SRScales™
by SR™ Instruments, Inc.

Model SR245/SR245SO

Portable Infant / Adult Scale

Operating and Service Manual

Serial Numbers: 3000+

SR Instruments, Inc., 600 Young Street, Tonawanda, NY 14150
Tel: 716-693-5977 Fax: 716-693-5854 URL: www.srscales.com
email: sri@srinstruments.com

TABLE OF CONTENTS

TABLE OF FIGURES

PACKING CHECKLIST – Model SR245
Portable Infant / Adult Scale

√	DESCRIPTION	QUANTITY
	SCALE BASE	1 ea
	INFANT CRADLE	1 ea
	9 VOLT BATTERY	1 ea
	CERTIFICATE OF CALIBRATION	1 ea
	MANUAL	1 ea
	OPTIONAL ITEMS IF ORDERED	
	SOFT-SIDED CARRY CASE	1 ea

PACKING CHECKLIST – Model SR245SO
Portable Scale

√	DESCRIPTION	QUANTITY
	SCALE BASE	1 ea
	9 VOLT BATTERY	1 ea
	CERTIFICATE OF CALIBRATION	1 ea
	MANUAL	1 ea
	OPTIONAL ITEMS IF ORDERED	
	SOFT-SIDED CARRY CASE	1 ea

ASSEMBLY

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

STEP 2: Insert supplied 9-volt battery. See BATTERY REPLACEMENT instructions.

STEP 3: SR245 scale system Infant Cradle slides onto the Scale Base and snaps securely into position.

REPLACEMENT PARTS and ACCESSORIES

Part #	Description
SM4028	REPLACEMENT INFANT CRADLE
SR245SO	SCALE ONLY
MAN245	MANUAL
PP-4022	SOFT-SIDED CARRY CASE

SYSTEM DESCRIPTION and INTENDED USE

SYSTEM DESCRIPTION

The SR245/SR245SO Portable Infant/Adult 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 patient's weight.

The patient's weight is displayed on an LCD screen. With a push of a button, weight data may be viewed in kilograms with a displayed resolution of 0.1 kg for adult or .01 kg for infants.

INTENDED USE

The SR245 Portable Infant/Adult Scale is a unique portable scale system that offers the versatility of being able to weigh infants, toddlers, and adults on one lightweight and weather resistant system. Weighing in itself at a mere three kilograms, this scale is specialized for use in pediatrician or physicians' offices and is also perfect for traveling nurse applications. The optional Soft-Sided Carry Case (Figure 1) protects the scale and facilitates its portability.

Figure 1: Optional Soft-Sided Carry Case

The SR245 Portable Infant/Adult Scale is a preferred means of gathering patient weight data of adults weighing up to 181 kilograms and infants up to 20 kilograms. Load cell technology ensures accurate and repeatable weight readings.

The SR245SO Portable Adult Scale is a unique portable scale system that is lightweight and weather resistant. It weighs a mere two kilograms. This scale is specialized for use in physicians' offices and is also perfect for traveling nurse applications. The optional Soft-Sided Carry Case (Figure 1) protects the scale and facilitates its portability.

The SR245SO Portable Adult Scale is a preferred means of gathering patient weight data of patients weighing up to 181 kilograms. Load cell technology ensures accurate and repeatable weight readings.

Please heed the following warning to avoid injury to the patient or attendant.

⚠ WARNING ⚠

DO NOT EXCEED MAXIMUM WEIGHT LIMIT OF 181 KG

MAINTENANCE and CLEANING

Exercise caution when cleaning the display window as it is made of clear polyester and can be scratched by abrasive cleaners. Mild soap and water is recommended for general cleaning and disinfecting.

WARNING

DO NOT use pressurized water or steam. The scale system contains microprocessor circuitry and strain gauge sensors that may be adversely affected by exposure to such an environment.

STORAGE and TRANSPORTATION

STORAGE

If storing this equipment for periods longer than three (3) months, remove the battery. To maintain proper operation of this instrumentation, 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).

TRANSPORTATION

WARNING

Prolonged exposure to extremes of heat or cold can damage equipment and effect accuracy.

SPECIFICATIONS

MAXIMUM WEIGHT CAPACITY	Infant: 20 kg (44 lb) Adult: 181 kg (400 lb)
DIMENSIONS	Infant Cradle: 55 cm x 32 cm (22" x 12.5") Adult Platform: 31 cm x 36 cm (12" x 14")
DISPLAY TYPE	LCD
DISPLAY RESOLUTION	Infant: 0.01 kg Adult: 0.1 kg
ACCURACY	0.2% +/- 1 digit of displayed resolution (over 0.2 kg)
AUTO ZERO	One button operation
SR245 SCALE WEIGHT	3 kg (7 lb)
SR245SO SCALE WEIGHT	2 kg (4 lb)
AUTO POWER DOWN	After 1 minute
AVERAGING	Automatic digital filter
POWER SUPPLY	9-volt battery
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.
STORAGE	Storage 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

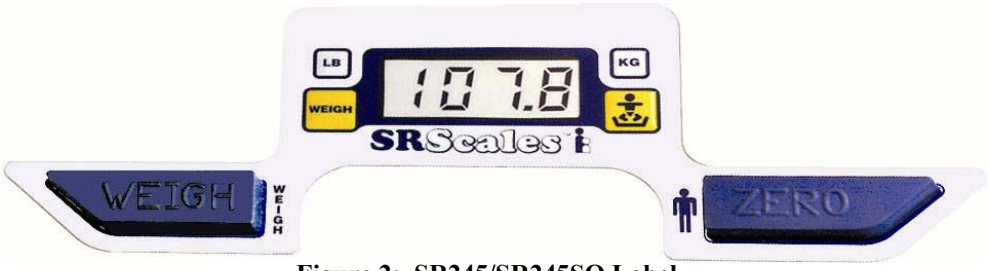

Figure 2: SR245/SR245SO Label

SYSTEM ZERO

ZERO – ADULT MODE

To zero for adult weigh: Press the large blue "**ZERO**" button. Display will read "**0.0**". When patient is placed onto the scale, net weight will be displayed.

ZERO – BABY MODE

To zero for infant weigh: Slide and snap the cradle into place on the scale. Place any blankets, pads, or disposable liners being used for infant's comfort on the cradle before zeroing. Press the yellow "**BABY MODE**" button to zero the scale system. When baby is placed on the scale, the infant's net weight data will be displayed.

Note: When system is zeroed, memory is emptied.

WEIGH – ADULT MODE

The large blue "**WEIGH**" button wakes up the display from AUTO POWER DOWN status. Current weight data will be displayed.

WEIGH – BABY MODE

Press to obtain infant weight when baby weighs less than 2.27 kilograms. Also wakes up display from AUTO POWER DOWN status.

KG MODE BUTTON

Pressing the "**KG**" button after the weigh process is finished and display has shut down re-activates display and recalls last weight reading. This must be done before system is zeroed.

Button is inactive.

BASIC SYSTEM OPERATION

ADULT WEIGH

STEP 1: Remove infant cradle from base. Place scale on hard smooth floor surface to ensure accurate data.

STEP 2: Press the large blue "**ZERO**" button and wait for the display to indicate "**0.0**".

STEP 3: Position patient on the platform. Weight will be displayed in a few seconds. If the display shuts down before weight data can be noted, press the large blue "**WEIGH**" button to wake the system and display weight data.

STEP 4: To recall last weight data, press the "**KG**" button. **Note**: This must be done before "**ZERO**" button is pressed.

BABY WEIGH – OPTION 1

STEP 1: If necessary, attach the baby cradle by sliding and snapping it into place.

STEP 2: Place the platform on a stable counter or table-top.

STEP 3: Follow the directions for **ZERO-BABY MODE** in the previous section.

STEP 4: When the display indicates "**0.0**", you may place the baby on the scale. Press the yellow "**WEIGH**" button to wake up the system and display the weight data. If the baby's weight is above 2.27 kilograms, the weight will be displayed automatically. Press the yellow "**WEIGH**" button to display weight if infant weighs less than 2.27 kilograms.

BABY WEIGH – OPTION 2

STEP 1: Remove infant cradle from base. Place scale on hard smooth floor surface to ensure accurate data.

STEP 2: Have an adult stand on the scale holding any accessories that will be necessary for the baby's comfort (blanket, diaper, etc.). Press the yellow "**BABY ZERO**" button. This will zero the scale system and TARE the adult's and additional accessories weight.

STEP 3: Place the baby in the adult's arms. The weight displayed will be the infant's net weight. If the display shuts down before weight data can be noted, press the yellow "**WEIGH**" button to wake the system and display weight data.

STEP 4: To recall last weight data, press the "**KG**" button. **Note**: This must be done before "**ZERO**" button is pressed.

BATTERY REPLACEMENT

REPLACING BATTERIES

The display will read "**LoB**" when battery is low and needs to be changed.

STEP 1: (Figure 3) Turn the scale over and locate the battery cover. Unscrew the two (2) screws.

STEP 2: Replace with a 9-volt battery.

STEP 3: Press the "**WEIGH**" button to confirm display is working.

STEP 4: Replace cover and securely tighten screws.

STEP 5: Zero the system.

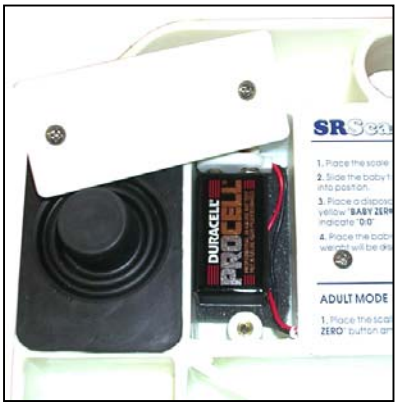

Figure 3: SR245/SR245SO Battery Compartment

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 Whetstone-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 Whetstone-bridge, which is amplified by the operational amplifier. The amplifier is configured to current sum the output of each cell, with potentiometers serving to adjust the sensitivity (voltage out per unit of weight applied) of each bridge. The offset potentiometer produces a small current, which nulls the output of the amplifier for an unloaded system.

The output of the operational amplifier is digitized by the analog to digital converter. The converter integrates the analog signal onto the integrating capacitor over a short interval. The integrating capacitor is then discharged at a rate proportional to the reference voltage applied to the converter. The residual voltage on the integrating capacitor is then multiplied by a factor and again discharged at a rate proportional to the reference voltage. The residual voltage from this discharge is again multiplied by a factor and again discharged. The time taken to discharge the capacitor is proportional to the voltage from the operational amplifier, which is proportional to the applied load on the force cells. The time is stored as a binary number in the analog to digital converter and is transferred to the micro-controller when the conversion is complete.

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 rolling average of data for continuous weigh and averages the data before locking in on the reading.

CALIBRATION

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. The recommendation for calibration check is at least once every 12 months, or as individual maintenance policy requires.

TROUBLESHOOTING

SYMPTOM	REASON/CORRECTIVE ACTION
System fails to perform correctly	Check battery Make sure patient is standing on two feet, is clear of any obstacles and that nothing, including the caregiver, is touching the patient or scale. Set scale on smooth, hard floor surface.
Scale reads 999.9	Return to factory for repair.
For additional information or assistance, phone our Service Hotline: 1-800-654-6360 or e-mail: sri@srinstruments.com	

WARRANTY

TWO YEAR LIMITED WARRANTY

Each SRScales™ system is manufactured with high quality components. SR Instruments, Inc. warrants that all new equipment purchased will be free from defects in material or workmanship, under normal use and service, for a period of two (2) 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. The factory or an authorized repair station must perform warranty service. 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 part, which has been so returned and is disclosed to SR Instruments, Inc.'s satisfaction to be defective. The provision of this warranty clause is in lieu of all other warranties, expressed or implied, and of all other obligations or 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. Any claims for shortage or damage should be filed with the delivery carrier by purchaser.

RETURN POLICY

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

When inquiry is made, please supply model and serial numbers, purchase order, if the scale was bought on contract, 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.

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

RESTOCKING FEE

- **15% fee** for any scale that has been opened and used
- **10% fee** for any scale returned that has been ordered incorrectly or refused delivery with no model change
- **5% fee** if an error in ordering has been made and a different model exchanged
- **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 60 days**.**

SRScales™
By SR™Instruments, Inc.

Precision & Technology in Perfect Balance™

