SRScales®

by SR®Instruments, Inc.

Model SR615*i*

Infant Scale

Operating and Service Manual

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TABLE OF FIGURES

PACKING CHECKLIST - Model SR615*i*
Infant Scale

√	DESCRIPTION	QUANTITY
	SCALE BASE	1 ea
	SCALE BASE COVER	1 ea
	(One of the following cradle choices included.)	
	CRADLE - CLEAR ACRYLIC OPEN END 22" (Standard comes with scale)	
	CRADLE - CLEAR ACRYLIC OPEN END 30" (Optional)	
	PACKAGE OF SIX (6) D-CELL BATTERIES	6 ea
	NYLON SCREWS	4 ea
	CALIBRATION CERTIFICATE	1 ea
	QC INSPECTION SHEET	1 ea
	WARRANTY CARD	1 ea
	MANUAL	1 ea
√	**OPTIONAL PRINTER KIT**	**QUANTITY**
	PRINTER	1 ea
	PRINTER BATTERY CHARGER	1 ea
	PRINTER CABLE	1 ea
	PRINTER PAPER	1 ea

ASSEMBLY

STEP 1: Unpack the scale system and check parts against the **PACKING CHECKLIST**. If there are any missing or damaged parts, please call the Service Hotline 1-800-654-6360.

#	PART NAME
1	Scale Base Cover
2	Clear Acrylic Cradle
3	Nylon Screws (4)
4	Battery Compartment Cover
5	Battery Cover Screws

STEP 2: (Figure 1) Turn the scale base over to access the Battery Compartment Cover (4) and remove the two (2) Battery Cover Screws (5). Install the six (6) "D" cell batteries as described on battery compartment cover label and replace the Battery Compartment Cover. Turn scale base right side up and place on a stable flat surface so that all four feet are supported.

STEP 3: (Figure 2) Place the Scale Base Cover (1) on top of the scale base, then place the Clear Acrylic Cradle (2) on top of both pieces. Align the pre-drilled holes of all three parts. Using the four (4) Nylon Screws (3), attach the Clear Acrylic Cradle to the scale base. **Note**: Slightly tighten all four (4) Nylon Screws before securely tightening any one.
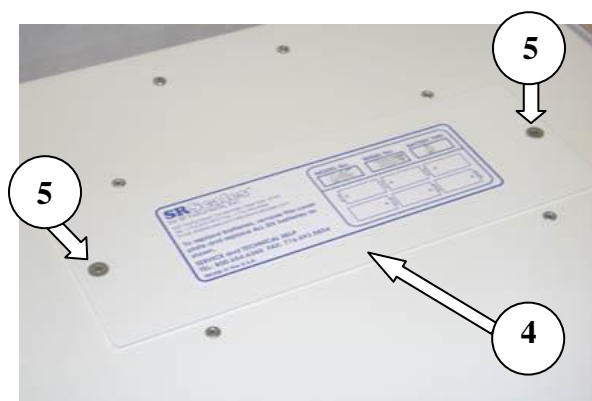
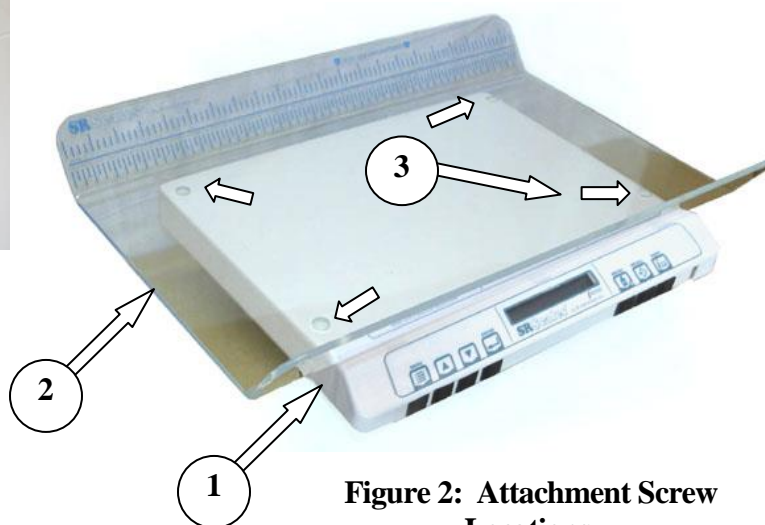**Figure 1: Battery Compartment Cover & Screw Locations**

Figure 2: Attachment Screw Locations

STEP 4: (**Printer Option**) (Figure 3). Plug optional printer into connector provided on back of the Scale Base using optional printer cable. Secure plug in place with plug connector screws.

Figure 3: Printer Connector

REPLACEMENT PARTS and ACCESSORIES

Part #	Description
PF1051-1	22" Open End Cradle
PF1051-2	30" Open End Cradle
SRC-100	Stainless Steel Mobile Cart with two (2) Locking Wheel Casters
FB142058FN	1/4-20 x 5/8 Flat Nylon White Screw
SR8327	Printer Kit (optional; contains all printer parts listed below)
FRAP1300	Printer
FRAP1300BR-01	Printer Cable
FRAP1300BP01	Rechargeable Battery Pack
FRTP130012C	Paper, thermal printer 58mm (10 rolls)
FRBC1300	Printer Battery Charger

SYSTEM DESCRIPTION and INTENDED USE

SYSTEM DESCRIPTION

The SR615*i* Infant Scale employs the latest in microprocessor and load cell technology to provide accurate and repeatable weight data. Four (4) identically matched transducers are strategically placed to ensure an accurate representation of the infant's weight regardless of weight distribution.

The infant's weight is displayed on a 16-character dot matrix LCD. With a push of a button, weight data may be viewed in either pounds/decimal, pounds/ounces, kilograms, or grams. These have a displayed resolution of 0.01 lb., 1/4 oz., 0.005 kg, and 5 g.

INTENDED USE

The SR615*i* Infant Scale is designed for use in pediatric applications. Maximum weight capacity must not exceed 40 pounds or 18 kilograms gross weight.

⚠️ **WARNING** ⚠️
DO NOT EXCEED
MAXIMUM WEIGHT LIMIT OF
40 LB / 18 KG

MAINTENANCE and CLEANING

Exercise caution when cleaning the display window and pediatric cradle as both can be scratched by abrasive cleaners. Mild soap and water is recommended for general cleaning.

CLEANING

To clean the pediatric cradle and display / user interface:

- Use a soft cloth dampened with water and mild detergent to clean scale surfaces.

- Wipe surface with clean soft cloth dampened with water and then dry with clean soft cloth.

- Do not use abrasive materials to clean scale surface to prevent damage to the surface finish.

- Do not spray liquid directly onto scale surfaces. Use only a damp cloth.

DISINFECTION

To disinfect the pediatric cradle and display / user interface:

- **DO NOT** allow concentrated disinfectant, surgical or methylated spirits, any liquid containing alcohol or any other solvents to come in contact with ACRYLIC BABY TRAY.

- Use a soft cloth dampened with disinfectant or a damp disposable disinfectant cloth. Cloth cannot be dripping wet. Follow manufacturer's instruction on the proper use of commercially available disinfectants.

- Disinfectant solutions with 1% sodium hypochlorite are suitable for display / user interface and other scale contact surfaces.

- After disinfecting, use a soft cloth dampened with clean water and dry with a soft clean cloth to prevent buildup of material on scale finish.

- Do not use abrasive material to disinfect / clean scale surfaces to prevent damage to the surface finish.

- Do not spray liquid directly onto scale surfaces. Use only a damp cloth.

    WARNING: **DO NOT SPRAY CLEANING SOLUTION OR LIQUIDS DIRECTLY ON SURFACES TO BE CLEANED**

    WARNING: **EXPOSURE TO EXCESSIVE LIQUID WILL DAMAGE USER INTERFACE KEYPAD**

    WARNING: **DO NOT ALLOW CONCENTRATED DISINFECTANT, SURGICAL OR METHYLATED SPIRITS, ANY LIQUID CONTAINING ALCOHOL OR ANY OTHER SOLVENTS TO COME IN CONTACT WITH ACRYLIC BABY TRAY**

    WARNING: **DO NOT USE PRESSURIZED WATER OR STEAM. THE SCALE SYSTEM CONTAINS ELECTRONIC COMPONENTS THAT MAY BE ADVERSELY AFFECTED BY EXPOSURE TO SUCH AN ENVIRONMENT.**

STORAGE and TRANSPORTATION

If storing this equipment for periods longer than three (3) months, remove the batteries. To maintain proper operation of this instrument, storage and transport conditions should not vary outside the following conditions: Relative Humidity 0% to 85%, Ambient Temperature 14°F to 122°F (-10°C to +50°C).

SPECIFICATIONS

MAXIMUM WEIGHT CAPACITY	40 lb or 18 kg
CRADLE SIZE	Clear Acrylic 22 in x 15 1/2 in (56 cm x 39 cm)
DISPLAY TYPE	16-Character Dot-Matrix LCD
DISPLAY RESOLUTION	0.01 lb, 1/4 oz., 0.005 kg, 5 g
ACCURACY	0.1% +/- 1 digit of displayed resolution for calibration range
AUTO ZERO	One button operation
AUTO POWER DOWN	Approximately 120 seconds
LAST WEIGHT RECALL	Press "RECALL" button to recall last stored displayed reading
AVERAGING	Automatic digital filter
POWER SUPPLY	Six (6) "D" cell batteries
CALIBRATION	Calibration is traceable to NIST standards
OPERATING CONDITIONS	Normal operating conditions for this product: Ambient Temperature Range: 68°F to 85°F (20°C to 30°C) Relative Humidity Range: 0% to 85% Avoid exposure to high-pressure water or steam.
TRANSPORTATION and STORAGE	Storage and transportation conditions should not vary outside the following conditions: Relative Humidity 0% to 85%, Ambient Temperature 14°F to 122°F (-10°C to +50°C). Remove batteries if storing longer than three (3) months.

BUTTON FUNCTIONS

Figure 4: Button Display

ZERO / WEIGH

Press and hold to zero. The display will read "**WT = 0.00 Lb**". This is used to zero the system before placing the patient on the scale system. This action also resets previously stored weight values to zero. Ensure that nothing is in contact with the weighing surface during this procedure.

Press to weigh. Weight stable indicator "☐" flashes then remains solid when stable. Auto stores stable weight in memory.

SEND (PRINTER / EHR)

Press to send stored values to EHR or to printer. Output values include time, date and weight. Also, indicated on display when paper is out, "**PAPER OUT**" and when door is open, "**PAPER DOOR OPEN**".

RECALL

Press to recall the last stable weight.

ENTER

Press to save changes to "**MENU**" options.

BUTTON FUNCTIONS (Cont'd)

MENU

MENU Press Menu to edit setup.

Setting the **UNITS**: Use **UP** or **DOWN** arrow buttons to select "**Lb**", "**Kg**" "**Lb/oz**" or "**g**" Press **ENTER** to save changes.

Setting **ON TIME**: Use **UP** or **DOWN** arrow buttons to adjust the "**ON TIME**". The "**ON TIME**" may be set from 30 to 300 seconds in 30 second increments. Press **ENTER** to save changes.

Configuring scale output: Use the **UP** or **DOWN** arrow buttons to select between **PRINT, NONE** and **EHR.** Press **ENTER** to save changes.

Setting printout orientation: Use the **UP** or **DOWN** arrow buttons to select between "**PRINT INVERTED**" and "**PRINT NORMAL**". Press **ENTER** to save changes.

Setting **TIME** and **DATE**: Use the **UP** arrow button to select digit. To change digit use the **DOWN** arrow button. Press **ENTER** to save changes.
NOTE: When selected, the year position defaults to "00"

UP

Press **UP** to increase the scale's "on time" or to select a digit when setting time and date.

DOWN

Press **DOWN** to decrease the scale's "on time" or to change the value of a selected digit when setting time and date.

BASIC SYSTEM OPERATION

SETTING SYSTEM ZERO

WEIGH Make sure the scale is free and clear of any obstructions and press and hold the **ZERO / WEIGH** button. The displayed message will indicate "**HOLD TO ZERO**" and count down to zero. Make sure that nothing is in contact with the scale while zeroing the system. In a few seconds, the display will read "**WT = 0.00 Lb**" (or **Kg**). This action also resets previously stored weight to zero.

BASIC SYSTEM OPERATION (Cont'd)

WEIGHING

Position the patient on the scale. Press the **ZERO/WEIGH** button. The weight stable indicator "▯" flashes on the display. When the weight is stable, the weight stable indicator remains solid. The display will indicate the patient's weight in either pounds or kilograms; example: "**WT = 12.35 Lb**". The stable weight is auto stored in memory.

NOTE: If there are any accessories (blanket, diaper, etc.), place them on the scale while zeroing the system. This will ensure that the patient's NET weight will be displayed. It is recommended that the system be zeroed prior to each new patient.

RECALLING LAST STABLE WEIGHT

Press to recall last stable weight.

BATTERY REPLACEMENT

STEP 1:   Display will read "**REPLACE BATTERIES**".

STEP 2:   (Figure 5) Turn the scale over and unscrew the two (2) screws from the Battery Compartment Cover.

STEP 3:   Remove and replace ALL six (6) "D" cell batteries. Refer to battery compartment cover label for placement.

STEP 4:   Replace the Battery Compartment Cover and securely tighten screws.

STEP 5:   Press the "**ZERO/WEIGH**" button to confirm display is working.

STEP 6:   Zero the system.

Figure 5: Battery Replacement

THEORY OF OPERATION

SR Instruments patient weighing systems are digital scales. Strain-gauge force cells convert the force of an applied weight into an analog signal. This signal is amplified by an operational amplifier and converted to a digital signal by an analog to digital converter. The digital signal is transferred to a micro-controller where it is filtered, converted to appropriate units and displayed on a liquid crystal display.

Strain-gauge force cells each contain four strain gauges mounted in a full Wheatstone-bridge configuration. These bridges convert the physical movement of the force cell, due to the applied mass on the system, into minute changes in electrical resistance. These changes in resistance produce a voltage difference across the Wheatstone-bridge, which is amplified by the operational amplifier. The amplifier is configured to current sum the output of each cell.

The output of the operational amplifier is digitized by the analog to digital converter. The sigma-delta converter sums a rapid sequence of 0's (0 volts) and 1's (reference voltage) to achieve balance with the input from the amplifier.

The micro-controller averages and filters the digital output of the analog to digital converter, subtracts the value saved during the system zero operation and scales the filtered output, then displays the result on the liquid crystal display. The micro-controller performs a moving-median filter of data for continuous weigh and, for AutoHold, the micro-controller performs checks for signal stability before locking in on the reading. If the data variance is greater than 0.1% in the AutoHold mode, the micro-controller will reset the filter and start a new filtering period.

The micro-controller can be placed in a calibration mode, where the system can be re-calibrated. In the calibration mode, the system slope is calculated from two points (zero and full scale) in the 2-point calibration mode, or the slope and change in slope is calculated from three points (zero, half and full scale) in the 3-point calibration mode.

CALIBRATION

NOTE: Ensure that nothing is in contact with the scale system during this procedure. Remove hands from the system when noting the displayed calibration results.

CHECKING CALIBRATION

STEP 1: Select two (2) known calibrated weights, traceable to NIST.

NOTE: The first weight should be at least 20 pounds (half of the maximum scale capacity). The second weight should be less than half of the first weight. **DO NOT USE** barbells or uncalibrated weights.

STEP 2: Zero the scale by pressing and holding **ZERO / WEIGH** button.

STEP 3: Place the first calibrated weight on the scale. Wait for scale to stabilize; note scale reading. Remove weight.

STEP 4: Place second calibrated weight on scale. Wait for scale to stabilize; note scale reading. Remove weight.

STEP 5: The scale readings for both weights should be within the Calibration Tolerance Table (Figure 6).

CALIBRATION TOLERANCE TABLE		
LOW LIMIT	APPLIED LOAD (LB)	HIGH LIMIT
1.00	1.00	1.00
5.00	5.00	5.01
9.99	10.00	10.01
14.99	15.00	15.02
19.98	20.00	20.02
24.98	25.00	25.03
29.97	30.00	30.03
34.97	35.00	35.04
39.96	40.00	40.04

Figure 6: Calibration Tolerance Table

CALIBRATION (Cont'd)

> ## ⚠ IMPORTANT ⚠
>
> **CALIBRATION CHECK - Qualified service personnel only should perform this procedure. Load cells have no user serviceable components and should not be tampered with for any reason. Re-calibration is generally not required, but should be verified periodically to ensure accuracy. Recommendation for calibration check is at least once every 12 months, or as individual maintenance policy requires.**

> ## ⚠ CAUTION ⚠
>
> **The integrated circuits and semiconductors on the printed circuit boards may be damaged by electrostatic discharge (ESD). Be sure to use proper handling precautions at all times.**

CALIBRATION PROCEDURE

NOTE: Ensure that nothing is in contact with the scale system during this procedure. Remove hands from the system when noting the displayed calibration results.

STEP 1:   Place Scale Base on countertop. Remove the Nylon Screws from the Clear Acrylic Cradle, Scale Base Cover. Set Cover, Screws and Cradle aside.

STEP 2: Put the scale system into the Calibration Mode by switching the calibration switch on the display board (Figure 7), "**CALIBRATION**" will flash on the display.
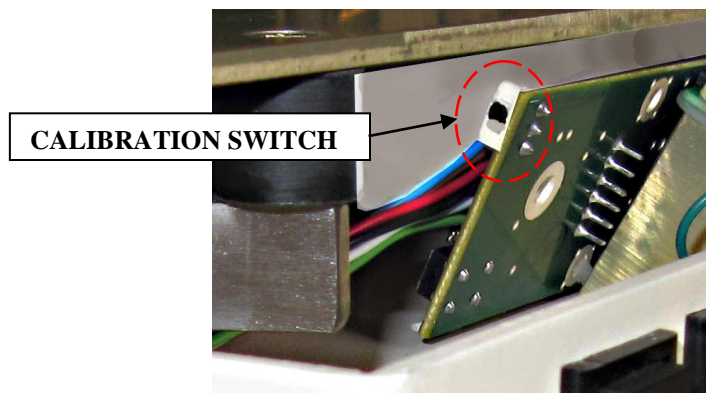

CALIBRATION SWITCH

Figure 7: Calibration Switch Location

CALIBRATION (Cont'd)

STEP 3: Select two (2) known calibrated weights, traceable to NIST.

NOTE: The first weight should be at least 20.00 pounds (half of the maximum scale capacity). The second weight should be less than half of the first weight. **DO NOT USE** barbells or uncalibrated weights.

STEP 4: Press the **MENU** button until "**FULL = 40.00 Lb**" is displayed. Set the **FULL** value of the first selected calibrated weight. Use the **UP** arrow button to select the digit and the **DOWN** arrow button to change digit. Press **ENTER** to save changes.

STEP 5: Press the **MENU** button until "**HALF = 20.00 Lb**" is displayed. Set the **HALF** value of the second selected calibrated weight. Use the **UP** arrow button to select the digit and the **DOWN** arrow button to change the digit. Press **ENTER** to save changes.

STEP 6: Press **MENU** button until "**3 Pt Calibration**" is displayed. Press the **UP** arrow button.

STEP 7: Zero the scale by removing all weight from the platform. Press the **UP** arrow button.

STEP 8: Display will read "**ADD HALF**". Place the **HALF** weight from Step 5 on platform. Allow weight to stabilize. Press **UP** arrow to save change. Remove weight.

STEP 9: Display will read "**ADD FULL**". Place the **FULL** weight from Step 4 on platform. Allow weight to stabilize. Press **UP** arrow to save change. Remove weight.

STEP 10: Press **ENTER** to save the calibration, or **WEIGH** to exit without saving**.**

STEP 11: Switch the scale system out of the Calibration Mode on the display board (Figure 7).

STEP 12: Place the Scale Base Cover on top of the scale base, then place the Clear Acrylic Cradle on top of both pieces. Align the pre-drilled holes of all three parts. Using the four (4) Nylon Screws, attach the Clear Acrylic Cradle to the scale base.
NOTE: Slightly tighten all four (4) Nylon Screws before securely tightening any one.

CONFIGURING SEND BUTTON

STEP 1: Press the "**MENU**" key until "**DATA OUT = PRINT**" is displayed

STEP 2: Press "**UP**" or "**DOWN**" key to select between "**EHR**" and "**PRINT**"

STEP 3: Press the "**ENTER**" key to save

EHR OUTPUT

Electronic Medical Records (EMR) / Electronic Health Records (EHR) technology is supported by the i-series scales from SR Instruments. The EMR/ EHR software is not included with scale. There are many different EMR/ EHR software available and the connectivity of the scale to the software requires the services of a professional.

A null modem cable is required to communicate with the scale.

Scale output when send button is configured to Electronic Health Records is as follows:
    <esc>R<esc>Wnnn.n<esc>Uuu<esc>E

Where: R is read
        W is weight
        nnn.n is the weight in Lb or kg
        U is units (lb or kg; in or cm)
        uu is LB or KG
        E is end of packet.

TROUBLESHOOTING

SYMPTOM	REASON/CORRECTIVE ACTION
Low readings	Check offset and verify calibration
Only half of display activates	Press the "WEIGH" button
No power	Check that batteries are making contact with each other and the terminals of the battery holder.
For additional information or assistance, telephone the Service Hotline: 1-800-654-6360 or e-mail: sri@srinstruments.com	

WARRANTY

FOUR YEAR LIMITED WARRANTY

Each **SR**Scales® system is manufactured with high quality components. SR Instruments, Inc. warrants that all new equipment will be free from defects in material or workmanship, under normal use and service, for a period of four (4) years from the date of purchase by the original purchaser. Normal wear and tear, injury by natural forces, user neglect, and purposeful destruction are not covered by this warranty. Warranty service must be performed by the factory or an authorized repair station. Service provided on equipment returned to the factory or authorized repair station includes labor to replace defective parts. Goods returned must be shipped with transportation and/or broker charges prepaid. SR Instruments, Inc.'s obligation is limited to replacement of parts that have been so returned and are disclosed to SR Instruments, Inc.'s satisfaction to be defective. The provisions of this warranty clause are in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on SR Instruments, Inc.'s part, and it neither assumes nor authorizes any other person to assume for SR Instruments, Inc. any other liabilities in connection with the sale of said articles. In no event shall SR Instruments, Inc. be liable for any subsequent or special damages. Any misuse, improper installation, or tampering, shall void this warranty.

DAMAGED SHIPMENTS

Title passes to purchaser upon delivery to Transportation Company. Purchaser should file any claims for shortage or damage with the delivery carrier and should refuse any shipment that has obvious external damage.

RETURN POLICY

All products being returned to SR Instruments, Inc. require a Return Goods Authorization number (RGA). To receive an RGA, call our Customer Service at 716-693-5977 ext 103 or toll-free in the USA and Canada at 800-654-6360 ext 103.

When inquiry is made, please supply model and serial numbers, purchase order and reason for return.

Generally, deleted, damaged, and outdated merchandise will not be accepted for credit. A minimum restocking charge of 15% will be assessed on return of current merchandise unless scale is returned because of SR error.

No returns will be accepted after 30 days.

All returns are to be shipped FREIGHT PREPAID to: SR Instruments, Inc., 600 Young Street, Tonawanda, NY 14150.

RESTOCKING FEE

- **15% fee** will be assessed on return of current merchandise

- **No fees** will be charged if the scale is returned because of an error on the part of SR Instruments, Inc.

- **No returns** accepted after 30 days**.**

NOTES

SRScales®
By SR®Instruments, Inc.

Precision & Technology in
Perfect Balance ™