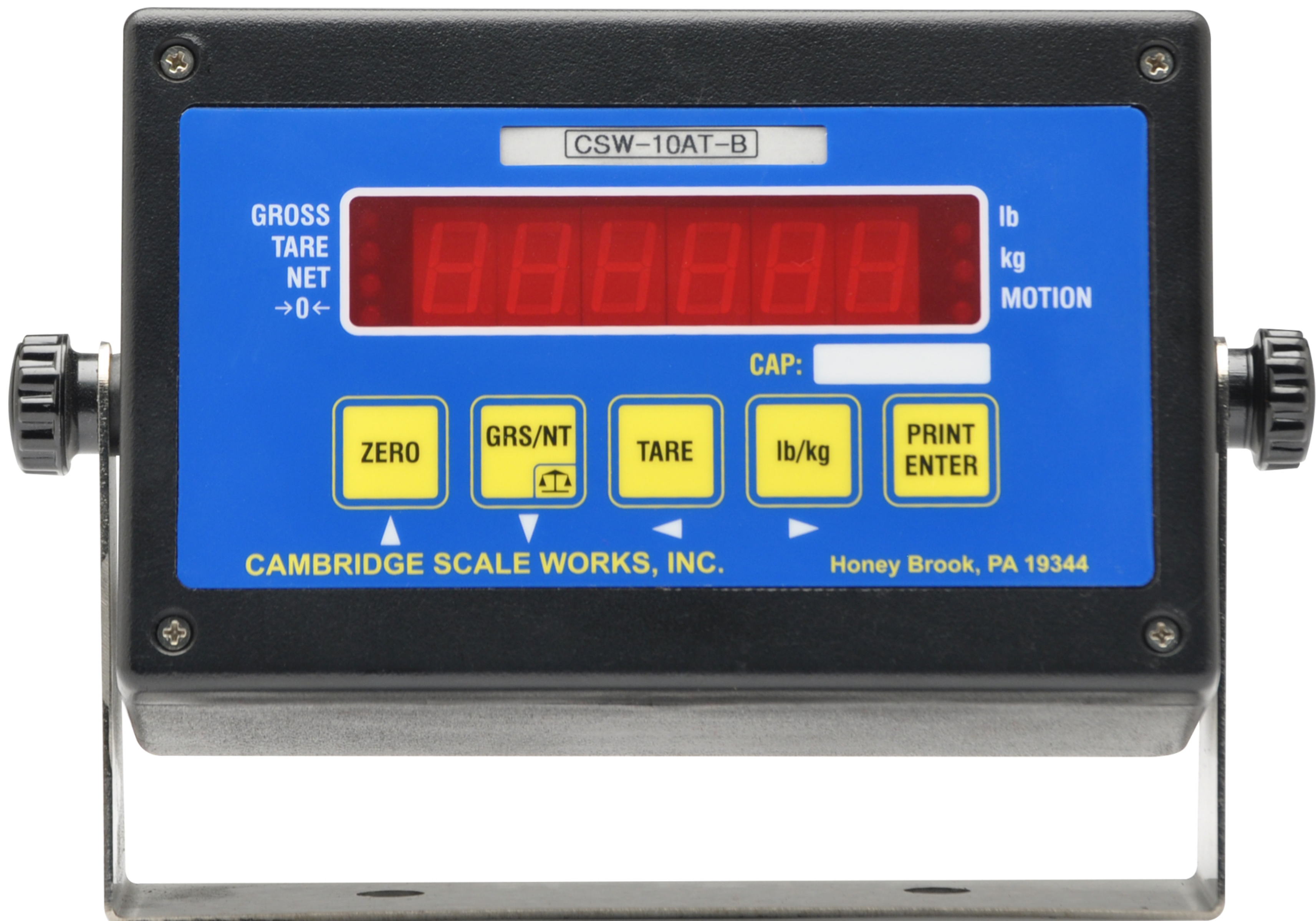


C A M B R I D G E

SCALE WORKS INCORPORATED

MODEL: CSW-10AT-B DIGITAL WEIGHT INDICATOR

INSTALLATION, SET-UP & OPERATION



COC # 06-070A1



MEASUREMENT CANADA
AM-5778C



Made in USA

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MANUAL P/N 5999-1011-02 (11/12)

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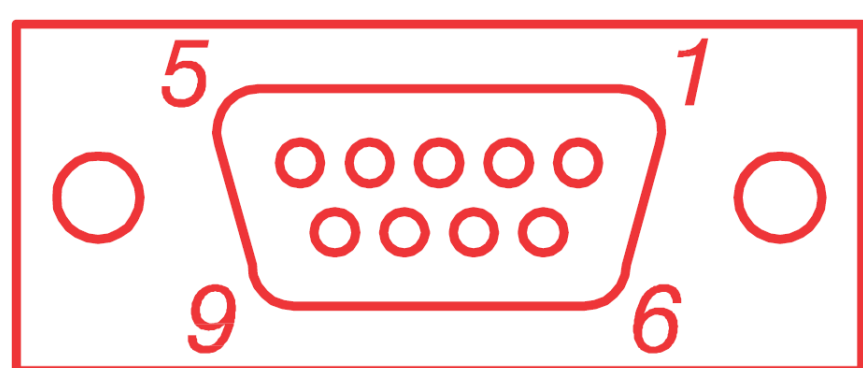
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Meter Connections

To connect power to the **CSW-10AT-B** Meter. First make sure the On/Off Switch on the Rear of the meter is in the **OFF** position. Insert the battery in the battery holder, with the contacts pointing down, then slide down to lock into position.

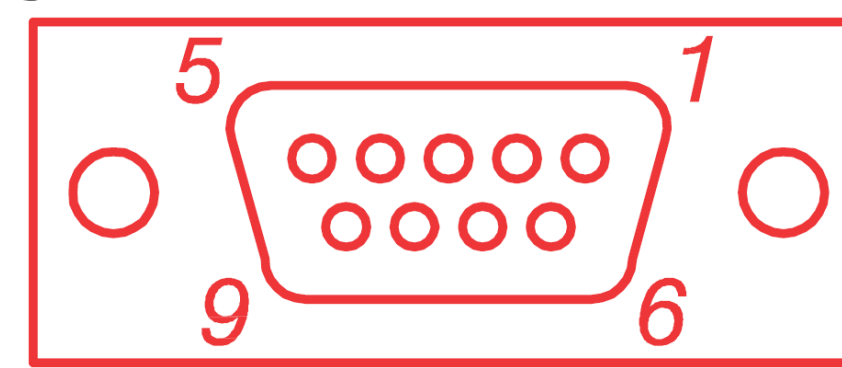


Communications port



PIN #	DESCRIPTION
3	----- TXD
4	----- +5V
5	----- SGND

Signal connection



PIN #	DESCRIPTION	
1	----- +EXC	
2	----- -SIG	
5	----- SHIELD	LOAD CELL
6	----- -EXC	
7	----- +SIG	

1.0 OPERATION

1.1 Key Functions:

- ZERO** Brings the scale to a zero balance reading.
If the Zero key is pressed and held for 5 seconds the Calibration zero value will be displayed.
- GRS/NET** Toggles the display between Gross weight and Net weight.
This key is also used to enter setup mode. Begin by pressing and holding this key until the Parameter (**Pxxx**) Event counter is displayed, then release. Immediately after **COdE** is displayed, enter in sequence (within 5 seconds) **Tare**, **lb/kg**, **GRS/NET**, and **Print/Enter**, the display will indicate **ScALE**.
- P xxx and Cxxx are event counters that will increment each time one or more changes are made to the scale or Calibration Parameters.
- TARE** Enters the Gross weight value into the Tare display and switches to the Net display mode.
If the Tare key is pressed and held for 5 seconds the current Tare value will be displayed.
- lb/kg** Toggles the display between pounds and kilograms.
- PRINT** Outputs the displayed weight data to the RS-232 Port.

Note: All keys are disabled when the scale is in motion or overload.

1.2 Error Messages

- ScnEg** When the weight is more than 10 divisions negative from the zero calibration point.
- oLD** The Scale is in an overload condition.
- bAt LO** Will flash when the Battery voltage falls to 10.8VDC and will be displayed continuously when the voltage falls to 10.2VDC.
- Err d** More than 5,000 scale divisions have been selected in **S1** Ntep or **S1** Angle mode.
More than 20,000 scale divisions have been selected in **S1** NO mode.

1.3 Charging The Battery

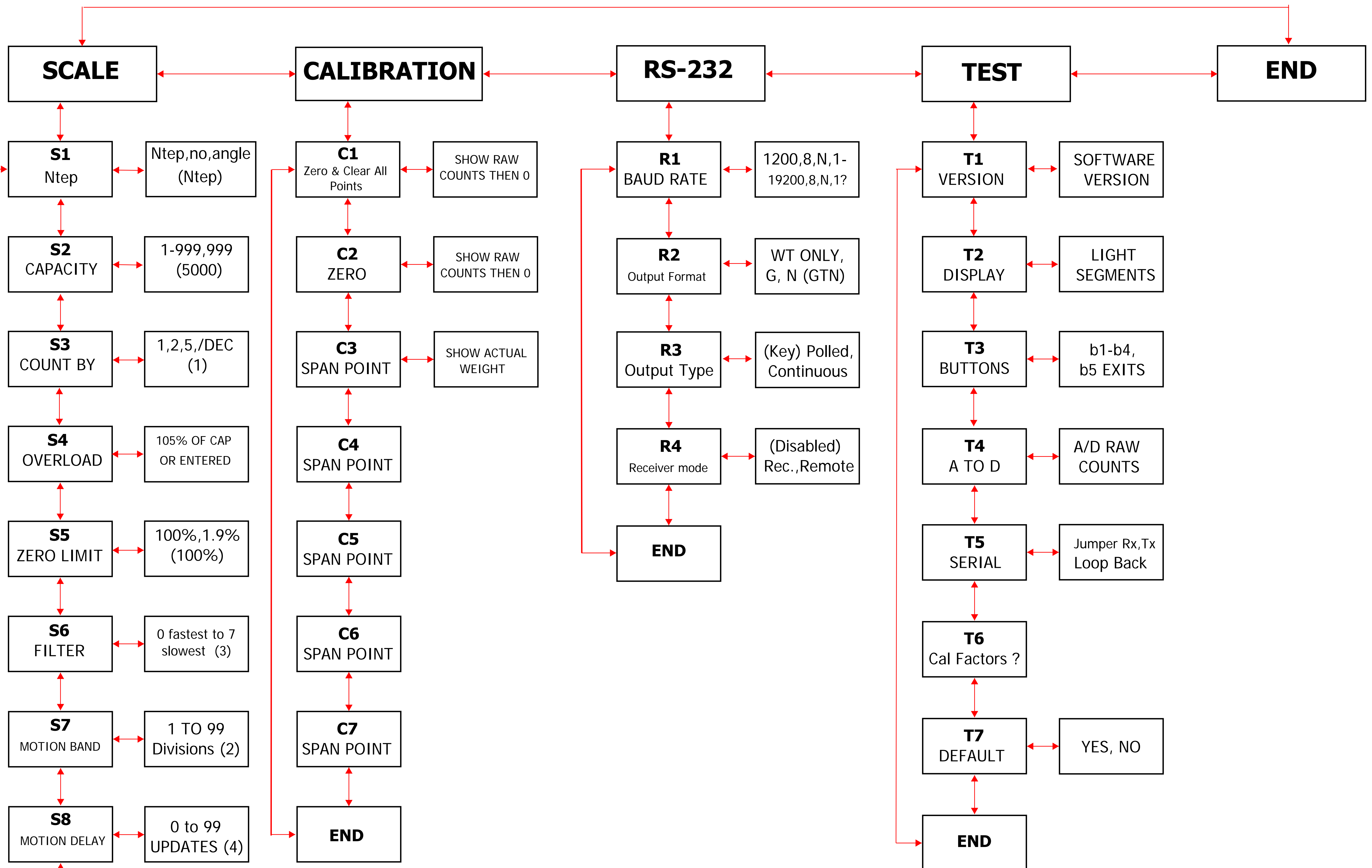
When the battery voltage falls to 6.5VDC, as described previously, ***bAt LO*** will be displayed continuously. The battery needs to be charged at this time.

With the on/off switch in the OFF position, connect one end of the power adapter to a 110VAC outlet. Next connect the other end of the adapter to the power jack on the rear of the meter. The charge indicating led will be orange while the battery is being charged and turned off when the battery is fully charged. Turn the on/off switch to the ON position and the meter will be fully operational as the battery is being charged.

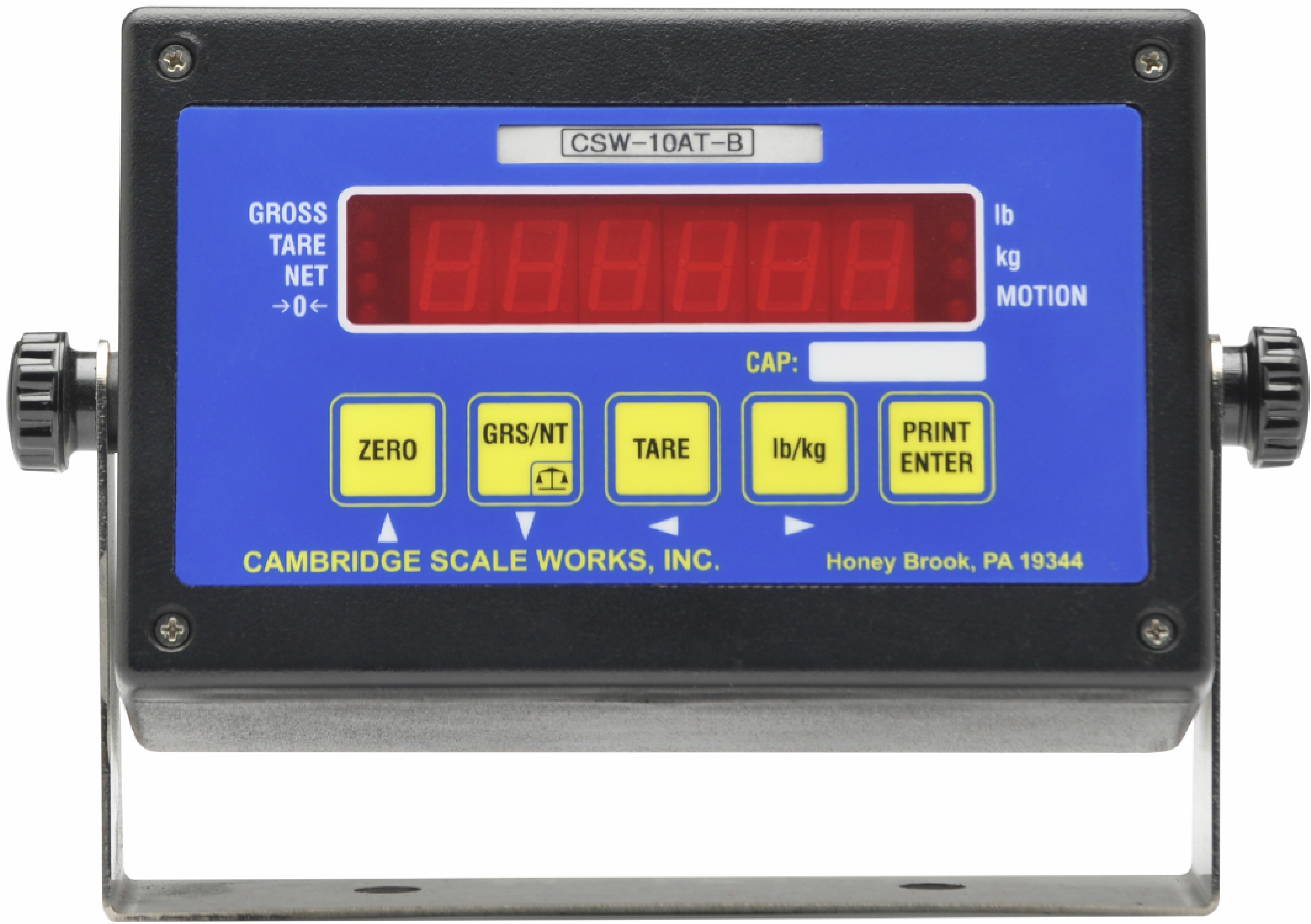
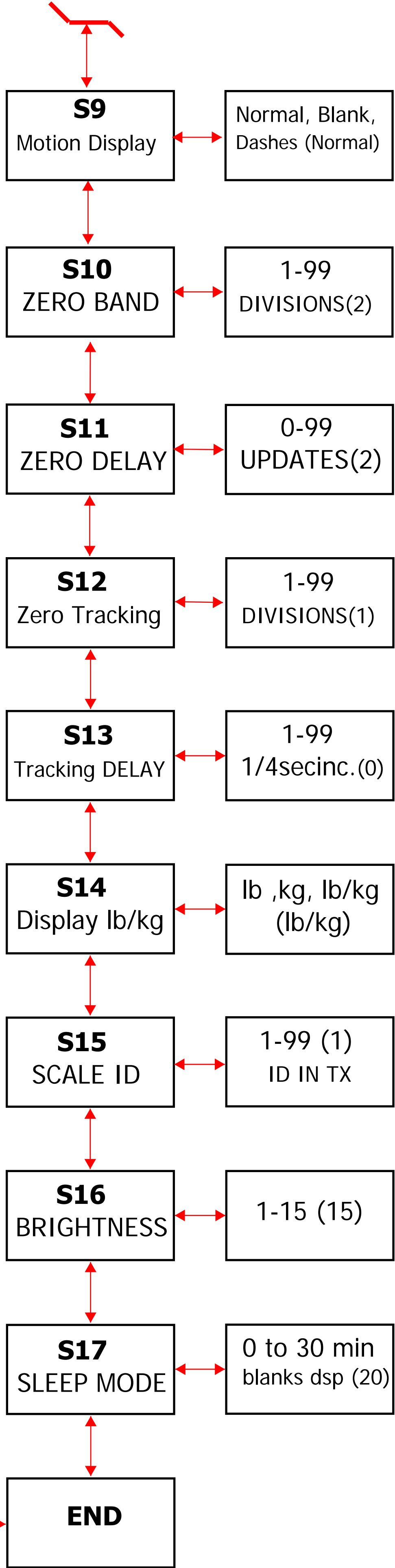


2.0 SCALE PROCEDURE

2.1 SOFTWARE NAVIGATION FLOWCHART



2.1 SOFTWARE NAVIGATION FLOWCHART (CONTINUED)



2.2 NAVIGATION KEYS

During setup you will be required to make numeric entries. (Ex: Capacity, Zero Band, etc...) The following table outlines the keys used to perform these entries along with their function.

- ZERO-----KEY IS USED TO NAVIGATE UP.
- GRS/NET---KEY IS USED TO NAVIGATE DOWN.
- TARE-----KEY IS USED TO NAVIGATE LEFT.
- lb/kg-----KEY IS USED TO NAVIGATE RIGHT.
- PRINT-----KEY IS USED TO ENTER DATA AND RETURNS.

2.3 Scale Menu Definitions:

- S1** NTEP (Ntep): Maximum divisions limited to 5,000.
Scale negative message is displayed if the gross weight goes more than 10 divisions below zero. If a capacity and count by of more than 5,000 divisions is selected **ERR d** will be displayed and you will be returned to **S2** to select a new capacity or count by.
Angle: Enables angle correction for Legal For Trade lift truck scales.
No: 20,000 maximum division limits and no scale negative tests.
- S2** Capacity 1 to 950,000 pounds (5,000).
- S3** Count By .001, .01, .1, (1), 10, 100,
.002, .02, .2, 2, 20, 200
.005, .05, .5, 5, 50, 500
- S4** Over load (105%) of scale capacity or user entered value.
- S5** Zero Limit (100%) or 1.9% of scale capacity.
- S6** Filter 0 - 7 (3) 0 is the fastest response or least filtering and 7 is the slowest response or most filtering
- S7** Motion Band 1 to 99 updates (2) the weight display must be stable within the selected number of updates for the motion indicator to be turned off.
- S8** Motion Delay 0 to 99 updates (4) the weight display must be within the motion band for the selected number of updates for the motion indicator to be turned off.
- S9** Motion (Normal): When the scale is in motion the motion LED will Display light.
Blank: When the scale is in motion the display will be blanked out.
Dashes: When the scale is in motion the display will show all Dashes.
- S10** Zero Band 1 to 99 divisions (2) the weight display must return to Zero within the selected number of divisions to to be considered Zero.

2.3 Scale Menu Definitions Continued:

- S11** Zero Delay 0 to 99 updates (4) the weight display must be within the zero band for the selected number of updates to be considered Zero.
- S12** Zero Tracking 1 to 99 divisions (2) the number of graduations allowed to be Automatically Zeroed off.
- S13** Tracking Delay 0 to 99 [15second increments] (10) the amount of time the display must be within the allowed graduations before it will be automatically Zeroed.
- S14** Lb/Kg (Lb/KG): Allows the indicator to be switched between pounds and kilograms by pressing the lb/kg key.
LB: This sets the display to Pounds only.
Kg: This sets the display to Kilograms only.
- S15** Scale ID (1) to 99 scale ID used in RF link output.
- S16** Brightness 0 to (15) adjusts the LED display intensity 15 is the brightest.
- S17** Sleep Mode 0 to 30 minutes (20). The display will turn off after the the set amount of time elapses with no scale activity.
- END** Exits back to the main Menu.

() indicates Factory Set defaults.

2.4 Numeric Entries

When entering a numeric value, First press and release the **lb/kg** key to move right into the menu where the numeric value will be entered. Then press and release the **Zero** key, the first digit in the value will flash. Press and release the **ZERO** and **GRS/NET** keys to increase or decrease the digits value. Press and release the **Tare** key to move to the next digit. Repeat the steps above to adjust the digits value. Repeat all steps until the numeric value is correct, then press and release the **PRINT** key to enter the data. The display will return to the menu.

2.5 Set Up Parameters

To begin press and hold the **GRS/NET** key until the Parameter (**Pxxx**) Event counter is displayed, then release. Immediately after **COdE** is displayed, (within 5 seconds) enter in sequence **TARE**, **lb/kg**, **GRS/NET**, and **Print/Enter**, The display will indicate **ScAlE**.

-Pxxx and Cxxx are event counters that will increment each time one or more changes are made to the Scale or Calibration Parameters.

With the display indicating **ScAlE**, press the **GRS/NET** key to move down. This allows the operator to change any of the scale Parameters **S1** thru **S17**. For example, press the **GRS/NET** key to move down until **S2** is displayed, **S2** is used to set the Capacity of the Scale. Press the **lb/kg** key to move right in the **S2** Parameter. The current capacity will be displayed. Press the **ZERO** key, the first digit will flash. Enter the capacity using the steps described in section 1.3. When the capacity is correct, press the **Print** key to enter the value. The display will return to **S2**.

Entering the Count By. Press the **GRS/NET** to move down, **S3** will be displayed. Press the **lb/kg** key to move right into this parameter. The current "Count by" will be displayed. Press the **ZERO** and **GRS/NET** keys to adjust the divisions. Press the **TARE** and **lb/kg** keys to adjust the decimal point. Press the **PRINT** key when finished, to enter the data. The display will return to **S3**. Exit Set up Mode by pressing the **TARE** Key, **End** will be displayed, then press **Print/Enter**.

3.0 CALIBRATION PROCEDURES

3.1 Calibration Menu Definitions:

- C1 Zero All** Raw counts, (pitch and roll if in angle mode) will be displayed. When ZERO is pressed an analog Zero is done and all calibration span points will be cleared. If in angle mode the pitch and roll offsets will also be zeroed.
- C2 Zero** Zeroed Raw counts, (pitch and roll if in angle mode will be displayed). When ZERO is pressed an analog zero is done and all calibration span points will NOT be cleared. If in angle mode the pitch and roll offsets will also be zeroed.
- C3 Span Point** The last Calibration weight will be displayed then the actual weight on the scale will be displayed.
If you do not wish to change the span point, press the TARE key to exit without making any changes.
If the displayed weight does not match the known test weight, press the ZERO key to enter the correct weight. Use the steps described in section 2.4 for numeric entry. When the weight is correct press the Print key to enter the new value.
- C4 to C7 Span points** C4 to C7 are for linearity correction, they can be used in order and in any quantity or not at all if no correction is necessary. You may also return to C4 to C7 later and add a new correction point without affecting any original calibration points. The last calibration weight will be displayed then the actual weight on the scale will be displayed. If no calibration weight has been entered at this span point *"notset"* will be displayed, then the actual weight on the scale is displayed. If the displayed weight does not match the known test weight, follow the steps described for C3 Span point on adjusting the weight and entering the value.
- END** Exits back to the main Menu.

3.2 Calibration

Press and hold the **GRS/NET** key, as described previously in section 2.5. **ScAlE** will be displayed. Press the **lb/kg** key to move right, **CALib** will be displayed. Press the **GRS/NET** key to move down, **C1** will be displayed. Press the **lb/kg** key to move right, the Raw counts will be displayed. With no weight on the scale and the scale level, press the **ZERO** button, “0” will be displayed. Press the **Print/Enter** key to enter the data. “0” is now entered and the display returns to **C1**.

Note: With the scale completely level use C1 or C2 to zero. There is no need to use both C1 and C2.

Press **GRS/NET** key to move down, **C3** will be displayed. Press the **lb/kg** key to move to the right, the last calibrated weight will flash then the current weight on the scale is displayed. Place a known test weight on the scale with the forks level. Press the **ZERO** key, the first digit of the weight will flash. Use the **ZERO** and **GRS/NET** keys to increase or decrease the digits value. Press the **TARE** key to move left, the next digit will flash. Repeat the steps until the correct weight is entered. Press the **PRINT** key to record the data. The display will return to **C3**.

Press the **GRS/NET** key until End is displayed, then press **PRINT**. Calibration is now complete.

3.3 Linearity Correction

If Linearity Correction is needed, Press the **GRS/NET** key (from the calibration menu) to move down to **C4**. Press the **lb/kg** key to move right, the last calibrated weight will flash or “**notset**” will flash if this point has not been previously set. Next the current weight on the scale will be displayed. Place a known test weight on the scale with the forks level. Press the **ZERO** Key for the first digit of the displayed weight to flash. Enter the weight as described in section 1.4, then press the **PRINT** key to record the data. Continue these steps for **C5**, **C6** and **C7**.

Linearity Correction points (**C4-C7**) can be used in any order and in any quantity or not at all if no correction is necessary. After calibration is complete you may also return to these correction points and make changes to its value without affecting any of the original calibration points.

4.1 Communications Menu Definitions Continued:

R4 Receiver	0 - Disabled - normal scale mode
	1 - Standard Receiver. Receives R3.3 RF link output string displaying data as it appears on the scale display. All keys are disabled except the PRINT key.
	2 - Remote control Receives R3.3 RF link output string displaying data as it appears on the scale display and allows full control of all scale meter functions.
End	Exits back to main Menu

() indicates Factory Default settings.

5.0 TESTING PROCEDURES

5.1 Testing Menu Definitions:

T1 Version	Displays Software Version.
T2 Display	Lights all display segments and indicating LED s
T3 Buttons	Press the Zero key, b1 will be displayed. Press the GRS/NET key, b2 will be displayed. Press the Tare key, b3 will be displayed. Press the lb/kg key, b4 will be displayed. Pressing the print key will exit back to the menu T3.
T4 A to D	Displays Raw counts where a 1mV/V signal from the scale will display 25,000 counts. When in angle mode Down GRS/NET will cycle Pitch, Roll and Raw counts.
T5 Serial	Serial communications can be verified by connecting pins 2 and 3 on the serial port. A single character will be echoed and pass or fail will be displayed.
T6 Setup data	Setup data will be sent out on the printer port.
T7 Default	Resets the meter back to factory defaults clearing all calibration and setup data. "r you sure?" will be displayed then press the Tare key to exit without Defaulting, or press the Print key to reset the meter to factory default.
END	Exits back to the main Menu.

6.0 WARRANTY

CAMBRIDGE warrants the **CSW-10AT-B** to be free of defects in workmanship and/or materials for 12 months from the date of shipment. This warranty of workmanship and/or materials is valid, if in the opinion of **CAMBRIDGE**, the equipment has not been mechanically, environmentally, or electrically abused.

This warranty is limited, at the option of **CAMBRIDGE**, to repair, replace or an appropriate credit adjustment not to exceed the original equipment sale price paid to **CAMBRIDGE**. **CAMBRIDGE** assumes no liability in connection with the sales of its products beyond that stated above.

Warranty replacement parts and/or repair services are performed at the factory in Cumberland, Maryland or by an authorized Service Group approved by **CAMBRIDGE**.

Warranty does not include travel expense if a factory technician is requested to perform repairs at a location other than the factory.

It's the user's responsibility to follow the proper set-up, calibration and operating procedures of the **CSW-10AT-B** as described in this manual. If the operator has difficulty using their **CSW-10AT-B** scale properly, please contact **CAMBRIDGE** at 1-301-724-4082. Any of our technicians will be happy to work with the user via telephone.

Thank You!

7.0 Assistance

If at any time you require assistance with your Model:
CSW-10AT-B Meter please contact us at:

CAMBRIDGE SCALE WORKS, INC.

115 West Mary Street
Cumberland, MD 21502

Phone: (301) 724-4082

Fax: (301) 724-4964