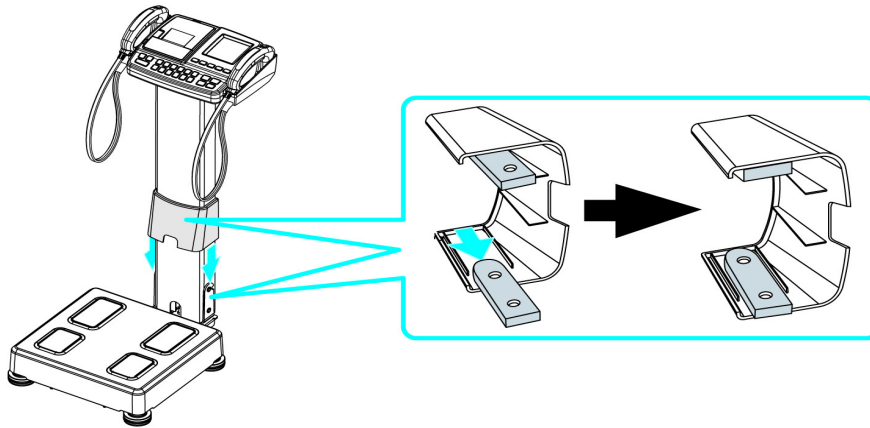


Figure 3-10. Column Cover Assembly

3.10 Connect Power Supply and Scale Cable

Connect the scale cable to the scale port located on the back of the digital display by fastening the DB-9 cable bolts.

Connect the adapter cable to the adapter port and plug the power cord into the power outlet.

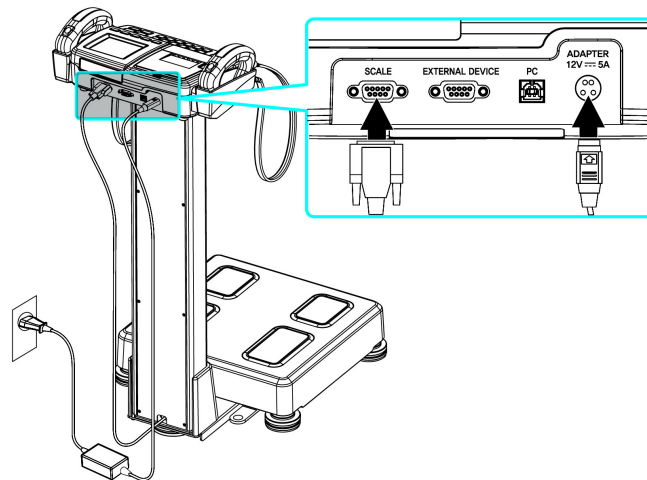


Figure 3-11. Power Supply and Scale Cable Connection Locations



CAUTION Before connecting a peripheral device to this scale, the power should be turned off, otherwise the scale could malfunction or be damaged due to electric shock.

Power should be supplied from this device to ensure safe operation and durable performance.

This scale should be powered with only the adapter and cable that are supplied with this product.

Be careful not to touch the scale base part of the scale when the power switch is turned ON.



Note The scale zeros on power up. For accurate readings, press the zero reset button on the digital display.

4.0 Configuration

The Competitor Series scale setup allows users to change the setting of the operational parameters.

4.1 Entering System Setup

To enter the System Setup, use the following steps.

1. Turn the unit on by pressing the **ON/OFF** button.
2. Press the left arrow (◀) button, the 1, 2, 3, 4 buttons and finally the right arrow (▶) button in sequence to enter *SYSTEM SETUP* screen.

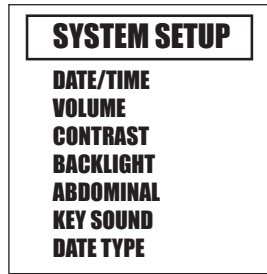


Figure 4-1. System Setup Main Screen

4.1.1 Navigating Through the Menu Options in SYSTEM SETUP

Use the following key press options to navigate through the system setup menu.

Press the ◀ and ▶ buttons to scroll through the system setup menu options. Press the **NEXT** button to enter into the selected system setup menu option. A chime will ring when the selection has been accepted.

4.1.2 Menu in System Setup

The function of each menu item is as follows.

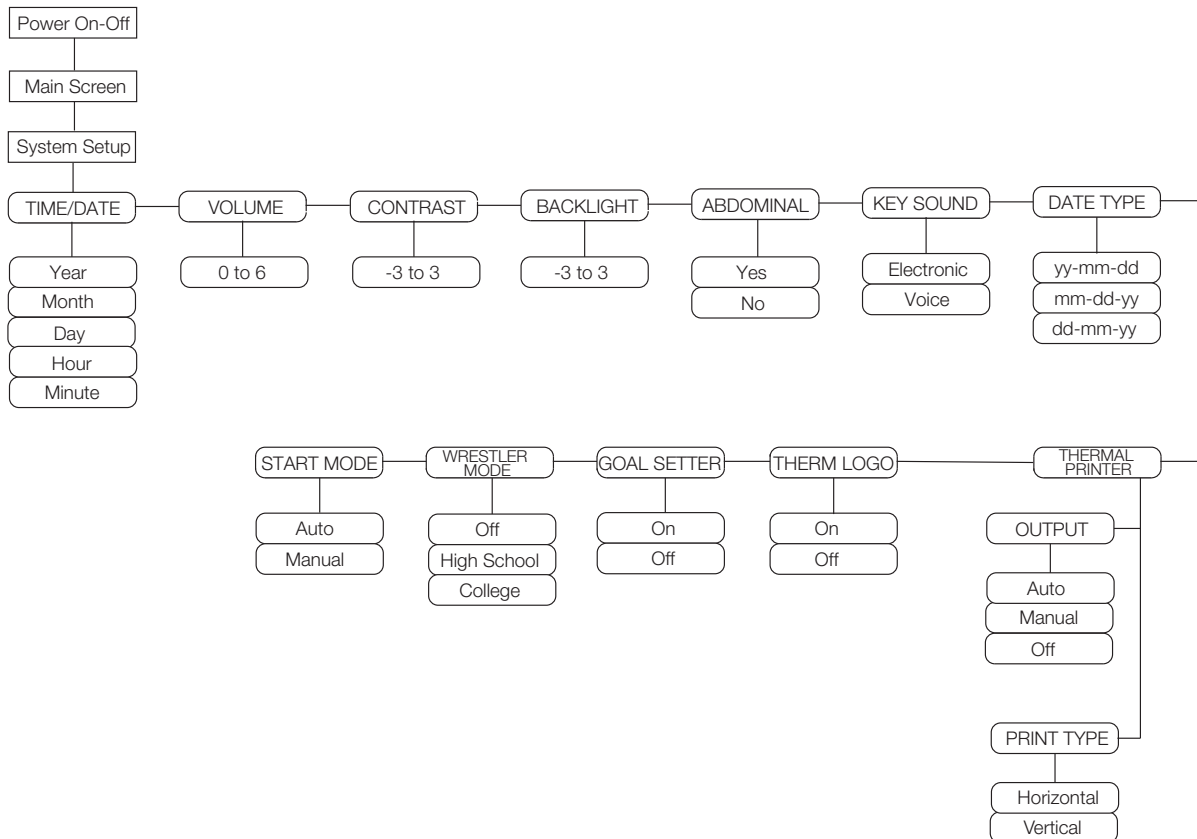


Figure 4-2. System Setup Menu

| Parameter | Description | Choices | Steps |
|-----------|---|--|---|
| DATE/TIME | <p>Sets the date and time of the scale</p> <p>Date and Time are already preset from the factory.</p> <p>Note:</p> <ol style="list-style-type: none"> If the NEXT button is pressed before finishing the setup of date and time, the date and time inputted at that time is saved and the System Setup screen appears. To cancel any changes attempted, press the BACK button. The device will return to the previous setting and the System Setup screen will appear. When body pass plus or easy body plus is used in data management, measured date is automatically saved as the date set in the device. Date and time set in the device should be checked prior to use. | Year Month Day Hour Minute | <p>Scroll to <i>DATE/TIME</i> by using the left and right arrows. The date of the device is pre set from the factory.</p> <ol style="list-style-type: none"> Press the NEXT button to access <i>DATE/TIME</i> Change the year by using the left and right arrows. Press the NEXT button to move to the month parameter. Change the month by using the left and right arrows. Press the NEXT button to move to the Day parameter. Change the day by using the left and right arrows. Press the NEXT button to move to the Hour parameter. Change the hour by using the left and right arrows. Press the NEXT button to move to the Minute parameter. Change the minute by using the left and right arrows. Press the NEXT button to save the changes and a chime will ring when the selection has been accepted. The screen will exit back to the System Parameter Setup menu screen. |
| VOLUME | Adjusts the volume of the voice guidance | Numeric 0 to 6 | <p>Scroll to <i>VOLUME</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> Press the NEXT button to access <i>VOLUME</i>. Use the left and right arrows to increase or decrease the volume of the unit which ranges from 0 to 6. Press the NEXT button to save the changes. Press the BACK button to exit back to the System Setup menu screen. |
| CONTRAST | Adjusts the brightness of the display screen | Numeric -3 to 3 | <p>Scroll to <i>CONTRAST</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> Press the NEXT button to access <i>CONTRAST</i>. Use the left and right arrows to increase or decrease the contrast of the unit which ranges from -3 to 3. Press the NEXT button to save the changes and a chime rings. Press the BACK button to exit back to the System Setup menu screen. |
| BACKLIGHT | Adjusts the backlighting of the display screen | Numeric -3 to 3 | <p>Scroll to <i>BACKLIGHT</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> Press the NEXT button to access <i>BACKLIGHT</i>. Use the left and right arrows to increase or decrease the backlighting of the unit which ranges from -3 to 3. Press the NEXT button to save the changes and a chime rings. Press the BACK button to exit back to the System Setup menu screen. |

Table 4-1. System Setup Parameters

| Parameter | Description | Choices | Steps |
|-----------------|--|----------------------------------|--|
| ABDOMINAL | Sets the analysis of abdominal fat under 18 years of age | Yes No | <p>Scroll to <i>ABDOMINAL</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access <i>ABDOMINAL</i>. 2. Use the left and right arrows to select either Yes or No. 3. Press the NEXT button to save the changes and a chime rings. 4. Press the BACK button to exit back to the System Setup menu screen. |
| KEY SOUND | Sets the sound of keys when data is entered | Electronic Voice | <p>Scroll to <i>KEY SOUND</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access <i>KEY SOUND</i>. 2. Use the left and right arrows to select either Elec (electronic sounds) or Voice (human sounds). 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |
| DATE TYPE | Sets the format of the date | yy-mm-dd mm-dd-yy dd-mm-yy | <p>Scroll to <i>DATE TYPE</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access <i>DATE TYPE</i>. 2. Use the left and right arrows to select the desired date type. 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |
| THERMAL PRINTER | <p>Selects the printing mode of the thermal printer</p> <p>Horizontal and vertical print examples can be seen in Section 6.8 on page 28.</p> | Output Print Type | <p>Scroll to <i>THERMAL PRINT</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access <i>THERMAL PRINT</i>. 2. Press the 1 button to access the Output type. 3. Use the left and right arrows to select either Auto, Manual, or Off. <ul style="list-style-type: none"> • Auto means that a print ticket automatically prints. • Manual requires you to press the Print button at the end of a weighment. • Off means that nothing will print. 4. Press the 2 button to access the Print Type. 5. Use the left and right arrows to select either Horizontal print or Vertical print. 6. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |

Table 4-1. System Setup Parameters

| Parameter | Description | Choices | Steps |
|------------------------|---|-------------------------------|--|
| THERM LOGO | Thermal logo can be used but requires a PC with optional Body Pass software. | On Off | <p>Scroll to <i>THERM LOGO</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access THERM LOGO. 2. Use the left and right arrows to select either On or Off. 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |
| GOAL SETTER | Can be set from 3 – 30%. | On Off | <p>Scroll to <i>GOAL SETTER</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access GOAL SETTER. 2. Use the left and right arrows to select either On or Off. 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |
| WRESTLER MODE | This mode provides weight, mass of fat body and lean body mass to maintain the minimum P.B.F. | Off High School College | <p>Scroll to <i>WRESTLER MODE</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access WRESTLER MODE. 2. Use the left and right arrows to select either Off, High School or College. 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |
| START MEASUREMENT MODE | Selects the start mode | Auto Manual | <p>Scroll to <i>START MODE</i> by using the left and right arrows.</p> <ol style="list-style-type: none"> 1. Press the NEXT button to access START MODE. 2. Use the left and right arrows to select either Auto or Manual. 3. Press the NEXT button to save the changes and a chime rings. <p>Press the BACK button to exit back to the System Setup menu screen.</p> |

Table 4-1. System Setup Parameters

5.0 Measurement and Analysis

5.1 Suggestions for Accurate and Repeatable Results

For best results, the reliability of the results can be assessed by its accuracy. The “accuracy” of the device is determined by comparing the actual body composition and the results from the Competitor Series. The repeatability and reliability is determined when the device gives the identical results under the same condition. In order to maintain the accuracy of the results, the following guidelines should be used.

- Measure on an empty stomach as water volume increases after a meal.
- Measure three to four hours after a meal.
- Avoid beverages containing caffeine or beverages that function as a diuretic four hours before the measurement.
- Drink two cups of water two hours before the measurement.
- Before the measurement, the subject should be in a stable condition.
- Measure three to four hours after a bath, a sauna, exercise or any other activity that causes the person to sweat a lot.
- Avoid drinking alcohol 24 hours before the measurement.
- Wear clothes as light as possible.
- Once the subject is on the scale, avoid sudden movement from sitting to standing position. Body fluid goes down to the lower body and it can affect the results. Thus subjects should be measured after maintaining standing position for five minutes.
- Clean both the electrodes and measuring body parts.
- Changes in room temperature may affect the results. Measurement should be done in a temperature around 68°F (20°C).
- Body composition and weight varies even during the day. Therefore, the measurement should be performed at the same time every day. For a person who stands for a long period of time during the day, it is advised to measure in the morning.
- Go to the bathroom before measurement.
- Maintain correct position and posture during the measurement.
- Poor contact between the feet (which should be free of dirt), and electrodes can produce an error message. Heels of the feet should be placed directly on top of the rear electrodes while the front part of the feet needs to be in contact with the front of the electrodes.
- If there are calluses on the soles of the feet, or an individual is wearing thin nylons, accurate measurement may still be possible.
- Keep electrodes clean by wiping them with a disinfectant.
- Wrestlers should confirm proper hydration before assessing body fat percent and weight.
- When interpreting the results, the data provided by the Competitor Series, as well as any supplementary information such as diet or exercise programs based on this data, should be interpreted by a licensed professional.

In order to keep one's health and the balance of body composition, check the changes of body composition through the continuous analysis and compare the results. Make sure that the body composition should be measured under the same physical and environmental conditions. If the condition before the measurement such as consumption of a meal, meal time, and activities (exercise, sauna, drinking lots of beverage, urination, etc.) are kept same, the reproducibility of a device is obtained. Therefore, the data can be used to evaluate the change of body composition.

5.2 Correct Posture

To get the most accurate weight, there are certain steps that should be taken. The following sections show the correct way to touch the plate electrodes and how to touch the handle electrodes.

5.2.1 How to Touch Plate Electrodes on the Scale Base

- Make sure that the plate electrodes are clean.
- Stand on plate electrodes with bare feet, no socks.
- Remove sweat or foreign matter from the soles of the feet.
- Place the bare feet squarely on the plate electrodes. Make sure that clothing items are not between the soles of the feet and the plate electrodes.



Figure 5-1. Correct Stance on Scale Base

5.2.2 How to Touch Handle Electrodes

- Grip the handle electrodes with fingers and palms.
- Four electrodes should be touched impartially.
- Stretch both arms and spread them 30° from the body.

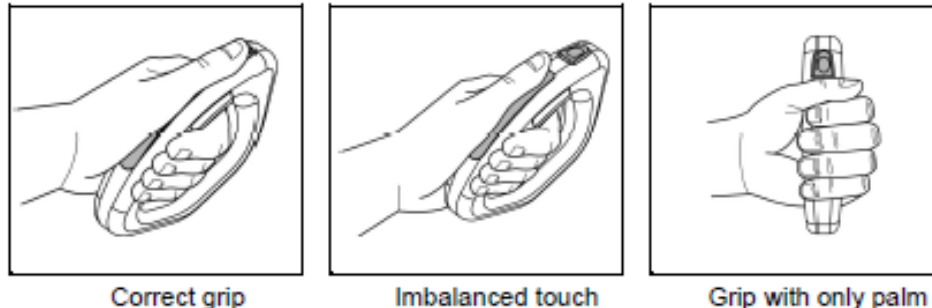


Figure 5-2. Handling the Electrodes



Not touching all of the electrodes sufficiently will affect the reliability of your results. When a person has small hands or feet and cannot cover all electrodes sufficiently, try to distribute as evenly as possible to touch all the electrodes equally.

During the measurement, the patient should not be touched by others or any other conductive materials.

If all eight electrodes are not perfectly touched during measurement, measurement will be stopped or the result will not be reliable.

5.3 Measuring Posture

- Step on the scale with bare feet. Stretch both arms and spread them 40° from the body.
- Do not speak or move the body until the measurement is completed.
- Do not bend or shake the arms until the measurement is completed.
- The measurement will be stopped if all eight electrodes are not equally touched.

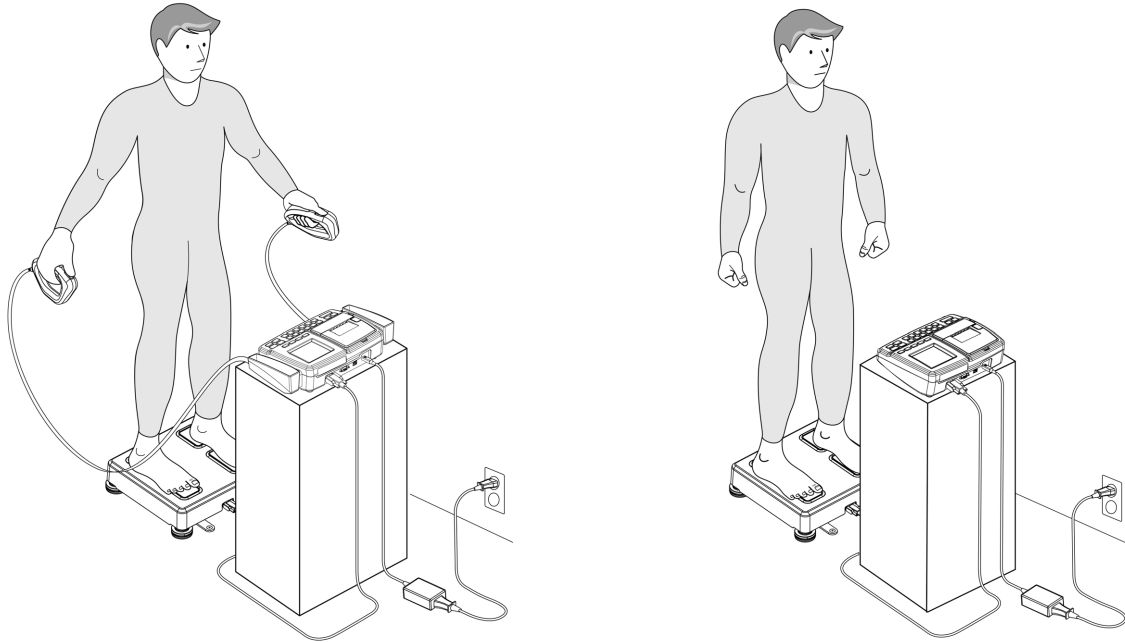


Figure 5-3. Measuring Posture - left figure shows measuring posture for the whole and upper body while right figure shows posture for the lower body.

5.4 Body Composition Weighing Measurement

1. Turn the Competitor Series on by pressing the **ON/OFF** key. The following screen is displayed.

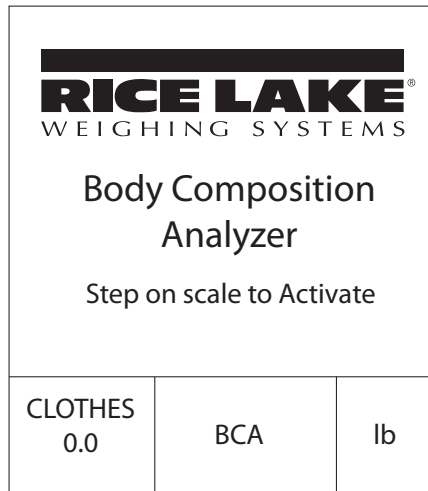


Figure 5-4. Body Composition Analyzer Main Screen

2. Select the **BCA** button to measure the body composition of the person. This will toggle the main screen between Scale and BCA (Body Composition Analyzer)



Deduct the Weight of Clothing.

The weight of clothing can be deducted prior to using the Competitor Series scale. To deduct (or tare off the weight) of your clothing prior to using the Competitor Series use the following steps.

1. Press and hold the **ON/OFF** button to power up the unit.
2. Press the **CLOTHES WEIGHT** button and hold for approximately four to five seconds and the following screen appears on the display.

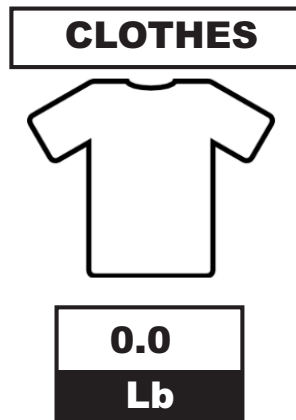


Figure 5-5. Enter Clothes Weight

3. Use the numbered buttons to enter the clothing weight until the desired amount is entered.
4. Press the **NEXT** button to save that weight value and you will hear a chime stating that the entered weight has been accepted.
5. Now step on the scale, the screen changes with a chime bell.
 - Do not move or speak until the weight measurement is completed.
 - The measured weight is displayed on the screen.
 - The measuring range is 22.0 to 440.9 lb (10 - 200 kg).
6. After the weight measurement, continue to input the personal data.

7. Personal information — Input the following information in order; gender, age, and height. Confirm the input data. Press **NEXT** button to move to the next step.
 - Select gender — The following message appears, *Choose your gender*. Select either male or female using the male or female icon buttons located on the left side of the unit. Press the **NEXT** button.
 - Input age — The following message appears, *Input your age*. Input the age using the numerical buttons on the keypad. The possible input range is 7 to 89 years old. Press the **NEXT** button.
 - Input height — The following message appears, *Input your height*. Input the height using the numeric keypad. The possible input range 39.4 to 78.7 inches. Press the **NEXT** button.
8. Measurement Posture

Once the input is completed, the screen shown in Figure 5-6 appears in the display screen.

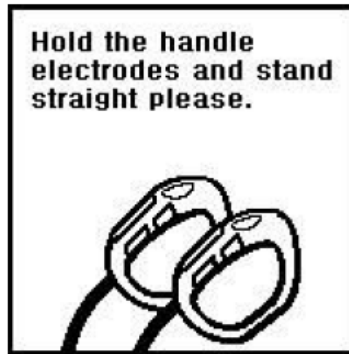


Figure 5-6. Measurement

- Hold the electrodes and stand straight as the unit starts measuring impedance. Do not move, speak, or bend arms during the measurement. Measuring time takes under one minute.
- During the measurement, the following screen appears and begins counting down.

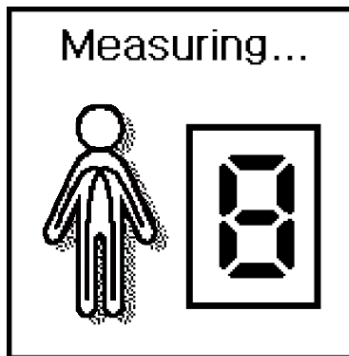


Figure 5-7. Measuring Screen

9. Result screen

- After the measurement is completed, the result is displayed on the screen.

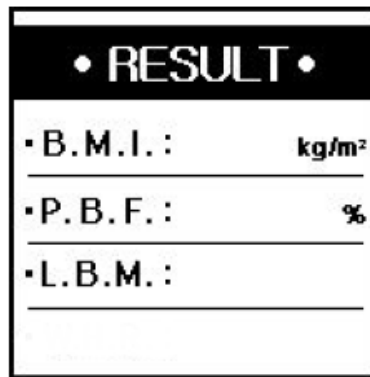


Figure 5-8. Result Screen

- The results are presented in graph and numerical values.
- Check the results and press the **PRINT** (Auto Print must be on) or **NEXT** button to exit and clear off the scale

10. Print results and restart

- Once the result is displayed it can be printed out. After confirming the result, press the **NEXT** button if you want to measure again.
- The Competitor Series returns back to the initial start up screen after one minute.



Note

If Automatic printing is selected during the system setup, the result sheet is automatically printed after measurement. If the Print button is pressed, the same results can be printed again.

6.0 Interpreting the Results

There are various ways to interpret the criteria of the printed results.

6.1 Personal Data

The subject's date, height, weight, age and gender are indicated on the result sheet.

6.2 Segmental Analysis

Soft lean mass and body fat of five body parts (left and right arms, left and right legs, and trunk) are indicated.

6.3 Body Composition

The human body is mainly divided into body fat and lean body mass. Lean body mass is the sum of non-fat constituents like muscle, bone, body water, etc. Body water consists of intra- and extra-cellular water.

A body composition table provides the subject's actual body composition and the optimal range of body weight, body fat, lean body mass, and intra- and extra-cellular water based on standard weight. Figures 6-3 through 6-9 show examples on print tickets of what the body composition of an individual is.

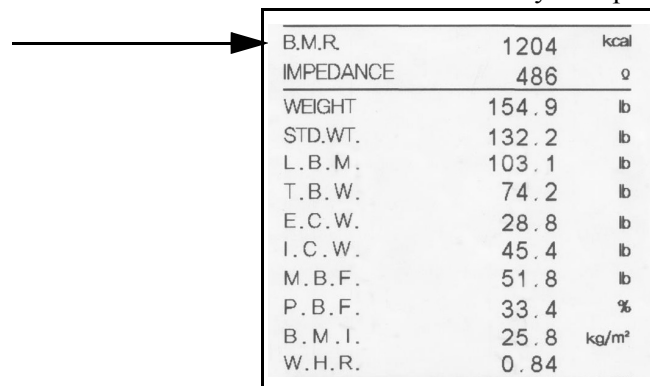
- Body Weight = Lean Body Mass + Mass of Body Fat
- Lean Body Mass = Total Body Water + other non-fat elements of body
- Total Body Water = Extra Cellular Water + Intra Cellular Water
- Weight: subject's actual body weight —Std. wt. (Standard weight): Height (m²) × 22 (ideal BMI value)
- L.B.M. (Lean Body Mass): Subtract body fat mass from body weight.
- M.B.F. (Mass of Body Fat): It is the total body fat mass in the unit of lb.
- T.B.W. (Total Body Water): It is the total body water.
- I.C.W. (Intra-Cellular Water): It exists inside of cell membrane.
- E.C.W. (Extra-Cellular Water): It exists outside of cell membrane like plasma, interstitial fluid, etc.

Not only the measured data but also the evaluation and the optimal range based on standard weight are presented. For example,

| | |
|---------------|---|
| Weight / Over | Weight: It is one of the items in body composition table. |
| 135.5 | Over: It is the evaluation of the subject's state based on standard weight. |
| [108.9~132.9] | 135.5: It is the measured value of the subject's body composition. |
| | [108.9~132.9]: It is the optimal range based on standard weight. |

6.4 Basal Metabolic Rate (B.M.R.)

B.M.R. is the calories to maintain human body's basic function such as movement of heart, brain, neural transmission, regulating body temperature and so on. B.M.R. is in proportion to S.L.M. because body fat stores energy while muscle consumes energy. Therefore, even if the weight is same between persons, the person with more muscle has greater B.M.R. The B.M.R. is shown in the Body Composition table on printed tickets.



| | | |
|-----------|-------|-------------------|
| B.M.R. | 1204 | kcal |
| IMPEDANCE | 486 | Ω |
| WEIGHT | 154.9 | lb |
| STD.WT. | 132.2 | lb |
| L. B. M. | 103.1 | lb |
| T. B. W. | 74.2 | lb |
| E. C. W. | 28.8 | lb |
| I. C. W. | 45.4 | lb |
| M. B. F. | 51.8 | lb |
| P. B. F. | 33.4 | % |
| B. M. I. | 25.8 | kg/m ² |
| W. H. R. | 0.84 | |

Figure 6-1. Basal Metabolic Rate Location on Print Tickets

6.5 Body Type

Body type is determined by B.M.I and P.B.F. Body type is classified into 9 types; Low fat Low weight, Low fat Muscular, Athletic, Low weight, Standard, Over Weight Muscular, Thin fat, Over fat, Obese. It is illustrated on printed tickets shown in Figures 6-3 through 6-9.

6.6 E.C.W./T.B.W. Ratio

It indicates the ratio between extra-cellular water and total body water. If the value is 'Over' in the pie chart, it means that the balance of body water is broken. If this imbalance is not temporary, it is recommended to consult with a doctor.

6.7 Wrestler Mode

It provides Weight, Mass of Fat Body and Lean Body Mass to maintain the minimum P.B.F.

For people choosing the 'high school', the minimum P.B.F is 7%.

For people choosing the 'college', the minimum P.B.F is 5%.

1. Minimum weight: Weight to maintain the minimum Body fat %.
*Min Weight = $LBM / 0.93$: Minimum PBF(%) is 7%.
 $LBM / 0.95$: Minimum PBF(%) is 5%.
2. Mass of Body Fat: M.B.F to maintain the minimum Body Fat %.
* Fat Mass = $MBF - (Current\ weight - Minimum\ weight)$
3. Lean Body Mass: It indicates the current Lean Body Mass.
* $LBM = Current\ Lean\ Body\ Mass$



Note *The equation for minimum weight follows guidelines of the Weight Management from NCAA (National Collegiate Athletic Association) issued in 1996.*

Examples of Wrestler Mode are shown on the following pages in Figures 6-3 through 6-9 and only if Wrestler Mode is turned on.

6.8 Sample Print Tickets

Tickets can be set up in a variety of ways depending on what features you want to be displayed on the ticket. The following examples on pages 28 through 33 illustrate the different configurations that can be shown.

6.8.1 Foot to Foot and Hand to Hand Example Print Tickets

| RICE LAKE® WEIGHING SYSTEMS | | | |
|--|------------|-------------------|--|
| DATE | 06.13.2015 | | |
| TIME | 01:48:44 | | |
| GENDER | Female | | |
| AGE | 45 | yrs | |
| HEIGHT | 5 ft 05.0 | in | |
| B.M.R. | 1213 | kcal | |
| IMPEDANCE | 449 | Ω | |
| WEIGHT | 154.9 | lb | |
| STD.WT. | 132.2 | lb | |
| L.B.M. | 105.3 | lb | |
| T.B.W. | 75.8 | lb | |
| E.C.W. | 25.6 | lb | |
| I.C.W. | 50.2 | lb | |
| M.B.F. | 49.6 | lb | |
| P.B.F. | 32.0 | % | |
| B.M.I. | 25.8 | kg/m ² | |
| Wrestler Mode | | | |
| TARGET P.B.F. | 5 | % | |
| Min Weight | 110.8 | lb | |
| Fat Mass | 5.5 | lb | |
| L.B.M. | 105.3 | lb | |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| * M O B 1 | | | |

Vertical example with goal setter off and wrestling mode on with college values

| RICE LAKE® WEIGHING SYSTEMS | | | |
|--|------------|-------------------|--|
| DATE | 06.18.2015 | | |
| TIME | 03:23:47 | | |
| GENDER | Male | | |
| AGE | 18 | yrs | |
| HEIGHT | 6 ft 02.0 | in | |
| B.M.R. | 1915 | kcal | |
| IMPEDANCE | 402 | Ω | |
| WEIGHT | 216.4 | lb | |
| STD.WT. | 171.2 | lb | |
| L.B.M. | 161.3 | lb | |
| T.B.W. | 116.1 | lb | |
| E.C.W. | 38.3 | lb | |
| I.C.W. | 77.8 | lb | |
| M.B.F. | 55.1 | lb | |
| P.B.F. | 25.5 | % | |
| B.M.I. | 27.8 | kg/m ² | |
| Wrestler Mode | | | |
| TARGET P.B.F. | 7 | % | |
| Min Weight | 173.4 | lb | |
| Fat Mass | 12.1 | lb | |
| L.B.M. | 161.3 | lb | |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| * M O B 1 | | | |

Vertical example with goal setter off and wrestling mode on with high school

| RICE LAKE® WEIGHING SYSTEMS | | | |
|--|------------|-------------------|--|
| DATE | 06.13.2015 | | |
| TIME | 01:46:12 | | |
| GENDER | Female | | |
| AGE | 45 | yrs | |
| HEIGHT | 5 ft 05.0 | in | |
| B.M.R. | 1213 | kcal | |
| IMPEDANCE | 449 | Ω | |
| WEIGHT | 154.9 | lb | |
| STD.WT. | 132.2 | lb | |
| L.B.M. | 105.3 | lb | |
| T.B.W. | 75.8 | lb | |
| E.C.W. | 25.6 | lb | |
| I.C.W. | 50.2 | lb | |
| M.B.F. | 49.6 | lb | |
| P.B.F. | 32.0 | % | |
| B.M.I. | 25.8 | kg/m ² | |
| Goal Setter | | | |
| TARGET P.B.F. | | % | |
| Predicted Weight | | | |
| Predicted Fat Mass | | | |
| Control | | | |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| * M O B 1 | | | |

Vertical example with goal setter on and wrestling mode turned off

| RICE LAKE® WEIGHING SYSTEMS | | | |
|--|------------|-------------------|--|
| DATE | 06.13.2015 | | |
| TIME | 01:43:32 | | |
| GENDER | Female | | |
| AGE | 45 | yrs | |
| HEIGHT | 5 ft 05.0 | in | |
| B.M.R. | 1213 | kcal | |
| IMPEDANCE | 449 | Ω | |
| WEIGHT | 154.9 | lb | |
| STD.WT. | 132.2 | lb | |
| L.B.M. | 105.3 | lb | |
| T.B.W. | 75.8 | lb | |
| E.C.W. | 25.6 | lb | |
| I.C.W. | 50.2 | lb | |
| M.B.F. | 49.6 | lb | |
| P.B.F. | 32.0 | % | |
| B.M.I. | 25.8 | kg/m ² | |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| * M O B 1 | | | |

Vertical example with goal setter off and wrestling mode off

| | | | | | | |
|--------------------------------------|--------|--------------|---------|------------------------|--|----------|
| RICE LAKE WEIGHING SYSTEMS | DATE | 06.13.2015 | WEIGHT | 154 .9 lb | Wrestler Mode | |
| | TIME | 01:50:57 | STD.WT. | 132 .2 lb | TARGET P.B.F. | 5 % |
| | GENDER | Female | L.B.M. | 105 .1 lb | Min Weight | 110.6 lb |
| | AGE | 45 yrs | T.B.W. | 75 .6 lb | Fat Mass | 5.5 lb |
| | HEIGHT | 5 ft 05.0 in | E.C.W. | 25 .6 lb | L.B.M. | 105.1 lb |
| | | | I.C.W. | 50 .0 lb | | |
| | | | M.B.F. | 49 .8 lb | | |
| | | | P.B.F. | 32 .1 % | | |
| | | | B.M.I. | 25.8 kg/m ² | | |
| | | | B.M.R. | 1212kcal | ※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | |
| | | IMPEDANCE | 451 Ω | ※ M O B 1 | | |

Horizontal example with goal setter off and wrestling mode on with college values

| | | | | | | |
|--------|--------------|---------|-----------|------------------------------------|----------------------|----------|
| DATE | 06.17.2015 | WEIGHT | 216 .7 lb | Ratio to E.C.W./T.B.W. | Wrestler Mode | |
| TIME | 03:16:29 | STD.WT. | 171 .2 lb | 0.393 (Normal) | TARGET P.B.F. | 7 % |
| GENDER | Male | L.B.M. | 164 .3 lb | Segmental Assessment L,B,M. | Min Weight | 176.6 lb |
| AGE | 18 yrs | T.B.W. | 118 .1 lb | Lt.Arm 11.79 (lb) [Well] | Fat Mass | 12.3 lb |
| HEIGHT | 6 ft 02.0 in | E.C.W. | 46 .5 lb | Rt.Arm 12.01 (lb) [Well] | L.B.M. | 164.3 lb |
| | | I.C.W. | 71 .6 lb | Lt.Leg 29.40 (lb) [Well] | | |
| | | M.B.F. | 52 .4 lb | Rt.Leg 30.13 (lb) [Well] | | |
| | | P.B.F. | 24 .2 % | Trunk 80.97 (lb) [Well] | | |

Horizontal example with goal setter off and wrestling mode on with high school values

| | | | | | | |
|--------------------------------------|--------|--------------|---------|------------------------|--|---|
| RICE LAKE WEIGHING SYSTEMS | DATE | 06.13.2015 | WEIGHT | 154 .9 lb | Goal Setter | |
| | TIME | 01:53:43 | STD.WT. | 132 .2 lb | TARGET P.B.F. | % |
| | GENDER | Female | L.B.M. | 105 .6 lb | Predicted Weight | |
| | AGE | 45 yrs | T.B.W. | 76 .0 lb | Predicted Fat Mass | |
| | HEIGHT | 5 ft 05.0 in | E.C.W. | 25 .6 lb | Control | |
| | | | I.C.W. | 50 .4 lb | | |
| | | | M.B.F. | 49 .3 lb | | |
| | | | P.B.F. | 31 .9 % | | |
| | | | B.M.I. | 25.8 kg/m ² | | |
| | | | B.M.R. | 1214kcal | ※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | |
| | | IMPEDANCE | 445 Ω | ※ M O B 1 | | |

Horizontal example with goal setter on and wrestling mode off

| | | | | |
|--------------------------------------|--------|--------------|---------|------------------------|
| RICE LAKE WEIGHING SYSTEMS | DATE | 06.13.2015 | WEIGHT | 154 .9 lb |
| | TIME | 01:56:02 | STD.WT. | 132 .2 lb |
| | GENDER | Female | L.B.M. | 105 .3 lb |
| | AGE | 45 yrs | T.B.W. | 75 .8 lb |
| | HEIGHT | 5 ft 05.0 in | E.C.W. | 25 .6 lb |
| | | | I.C.W. | 50 .2 lb |
| | | | M.B.F. | 49 .6 lb |
| | | | P.B.F. | 32 .0 % |
| | | | B.M.I. | 25.8 kg/m ² |
| | | | B.M.R. | 1213kcal |
| | | IMPEDANCE | 449 Ω | |

※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender.
※ M O B 1

Horizontal example with goal setter off and wrestling mode off

6.8.2 Full body Print Ticket Examples

| | | | |
|---|------------|-------------------|-----------|
| DATE | 06.12.2015 | | |
| TIME | 01:44:04 | | |
| GENDER | Female | | |
| AGE | 45 | yrs | |
| HEIGHT | 5 ft 05.0 | in | |
| B.M.R. | 1204 | kcal | |
| IMPEDANCE | 486 | Ω | |
| WEIGHT | 154.7 | lb | |
| STD.WT. | 132.2 | lb | |
| L.B.M. | 103.2 | lb | |
| T.B.W. | 74.2 | lb | |
| E.C.W. | 28.8 | lb | |
| I.C.W. | 45.4 | lb | |
| M.B.F. | 51.5 | lb | |
| P.B.F. | 33.3 | % | |
| B.M.I. | 25.8 | kg/m ² | |
| W.H.R. | 0.84 | | |
| Ratio fo E.C.W./T.B.W. | | | |
| 0.388 (Normal) | | | |
| Segmental Assessment L.B.M. | | | |
| Lt.Arm | 6.98 | [lb] | [Optimal] |
| Rt.Arm | 6.92 | [lb] | [Optimal] |
| Lt.Leg | 18.71 | [lb] | [Optimal] |
| Rt.Leg | 19.06 | [lb] | [Optimal] |
| Trunk | 51.53 | [lb] | [Optimal] |
| Wrestler Mode | | | |
| TARGET P.B.F. | 5 | % | |
| Min Weight | 108.6 | lb | |
| Fat Mass | 5.4 | lb | |
| L.B.M. | 103.2 | lb | |
| *This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| **M1 B1 | | | |

Vertical example with goal setter off and wrestling mode on with college values

| | | | |
|---|------------|-------------------|----------|
| DATE | 06.17.2015 | | |
| TIME | 03:19:06 | | |
| GENDER | Male | | |
| AGE | 18 | yrs | |
| HEIGHT | 6 ft 02.0 | in | |
| B.M.R. | 1933 | kcal | |
| IMPEDANCE | 369 | Ω | |
| WEIGHT | 216.4 | lb | |
| STD.WT. | 171.2 | lb | |
| L.B.M. | 164.4 | lb | |
| T.B.W. | 118.3 | lb | |
| E.C.W. | 46.9 | lb | |
| I.C.W. | 71.4 | lb | |
| M.B.F. | 52.0 | lb | |
| P.B.F. | 24.0 | % | |
| B.M.I. | 27.8 | kg/m ² | |
| W.H.R. | 0.82 | | |
| Ratio fo E.C.W./T.B.W. | | | |
| 0.396 (Normal) | | | |
| Segmental Assessment L.B.M. | | | |
| Lt.Arm | 11.83 | [lb] | [Well] |
| Rt.Arm | 12.10 | [lb] | [Well] |
| Lt.Leg | 29.45 | [lb] | [Well] |
| Rt.Leg | 30.20 | [lb] | [Well] |
| Trunk | 80.82 | [lb] | [Well] |
| Wrestler Mode | | | |
| TARGET P.B.F. | 7 | % | |
| Min Weight | 176.7 | lb | |
| Fat Mass | 12.3 | lb | |
| L.B.M. | 164.4 | lb | |
| *This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | | |
| **M1 B1 | | | |

Vertical example with goal setter off and wrestling mode on with high school values

| | | |
|--|------------|-------------------|
| DATE | 06.12.2015 | |
| TIME | 01:38:48 | |
| GENDER | Female | |
| AGE | 45 | yrs |
| HEIGHT | 5 ft 05.0 | in |
| B.M.R. | 1204 | kcal |
| IMPEDANCE | 486 | Ω |
| WEIGHT | 154.9 | lb |
| STD.WT. | 132.2 | lb |
| L.B.M. | 103.1 | lb |
| T.B.W. | 74.2 | lb |
| E.C.W. | 28.8 | lb |
| I.C.W. | 45.4 | lb |
| M.B.F. | 51.8 | lb |
| P.B.F. | 33.4 | % |
| B.M.I. | 25.8 | kg/m ² |
| W.H.R. | 0.84 | |
| Ratio fo E,C,W./T,B,W. | | |
| 0.388 (Normal) | | |
| Segmental Assessment L,B,M. | | |
| Lt.Arm | 7.03 | [lb] [Optimal] |
| Rt.Arm | 7.01 | [lb] [Optimal] |
| Lt.Leg | 18.73 | [lb] [Optimal] |
| Rt.Leg | 18.91 | [lb] [Optimal] |
| Trunk | 51.42 | [lb] [Optimal] |
| Goal Setter | | |
| TARGET P.B.F. | | % |
| Predicted Weight | | |
| Predicted Fat Mass | | |
| Control | | |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | |
| * M1 B1 | | |

Vertical example with goal setter on and wrestling mode turned off

| | | |
|--|------------|-------------------|
| DATE | 06.12.2015 | |
| TIME | 01:41:27 | |
| GENDER | Female | |
| AGE | 45 | yrs |
| HEIGHT | 5 ft 05.0 | in |
| B.M.R. | 1204 | kcal |
| IMPEDANCE | 486 | Ω |
| WEIGHT | 154.9 | lb |
| STD.WT. | 132.2 | lb |
| L.B.M. | 103.1 | lb |
| T.B.W. | 74.2 | lb |
| E.C.W. | 28.8 | lb |
| I.C.W. | 45.4 | lb |
| M.B.F. | 51.8 | lb |
| P.B.F. | 33.4 | % |
| B.M.I. | 25.8 | kg/m ² |
| W.H.R. | 0.84 | |
| Ratio fo E,C,W./T,B,W. | | |
| 0.388 (Normal) | | |
| Segmental Assessment L,B,M. | | |
| Lt.Arm | 7.01 | [lb] [Optimal] |
| Rt.Arm | 6.98 | [lb] [Optimal] |
| Lt.Leg | 18.73 | [lb] [Optimal] |
| Rt.Leg | 18.98 | [lb] [Optimal] |
| Trunk | 51.40 | [lb] [Optimal] |
| * This result consists of the calculated values by using measured weight and impedance and entered height, age and gender. | | |
| * M1 B1 | | |

Vertical example with goal setter off and wrestling mode off

| | | | | | |
|--------|--------------|-----------|-------------------------|------------------------------|-------------------|
| DATE | 06.12.2015 | WEIGHT | 154 .7 lb | Ratio to E.C.W./T.B.W. | Wrestler Mode |
| TIME | 01:46:26 | STD.WT. | 132 .2 lb | 0 .390 (Normal) | TARGET P.B.F. |
| GENDER | Female | L .B .M . | 103 .4 lb | Segmental Assessment L.B.M. | Min Weight |
| AGE | 45 yrs | T .B .W . | 74 .5 lb | Lt.Arm 7 .05 (lb) [Well] | Fat Mass |
| HEIGHT | 5 ft 05.0 in | E .C .W . | 29 .1 lb | Rt.Arm 7 .03 (lb) [Optimal] | L.B.M. |
| | | I .C .W . | 45 .4 lb | Lt.Leg 18 .71 (lb) [Optimal] | |
| | | M .B .F . | 51 .3 lb | Rt.Leg 19 .04 (lb) [Optimal] | |
| | | P .B .F . | 33 .2 % | Trunk 51 .57 (lb) [Optimal] | |
| | | B .M .I . | 25 .8 kg/m ² | B .M .R . | 1205 kcal |
| | | W .H .R . | 0 .84 | IMPEDANCE | 484 \varnothing |

※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender.
※ M1 B1

Horizontal example with goal setter off and wrestling mode on with college values

| | | | | | |
|--------|--------------|-----------|-------------------------|-----------------------------|-------------------|
| DATE | 06.17.2015 | WEIGHT | 216 .7 lb | Ratio to E.C.W./T.B.W. | Wrestler Mode |
| TIME | 03:16:29 | STD.WT. | 171 .2 lb | 0 .393 (Normal) | TARGET P.B.F. |
| GENDER | Male | L .B .M . | 164 .3 lb | Segmental Assessment L.B.M. | Min Weight |
| AGE | 18 yrs | T .B .W . | 118 .1 lb | Lt.Arm 11 .79 (lb) [Well] | Fat Mass |
| HEIGHT | 6 ft 02.0 in | E .C .W . | 46 .5 lb | Rt.Arm 12 .01 (lb) [Well] | L.B.M. |
| | | I .C .W . | 71 .6 lb | Lt.Leg 29 .40 (lb) [Well] | |
| | | M .B .F . | 52 .4 lb | Rt.Leg 30 .13 (lb) [Well] | |
| | | P .B .F . | 24 .2 % | Trunk 80 .97 (lb) [Well] | |
| | | B .M .I . | 27 .8 kg/m ² | B .M .R . | 1932 kcal |
| | | W .H .R . | 0 .82 | IMPEDANCE | 372 \varnothing |

※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender.
※ M1 B1

Horizontal example with goal setter off and wrestling mode on with high school values

| | | | | |
|--------------|-------------|--------------------------|-------------------------------|--------------------|
| 06.12.2015 | WRIGHT | 154 . 7 lb | Ratio to E.C.W./T.B.W. | Goal Setter |
| 01:49:05 | STD.WT. | 132 . 2 lb | 0 . 392 (Normal) | TARGET P.B.F. |
| Female | L . B . M . | 103 . 2 lb | Segmental Assessment L.B.M. | Predicted Weight |
| 45 yrs | T . B . W . | 74 . 2 lb | Lt.Arm 7 . 01 [lb] [Optimal] | Predicted Fat Mass |
| 5 ft 05.0 in | E . C . W . | 29 . 1 lb | Rt.Arm 6 . 96 [lb] [Optimal] | Control |
| | I . C . W . | 45 . 1 lb | Lt.Leg 18 . 69 [lb] [Optimal] | |
| | M . B . F . | 51 . 5 lb | Rt.Leg 19 . 04 [lb] [Optimal] | |
| | P . B . F . | 33 . 3 % | Trunk 51 . 50 [lb] [Optimal] | |
| | B . M . I . | 25 . 8 kg/m ² | B . M . R . | 1204 kcal |
| | W . H . R . | 0 . 84 | IMPEDANCE | 486 α |

※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender.
※ M1 B1

Horizontal example with goal setter on and wrestling mode off

| | | | | |
|--------|--------------|-------------|--------------------------|-------------------------------|
| TIME | 01:51:28 | STD.WT. | 132 . 2 lb | 0 . 394 (Normal) |
| GENDER | Female | L . B . M . | 103 . 1 lb | Segmental Assessment L.B.M. |
| AGE | 45 yrs | T . B . W . | 74 . 2 lb | Lt.Arm 7 . 03 [lb] [Optimal] |
| HEIGHT | 5 ft 05.0 in | E . C . W . | 29 . 3 lb | Rt.Arm 6 . 94 [lb] [Optimal] |
| | | I . C . W . | 44 . 9 lb | Lt.Leg 19 . 11 [lb] [Optimal] |
| | | M . B . F . | 51 . 8 lb | Rt.Leg 18 . 62 [lb] [Optimal] |
| | | P . B . F . | 33 . 4 % | Trunk 51 . 40 [lb] [Optimal] |
| | | B . M . I . | 25 . 8 kg/m ² | B . M . R . |
| | | W . H . R . | 0 . 84 | IMPEDANCE |
| | | | | 1204 kcal |
| | | | | 487 α |

※ This result consists of the calculated values by using measured weight and impedance and entered height, age and gender.
※ M1 B1

Horizontal example with goal setter off and wrestling mode off

6.9 Measuring Weight Only

To use the Competitor Series scale for weight only, use the following steps.

1. Press the ON/OFF button to power up the unit. The display indicates which mode it is in (BCA or SCALE).

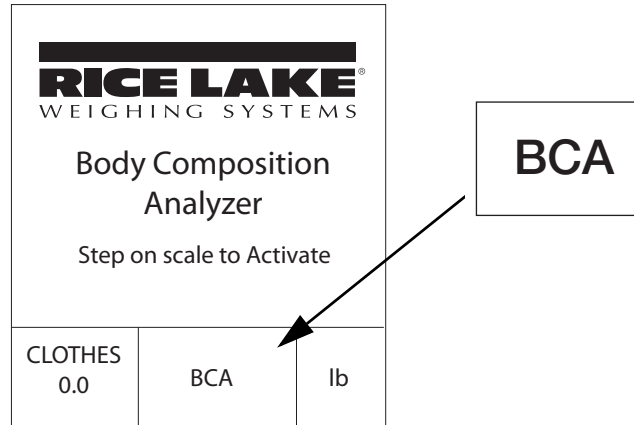



Figure 6-2.

2. Press and hold the **WEIGHT ONLY** button  to use the analyzer for weighing only.
3. Toggle back to BCA to measure body composition.

7.0 Troubleshooting

7.1 Storage and Maintenance

- Pay attention to the allowable value to electric current.
- Avoid direct sunlight, humidity, dust, thick oil and salty or extreme changes in temperature.
- Do not install or store the device in a place where any chemicals or gas is stored.
- Do not use the device in any unstable, vibrating, or impact-giving area.
- Do not put or drop anything on the device and avoid strong impact.
- Do not disassemble or remodel the device.
- If the device has not been used for a long time, check its function and physical status before use.
- **Do not spill any fluid on the device or put any foreign substances.**
- When the foreign substances get into the device or when the device is exposed to the particular environment, inspect the device by an expert before use.
- Use the power cable, plug, and adapter that are supplied with the unit.
- Also check the condition of the cable coating, plug and other things whether there is any defects or not.
- Always turn off the power first then, pull the plug out.
- When the device is used near electrical appliances such as TV, devices with micro electromagnetic waves, and devices that generate X-ray or strong electric field, these electrical appliances should be turned off or placed apart from the device. It is to keep the reliability of the results and to prevent any electric shock from leakage current.
- Use a soft gauze cloth to clean the unit. Do not use a wet cloth or flammable liquid such as benzene and alcohol. Clean the unit every two to three days.
- Storage ambient: Temperature $-4^{\circ}\sim 140^{\circ}\text{F}$ ($-20 \sim 60^{\circ}\text{C}$), Humidity lower than 95 % (non-condensing)
- Operation ambient: Temperature $50^{\circ}\sim 104^{\circ}\text{F}$ ($10 \sim 40^{\circ}\text{C}$), Humidity 30 ~ 75 % (non-condensing)
- Do not keep or use the device when the atmospheric pressure is lower than 70kPa (700mbar) or higher than 106kPa (1060mbar).
- Refer to the additional safety precautions located in Section 1.0 on page 1.

7.2 Error and Repair

| Error | Cause | Repair |
|---|--|--|
| Out of Range of Impedance | When the subject's body impedance is deviated from the limit - Insufficient touch to electrodes - Impedance is out of range - Range: 100 ~ 950 Ω | Clean the measuring parts (the electrodes, palms, and soles) and try again. Measure again with correct posture. Do not move during measurement. If the same error is repeated, please contact Rice Lake Weighing Systems (RLWS) or its local distributor where this device was purchased. |
| Out of Range of Body Fat | When the subject's P.B.F. is deviated from the limit - Incorrect input of personal data - P.B.F. is out of range - Range: 3 ~ 75 % | Clean the handle electrodes and try again. If the same error is repeated, please contact RLWS or its local distributor where this device was purchased. |
| Out of Range Measurement | When the subject's fatness is deviated from the limit - Range: -100 ~ +100 % - Mechanical error | Input height correctly. Check the weight is correct and try again. If the same error is repeated, please contact RLWS or its local distributor where this device was purchased. |
| Problem is detected in the internal communication port. | There's a problem in the internal communication port. | Turn off the power and turn on. If the problem remains, please contact RLWS or its local distributor where the device was purchased. |
| Can't measure the weight | When the subject's weight is deviated from the limit - Measuring error - Moving during the measurement - Range: 22.0 ~ 440.9 lb | Measure weight again. If the subject's weight is out of range, weight can't be measured. |
| No printing paper | There is no thermal paper. | Insert the thermal paper. |
| Printer cover is opened | Printer cover is opened. | Check the cover is firmly closed. |
| Problem is detected in the Auto-cut of the printer. | Auto-cut blade is shown outward. | Open the cover of Printer-Cut. Turn the plastic Phillips-head screws clockwise and push the blade back. If the problem remains, please contact RLWS or its local distributor where the device was purchased. |
| Problem is detected in the printer. | Thermal printer has some problems. | Power is automatically turned off by safety unit. Turn the power after few minutes. If the problem remains, please contact RLWS or its local distributor where the device was purchased. |

Table 7-1. Troubleshooting

| Error | Cause | Repair |
|---|--|--|
| P.B.F. is measured too low or too high. | Measure in unstable conditions such as right after exercise, bathing, sweating or drinking lots of water. Moving or speaking during the measurement process. Handle electrodes or measuring parts are dirty. | Measure again in a stable condition with the correct posture. Do not move or speak during the measurement. Clean handle electrodes with a soft gauze and try again. Clean hands and feet and try again. Make sure there are no foreign substances between the electrodes and measuring body parts. |
| Unit does not work even when the start buttons are correctly pressed. | Defective cable between the head and the scale. Start buttons are defective. Bad connection between the head and the scale. Handle electrodes are defective. | Contact company where the device was purchased. Check whether the handle electrodes are connected tightly to the head. If the same error is repeated, contact RLWS where the device was purchased. |

Table 7-1. Troubleshooting

7.3 Troubleshooting Assistance

If an issue occurs, please follow the instructions below.

1. Carefully read “Precautions for Measurement” again and inspect the device. If the problem remains, contact Rice Lake Weighing Systems or its local distributor.
2. When contacting Rice Lake Weighing Systems or the local distributor, please have the model name, serial number, date of purchase and description of the problem ready.
3. Rice Lake Weighing Systems strives to provide the best service possible to customers. One of our skilled technicians will assist the customer in finding a solution in prompt manner.



Note Contact information for Rice Lake Weighing Systems is located on the back cover of this manual.

7.4 Specifications

| Type | Description | D1000-3 Full Body | D1000-2 Hand to Hand | D1000-1 Foot to Foot |
|--------------------------|--------------------------------------|---|-------------------------|-------------------------|
| Impedance Measurement | Measuring Method | BIA via tetra-polar electrode method using eight touch electrodes | | |
| | Frequency | 50k Hz | | |
| | Current | < 280 μ A | | |
| | Electrode Material | Pressure contact stainless steel foot pads | | |
| | Measurement Style | Between both feet | | |
| | Measurement Range | 150 - 900 Ω | | |
| Weight Measurement | Measurement System | Strain gauge load cell | | |
| | Max Capacity/Min Grads | 440 lb / 0.2 lb (200 kg / 0.1 kg) | | |
| Input Items | Clothes Weight | 0-440 lb (0.2 lb increments) / 0-200 kg (0.1 kg increments) | | |
| | Gender | Male/Female | | |
| | Body Type | Standard/Athletic | | |
| | Age | 7-99 years (1 year increments) | | |
| | Height | 3 ft-7 ft 11.5 inches (0.5 inch increments) / 90-49 cm (1 cm increments) | | |
| | Target Body Fat % | 4 - 55% | | |
| Output Items | Display Weight | 0 - 440 lb / 0.2 lb (0 - 200 kg / 0.1 kg) | | |
| | Display Gender | Male/Female | | |
| | Display Age | 7 - 99 years (1 year increments) | | |
| | Display Height | 3 ft-7 ft 11.5 inches (0.5 inch increments) / 90-249 cm (1 cm increments) | | |
| | Display Body Type | Standard/Athletic | | |
| | Display FAT % | 1-75% (0.1% increments) | | |
| | Printout Body Type | Standard/Athletic | | |
| | Printout Gender | Male/Female | | |
| | Printout Age | 7 - 99 years old (1 year increments) | | |
| | Printout Height | 3 ft-7 ft 11.5 inches (0.5 inch increments) / 90-249 cm (1 cm increments) | | |
| | Printout Weight | 4.4 - 440 lb (0.2 lb increments) / 0 - 200 kg (0.1 kg increments) | | |
| | Printout BMI | 0.1 increments | | |
| | Printout BMR | 1 kcal increments (1 kJ increments) | | |
| | Printout Impedance | 150 - 900 Ω (1 Ω - increments) | | |
| | Printout FAT % | 1 - 75% (0.1% increments) | | |
| | Printout Fat Mass/FFM/TBW | 0.2 lb increments (0.1 kg) | | |
| Display | 3 rows, 5 digit LCD | | | |
| Cable Length | 6 ft 6.5 inches (2 m) | | | |
| Output Data Interface | RS-232C (D-sub 9 pin male connector) | | | |
| Power Source | AC Adaptor (included) | | | |
| Rated Power | DC5V 3.5A | | | |
| Power Consumption | 17.5 W | | | |
| Temperature Range | 50°~ 104°F (10 ~ 40°C) | | | |
| Equipment Weight | 15.4 lb (7.0 kg) | | | 11.9 lb (5.4 kg) |
| Input Device | Keypad, PC remote control | | | |
| Transmitting Device | USB port, RS-232 cable | | | |

Table 7-2. Specifications

Limited Warranty

Rice Lake Weighing Systems warrants that all Rice Lake Weighing Systems 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 Rice Lake Weighing Systems. All systems and components are warranted against defects in materials and workmanship for two years.

Rice Lake Weighing Systems warrants that the equipment sold hereunder will conform to the current written specifications authorized by Rice Lake Weighing Systems. Rice Lake Weighing Systems warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, Rice Lake Weighing Systems 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, Rice Lake Weighing Systems will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to Rice Lake Weighing Systems for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment.
- Examination of such equipment by Rice Lake Weighing Systems confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; Rice Lake Weighing Systems shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than Rice Lake Weighing Systems or its duly authorized repair agents.
- Rice Lake Weighing Systems will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will Rice Lake Weighing Systems be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will Rice Lake Weighing Systems 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 RICE LAKE WEIGHING SYSTEMS OR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RICE LAKE WEIGHING SYSTEMS AND BUYER AGREE THAT RICE LAKE WEIGHING SYSTEMS'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 RICE LAKE WEIGHING SYSTEMS, 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 RICE LAKE WEIGHING SYSTEMS AND THE BUYER.

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