Cardinal®

Cardinal Scale Manufacturing Co.

205
WEIGHT INDICATOR
Installation and Technical Manual

CAPACITY

LO BAT

STORM

888 **205**

In
g
lb
oz
kg
t

ZERO ▶◀ NET GROSS TARE

REVIEW — ENTER — TEST

ON I / OFF O   ZERO   TARE   NET/GROSS   UNITS   ✳   PRINT
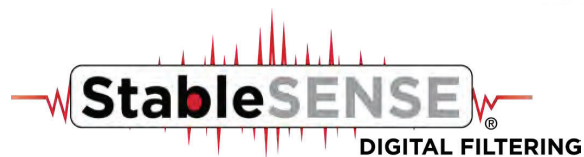
Cardinal®
www.cardinalscale.com

MODEL 205 WEIGHT INDICATOR

StableSENSE®
DIGITAL FILTERING

INTRODUCTION

Thank you for selecting and purchasing the Cardinal Model 205 Weight Indicator. The Model 205 was built with quality and reliability and incorporates the latest in digital technology and innovative features for the weighing industry. Configuration and upgrades can easily be performed in the field, while still maintaining the rigid control the most demanding installations require. This flexibility ensures the Model 205 will be able to meet your weight indicating needs for years to come.

The purpose of this manual is to provide you with a guide to the installation, setup, and operation of your new Model 205 Weight Indicator. Please read it thoroughly before attempting to install your weight transmitter and keep it handy for future reference.

COPYRIGHT

DISCLAIMER

SERIAL NUMBER _____

DATE OF PURCHASE _____

PURCHASED FROM _____

_____

_____

RETAIN THIS INFORMATION FOR FUTURE USE

PRECAUTIONS

Before using this indicator, read this manual and pay special attention to all "NOTIFICATION" symbols:

IMPORTANT   ELECTRICAL WARNING   STATIC SENSITVE

FCC COMPLIANCE STATEMENT

This equipment generates uses and can radiate radio frequency and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user will be responsible to take whatever measures necessary to correct the interference.

You may find the booklet "How to Identify and Resolve Radio-TV Interference Problems" prepared by the Federal Communications Commission helpful. It is available from the U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 001-000-00315-4.

PROPER DISPOSAL

When this device reaches the end of its useful life, it must be properly disposed of. It must not be disposed of as unsorted municipal waste. Within the European Union, this device should be returned to the distributor from where it was purchased for proper disposal. This is in accordance with EU Directive 2002/96/EC. Within North America, the device should be disposed of in accordance with the local laws regarding the disposal of waste electrical and electronic equipment.

It is everyone's responsibility to help maintain the environment and to reduce the effects of hazardous substances contained in electrical and electronic equipment on human health. Please do your part by making certain that this device is properly disposed of. The symbol shown to the right indicates that this device must not be disposed of in unsorted municipal waste programs.

CAUTION

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION: RISQUE D'EXPLOSION SI LA BATTERIES EST REMPLACE'E PAR UN TYPE INCORRECT. REJETEZ LES BATTERIES UTILISE'ES SELON LES INSTRUCTIONS.

TABLE OF CONTENTS

SPECIFICATIONS

Power Requirements:	100 to 240 VAC (50/60 Hz) at 0.4A Max.
Enclosure Type:	Stainless Steel wall or desk-mount
Enclosure Size:	9 3/16" W x 7 1/2" H x 3 1/8" D
	(233 mm W x 191 mm H x 79 mm D)
Weight:	8.2 lb (3.7 kg)
Operating Environment:	Compensated Temperature Range: 14º to 104º F (-10º to +40º C)
	Operated Temperature Range: -10º to 122º F (-23º to +50º C)
	Humidity: 0 to 90% non-condensing
Display:	Six-digit, seven-segment, 0.6" (15 mm) high LED
Transducer Excitation:	9.4 VDC
Signal Input Range:	1.0 mV min. to 31 mV max. (with dead load boost)
Number of Load Cells:	8 each, 350-ohm load cells
Load Cell Cable Length:	1,500 feet maximum (requires the use of sense lines). Consult the factory regarding other requirements.
	30 feet maximum without sense lines
Division Value:	Commercial: 1, 2, or 5 x 10, 1, 0.1, 0.01, 0.001
	Non-commercial: 1 to 99 x 10, 1, 0.1, 0.01, 0.001.

Sensitivity:

NON-COMMERCIAL	0.15 uV/e
NTEP	0.3uV/e (Class III/IIIL)
CANADA	0.3uV/e (Class III/IIIHD)
OIML	0.5 uV/e (Class III)

Scale Divisions:

NON-COMMERCIAL	100 to 240,000
NTEP	500 to 10,000 (Class III/IIIL)
CANADA	500 to 10,000 (Class III/IIIHD)
OIML	500 to 10,000 (Class III)

Internal Resolution:	1 part in 16,777,216
Tare Capacity:	Scale Capacity
Sample Rate:	1 to 100 samples per second, selectable
Auto Zero Range:	0.5 or 1 through 9 divisions
Weighing Units:	Tons, Pounds, Pounds-Ounces, Ounces, Metric Tons, Kilograms, and Grams
Keypad:	Color-coded Membrane type, 7 keys

Standard I/O:	4 ea Serial I/O Ports configured as:
	    4 ea bi-directional RS-232 ports
	    1 ea 20mA output-only ports (uses one of the four RS-232 ports)
	    1 ea bi-directional 20mA port (uses one of the four RS-232 ports)
	    1 ea USB port (uses one of the four RS-232 ports)

SPECIFICATIONS, CONT.

Standard Features:

- Push button tare function
- Gross, tare, net conversion
- Selectable key lockout
- Hi-Resolution mode
- StableSENSE® [1] adjustable digital filtering
- Gross and Net accumulators
- Four serial ports
- Eight (8) remote input lines for Zero, Tare, Gross, Units, Start, Stop, and Print
  (1000 feet maximum)
- Programmable print format using Visual Print or nControl (2 Visual Tickets available)
- SMA level 2 compliant serial communications
  (For more information see http://www.scalemanufacturers.org)
- Field re-programmable via PC interconnection
- Test feature (performs display and internal tests)
- Auto Shutoff and Sleep modes
- USB Interface

Optional Features:

Analog Output*, Allen-Bradley Interface*, 10/100 Mbps Ethernet Adapter*, Additional Serial Port*, USB-A Option Card*, Internal Relay Box*, External Relay Box*, Special Filtering, and Column Mounting

*This feature requires additional hardware and includes additional documentation.

PRECAUTIONS

Static Electricity

CAUTION! This device contains static-sensitive circuit cards and components. Improper handling of these devices or printed circuit cards can result in damage to or destruction of the component or card. Such actual and/or consequential damage **IS NOT** covered under the warranty and is the responsibility of the device owner. Electronic components must be handled only by qualified electronic technicians who follow the guidelines listed below.

WARNING! ALWAYS use a properly grounded wrist strap when handling, removing, or installing electronic circuit cards or components. Make certain that the wrist strap ground lead is securely attached to an adequate ground. If you are uncertain of the quality of the ground, you should consult a licensed electrician.

ALWAYS handle printed circuit card assemblies by the outermost edges. **NEVER** touch the components, component leads, or connectors. **ALWAYS** observe warning labels on static protective bags and packaging and never remove the card or component from the packaging until ready for use. **ALWAYS** store and transport electronic printed circuit cards and components in anti-static protective bags or packaging.

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[1] StableSENSE® is a digital filter utilizing proprietary software algorithms to remove or greatly reduce changes in the weight display resulting from movement on the scale platform. StableSENSE® can be used with livestock and single animal scales to lessen the effects of the animal's movement on the scale or it can be used with vehicle scales to lessen the effects of wind and vehicle vibration. Any application affected by vibration or movement on the scale platform can benefit from using StableSENSE®.

SITE PREPARATION REQUIREMENTS

The Cardinal 205 indicator is a precision weight-measuring instrument. As with any precision instrument, they require an acceptable environment to operate at peak performance and reliability. This section is provided to assist you in obtaining such an environment.

Environmental

The Model 205 indicator meets or exceeds all certification requirements within a temperature range of 14 to 104 °F (-10 to +40 °C).

To keep cooling requirements to a minimum, the indicator should be placed out of direct sunlight and to provide adequate air circulation, keep the area around the indicator clear.

Make certain the indicator is not directly in front of a heating or cooling vent. Such a location will subject the indicator to sudden temperature changes, which may result in unstable weight readings.

Ensure that the indicator has good, clean AC power and is properly grounded.

In areas subject to lightning strikes, additional protection to minimize lightning damage, such as surge suppressors, should be installed.

Electrical Power

The 205 indicator has been designed to operate from 100 to 240 VAC at 50/60 Hz. Note that a special order is not required for operation at 230/240 VAC.

WARNING! To avoid electrical hazards and possible damage to the indicator, DO NOT, under any circumstance, cut, remove, alter, or in any way bypass the power cord grounding prong.

- The socket outlet supplying power to the indicator should be on a separate circuit from the distribution panel and dedicated to the exclusive use of the indicator.

- The socket outlet shall be installed near the equipment and shall be easily accessible. Note that the power cord on the 205 serves as the power disconnect.

- The wiring should conform to national and local electrical codes and ordinances and should be approved by the local inspector to assure compliance.

- For outdoor operations, the socket-outlet must provide GFCI (ground fault circuit interrupter) protection.

- On installations requiring 230/240 VAC power, **it is the responsibility of the customer** to have a qualified electrician install the proper power cord plug that conforms to national electrical codes and local codes and ordinances.

SITE PREPARATION REQUIREMENTS, CONT.

Electrical Noise Interference

To prevent electrical noise interference, make certain all other wall outlets for use with air conditioning and heating equipment, lighting, or other equipment with heavily inductive loads, such as welders, motors, and solenoids are on circuits separate from the indicator. Many of these disturbances originate within the building itself and can seriously affect the operation of the indicator. These sources of disturbances must be identified and steps must be taken to prevent possible adverse effects on the indicator. Examples of available alternatives include isolation transformers, power regulators, uninterruptible power supplies, or simple line filters.

Transient Suppression

The following recommendations will help to reduce transients:

- Always use shielded cables to connect signal wires to the weight indicator.

- Secure the cables in the cable clips provided inside the indicator.

- Connect the cable shield (indicator end only) to a ground point inside the indicator. Keep wires that extend beyond the shield as short as possible.

- Do not run load cell or signal cables from the weight indicator alongside or parallel to wiring carrying AC power. If unavoidable, position the load cell and signal cables a minimum of 24" away from all AC wiring.

- Always use arc suppressors across all AC power relay contacts (see recommendations at http://www.paktron.com/pdf/Quencharch_QRL.pdf).

- Use zero voltage switching relays, optically isolated if possible.

RFI Immunity

The operation of sensitive electronic equipment can be adversely affected by RF (Radio Frequency) radio transmissions. Digital weight indicators are one such type of equipment. Radio transmissions come from things like hand-held radio transmitters and cell phones. One symptom of RFI (Radio Frequency Interference) in a digital weight indicator is weight indication instability during radio transmission.

Cardinal digital weight indicators are designed with special grounding and RFI shielding to achieve a high degree of immunity to common RFI. To maximize the digital weight indicator's immunity to radio transmissions, follow these guidelines:

1. ALWAYS use shielded cable for all I/O (Input/Output) connections to the digital weight indicator.

2. NEVER operate any radio transmitter within 2 meters (~6ft.) of the weight indicator.

3. NEVER connect un-terminated serial, digital, or analog I/O cables to the internal printed circuit boards of the digital weight indicator.

4. KEEP the intended external I/O device connected to I/O cables entering the digital weight indicator.

5. ALWAYS connect the shield of the shielded cable to the indicator back panel gland connector or other closest ground terminal inside the indicator.

6. ALWAYS connect the shield of the shielded I/O cable at the indicator end only. Leave the shield unconnected at the I/O device.

INSTALLATION

Before beginning the installation of your Model 205 Weight Indicator, make certain that the indicator has been received in good condition. Carefully remove the indicator from the shipping carton and inspect it for any evidence of damage (such as exterior dents or scratches) that may have taken place during shipment. Keep the carton and packing material for return shipment if it should become necessary. It is the responsibility of the purchaser to file all claims for any damages or loss incurred during transit.

Mounting

NOTE: Should your 205 indicator come already installed on a scale, the following information describing the installation of the indicator does not apply.

The Model 205 Indicator is housed in a Stainless Steel wall or desk-mount enclosure. The gimbal may be mounted on a desktop or other smooth, flat, horizontal surface or may be mounted on a wall. Refer to Figure No. 1 for a layout of wall-mounting bolts.

Figure No. 1

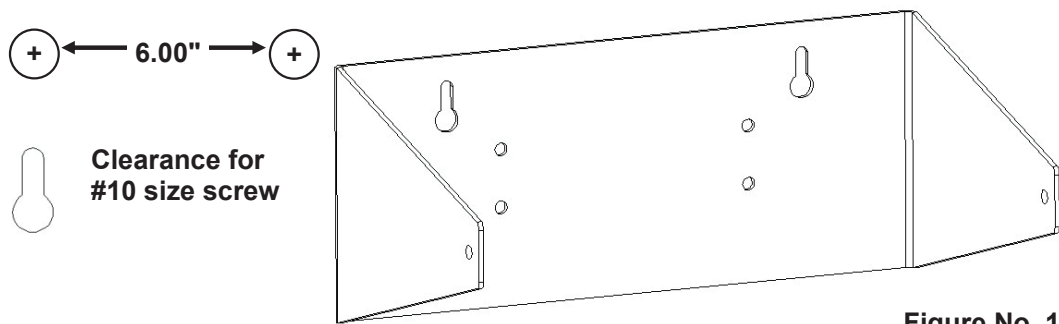If wall-mounted, make certain the mounting surface is strong enough to support the indicator. The mounting location should be where the display is easily viewed while being close enough to provide the operator with easy access to the keypad. Carefully lay out the mounting hole locations, then drill and install the anchor bolts. Attach the gimbal to the wall and securely tighten the retaining bolts.
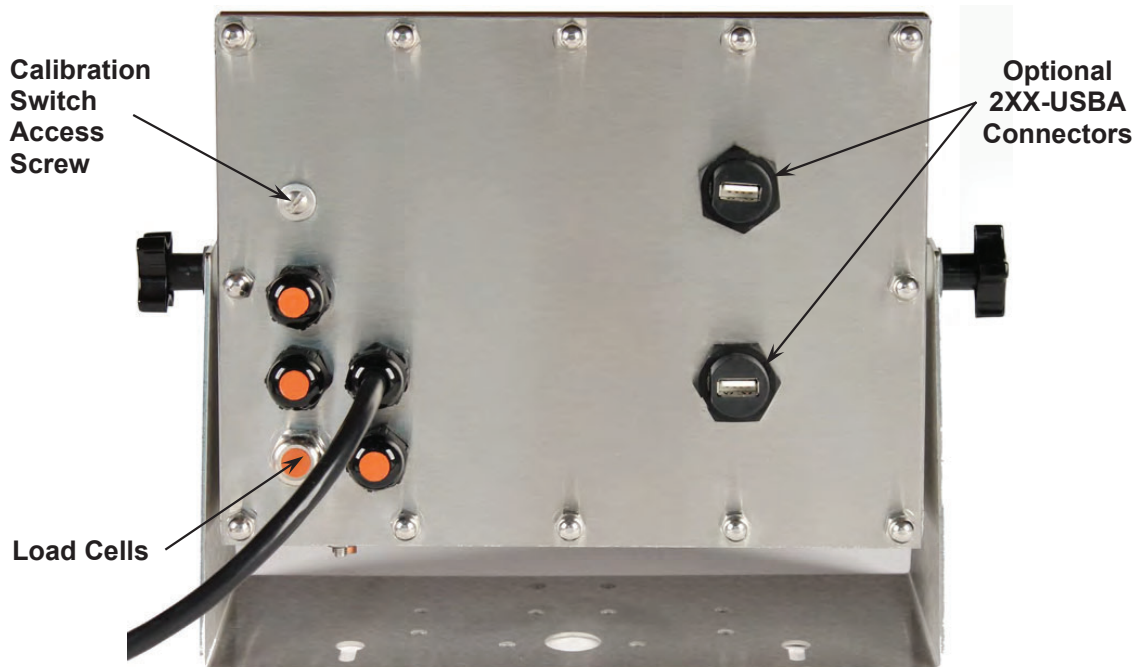

Figure No. 2

INSTALLATION, CONT.

Load Cell Cable Connection for RFI Suppression

> ⚠ **WARNING! Disconnect any external load cell power supply before connecting load cells to the indicator. Failure to do so will result in permanent damage to the indicator.**

The load cell cable should be routed through the special metallic gland connector and the shield wire must be connected to this gland connector for grounding and to eliminate RFI. Refer to Figure No. 2 and Figure No. 3 for the appropriate gland connector.

1. Remove the 12 acorn nuts securing the back panel to the main housing.

2. Loosen and remove the metal gland connector nut and remove the plastic insert.

3. Route the load cell cable through the nut and plastic insert and into the enclosure.

4. With the load cell cable routed into the enclosure, remove approximately 18 to 20 inches of the outer insulating jacket from the cable exposing the internal wires.

5. Cut the shield wire so that it extends past the outer jacket approximately 3/4 inch.

6. Remove 1/4" of insulation from the end of each of the 4 wires (without sense leads) or 6 wires with sense leads (refer to figure No. 4).

7. Connect each of the wires to terminal block P15 referring to labels on the circuit board for terminal connections. Refer to Figure No. 10 for the terminal block location.

8. To terminate a wire, press down on the release bar for the terminal, insert a wire into the terminal opening then allow the release bar to return to its original position, locking the wire in place. Repeat the procedure until all wires are in place.

9. Route load cell cable wires through the two cable clips provided on the upper and left sides of the enclosure interior.
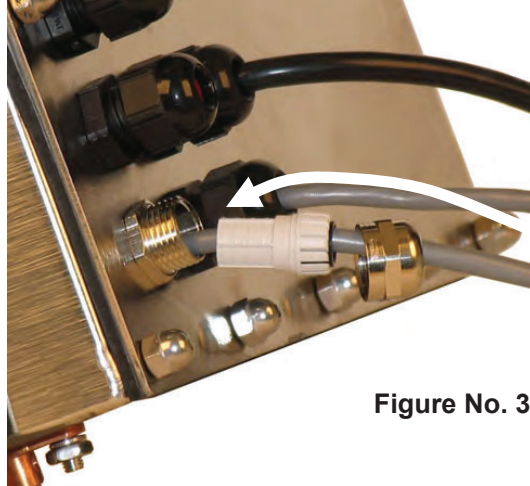
Figure No. 3

Figure No. 4

LOAD CELL TERMINAL BLOCK P15

TERMINAL NO.	Function	TERMINAL NO.	Function
1 – +EXC	+ EXCITATION	5 – -SIG	- SIGNAL
2 – +SEN	+ SENSE*	6 – -SEN	- SENSE*
3 – +SIG	+ SIGNAL	7 – -EXC	- EXCITATION
4 – SHLD	SHIELD (Not used, load cell cable shield wire is connected to the special metallic gland connector).		

* NOTE: If the sense leads are NOT used, you must install plug-in jumpers at J6 and J9 adjacent to the terminal block. These jumpers attach the sense leads to the excitation leads. If sense leads ARE used (as in motor truck scales), these plug-in jumpers should be positioned on one plug-in pin only or removed and stored for later use (see Figure No. 10).

INSTALLATION, CONT.

Load Cell Cable Shield Wire Connection for RFI Suppression

1. After all terminations have been made, remove the excess cable from the enclosure.

2. Referring to Figure No. 5, fold the shield wire back over the plastic insert and then insert the plastic insert (with the shield wire) into the gland connector.

3. The shield wire is secured when tightening the gland connector nut.

4. Do not overtighten the connector but make certain it is snug.

5. **DO NOT USE TOOLS!** Finger-tighten only!
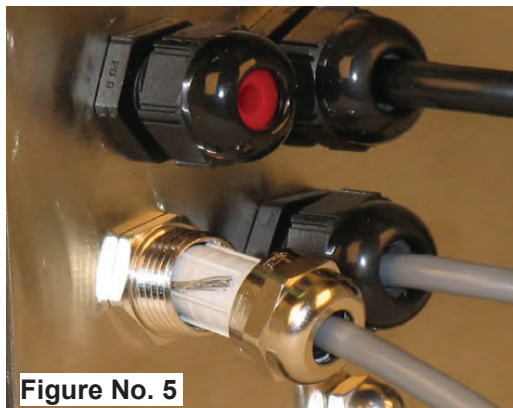
Figure No. 5

Load Cell Cable Connection (Standard Gland Connector)

The following instructions describe the load cell connection should it be desired to route the load cell cable through a standard gland connector.

1. Remove the 12 acorn nuts securing the back panel to the main housing, and then loosen a gland connector for the load cell cable. Refer to Figure No. 2 for an illustration of the connector layout.

2. Slip the single cable from the load cell or load cell junction box through the gland connector and into the enclosure.

3. Remove 3" of the outer insulation jacket then remove 1/4" of insulation from each of the 4 wires and shield (without sense leads) or 6 wires and shield (with sense leads). Refer to Figure No. 4.

4. Connect each of the wires to terminal block P15 referring to labels on the circuit board for terminal connections. Refer to Figure No. 10 for the terminal block location.

5. To terminate a wire, first press down on the release bar for the terminal, insert a wire into the terminal opening then allow the release bar to return to its original position, locking the wire in place. Repeat the procedure until all of the wires are in place.

6. Route load cell cable through the two cable clips provided on the upper and left sides of the enclosure interior.

LOAD CELL TERMINAL BLOCK P15
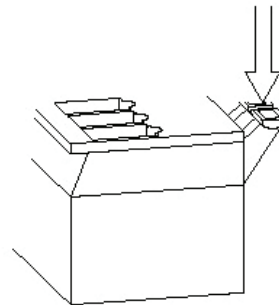
TERMINAL NO.	Function	TERMINAL NO.	Function
1 – +EXC	+ EXCITATION	5 – -SIG	- SIGNAL
2 – +SEN	+ SENSE*	6 – -SEN	- SENSE*
3 – +SIG	+ SIGNAL	7 – -EXC	- EXCITATION
4 – SHLD	SHIELD (Connect the load cell cable shield wire here).		

* NOTE: If the sense leads are NOT used, you must install plug-in jumpers at J6 and J9 adjacent to the terminal block. These jumpers attach the sense leads to the excitation leads. If sense leads ARE used (as in motor truck scales), these plug-in jumpers should be positioned on one plug-in pin only or removed and stored for later use (see Figure No. 10).

Load Cell Connections with Over 30 Feet of Cable

For installations with over 30 feet of cable between the indicator and the load cells, sense wires should be used. The sense wires must be connected between the +SENS, -SENS terminals on the indicator and the +EXCITATION, -EXCITATION wires of the load cells or the +SENS, -SENS terminals of the load cell trim board or the section seal trim board.

INSTALLATION, CONT.

Serial I/O Cable Installation

The 205 indicator may be connected to a printer to record weight and associated data or it may be connected to a remote display or a computer for transmission of weight data. The weight data may be transmitted on demand (by pressing the **PRINT** key or on receipt of a command from the computer). Refer to the Setup, SIO Serial I/O section of this manual.

1. Remove the 12 acorn nuts securing the back panel to the main housing, and then loosen a gland connector for the serial cable. Refer to Figure No. 2 for an illustration of the connector layout.

2. Slip the serial cable through the gland connector and into the enclosure.

3. Remove 2" of the outer insulation jacket then remove 1/4" of insulation from each of the wires (refer to Figure No. 6).

4. Connect each of the wires to the Serial Data terminal block (P13 and P14) referring to Figure No. 10 for terminal block locations.

5. To terminate, first press down on the release bar for the terminal, insert the wire into the opening then allow the release bar to return to its original position, locking the wire in place. Repeat the procedure until all of the wires are in place.
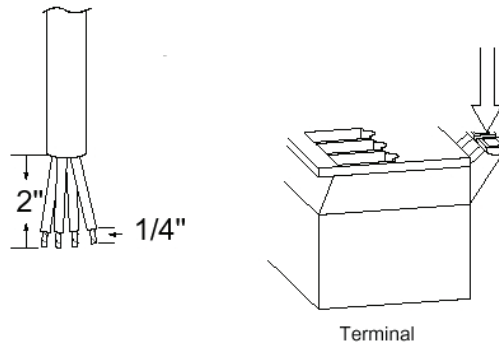
Figure No. 6

BI-DIRECTIONAL SERIAL INTERFACE

TERMINAL (P14)	
PIN NO.	**Function**
1	TxD1-RS232
2	RxD1-RS232
3	GND
4	TxD2-RS232
5	RxD2-RS232
6	GND
7	TxD3-RS232
8	RxD3-RS232
9	GND

TERMINAL (P13)	
PIN NO.	**Function**
1	+20mA SRC
2	RxD0-SRC
3	RxD0-20mA+
4	RxD0-20mA-
5	TxD0-SRC
6	TxD0-20mA+
7	TxD0-20mA-
8	TxD1-20mA+
9	TxD1-20mA-
10	GND
11	TxD0-RS232
12	RxD0-RS232
13	GND

INSTALLATION, CONT.

Interconnect Wiring for 20mA Current Loop Operation
Peripheral Device has **ACTIVE END** of Current Loop.

Figure No. 7

> **IMPORTANT!**
> **A jumper MUST be installed between P13 terminals 5 & 12 to enable RxD0-20mA.**

Interconnect Wiring for 20mA Current Loop Operation
Peripheral Device has **PASSIVE END** of Current Loop.
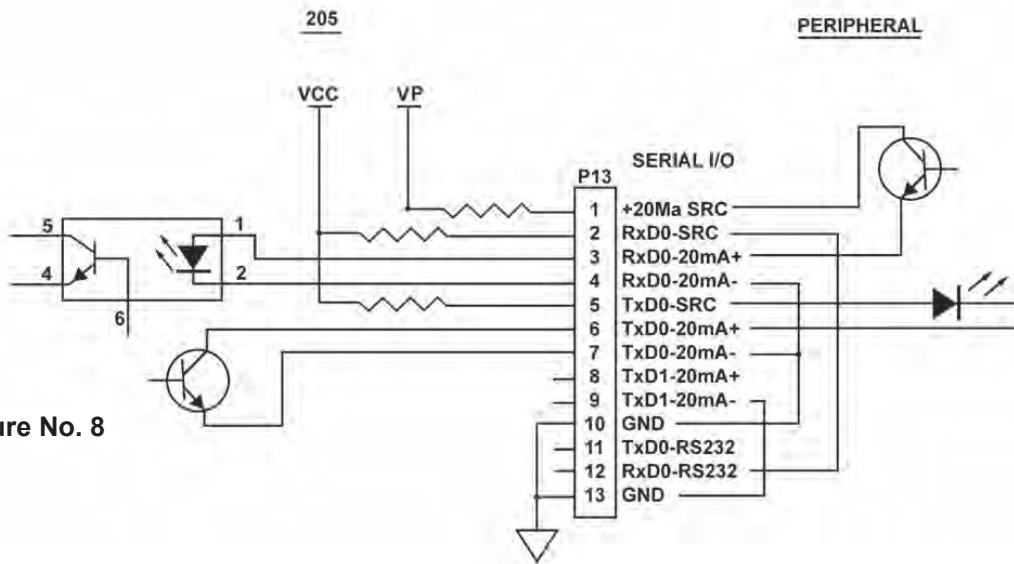
Figure No. 8

PORT	RS-232	20mA	USB
TXD0	X	X	
RXD0	X	X	
TXD1	X	X	
RXD1	X		
TXD2	X		
RXD2	X		
TXD3	*X		*X
RXD3	**X		**X

* Mutually exclusive

** Mutually exclusive

INSTALLATION, CONT.

USB Interface

The 205 indicator USB Interface is a standard full-speed (12Mbps) USB 2.0 device port. It can be connected to a USB 2.0 host, with the Cardinal Scale 8200-B163-0A USB CABLE or an industry-standard USB 2.0 cable, to be used as the COM3 serial I/O port set to 8 bit data, 1 stop bit, no parity, 9600 to 115.2k baud. Refer to the Setup, SIO Serial I/O section of this manual.

The USB port is enabled with jumpers J4 and J5 (see Figure No. 10) set to the USB position (utilizing the indicator COM3 serial port) and the USB PWR jumper, J10 (see Figure No. 10), set to the BUS position to be powered by the USB host or to the VCC position to be powered by the 205 indicator main PC board.

NOTE: The 205-USB driver and driver installation instructions are available when logged into the dealer-protected software section of Ca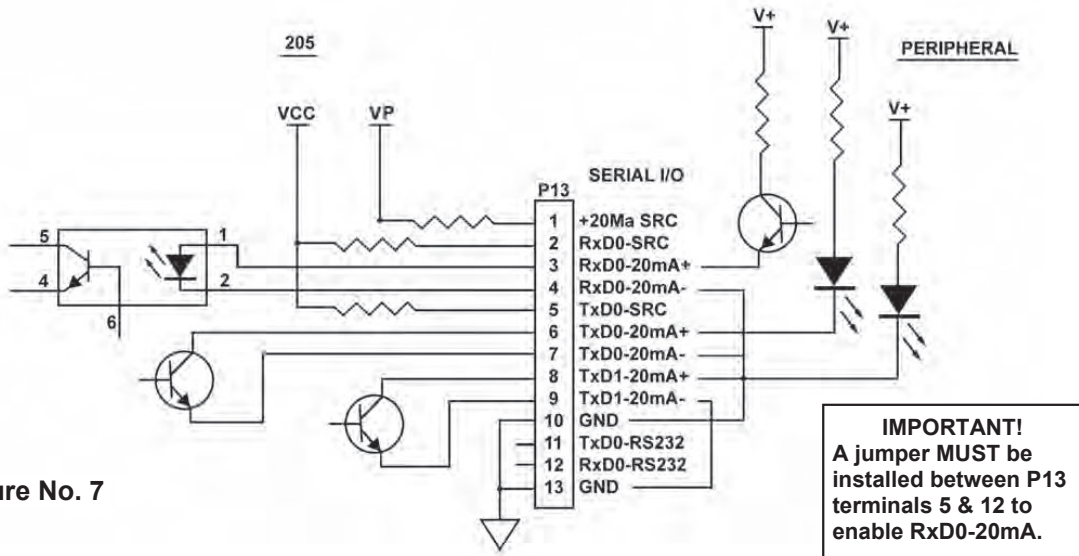rdinalScale.com. Download the driver and its installation instructions from CardinalScale.com by navigating to 205 Storm > Resources > Resource Type > Software > 205-210 USB Driver.

8200-B163-0A Water Tight USB Cable Installation

1. Remove the 12 acorn nuts securing the back panel to the main housing.

2. Remove a gland connector from the back panel. Refer to Figure No. 2 for an illustration of the connector layout.

3. Loosen the gland connector nut from the 8200-B163-0A cable/gland assembly (see Figure No. 9) and slip off over the 5-pin cable connector and ground wire.

4. Insert the 5-pin connector and ground wire through the rear panel.

5. Slip the gland connector nut back over the 5-pin connector and ground wire and tighten the gland connector on the rear panel.

6. Pull the USB cable through the gland to reach P4, the USB-B header.

7. Plug the USB cable connector onto the USB-B, P4 header, referring to Figure No. 10 for the location of P4. Tighten the gland cable nut on the USB cable.
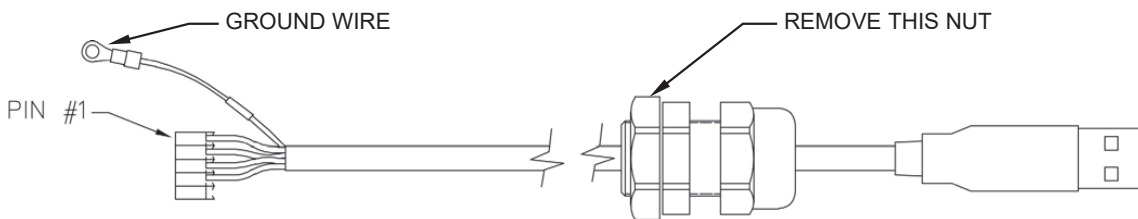
Figure No. 9

8. To attach the ground wire (see Figure No. 9); remove a 6-32 nut and washer from the corner of the main board.

9. Connect the ground wire from the USB cable by placing the ring terminal over the 6-32 threaded stud.

10. Reinstall the washer and 6-32 nut and tighten.

Standard USB Cable Installation

1. Remove the 12 acorn nuts securing the back panel to the main housing.

2. Remove a gland connector from the back panel. Refer to Figure No. 2 for an illustration of the connector layout.

3. Slip the cable through the hole in the rear panel and into the enclosure.

4. Plug the USB cable into the USB-B connector P6. See Figure No. 10 for the location of P6.

INSTALLATION, CONT.

Optically Isolated Remote Inputs

Included with the I/O are 4 programmable inputs that may be used to remotely (up to 100 feet) initiate various functions within the indicator. These inputs are accessed via a terminal block (P3) on the back of the PC board (see Figure No. 10). The 8 inputs are defined as follows:

TERMINAL NO.	Function
1	SRC 12-24VDC
2	Gross
3	Print
4	Zero
5	Tare
6	*
7	UNITS
8	START
9	STOP
10	GND

NOTE: The input must be momentarily connected to GND to initiate the function.

Main PCB

Figure No. 10

INSTALLATION, CONT.

Main PCB Jumpers

J2 – REMOTE INPUT SRC (SOURCE)
The Remote Input SRC jumper J2, when connected, allows the 205 indicator to supply (source) 12-24VDC to a solid-state relay or other loads of 200 ohms or greater. The positive connection from the relays must be connected to the remote input connector pins and the negative wire from the relays to the GND/SHLD pin.

J3 – AUTO-ON JUMPER
The AUTO-ON jumper J3, when connected, will cause the indicator to power on automatically whenever power is applied to the power input connector. If power is lost momentarily and then reapplied, the indicator will turn on without pressing the **ON/OFF** key.

J4 AND J5 – RS-232/USB PORT
These jumpers control whether COM3 is RS-232 and uses Serial I/O P14 (pins 7, 8, & 9) or USB and uses the USB-B header, P4 or USB-B port, P6.

J6 (+SEN) AND J9 (-SEN) – SENSE JUMPERS
If the sense leads are NOT used, you must install plug-in jumpers at J6 and J9 adjacent to the terminal block. These jumpers attach the sense leads to the excitation leads. If sense leads ARE used (as in motor truck scales), these plug-in jumpers should be positioned on one plug-in pin only or removed and stored for later use.

J8 – DLB (DEAD LOAD BOOST JUMPER)
For very low dead loads (less than 10% of the combined load cell capacity) connect the dead load boost jumper J8 on the printed circuit board.

J10 – USB PWR
The USB PWR jumper J10 selects whether the USB power is provided by the USB Host (set to BUS position) or by the 205 indicator (set to VCC position).

Re-Installing the Rear Panel

After all terminations have been made:

1. Remove the excess cable from the instrument enclosure and securely tighten each of the cable gland connectors.

   - Do not overtighten these connectors but make certain they are snug.

   - **DO NOT USE TOOLS!** Finger-tighten only!

2. Ensure any unused gland connectors are plugged and replace the rear panel.

3. Secure the rear panel with the 12 acorn nuts removed earlier.

4. Follow a diagonal pattern when tightening the acorn nuts.

KEYPAD FUNCTIONS

The Model 205 is equipped with a 7-key keypad. The keypad is used to enter commands and data into the indicator. This section describes each key along with its normal function. It is helpful to refer to the actual indicator while reading this section.
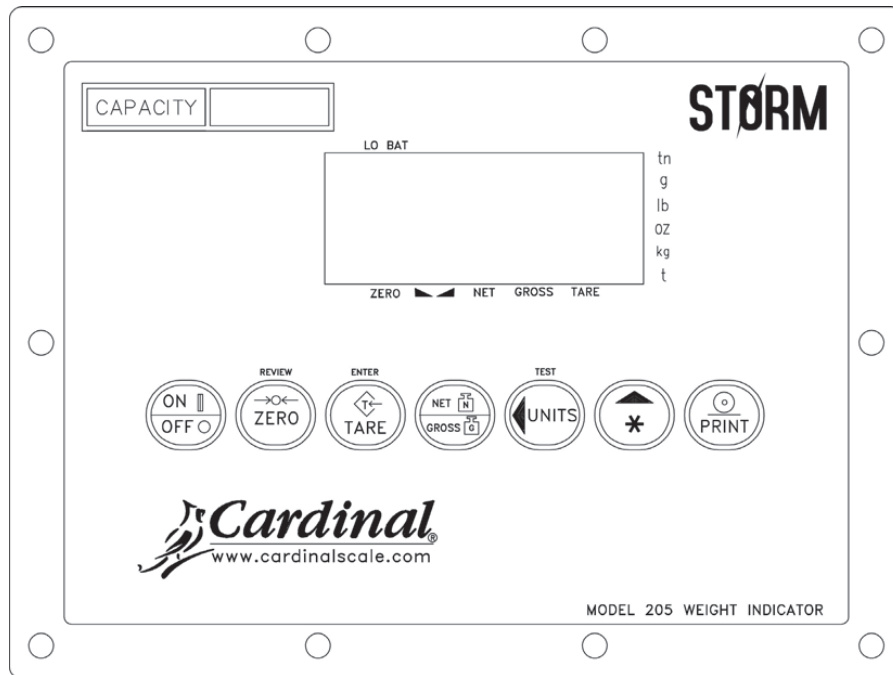
Figure No. 11

⚠️ **DO NOT operate the keypad with pointed objects (such as pencils, pens, etc..). Damage to the keypad resulting from this practice is NOT covered under the warranty.**

ON/OFF KEY
This key performs two functions. Pressing it when the indicator is off will apply power to the indicator. If the indicator is already on, pressing this key will turn the indicator off.

ZERO/REVIEW KEY
This key performs two functions. In normal operation, pressing this key will cause an immediate zeroing of the weight display up to the selected limit of 4% or 100% of the scale's capacity. Note that this selection is made during the setup and calibration of the indicator.

Pressing this key after the ✳ key will enter the Review mode of Setup and Calibration. Refer to the description of the ✳ key and the Setup Review section of this manual for details.

TARE (with diamond "T" symbol)/ENTER KEY
This is a dual-function key. Pressing the **TARE** key alone will store the current gross weight as a new tare weight and cause the weight display to change to the net weight display mode (Net annunciator turns on).

Pressing the ✳ key before the **TARE/ENTER** key serves two purposes. First, when reviewing setup parameters, pressing the **TARE/ENTER** key will display the current setting of the parameter. Second, the **TARE/ENTER** key is used to signal the completion of the entry of data and causes the indicator to process the data entered.

KEYPAD FUNCTIONS, CONT.

NET/GROSS KEY

This key is used to toggle between Net and Gross weight modes. The selected mode is indicated by turning on the appropriate annunciator on the display. Note that if no valid tare weight has been entered, pressing this key will cause a momentary "notArE" display error and the indicator will remain in the Gross weight mode.

UNITS/◄ LEFT ARROW/TEST KEY

This key is used for several functions. In normal operation, this key is used to select the units in which the weight is to be displayed. The available units of measure ("unit1" and "unit2") are selected in setup. The available units include tons, pounds only, pound-ounces, ounces only, Tonnes (metric tons), kilograms, and grams. Note that not all combinations are supported.

During setup, this key is used to advance the cursor left to the next position when inputting setup parameters.

Pressing the ✳ key before the **UNITS/LEFT ARROW/TEST** key will enter the Test mode. Refer to the description of the ✳ key below for details.

✳ (ASTERISK)/▲ UP ARROW KEY

This key is used for several functions. During setup, when a setup parameter (not a parameter value) is displayed, pressing this key will "backup" to the previous prompt. Also, during setup, when a parameter value is displayed, pressing this key will "toggle" between the different available values for the setup parameter. In normal operation, this key is used in conjunction with the other keys on the keypad to access additional indicator features. These features and their associated key combinations are as follows:

✳ AND ZERO/REVIEW KEY

This combination will enter the Review mode of Setup and Calibration. Refer to the Setup Review section of this manual for details.

✳ AND TARE KEY

This combination will display the current tare weight for three (3) seconds.

✳ AND NET/GROSS KEY

This combination will display the Net accumulator.

✳ AND NET/GROSS KEY, PRINT KEY

This combination will print the Net accumulator.

✳ AND NET/GROSS KEY, ZERO KEY

This combination will zero (clear) the Net accumulator.

✳ AND NET/GROSS KEY, NET/GROSS KEY

This combination will display the Gross accumulator.

✳ AND NET/GROSS KEY, NET/GROSS KEY, PRINT KEY

This combination will print the Gross accumulator.

✳ AND NET/GROSS KEY, NET/GROSS KEY, ZERO KEY

This combination will zero (clear) the Gross accumulator.

KEYPAD FUNCTIONS, CONT.

✳ AND UNITS KEY

This combination will enter the Test mode. The Test mode is used to test all the display elements. It consists of five (5) cycles, each lasting about one (1) second:

1. All horizontal segments will turn on (no annunciators).

2. All vertical segments and decimal points will turn on (no annunciators).

3. All annunciators will turn on.

4. All display elements are off.

5. The model number (205) and the software version X.X.

6. The calibration numbers (C1 to C4).

✳ AND PRINT KEY

This combination is used to *change* the selected print ticket format. Pressing the ✳ key then the **PRINT** key will display a prompt "Prt=". Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys enter the new setting, then press the **ENTER** key to save it. Allowable values are:

0 = print tab settings   **1** = visual ticket format 1   **2** = visual ticket format 2

In addition to using the ✳ and **PRINT** keys combination to change the print ticket format, the operator (just before printing the ticket) can change the print ticket format at the end of the weighing operation. This is accomplished by performing the normal weighing operation, then pressing the desired format number (0, 1, or 2), followed by pressing the **PRINT** key.

NOTE: When a print format is selected (by either method), it will remain active until changed by the operator.

PRINT KEY

Pressing this key will initiate the transmission of weight and other data via the selected printer output port (see $Port=$ under Print menu). The first gross or net weight printed after the gross weight has returned to "zero" will be added to the associated accumulator, and the consecutive number will be incremented.

Note that the indicator will not respond to the Print command unless the weight display is stable. If displaying gross weight, the only weight printed is gross weight. If displaying net weight, the gross, tare, and net weights are printed.

The 205 includes support for visual tickets. Visual tickets are designed by the PC-based programs Visual Print or nControl, then downloaded to the indicator. Two programmable formats in addition to the standard print tab settings are allowed.

Print formats are selected by using the ✳ and **PRINT** keys in combination (refer to the ✳ key, ✳ and **PRINT** key section for details).

NOTE: When the **PRINT** key is pressed, the indicator looks for the selected format. If a visual ticket is not found it reverts to the print tab settings.

```
#2
100.00   lb   G
 20.00   lb   T
 80.00   lb   N
     0.00   lb   GROSS ACCUM
   272.00   lb   NET ACCUM
```

TICKET EXAMPLE

ANNUNCIATORS

Annunciators are turned on to indicate that the display is in the mode corresponding to the annunciator label or that the status indicated by the label is active. The annunciators flash on and off to indicate that the indicator is waiting for input from the keypad for the mode indicated by the flashing annunciator. Refer to Figure No.11 for the location of the annunciators.

ZERO
This annunciator is turned on to indicate that the weight displayed is within +/- 1/4 division of the center of zero.

◣◢ (STABLE)
This annunciator is turned on when the weight display is stable. When off, it means that the change in successive weight samples is greater than the motion limits selected during setup.

NET
This annunciator is turned on to show that the displayed weight is the net weight (gross weight less tare weight).

GROSS
This annunciator is turned on to show that gross weight is displayed. Gross weight will be displayed when no tare weight is stored.

TARE
This annunciator is turned on to show that the displayed weight is the tare weight.

tn
This annunciator is located to the right of the weight display and is turned on to show that the displayed weight unit is tons.

g
This annunciator is located to the right of the weight display and is used to indicate that the displayed unit of weight measurement is grams.

lb
This annunciator is located to the left of the weight display and is turned on to show that the displayed weight unit is pounds.

oz
This annunciator is located to the right of the weight display and is turned on to show that the displayed weight unit is ounces.

kg
This annunciator is located to the left of the weight display and is used to indicate that the displayed unit of weight measurement is kilograms.

t
This annunciator is located to the right of the weight display and is used to indicate that the displayed unit of weight measurement is tonnes (metric tons).

SETUP AND CALIBRATION

Your Model 205 indicator has been thoroughly tested and calibrated before being shipped to you. If you received the indicator attached to a scale, calibration is not necessary. If the indicator is being connected to a scale for the first time or recalibration is necessary for other reasons, proceed as indicated.

The calibration switch is located on a bracket on the inside of the enclosure's rear panel. You may gain access to this switch simply by removing the calibration switch access screw on the rear panel. Refer to Figure No. 12.
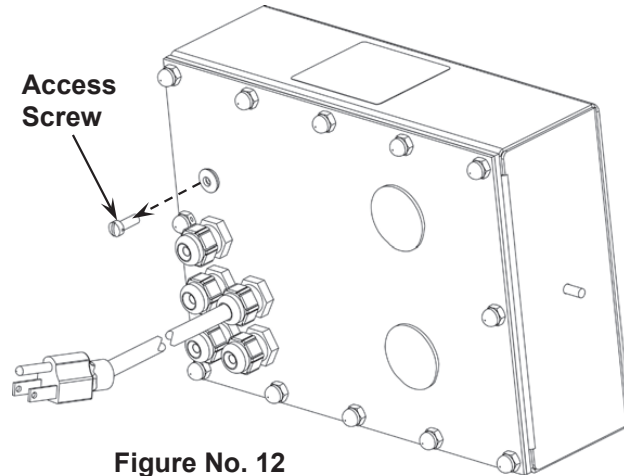
Figure No. 12

During the setup and calibration process, it will be necessary to enter operational parameters via the 205 keypad.

- Pressing the **TARE/ENTER** key will cause the data entered or displayed to be retained and the 205 to advance to the next prompt.
- The functions of numeric keys are replaced by using the **UNITS/LEFT ARROW** and the ***/UP ARROW** keys.
- The cursor location is identified by the blinking character and can be advanced to the left to the next position by pressing the **UNITS/LEFT ARROW** key.
- Pressing the ***/UP ARROW** key will change the blinking character to the next value. Continue to press this key to "toggle" between the different available values for the setup parameter.
- Pressing the ***/UP ARROW** key when a setup parameter (not a parameter value) is displayed, will "backup" to the previous prompt.

⚠ **DO NOT operate the keypad with pointed objects (such as pencils, pens, etc..). Damage to the keypad resulting from this practice is NOT covered under the warranty.**

Enter Setup Mode

To enter the setup mode, with the indicator ON, insert a small screwdriver or other tool through the calibration switch access hole on the rear panel. Press and release the calibration switch. The menu 5EtUP will be displayed. Continue to press and release the switch to rotate through the beginning point for entering the setup mode.

Setup Menus

5EtUP	Setup Mode (starts at U5A prompt)
A-d	Analog to Digital Filtering (starts at dFLt= prompt)
CAL	Calibration (starts at CAL 1 prompt)
55t	Setup Guardian Scale (starts at tLoU prompt)
5 io	Serial Input/Output (starts at 5 io 0P prompt)
Pr int	Print Tab Settings (starts at POrt prompt)
F SPAn	Fine Span Adjustment
H, rE5	Display high-resolution weight mode
LoCoUt	Key lock-out function
oPt ion	Option Card Configuration (only displayed when option card is installed)

SETUP AND CALIBRATION, CONT.

If you press the **TARE/ENTER** key at the `SEtUP` prompt, you may proceed through to the next section (up to and including `F SPAn`) by pressing the **TARE/ENTER** key.

If you press the **ZERO** key, `dFLtS?` is displayed. This allows all setup parameter values to be replaced with predetermined defaults.

⚠ **IMPORTANT! Setup may be interrupted at any time. ALL data previously entered and finalized with the TARE/ENTER key will be retained in the non-volatile memory.**

Pressing the calibration switch *at any prompt* will return you to the `SEtUP` menu. To exit setup, press the ✳/**UP ARROW** key with any of the above menu selections displayed or cycle power at any time (press the **ON/OFF** key twice).

NOTE: With the exception of the `SEtUP` prompt, the prompts displayed for each section are different if you push the calibration switch instead of pressing the **TARE/ENTER** key to proceed through the section.

For example, if you press the calibration switch with the `SEtUP` displayed, the next prompt displayed will be `A-d`.

If you step through the setup prompts by pressing the **TARE/ENTER** key, the next prompt displayed will be `A-d?`.

In addition, at a prompt with the `?` displayed, you must press the **TARE/ENTER** key, then the ✳/**UP ARROW** key to select **YES** and then the **TARE/ENTER** key again to proceed with that section.

To skip the section and advance you to the next menu selection, press the **TARE/ENTER** key twice.

`SEtUP`

`USA=` **(Domestic or International)**
With `SEtUP` displayed, press the **TARE/ENTER** key. The display will change to `USA=`. Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

`USA= 1` **(Domestic)**	`USA=0` **(International)**
`trL` = no	`trL` = yes
`CAP` + 4% to OC	`CAP` + 9 grads to OC
	PT printed with tare
	Lamp test on power up

SETUP AND CALIBRATION, CONT.

LFt: **(Legal For Trade)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

LFt:1
   Interval Settings (*Int:*) allowed
   are: 1, 2, 5, 10, 20, 50

LFt:0
   Interval Setting (*Int:*) is
   selectable from 1 to 99.

   NOTE: When both *LFt:1 and USA:1*, the followings results occur:
     The scale must have between 100 and 10,000 divisions
     trA : .5 or 0 to 3
     Inhibit serial data during input
     trL : no
     CAP + 4% to OC
     The display will show "Accumd" momentarily whenever the Gross or Net
     accumulator is updated

   NOTE: When *LFt:1 and USA:0*, the followings results occur:
     UnS : 1
     trL : yes
     CAP + 9 grads to OC
     PT printed with tare
     Lamp test on power up
     The display will show "Accumd" momentarily whenever the Gross or Net
     accumulator is updated

Unit1: **(Weighing Unit 1)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = none	4 = oz (ounces)
1= tn (tons)	5 = kg (kilograms)
2= g (grams)	6 = tonnes (metric tons)
3 = lb (pounds)	7 = lb/oz (pounds/ounces)

int: **(Interval Setting)**
Press the **TARE/ENTER** key to show the current value.

   If *LFt : 1* (Legal For Trade = YES), use the **/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 1, 2, 5, 10, 20, or 50.

   If *LFt:0* (Legal For Trade = NO), use the **/UP ARROW* and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 1 through 99.

In either case, if the setting displayed is acceptable, press the **TARE/ENTER** key again it.

SETUP AND CALIBRATION, CONT.

dPP: **(Decimal Point Setting)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0, 1, 2, or 3.

0 = XXXXXX	2 = XXXX.XX
1= XXXXX.X	3 = XXX.XXX

CAP: **(Capacity)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 1 through 999,999. **NOTE:** Capacity cannot exceed 999,999.

Unit2: **(Weighing Unit 2)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = none	4 = oz (ounces)
1= tn (tons)	5 = kg (kilograms)
2= g (grams)	6 = tonnes (metric tons)
3 = lb (pounds)	7 = lb/oz (pounds/ounces)

NOTE: The selection for *Unit2* can <u>not</u> be the same as *Unit1*. In addition, dependent upon the selection for *Unit1* and the interval and decimal point settings, not all unit combinations are available.

trA: **(Zero Tracking Range)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0 (disables Zero Tracking), .5, or 1 through 9.

trL: **(4% Zero Range)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

trL:1 **(Yes)**	*trL:0* **(No)**
4% of scale capacity	Full capacity (no limit)

PUO: **(Power-Up Zero Feature)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **✳/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

PUO:1 **(Yes)**	*PUO:0* **(No)**
Automatic Re-Zero on Power-Up	No Re-Zero on Power-Up

SETUP AND CALIBRATION, CONT.

SLEEP: **(Sleep Mode Feature)**
The Sleep Mode feature conserves power when the indicator remains unused for a selected period of time. With the feature enabled, the load cell excitation will be reduced and the display will be blank.

Press the **TARE/ENTER** key to show the current status of this feature. If a number other than 0 is shown, this feature is selected and the number shown corresponds to the number of minutes of a stable zero weight reading before the indicator enters the sleep mode.

If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0 through 10. Note that selecting 0 disables this feature.

A oFF: **(Auto Shutoff)**
The Automatic Shutoff feature will automatically turn the indicator off (when it is not in use) after a predetermined period of inactivity to conserve power. To turn the indicator back on you must press the **ON/OFF** key.

Press the **TARE/ENTER** key to show the current status of this feature. A number other than 0 indicates that the auto shutoff feature is enabled and the displayed number corresponds to the number of minutes of stable weight displayed before the indicator is turned off automatically.

If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0 through 10. Note that selecting 0 disables this feature.

CLtAr: **(Clear Tare)**
The Clear Tare feature allows the indicator to clear the Stored Tare weight when the Net weight goes below a value greater than 1/2 of the stored tare weight or goes below zero (a negative net weight after the display of a positive net weight). With this feature enabled, the operator must re-set the tare after the completion of a transaction when the load (container plus item) is removed from the scale.

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

CLtAr:1 **(Yes)**	*CLtAr:0* **(No)**
Automatically clears Stored Tare when Net weight goes below zero	Stored Tare is not cleared when Net weight goes below zero

SCALE: **(Scale ID)**
The Scale ID is used with the 2XX-USBA Option Card to identify the scale/indicator in the Transaction Storage file. Note that up to 99 scale/indicator can be identified.

Press the **TARE/ENTER** key to view the current setting. If the displayed value is acceptable, press the **TARE/ENTER** key to save it. Otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter the new Scale ID and then press the **TARE/ENTER** key to save the new setting. Allowable values are 0 through 99.

SETUP AND CALIBRATION, CONT.

$A - d$ ($A - d?$) – Analog to Digital Filtering

$5E-5EL$ – (REMOTE INDICATOR SETUP)*

If the indicator is to function as a remote indicator, press the ✱/UP ARROW key to select YES at the $5E-5EL$ prompt. If not then press the TARE/ENTER key at the prompt.

⚠ **IMPORTANT!** If a 200, 205, 210, or 215 indicator is to be used as the LOCAL and as the REMOTE, then both indicators **MUST** have Rev 2.6.3 or greater software installed.

If a combination of 200, 205, 210, or 215 and a 225 indicator are to be used in a LOCAL/REMOTE configuration, then the remote 200, 205, 210, or 215 indicator **MUST** have Rev 2.6.1 or greater software installed, and the 225 indicator **MUST** have Rev 1.0.K or greater software installed.

$L-P$ (Local/Remote Port)

NOTE: This will only be displayed if $5E-5EL$ was set to YES

Press the TARE/ENTER key to show the current value. If the setting displayed is acceptable, press the TARE/ENTER key again to save it. Otherwise, use the ✱/UP ARROW key to toggle to a new setting and then press the TARE/ENTER key to save it. Allowable values are 0, 1, 2, or 3 (for port 0 through port 3) and 4 for the optional 2xx-RS232 card (if installed).

* Refer to the LOCAL/REMOTE SETUP section of this manual for more information and interconnect wiring diagrams.

$dFLE$ (Digital Filtering)

With $A - d$ ($A - d?$) displayed, press the TARE/ENTER key. The display will change to $dFLE$. Press the TARE/ENTER key to show the current value. If the setting displayed is acceptable, press the TARE/ENTER key again to save it. Otherwise, use the ✱/UP ARROW key to toggle to a new setting and then press the TARE/ENTER key to save it. Allowable values are 0, 1, 2, or 3. Note that if you select 3 (Custom Filtering) three additional prompts will be displayed.

$dFLE$
0	Disabled – NO Filtering
1	MINIMAL FILTERING (sample rate = 2)
2	MODERATE FILTERING (sample rate = 1)
3	CUSTOM FILTERING

NOTE: The prompts, F (Filter Level), h (High-Frequency Filter Value), and b (Break Range) will <u>only</u> be displayed if you selected 3 (Custom Filtering) for the $dFLE$ (Digital Filtering) prompt.

F (Filter Level)

Press the TARE/ENTER key to show the current setting for the filter level. The filter level is a number from 0 to 99 that corresponds to the level of filtering with 99 being the greatest filtering and 1 the least.

To accept the value displayed, press the TARE/ENTER key, otherwise, use the ✱/UP ARROW and **UNITS/LEFT ARROW** keys to enter a new setting and then press the TARE/ENTER key to save it. Note that selecting 0 disables this feature.

SETUP AND CALIBRATION, CONT.

b: **(Break Range)**
Press the **TARE/ENTER** key to show the current setting for the break range. The break range is a number from 1 to 255 that corresponds to the number of division changes to break out of the filtering.

To accept the value displayed, press the **TARE/ENTER** key, otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Note that selecting 0 disables this feature.

h: **(High-Frequency Filter Value)**
Press the **TARE/ENTER** key to show the current setting for the high-frequency filter level. The filter level is a number from 0 to 99 that corresponds to the level of filtering with 99 being the greatest filtering and 1 the least.

To accept the value displayed, press the **TARE/ENTER** key, otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Note that selecting 0 disables this feature.

P: **(Preliminary Filter)**
Press the **TARE/ENTER** key to show the current setting for the high-frequency filter level. The preliminary filter is a number from 0 to 99 that corresponds to the number of weight samples that will be filtered without breaking (regardless of what *b:* is set to).

To accept the value displayed, press the **TARE/ENTER** key, otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Note that an entry of a 0 or 1 disables this feature.

Sr: **(Sample Rate)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 1 through 100.

UnS: **(Motion Range)**
Press the **TARE/ENTER** key to view the current setting for the range of motion detection. If the displayed value is acceptable, press the **TARE/ENTER** key to save it. Otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter the new range (the number of divisions of change permitted before indicating unstable), then press the **TARE/ENTER** key to save the new setting. Allowable range values are 0 through 99 divisions.

SC: **(Stable Count)**
Press the **TARE/ENTER** key to view the current setting for the number of consecutive stable weight readings before indicating stable weight. This helps filter weight readings for stability for use with Auto Print on Balance, or anything trying to capture stable weight.

If the displayed value is acceptable, press the **TARE/ENTER** key to save it. Otherwise, use the ✳/**UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new setting and then press the **TARE/ENTER** key to save it. Allowable values for the stable count are 3 through 255.

SETUP AND CALIBRATION, CONT.

FILTER SETTING RECOMMENDATIONS

Non-Critical Sample Rate
  If the sample rate is not critical, as in static weighing, set $dFLt:$ to "0" (no filtering), $dFLt:$ "1" ($F:$6, $b:$12, $Sr:$ 2/Sec), *or* $dFLt:$ "2" ($F:$6, $b:$8, $Sr:$ 1/Sec).

  Critical Sample Rate
  If the sample rate is critical, as in a filling operation, use the Custom Filtering (set $dFLt:$ to "3").

  1. $Sr:$ SAMPLE RATE (1 to 100 samples/second) determination:

  Set the sample rate as close as possible to produce a display graduation change for every graduation of material added to the scale.

$$\frac{\text{Material Flow Rate (lbs/second)}}{\text{Resolution}} =$$

  EXAMPLE: $\frac{100\text{lbs/sec}}{10\text{lbs}} = 10\text{s/s} = Sr$

  2. $b:$ BREAK RANGE (1 to 255 graduations) determination:

  Turn the filtering off by setting the $dFLt:$ setting to "0". Operate the system as it will be normally used and, by observation, determine the number of grads of instability that need to be filtered out. Set the break range ($b:$) to that value.

$$\frac{\text{Weight Change}}{\text{Graduation Value}} = b$$

  EXAMPLE: 20,000 x 10lb capacity scale with 800lb variation in the weight display.

  $\frac{800}{10} = b = 80$

  3. $F:$ FILTER SETTING (1 to 99) determination: Set to desired results.

  4. If stability is unacceptable with any setting of $F:$, reduce the sample rate and/or increase the break range, $b:$ setting for increased filtering.

SETUP AND CALIBRATION, CONT.

CAL (*CAL?*) - Calibration

With *CAL* (*CAL?*) displayed, press the **TARE/ENTER** key. The display will change to show the current setting *no*. If calibration is desired, press the **✶/UP ARROW** key (display will change to *YES*) and then the **TARE/ENTER** key to continue to the *CAL 1=* setting, otherwise press the **TARE/ENTER** key to advance to the *S io* menu.

CALIBRATION MODES

The 205 indicator has five modes that can be used to perform calibration. Three of the modes require a test load or test weights, one requires the scale to be empty (and at zero) and the last uses the calibration "C" numbers from a previous calibration. The modes are as follows:

1. **Dual-Point with Zero (First Zero)**
   This is a standard calibration method requiring one weight, an empty scale, and has one conversion factor. This method uses two calibration points (*CAL 1=* and *CAL2=*) to establish a zero (no load) calibration value and to span the indicator. The two points correspond to zero weight and the test load or test weight and can be applied in any order. This method should be used for first-time calibration and complete recalibration.

2. **Dual-Point <u>without</u> Zero (False Zero)**
   This calibration method requires one test weight and establishes a new conversion factor only. It is used to establish a false (temporary zero) zero without affecting the zero calibration value stored during the last calibration. This is particularly useful in tank weighing applications, where it may be impractical or impossible to completely empty the tank. This method uses two calibration points, *CAL 1=* and *CAL2=*. The value of the test weight is entered when *CAL 1=* is displayed and the **NET/GROSS** key is pressed when *CAL2=* is displayed.

3. **Single-Point for Span Only (Last Zero)**
   This calibration method requires one test weight and establishes a new conversion factor (span) without affecting the zero calibration value stored during the last calibration. This minimizes placing and removing test weights and is especially useful when checking high-capacity scales. This method uses two calibration points, *CAL 1=* and *CAL2=*. The value of the test weight is entered when *CAL 1=* is displayed and the **ZERO** key is pressed when *CAL2=* is displayed.

4. **Single-Point for Zero Only (Only Zero)**
   This calibration method requires no test weight, an empty scale and establishes a new zero without affecting the conversion factor (span). This is useful to regain the full range of zero limit when the dead load of the scale has changed. This would occur for example, if a guard rail had been added to the scale platform. This method uses two calibration points, *CAL 1=* and *CAL2=*. The **TARE/ENTER** key is pressed when *CAL 1=* is displayed and the **ZERO** key is pressed when *CAL2=* is displayed.

5. **Calibration "C" Numbers**
   The calibration "C" numbers (*C 1*, *C2*, *C3*, and *C4*) are displayed only during the Test mode operation and are shown at the end of the test. Each number is displayed for approximately 4 seconds, allowing you to record them. These numbers correspond to the calibration setting of the indicator. The numbers may be up to three digits in length. By recording these numbers, you will be able to return the indicator to its present calibration settings without using test weights simply by entering the "C" numbers. *Refer to the Calibration "C" Number section of this manual for instructions on viewing the "C" numbers*.

SETUP AND CALIBRATION, CONT.

Dual-Point with Zero (First Zero) Calibration

IMPORTANT! The functions of numeric keys are replaced by using the **UNITS/LEFT ARROW** and the ✴**/UP ARROW** keys. The cursor location is identified by the blinking character and can be advanced to the left to the next position by pressing the **UNITS/LEFT ARROW** key. Pressing the ✴**/UP ARROW** key will change the blinking character to the next value.

CAL 1= – First Calibration Weight

The display will show *CAL 1=0*. This is the first of two calibration weights. This weight could be ZERO (NO LOAD) or the TEST WEIGHTS / TEST LOAD.

- If the first calibration weight is to be ZERO (NO LOAD), press the **TARE/ENTER** key.

- If the first calibration weight is to be the TEST WEIGHTS / TEST LOAD, use the **UNITS/LEFT ARROW** and the ✴**/UP ARROW** keys to input the value of the calibrated test weights. **NOTE!** When entering values for *CAL 1=*, the digits start displaying on the right side of the display and proceed to the left. When large values are used (more than 3 digits), the *CAL 1=* prompt will automatically scroll off the left side of the display to show the additional digits on the right as they are entered.

- Place the weights on the scale platform, then press the **TARE/ENTER** key.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: *CAL2=*.

CAL2= - Second Calibration Weight

The display will show *CAL2=0*. This is the second of two calibration weights. This weight could be ZERO (NO LOAD) or the TEST WEIGHTS / TEST LOAD.

- If the second calibration weight is to be ZERO (NO LOAD), press the **TARE/ENTER** key.

- If the second calibration weight is to be the TEST WEIGHTS / TEST LOAD, use the **UNITS/LEFT ARROW** and the ✴**/UP ARROW** keys to input the value of the calibrated test weights. **NOTE!** When entering values for *CAL2=*, the digits start displaying on the right side of the display and proceed to the left. When large values are used (more than 3 digits), the *CAL2=* prompt will automatically scroll off the left side of the display to show the additional digits on the right as they are entered.

- Place the weights on the scale platform, then press the **TARE/ENTER** key.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: *Siod*.

SETUP AND CALIBRATION, CONT.

Dual-Point without Zero (False Zero) Calibration

⚠️ **IMPORTANT!** The functions of numeric keys are replaced by using the **UNITS/LEFT ARROW** and the **✳/UP ARROW** keys. The cursor location is identified by the blinking character and can be advanced to the left to the next position by pressing the **UNITS/LEFT ARROW** key. Pressing the **✳/UP ARROW** key will change the blinking character to the next value.

⌐RL 1= – First Calibration Weight

The display will show ⌐RL 1=0. This is the first of two calibration steps. This weight is the TEST WEIGHTS / TEST LOAD.

- Place the weights on the scale platform.

- Using the **UNITS/LEFT ARROW** and the **✳/UP ARROW** keys, input the value of the calibrated test weights/test load, then press the **TARE/ENTER** key. **NOTE!** When entering values for ⌐RL 1=, the digits start displaying on the right side of the display and proceed to the left. When large values are used (more than 3 digits), the ⌐RL 1= prompt will automatically scroll off the left side of the display to show the additional digits on the right as they are entered.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: ⌐RL2=.

⌐RL2= - Second Calibration Weight

The display will show ⌐RL2=0. This is the second of two calibration steps.

- Remove the weights on the scale platform, then press the **NET/GROSS** key.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: 5io2.

Single-Point for Span Only (Last Zero) Calibration

⌐RL 1= – First Calibration Weight

The display will show ⌐RL 1=0. This is the first of two calibration steps. This weight is the TEST WEIGHTS / TEST LOAD.

- Zero the scale, then place the weights on the scale platform.

- Using the **UNITS/LEFT ARROW** and the **✳/UP ARROW** keys, input the value of the calibrated test weights/test load, then press the **TARE/ENTER** key. **NOTE!** When entering values for ⌐RL 1=, the digits start displaying on the right side of the display and proceed to the left. When large values are used (more than 3 digits), the ⌐RL 1= prompt will automatically scroll off the left side of the display to show the additional digits on the right as they are entered.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: ⌐RL2=.

⌐RL2= - Second Calibration Weight

The display will show ⌐RL2=0. This is the second of two calibration steps.

- Remove the weights on the scale platform, and then press the **ZERO** key.

- The display will advance to 5io2.

SETUP AND CALIBRATION, CONT.

Single-Point for Zero Only (Only Zero) Calibration

IMPORTANT! The functions of numeric keys are replaced by using the **UNITS/LEFT ARROW** and the **✳/UP ARROW** keys. The cursor location is identified by the blinking character and can be advanced to the left to the next position by pressing the **UNITS/LEFT ARROW** key. Pressing the **✳/UP ARROW** key will change the blinking character to the next value.

CAL 1: – First Calibration Weight
The display will show *CAL 1:0*. This is the first of two calibration steps.

- Ensure the scale is empty.

- Press the **TARE/ENTER** key.

- Starting at the left and advancing right, a series of dashes will appear on the display. The dashes will stay on the display momentarily, then disappear, after which the display will show: *CAL2:*.

CAL2: - Second Calibration Weight
The display will show *CAL2:0*. This is the second of two calibration steps.

- Press the **ZERO** key.

- The display will advance to *Stop*.

Calibration "*C*" Numbers
1. With *CAL 1:* displayed, press the **UNIT** key.

2. At the *C 1:* prompt, press the **TARE/ENTER** key to show the current value of the *C 1* number.

3. If the *C 1:* number displayed is acceptable, press the **TARE/ENTER** key again to save it.

4. Otherwise, use the **UNITS/LEFT ARROW** and the **✳/UP ARROW** keys to enter a new *C 1:* number, then press the **TARE/ENTER** key.

5. Repeat steps 2 through 4 for *C2:* , *C3:* and *C4:*.

NOTE: If any components have been changed that affect calibration and/or your scale is used in a commercial application and must be "Legal for Trade" you cannot use the "*C*" numbers to re-calibrate.

SETUP AND CALIBRATION, CONT.

⁵⁵ᵗ⁷ Setup Guardian Scale

If a **GUARDIAN** scale is connected to the indicator, at the ⁵⁵ᵗ⁷ prompt press the ✱/**UP ARROW** key to select **YES**.

The ᵗˡₒ꜀ prompt will be displayed. This is the low end of the range of weight that requires adjusting. For example, if after performing linearization testing, the displayed weight is 5 lbs low between 10,000 lbs and 15,000 lbs, the value for the tweak low weight is 10000.

Using the ✱/**UP ARROW** and **UNITS/LEFT ARROW** keys, input the tweak low weight value and then press the **TARE/ENTER** key.

The ᵗ𝐻ᵢ꜀ prompt will be displayed. This is the high end of the range of weight that requires adjusting. Using the example above, the value for the tweak high weight is 15000.

Using the ✱/**UP ARROW** and **UNITS/LEFT ARROW** keys, input the tweak high weight value and then press the **TARE/ENTER** key.

The ᵗ𝑈𝐴ˡ꜀ prompt will be displayed. This is the amount of weight that needs to be added (or subtracted) from the range of weight to bring the displayed weight into tolerance. Again, using the example above, the Tweak Weight value would be 5.

Using the ✱/**UP ARROW** and **UNITS/LEFT ARROW** keys, input the tweak weight value (pressing the **NET** key will change the sign) and then press the **TARE/ENTER** key to save it and advance to the ⁵ᵢₒ⁷ menu.

SETUP AND CALIBRATION, CONT.

5 io (5 io?) - Serial Input/Output

With 5 io (5 io?) displayed, press the **TARE/ENTER** key. The display will change to show the current setting no. To skip configuring the 5 io (serial input/output) and proceed to the Prant? menu, press the **TARE/ENTER** key again. To configure the 5 io, press the ***/UP ARROW** key to select **YES** and then press the **TARE/ENTER** key. After pressing the **TARE/ENTER** key, the display will change to 5 io 0.

5 io 0? (Setup Serial Port 0)

Press the **TARE/ENTER** key. The display will change to show the current setting no. To skip configuring the 5 io Port 0 (serial input/output) and proceed to the 5 io 1? menu, press the **TARE/ENTER** key again. To configure the 5 io 0, press the ***/UP ARROW** key to select **YES** and then press the **TARE/ENTER** key.

bAud0: (Serial Port 0 Baud Rate)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ***/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

12 = 1200 Baud	24 = 2400 Baud	48 = 4800 Baud
96 = 9600 Baud	14 = 14.4k Baud	19 = 19.2k Baud
28 = 28.8k Baud	38 = 38.4k Baud	57 = 57.6k Baud
76 = 76.8k Baud	11 = 115.2k Baud	23 = 230.4k Baud

Prt90: (Serial Port 0 Parity)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ***/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = NONE (No Parity)	1 = Odd Parity	2 = Even Parity

bit50: (Serial Port 0 Data Bits)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ***/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

7 = 7 Data Bits	8 = 8 Data Bits

StoP0: (Serial Port 0 Stop Bits)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ***/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

1 = 1 Stop Bit	2 = 2 Stop Bits

Cont0: (Continuous Output Serial Port 0)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ***/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

Cont0: YES	Cont0: no
Continuous Output	No Continuous Output

If Cont0: YES (Continuous Output) is selected, an additional prompt, type0: will be displayed.

If Cont0: no (No Continuous Output) is selected, proceed to the Weight On Demand section.

SETUP AND CALIBRATION, CONT.

ᴸYᴾᴱ0: **(Continuous 0 Output Format)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = SMA	1 = SB-400	2 = SB-200
3 = Rice Lake IQ355	4 = AnDFV	5 = WI110
6 = Number Only	7 = Toledo Long/Short	8 = SB500 with Traffic Light
9 = Ranger 5000 Format A		

If ᴸYᴾᴱ0:7 (Toledo Long/Short) is selected, an additional prompt, ᴸShorᴸ will be displayed.

ᴸShorᴸ: **(Toledo Short)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

ᴸShorᴸ: YES	ᴸShorᴸ: no
Toledo Short Output Format	Toledo Long Output Format

SMA – (Type = 0)
If SMA is selected, the data will be transmitted in the following format:

<lf><s><r><n><m><f><xxxxxx.xxx><uuu><cr>

Where:

lf =	Line Feed	
s =	Flags	Z= center of Zero, O = Overcap, E = zero Error, e = weight not currently being displayed
r =	Range	1, 2, 3, ...
n =	Mode	G = Gross, T = Tare, N = Net
m =	Motion	M = Motion, " "(*blank*) = no motion
f =	Custom	Custom flag
xxxxxx.xxx =	Weight	Six digits with a decimal point
uuu =	Units	ton, lb, l/o, oz, t, kg, g
cr =	Carriage Return	(hex 0D)

SB-400 – (Type = 1)
If SB-400* or Computer is selected, the data will be transmitted in the following format:

<s><xxxxxx><d><uu><m><cc><cr>

Where:

s =	Sign	"-" = negative, " " (*blank*) = positive
xxxxxx.xxx =	Weight	Six digits
d =	Decimal point	Added to string if enabled in Setup
uu =	Units	tn, lb, l/o, oz, t, kg, g
m =	Mode	G = Gross, N = Net
cc =	Weight Status	OC = overcap
		CZ = center of zero
		MO = motion
		ee = weight not currently being displayed
cr =	Carriage Return	(hex 0D)

*The SB-80, SB-300 (*multiple displays not supported*), and WinVRS use the SB-400 format.

SETUP AND CALIBRATION, CONT.

SB-200 – (Type = 2)
If SB-200 is selected, the data will be transmitted in the following format:

        \<cr>\<s>\<xxxxxx>\<d>\<c>\<uu>\<m> ETX

Where:

cr =	Carriage Return	(hex 0D)
s =	Sign	"-" = negative, " " (*blank*) = positive
xxxxxx.xxx =	Weight	(with leading zeros)
d =	Decimal point	Embedded into weight (after weight dpp=0)
c =	status	m = motion
		o = overcap
		e = weight not currently being displayed
uu =	Units	tn, lb, l/o, oz, t, kg, g
m =	Mode	G = Gross, N = Net
ETX =	End of TeXt	(hex 03) MUST terminate ALL serial commands

Rice Lake IQ355 – (Type = 3)
If Rice Lake IQ355 is selected, the data will be transmitted in the following format:

        \<stx>\<s>xxxxxxx\<u>\<m>\<s>\<cr>\<lf>

stx =	start of text	ASCII 02 (decimal)
s =	sign	< *space* > = positive, < — > = negative, < ^ > = Overload
xxxxxxx =	weight	7 digits, right justified, zero suppression, with a decimal point. ^^^^^^ = over capacity, OVERFL = display overflow
u =	units	L = pounds, K = kilograms, T = ton, G = grams, O = ounces, < *space* > = none
m =	mode	G = Gross, N = Net
s =	status	< space > = valid, I = weight not being displayed M = motion, O = over/under range
cr lf =	terminator	cr = carriage return, lf = line feed

AnDFV – (Type = 4)
If AnDFV is selected, the data will be transmitted in the following format:

        \<hdr1>xxxxx\<uu>\<cr>\<lf>

WI110 – (Type = 5)
If WI110 is selected, the data will be transmitted in the following format:

        \<m>\<sp>\<s>xxxxx\<sp>\<uu>\<cr>\<lf>

Number Only – (Type = 6)
If Number Only is selected, the data will be transmitted in the following format:

        xxxxxx\<cr>\<lf>

Toledo Short – (Type = 7)
If Toledo Short is selected, the data will be transmitted in the following format:

        \<stx>\<swa>\<swb>\<swc>xxxxxx\<cr>\<sum>

Where:

stx =		Start of TeXt (hex 02)
swa =, swb=, swc=		Status Bytes
xxxxxx=		Displayed Weight, Gross, or Net Weight (Six Digits)
cr =		Carriage Return (hex 0D)
sum=		Checksum Character

SETUP AND CALIBRATION, CONT.

Toledo Long – (Type=7)

If Toledo Long is selected, the data will be transmitted in the following format:

<stx><swa><swb><swc>xxxxxxyyyyyy<cr><sum>

Where:

stx =	Start of TeXt (hex 02)
swa =, swb=, swc=	Status Bytes
xxxxxx=	Displayed Weight, Gross, or Net Weight (Six Digits)
yyyyyy=	Tare Weight (Six Digits)
cr =	Carriage Return (hex 0D)
sum=	Checksum Character

SB500 (with Traffic Light) – (Type = 8)

If SB500 (with Traffic Light) is selected, the data will be transmitted in the following format:

%NDDDDDDDDDT<CR>

Where:

N = Panel number for a daisy chain configuration

D = Byte of data to display at a respective location on the scoreboard

T = Control character for the traffic light. Valid characters for T are:

G = Turn on the Green light

R = Turn on the Red light

" "(*space*) = no lights on

<CR> = Carriage Return

Ranger 5000 Format A – (Type = 9)

In setup, after selecting type 9 for the Ranger 5000 Format A:

At the 5tArtb prompt, enter the decimal value for the start character.
A valid entry is 0 to 126.

At the Endb 1 prompt, enter the decimal value for the first end character.
A valid entry is 0 to 126.

At the Endb 2 prompt, enter the decimal value for the second end character.
A valid entry is 0 to 126.

If the above items are '0' then the character will not be included in the data stream.

If Ranger 5000 Format A is selected, the data will be transmitted in the following format:

<StArtb>Sign WeightA(7) Status

Where:

Sign = The sign of the weight (' ' for positive, '-' for negative)

WeightA = A seven-character string containing the current weight including the decimal point. If there is no decimal point, then the first character is a space. Leading zero blanking applies.

Status = Provides information on the weight reading. The characters G/N/U/O/M/E represent Gross/Net/Underload/Overload/Motion/Error, respectively.

SETUP AND CALIBRATION, CONT.

Weight On Demand

If the continuous output has not been selected for Serial Port 0 (Cont0=NO), the 205 indicator will respond to a weight request (ENQ).

The host device (computer) sends:

ENQ - (hex 05)

The 205 will respond:

<s><xxxxxx><d><uu><m><cc><cr>

Where:

s =	Sign	"-" = negative, " " (*blank*) = positive
xxxxxx.xxx =	Weight	Six digits
d =	Decimal point	Added to string if enabled in Setup
uu =	Units	tn, lb, l/o, oz, t, kg, g
m =	Mode	G = Gross, N = Net
cc =	Weight Status	OC = overcap
		CZ = center of zero
		MO = motion
		ee = weight not currently being displayed
cr =	Carriage Return	(hex 0D)

5 ɪo ɪ2 (Setup Serial Port 1)

Press the **TARE/ENTER** key. The display will change to show the current setting ⁿo. To skip configuring the 5 ɪo Port ɪ (serial input/output) and proceed to the 5 ɪo 22 menu, press the **TARE/ENTER** key again. To configure the 5 ɪo ɪ, press the *⁄**UP ARROW** key to select **YES** and then press the **TARE/ENTER** key.

bAUd ɪ2 (Serial Port 1 Baud Rate)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *⁄**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

12 = 1200 Baud	24 = 2400 Baud	48 = 4800 Baud
96 = 9600 Baud	14 = 14.4k Baud	19 = 19.2k Baud
28 = 28.8k Baud	38 = 38.4k Baud	57 = 57.6k Baud
76 = 76.8k Baud	11 = 115.2k Baud	23 = 230.4k Baud

Prty ɪ2 (Serial Port 1 Parity)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *⁄**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = NONE (No Parity)	1 = Odd Parity	2 = Even Parity

b ɪtS ɪ2 (Serial Port 1 Data Bits)

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *⁄**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

7 = 7 Data Bits	8 = 8 Data Bits

SETUP AND CALIBRATION, CONT.

StoP 1: **(Serial Port 1 Stop Bits)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

       1 = 1 Stop Bit   2 = 2 Stop Bits

Cont 1: **(Continuous Output Serial Port 1)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

     Cont 1: YES   *Cont 1: no*
      Continuous Output   No Continuous Output

    If *Cont 1: YES* (Continuous Output) is selected, an additional prompt, *tYPE 1:* will be displayed.

    If *Cont 1: no* (No Continuous Output) is selected, proceed to the Weight On Demand section.

tYPE 1: **(Continuous 1 Output Format)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, using the numeric keys enter the new setting, then press the **TARE/ENTER** key to save it. Allowable values are:

0 = SMA	1 = SB-400	2 = SB-200
3 = Rice Lake IQ355	4 = AnDFV	5 = WI110
6 = Number Only	7 = Toledo Long/Short	8 = SB500 with Traffic Light
9 = Ranger 5000 Format A		

    If *tYPE 1: 7* (Toledo Long/Short) is selected, an additional prompt, *tShort* will be displayed.

tShort: **(Toledo Short)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

     tShort: YES   *tShort: no*
    Toledo Short Output Format   Toledo Long Output Format

Sio 2? **(Setup Serial Port 2)**
Press the **TARE/ENTER** key. The display will change to show the current setting *no*. To skip configuring the *Sio Port 2* (serial input/output) and proceed to the *Sio 3?* menu, press the **TARE/ENTER** key again. To configure the *Sio 2*, press the ✳/**UP ARROW** key to select **YES** and then press the **TARE/ENTER** key.

SETUP AND CALIBRATION, CONT.

bAUd2: **(Serial Port 2 Baud Rate)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

12 = 1200 Baud	24 = 2400 Baud	48 = 4800 Baud
96 = 9600 Baud	14 = 14.4k Baud	19 = 19.2k Baud
28 = 28.8k Baud	38 = 38.4k Baud	57 = 57.6k Baud
76 = 76.8k Baud	11 = 115.2k Baud	23 = 230.4k Baud

Prty2: **(Serial Port 2 Parity)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = NONE (No Parity)   1 = Odd Parity   2 = Even Parity

bit52: **(Serial Port 2 Data Bits)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

7 = 7 Data Bits   8 = 8 Data Bits

StoP2: **(Serial Port 2 Stop Bits)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

1 = 1 Stop Bit   2 = 2 Stop Bits

Cont2: **(Continuous Output Serial Port 2)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

Cont2: YES   Cont2: no
   Continuous Output   No Continuous Output

If *Cont2: YES* (Continuous Output) is selected, an additional prompt, *tYPE2:* will be displayed.

If *Cont2: no* (No Continuous Output) is selected, proceed to the Weight On Demand section.

tYPE2: **(Continuous 2 Output Format)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✱**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = SMA	1 = SB-400	2 = SB-200
3 = Rice Lake IQ355	4 = AnDFV	5 = WI110
6 = Number Only	7 = Toledo Long/Short	8 = SB500 with Traffic Light
9 = Ranger 5000 Format A		

If *tYPE2: 7* (Toledo Long/Short) is selected, an additional prompt, *tShort* will be displayed.

SETUP AND CALIBRATION, CONT.

tShort: **(Toledo Short)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

tShort: YES	tShort: no
Toledo Short Output Format	Toledo Long Output Format

Sio 3? **(Setup Serial Port 3)**
Press the **TARE/ENTER** key. The display will change to show the current setting no. To skip configuring the Sio Port 3 (serial input/output), and proceed to the Print? menu, press the **TARE/ENTER** key again. To configure the Sio 3, press the **∗/UP ARROW** key to select **YES** and then press the **TARE/ENTER** key.

bAUd3: **(Serial Port 3 Baud Rate)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

12 = 1200 Baud	24 = 2400 Baud	48 = 4800 Baud
96 = 9600 Baud	14 = 14.4k Baud	19 = 19.2k Baud
28 = 28.8k Baud	38 = 38.4k Baud	57 = 57.6k Baud
76 = 76.8k Baud	11 = 115.2k Baud	23 = 230.4k Baud

Prty3: **(Serial Port 3 Parity)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = NONE (No Parity)	1 = Odd Parity	2 = Even Parity

bitS3: **(Serial Port 3 Data Bits)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

7 = 7 Data Bits	8 = 8 Data Bits

StoP3: **(Serial Port 3 Stop Bits)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the **∗/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

1 = 1 Stop Bit	2 = 2 Stop Bits

SETUP AND CALIBRATION, CONT.

Cont3: **(Continuous Output Serial Port 3)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *∗/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

> *Cont3: YES*
> Continuous Output

> *Cont3: no*
> No Continuous Output

If *Cont3: YES* (Continuous Output) is selected, an additional prompt, *tYPE3:* will be displayed.

If *Cont3: no* (No Continuous Output) is selected, proceed to the Weight On Demand section.

tYPE3: **(Continuous 3 Output Format)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *∗/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are:

0 = SMA	1 = SB-400	2 = SB-200
3 = Rice Lake IQ355	4 = AnDFV	5 = WI110
6 = Number Only	7 = Toledo Long/Short	8 = SB500 with Traffic Light
9 = Ranger 5000 Format A		

If *tYPE3:7* (Toledo Long/Short) is selected, an additional prompt, *tShort* will be displayed.

tShort: **(Toledo Short)**
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *∗/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

> *tShort: YES*
> Toledo Short Output Format

> *tShort: no*
> Toledo Long Output Format

tHrS: **(Threshold Weight)**
If any of the Serial Ports have been configured for continuous SB-500 with Traffic Light output, this prompt will be displayed.

Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *∗/UP ARROW* and **UNITS/LEFT ARROW** keys to enter a new setting for the threshold weight and then press the **TARE/ENTER** key to save it.

The threshold weight is used to automatically toggle between the Red and Green lights.

- When the scale's gross weight is less than the threshold weight, the Green light will be on, otherwise, the Red light will turn on and stay on until the weight goes below the threshold weight or a ticket is printed.

- When a ticket is printed, the Green light will turn on and stay on until the scale gross weight goes below and back above the threshold weight, and then the Red light will turn on.

- **NOTE:** If you enter a zero (0) for the threshold weight (*tHrS:0*), the traffic light feature will be disabled (turned off).

SETUP AND CALIBRATION, CONT.

Print (Print?) - Print Tab Settings

With *Print (Print?)* displayed, press the **TARE/ENTER** key. The display will change to show the current setting *no*. To skip configuring the Print Tab Settings and proceed to the *FSPAn?* menu, press the **TARE/ENTER** key again. To configure Print Tab Settings, press the ✳**/UP ARROW** key to select **YES** and then the **TARE/ENTER** key. After pressing the **TARE/ENTER** key the display will change to *Port:*.

The general format for the input is A = YY.XX where A is the character identifying the data printed, YY is the number of lines down and XX is the number of spaces to the right.

> **NOTE: Enter 00 in either the YY or XX location to disable the data from printing.**
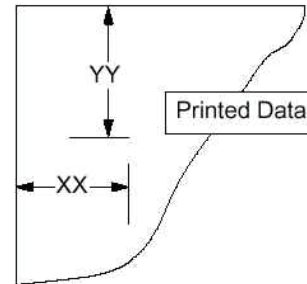
Port: (Select Port for Printer)
Press the **TARE/ENTER** key to show the current value. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0, 1, 2, or 3 (for port 0 through port 3) and 4 for the optional 2xx-RS232 card (if installed).

Gross: (Gross Weight Print Location)
Press the **TARE/ENTER** key to show the current setting for the location of Gross weight printing. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new location and then press **TARE/ENTER** to save it.

tArE: (Tare Weight Print Location)
Press the **TARE/ENTER** key to show the current setting for the location of Tare weight printing. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new location and then press **TARE/ENTER** to save it.

nEt: (Net Weight Print Location)
Press the **TARE/ENTER** key to show the current setting for the location of Net weight printing. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new location and then press **TARE/ENTER** to save it.

G ACC: (Gross Weight Accumulator Print Location)
Press the **TARE/ENTER** key to show the current setting for the location of Gross weight accumulator printing. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new location and then press **TARE/ENTER** to save it.

n ACC: (Net Weight Accumulator Print Location)
Press the **TARE/ENTER** key to show the current setting for the location of Net weight accumulator printing. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳**/UP ARROW** and **UNITS/LEFT ARROW** keys to enter a new location and then press **TARE/ENTER** to save it.

SETUP AND CALIBRATION, CONT.

CrLF: **(Carriage Return Line Feed) -** *Data Format Termination*
Data transmitted from the serial I/O port can be terminated with a single carriage return and either no line feed or a single line feed command. Press the **TARE/ENTER** key to view the current setting. A *YES* on the display means the data will be terminated with a carriage return AND a line feed while a *no* on the display means the data will be terminated with a single carriage return only.

If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the *∗/UP ARROW* key to toggle to a new setting and then press the **TARE/ENTER** key to save it.

EoP: **(End-Of-Print Line Feeds)**
At the end of data transmission to a printer, the indicator can transmit a pre-selected number of line feed commands to space the paper in the printer to the desired position for withdrawal or the next print.

Press the **TARE/ENTER** key to view the current setting. If the displayed value is acceptable, press the **TARE/ENTER** key to save it. Otherwise, use the *∗/UP ARROW* and **UNITS/LEFT ARROW** keys to enter the new number of End-Of-Print linefeeds and then press the **TARE/ENTER** key to save the new setting. Allowable values are 0 through 99.

SETUP AND CALIBRATION, CONT.

F SPAn (FSPAn?) – Fine Span Adjustment

⚠️ **NOTE: The FSPAn and Hi rES modes require a load of 10% of Capacity to be on the scale before adjustments can be made.**

With the F SPAn? prompt displayed after pressing the TARE/ENTER key at the last Print prompt:

With FSPAn? displayed, press the **TARE/ENTER** key. The display will change to show the current setting no. To skip the Fine Span Adjustment and return to the SEtUP menu, press the **TARE/ENTER** key again. To perform the Fine Span Adjustment, place a calibrated test weight on the scale, press the ✳/**UP ARROW** key to select **YES**, and then press the **TARE/ENTER** key.

After pressing the **TARE/ENTER** key, the display will change to show the amount of the test weight and the annunciators will alternately flash off and on i.e. (all ON, weighing unit off, then all OFF, weighing unit ON). Press the ✳/**UP ARROW** key to increase the span *OR* press the **UNITS/LEFT ARROW** key to decrease the span. Press the ✳/**UP ARROW** key to return to the previous prompt or press the **TARE/ENTER** key to exit FSPAn? and return to the SEtUP menu.

With the F SPAn prompt displayed after pressing the Calibration switch:

With F SPAn displayed, place a calibrated test weight on the scale and press the **TARE/ENTER** key. After pressing the **TARE/ENTER** key, the display will change to show the amount of the test weight and the annunciators will alternately flash off and on (all ON, weighing unit off, then all OFF, weighing unit ON). Press the ✳/**UP ARROW** key to increase the span *OR* press the **UNITS/LEFT ARROW** key to decrease the span. Press the ✳/**UP ARROW** key to return to the previous prompt or press the **TARE/ENTER** key to exit FSPAn? and return to the SEtUP menu.

Hi rES – Display High Resolution Weight

With Hi rES on the display, pressing the **TARE/ENTER** key will show the active weight in "high resolution" mode (in 1/10 intervals). Press the **PRINT** key to print the weight (followed by the text TEST) via the selected printer output port enabled during setup and calibration. Press the **TARE/ENTER** key to return to the Hi rE S prompt. To exit the Hi rE S mode, press the calibration switch or cycle power (press the **ON/OFF** key twice).

LoCoUt – Key Lock Out Function

With LoCoUt on the display, pressing *any* key will display LoCd (locked) or UnLoCd (unlocked) for the current key state. Pressing a locked key during normal operation will result in a 1/2-second display LoCd and the key will be ignored. To exit the LoCoUt function, press the calibration switch or cycle power (press the **ON/OFF** key twice).

⚠️ **NOTE: The menu selections Hi rES and LoCoUt can only be selected using the calibration switch.**

oPtion – Option Card Configuration

This prompt will ONLY be displayed when a 2XX Option Card is installed in the indicator.
Refer to the manual for the 2XX option card installed for setup instructions.

SETUP REVIEW

The 205 indicator allows several operational parameters to be reviewed and changed without breaking the calibration seal. These operational parameters are:

> Power Up Zero Reset Enable/Disable
> Sleep Mode Feature Enable/Disable
> Auto Shutoff Feature Enable/Disable
>
> Serial Input / Output Configuration
> > Baud Rate
> > Parity
> > Number of Data Bits
> > Number of Stop Bits
> > Continuous Output Port 1
> > > Continuous Output Format
> > Continuous Output Port 2
> > > Continuous Output Format
>
> Print Tab Settings
> > Printer Port Selection
> > Gross Weight
> > Tare Weight
> > Net Weight
> > Gross Weight Accumulator
> > Net Weight Accumulator
> > Carriage Return Line Feed
> > End Of Print Line Feeds

To enable the Setup Review feature, with the indicator ON:

1. Press the ✱/**UP ARROW** key. The indicator will respond by showing the $FunCt:$ (Function) prompt and alternately flashing off and on (all ON, weighing unit off, then all OFF, weighing unit ON) the annunciators.

2. Press the **ZERO/REVIEW** key. The display will change to the prompt for the selection of power-up zeroing ($PUO:$).

3. Using the same procedure as described in the Setup and Calibration section of this manual, make the required changes.

4. Press the ✱/**UP ARROW** key to return to the previous prompt.

5. To exit Setup Review, press the ✱/**UP ARROW** key to step through the remaining prompts *OR* at any time, cycle the power (press the **ON/OFF** key twice).

CALIBRATION "C" NUMBERS

The "C" numbers are displayed only during the Test mode operation by pressing the $*$ key then the **UNITS/TEST** key. The "C" numbers are shown at the end of the test operation and each number is displayed for approximately 4 seconds, allowing you to record them. Each number may be up to three (3) digits in length. By recording these numbers, you will be able to return the indicator to its present calibration settings without using test weights simply by entering the "C" numbers.

1. With CAL $1=$ displayed, press the **UNIT** key.

2. At the C $1=$ prompt, press the **TARE/ENTER** key to show the current value of the C 1 number.

3. If the C $1=$ number displayed is acceptable, press the **TARE/ENTER** key again to save it.

4. Otherwise, use the numeric keys to enter a new C $1=$ number, then press the **TARE/ENTER** key.

5. Repeat steps 2 through 4 for $C2=$, $C3=$ and $C4=$.

> **NOTE: If any components have been changed that affect calibration and/or your scale is used in a commercial application and must be "Legal for Trade" you cannot use "C" numbers to re-calibrate.**

ACCUMULATORS

To *view* the NET accumulator:
 1. Press the $*$/**UP ARROW** key and then the **NET/GROSS** key.
 2. Press the $*$/**UP ARROW** key to return to normal operation.

To *print* the NET accumulator:
 1. Press the $*$/**UP ARROW** key, the **NET/GROSS** key, and then the **PRINT** key
 2. The indicator will return to normal operation when printing has been completed.

To *clear* (zero) the NET accumulator:
 1. Press the $*$/**UP ARROW** key, the **NET/GROSS** key, and then the **ZERO** key
 2. Press the $*$/**UP ARROW** key to return to normal operation.

To *view* the Gross accumulator:
 1. Press the $*$/**UP ARROW** key and then the **NET/GROSS** key twice.
 2. Press the $*$/**UP ARROW** key to return to normal operation.

To *print* the Gross accumulator:
 1. Press the $*$/**UP ARROW** key, the **NET/GROSS** key twice, and then the **PRINT** key
 2. The indicator will return to normal operation when printing has been completed.

To *clear* (zero) the Gross accumulator:
 1. Press the $*$/**UP ARROW** key, the **NET/GROSS** key twice, and then the **ZERO** key
 2. Press the $*$/**UP ARROW** key to return to normal operation.

TROUBLESHOOTING

Error Codes

The 205 indicator is equipped with software that indicates when an error in the operation takes place. The following lists the error codes displayed by the 205 along with their meaning. Should you encounter an error code, please refer to this list for the cause.

CRLbtn **(Calibration button)**

    CRLbtn will be displayed (until the condition changes), on power-up if the calibration switch is pressed in by the operator or the switch is defective.

    <u>CORRECTIVE ACTION</u>: Release the switch. Replace the calibration switch assembly. Consult your scale service provider.

ConFiG **(Configuration)**

    E^{2}PROM checksum failure. Indicates improperly stored calibration data, calibration is necessary.

    <u>CORRECTIVE ACTION</u>: Recalibrate with calibrated test weight.

Error **(Error)**

    An invalid keypad entry was attempted:

    A. **PRINT** key pressed with a negative weight.
    B. **TARE/ENTER** key pressed to enter a push button tare value of a negative value.
    C. **TARE/ENTER** key pressed to enter a tare weight value that exceeds the scale capacity.
    D. **TARE/ENTER** key pressed to enter a tare weight value that is inconsistent with the scale division value (i.e., attempt to enter a tare of 123 with scale divisions of 5).
    E. **ZERO** key pressed when the gross weight is outside the scale zero weight range.
    F. **UNITS/TEST** key pressed to change to kg when the kg tare weight value exceeds 4 digits in length.

    <u>CORRECTIVE ACTION</u>: Determine which of the reasons for the error display is applicable and take the appropriate corrective action.

ErrRh **(Error Analog high)**

    1. The load cell input is above the range of the indicator.

    <u>CORRECTIVE ACTION</u>: Check for improper load cell wiring, excessive load, and for output of 1 to 40mV.

    2. Load cell or circuit failure.

    <u>CORRECTIVE ACTION</u>: Consult your scale service provider.

ErrRL **(Error Analog Low)**

    1. The load cell input is below the range of the indicator.

    <u>CORRECTIVE ACTION</u>: Check for improper load cell wiring and for output of 1 to 40 mV.

    2. Load cell or circuit failure.

    <u>CORRECTIVE ACTION</u>: Consult your scale service provider.

EEFRiL **(External EEPROM memory write/read failure)**

    ID storage will not operate correctly. Occurs once at Start-Up.

    <u>CORRECTIVE ACTION</u>: Press any key to continue. No other action is necessary if ID storage is not used. Consult your scale service provider.

TROUBLESHOOTING, CONT.

Error Codes, Cont.

EE Err **(External EEPROM memory retention error)**
ID storage will not operate correctly. Occurs once at Start-Up.

CORRECTIVE ACTION: Press any key to continue. No other action is necessary if ID storage is not used. Consult your scale service provider.

–EE– (External EEPROM memory is being initialized/erased)
Displayed momentarily at Start-Up, for about 2 seconds, if previous initialization was unsuccessful.

CORRECTIVE ACTION: No action is necessary.

HuH? **(HuH?)**
The **UNITS** key was pressed in an attempt to perform a unit conversion that is not allowed.

CORRECTIVE ACTION: Determine the reason for the error display and take the appropriate corrective action.

iiCErr **(IIC bus failure)**
Functions that use the IIC bus will not operate correctly. Occurs once at Start-Up.

CORRECTIVE ACTION: Press any key to continue. Consult your scale service provider.

notArE **(no tarE)**
NET key pressed with no stored tare weight value.

CORRECTIVE ACTION: Determine the reason for the error display and take the appropriate corrective action.

oCAP **(over Capacity)**
The load on the scale exceeds the scale capacity plus nine (9) divisions.

CORRECTIVE ACTION: Remove the over capacity load from the scale platform. This may indicate miscalibration.

-oF- (overflow)
The indicator is attempting to display a positive number greater than six (6) digits in length or a negative number of more than five (5) digits.

CORRECTIVE ACTION: Return to Gross Weight mode and review Tare value. This may indicate miscalibration.

toob iG **(too big)**
The **UNITS** key was pressed in an attempt to perform a unit conversion where the interval would have been greater than 50.

CORRECTIVE ACTION: Determine the reason for the error display and take the appropriate corrective action.

UnStb **(Unstable)**
Motion is present when trying to perform a print function.

CORRECTIVE ACTION: Wait for a stable weight display (*STABLE* annunciator on) before performing any of this operation.

TROUBLESHOOTING, CONT.

Before You Call For Service

The 205 has been designed to provide you with years of trouble-free operation. However, should you experience a problem, please refer to the troubleshooting guide below before you call for service. The following describes several types of symptoms along with suggested remedies.

PROBLEM	POSSIBLE SOLUTIONS
Display does not turn on	AC operation: Is the AC power cord fully inserted into the wall receptacle? Check the wall receptacle for proper AC power. Try another electrical appliance in the same receptacle, does it work? Check the circuit breaker. Has there been a power failure?
Incorrect weight displayed	Has the indicator been calibrated? Ensure that the scale platform is not touching an adjacent object. Check the load cell connector wiring. If using four (4) wire load cells, insure the sense lead jumpers (J6 & J9) are installed. Have proper operation procedures been followed?
Indicator will not display weight	Refer to the Error Codes section and make certain that the *oCAP* message is not displayed. If so, and the scale is not loaded, perform the calibration sequence.
The printer prints but does not use the Print Tab Settings or prints a test ticket	The print tab setting or visual ticket format must be selected before beginning the weighing operation or just before printing the ticket. To select the ticket format before beginning the weighing operation: 1. Press the ∗/**UP ARROW** key and then the **PRINT** key. The display will change to "*Prt =*". 2. Press the **TARE/ENTER** key to show the current value. 3. If the value displayed is acceptable, press the **TARE/ENTER** key again to save it. 4. If the displayed value is incorrect (or another ticket format is desired), use the ∗/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values for ticket formats are: 0 = print tab settings 1 = visual ticket format 1 2 = visual ticket format 2 **NOTE:** When a print format is selected (by either method), it will remain active until changed by the operator.

TROUBLESHOOTING, CONT.

Diagnostic Test Mode

To Start Diagnostic Test Mode
1. Remove the calibration access screw.
2. Press the **ON/OFF** key to turn the indicator ON.
3. Insert a small screwdriver or other tool into the access hole and press the CAL switch.
4. The display will change to $5EEUP$.
5. Press the **UNITS/TEST** key.
6. The display will change to $EE5E:$.
7. Press **TARE/ENTER** key to show the current test function value (which will be 0, test feature off).
8. Using the **UNITS/LEFT ARROW** and **∗/UP ARROW** keys, enter the test function value and then press **ENTER** key.
    - **4 = raw A/D readings**
    - **16 = display milliVolts**
9. The display will change to $5EEUP$.
10. Press the **∗/UP ARROW** key to begin the test.
11. The display will change to show test data.

To Change the Diagnostic Test Mode
1. With the indicator displaying test data, insert a small screwdriver or other tool into the access hole and press the CAL switch.
2. The display will change to $5EEUP$.
3. Press the **UNITS/TEST** key.
4. The display will change to $EE5E:$.
5. Press **TARE/ENTER** key to show the current test function value.
6. Using the **UNITS/LEFT ARROW** and **∗/UP ARROW** keys, enter the test function value and then press **ENTER** key.
    - **4 = raw A/D readings**
    - **16 = display milliVolts**
7. The display will change to $5EEUP$.
8. Press the **∗/UP ARROW** key to begin the test.
9. The display will change to show test data.

To Stop Diagnostic Test Mode
1. With the indicator displaying test data, insert a small screwdriver or other tool into the access hole and press the CAL switch.
2. The display will change to $5EEUP$.
3. Press the **UNITS/TEST** key.
4. The display will change to $EE5E:$.
5. Press **TARE/ENTER** key to show the current test function value.
6. Using the **UNITS/LEFT ARROW** and **∗/UP ARROW** keys, enter a 0 for the test function value (0 = test feature off) and then press **TARE/ENTER** key.
7. The display will change to $5EEUP$.
8. Press the **∗/UP ARROW** key to stop the test and reset the indicator.
9. The indicator is now ready for normal operation.

> ⚠ **IMPORTANT! Once Diagnostic Test Mode has been enabled, the indicator will power on with $EE5E$ on the display. The operator must press TARE/ENTER key to stay in Diagnostic Test Mode or press the ∗/UP ARROW key to disable Diagnostic Test Mode.**

CALIBRATION SEAL INSTALLATION

If your Model 205 Weight Indicator is used in a commercial application it must be tested and sealed by your local weights and measurements official. The 205 is designed to accept a lead and wire security seal to prevent unauthorized access to the calibration adjustments. Refer to Figure No. 13 for details on the installation of the seal.
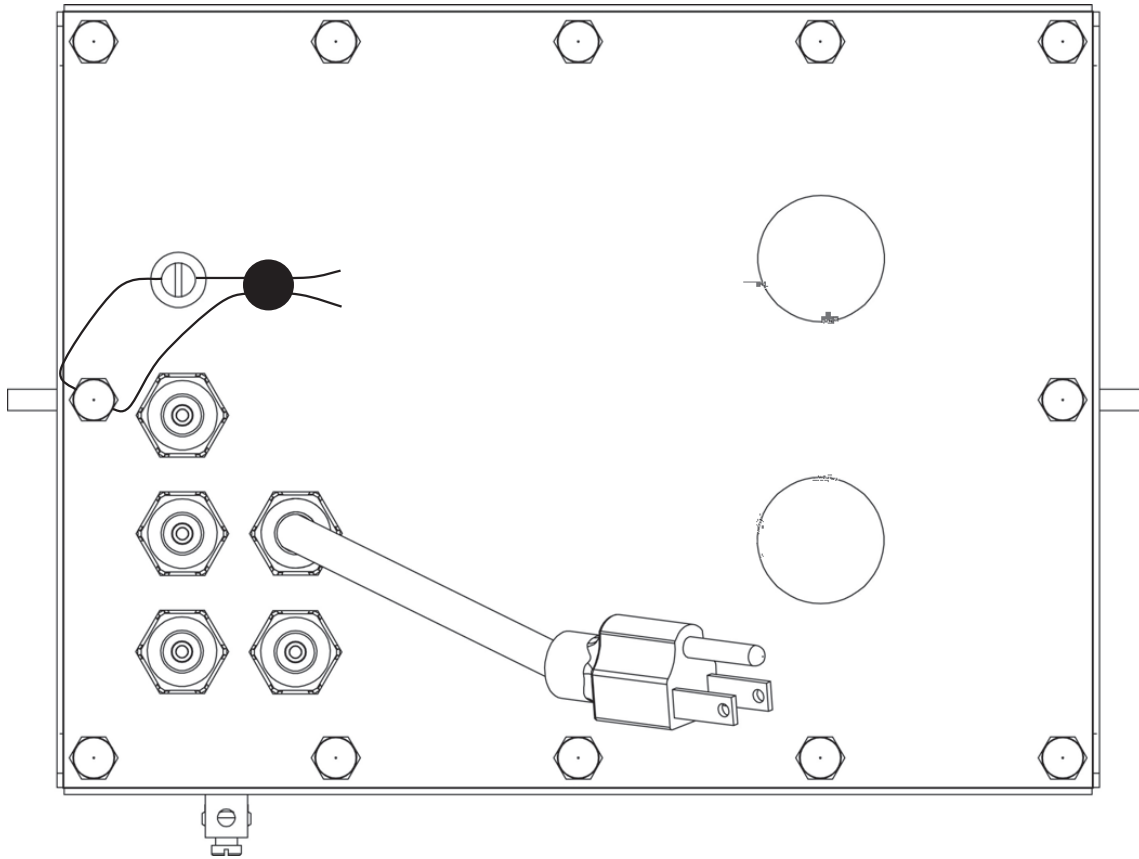

Figure No. 13

MODEL 205DC

The Model 205DC has been created to change the input power requirement from 115-230VAC, 0.4A to 12-15VDC, 1.0A. The AC input filtering and AC–DC converter components have been removed from the back panel of the indicator.

The input power wiring and the main printed circuit board power wiring have been changed. The input power source can be provided by the user and is to be 12-15VDC, 1A. The main printed circuit board positive (red) power wire is connected to the L1(H) terminal and the negative (black) wire is connected to the GND terminal of the input power terminal block.

Strip ¼" of insulation from each of the power source positive and negative wires. Solder tin each wire. Connect the positive (+) voltage source wire to the terminal marked L1(H) on the terminal block as shown below. Connect the negative (-) voltage source wire to the terminal marked GND on the terminal block as shown in Figure No. 14 below.

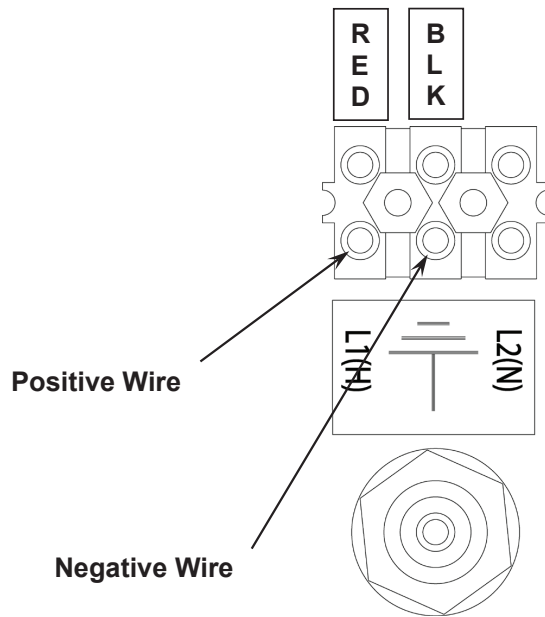The indicator can be operated as described in this manual.

Figure No. 14

LOCAL/REMOTE SETUP

If the indicator is to function as a remote indicator, at the 5Er5Cl (REMOTE INDICATOR SETUP) prompt, press the ✳/**UP ARROW** key to select **YES** and then press the **TARE/ENTER** key.

With 5Er5Cl set to YES, the LrP= (Local/Remote Port) will be displayed to select the serial port for the LOCAL/REMOTE communications.

With the LrP= (Local/Remote Port) displayed, press the **TARE/ENTER** key to show the current setting. If the setting displayed is acceptable, press the **TARE/ENTER** key again to save it. Otherwise, use the ✳/**UP ARROW** key to toggle to a new setting and then press the **TARE/ENTER** key to save it. Allowable values are 0, 1, 2, or 3 (for port 0 through port 3) and 4 for the optional 2xx-RS232 card (if installed).

Any unused RS-232 serial port may be used (see Figure 15 for port 1 interconnect wiring) for distances less than 100 feet.

NOTE: If the distance between the local and remote indicator is greater than 100 feet, the serial port with a 20mA Current Loop receiver and transmitter, port 0, must be used (see Figure 16 for interconnect wiring).

⚠ **IMPORTANT!** The selected serial port (5 ιoP) for the remote indicator must be configured the same as the serial port used for the local indicator. In addition, the Continuous Output must be set to NO (Cont=no).
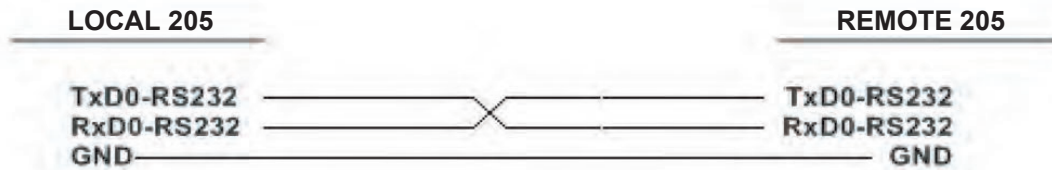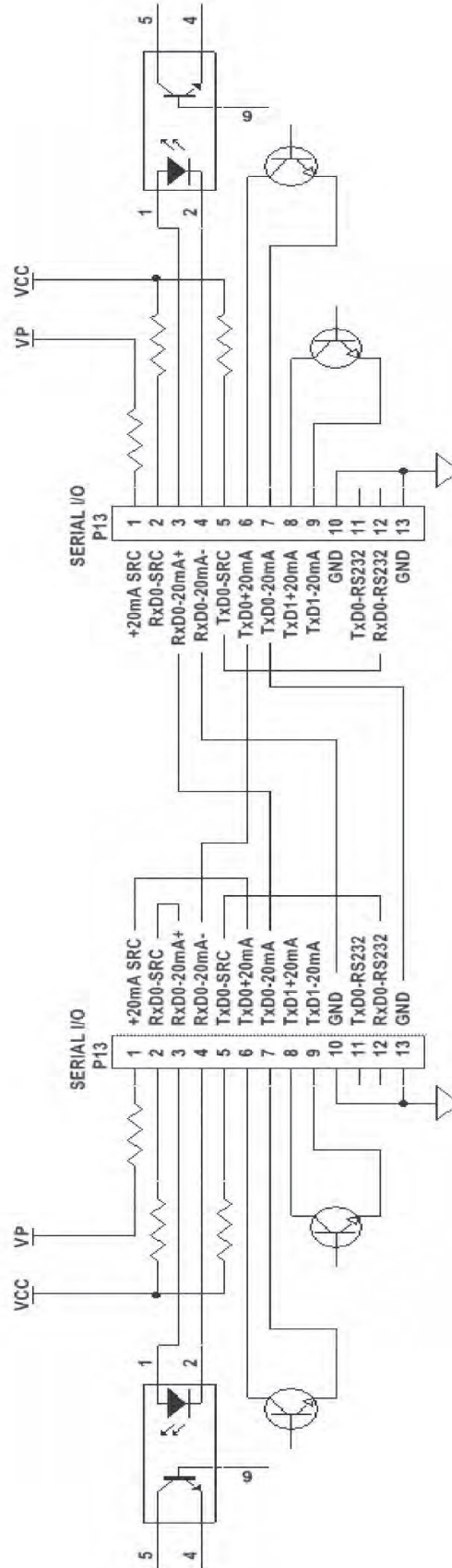
Local/Remote 205 RS-232 Wiring

Figure No. 15

LOCAL/REMOTE SETUP, CONT.

Local/Remote 205 20mA Current Loop Wiring

Figure No. 16

LOCAL/REMOTE SETUP, CONT.

Local/Remote 205 20mA Current Loop Wiring

⚠ **IMPORTANT! Make all connections with both indicators powered off.**

Referring to Figure 16 on the previous page, connect the Local and Remote indicators following the procedures below:

Local 205 Jumper Connections on P13

Three jumpers are required on the Serial I/O terminal P13:

1. Jumper terminal 1 to terminal 6.
2. Jumper terminal 2 to terminal 3.
3. Jumper terminal 5 to terminal 12.

Remote 205 Jumper Connections on P13

One jumper is required on the Serial I/O terminal P13:

1. Jumper terminal 5 to terminal 12.

A *four-wire cable* is required to connect the Local and Remote indicators.

1. Connect Local indictor connector P13 terminal 4 to Remote indicator P13 terminal 6 (Local 4 to Remote 6).
2. Connect Local indictor connector P13 terminal 7 to Remote indicator P13 terminal 3 (Local 7 to Remote 3).
3. Connect Local indictor connector P13 terminal 10 to Remote indicator P13 terminal 4 (Local 10 to Remote 4).
4. Connect Local indictor connector P13 terminal 13 to Remote indicator P13 terminal 7 (Local 13 to Remote 7).

PART IDENTIFICATION

(Rear Enclosure Sub Assembly)

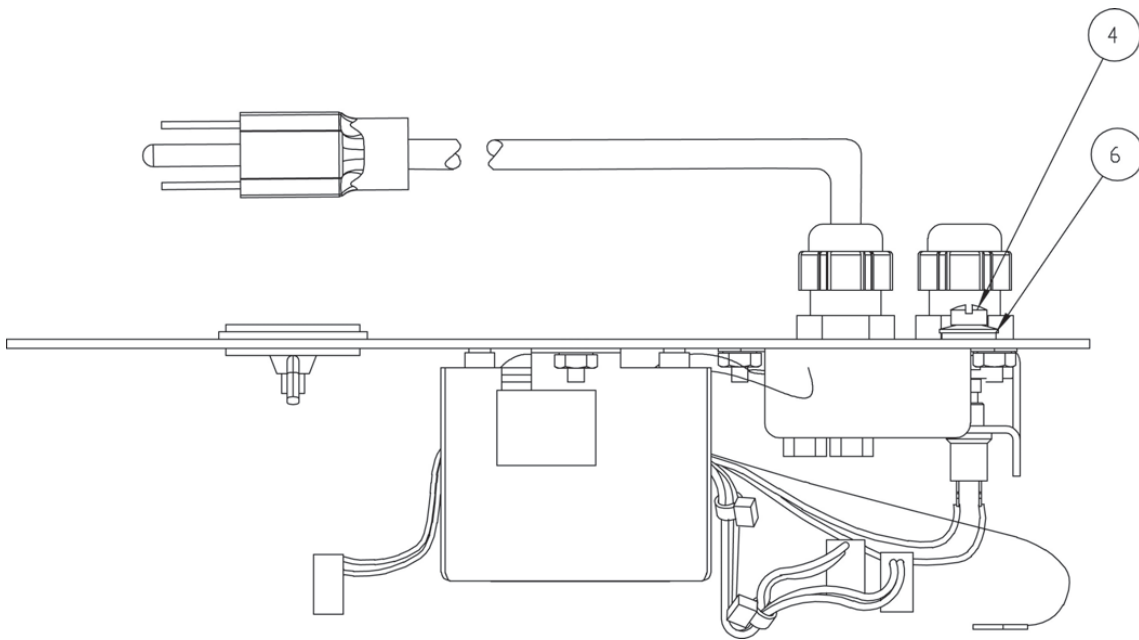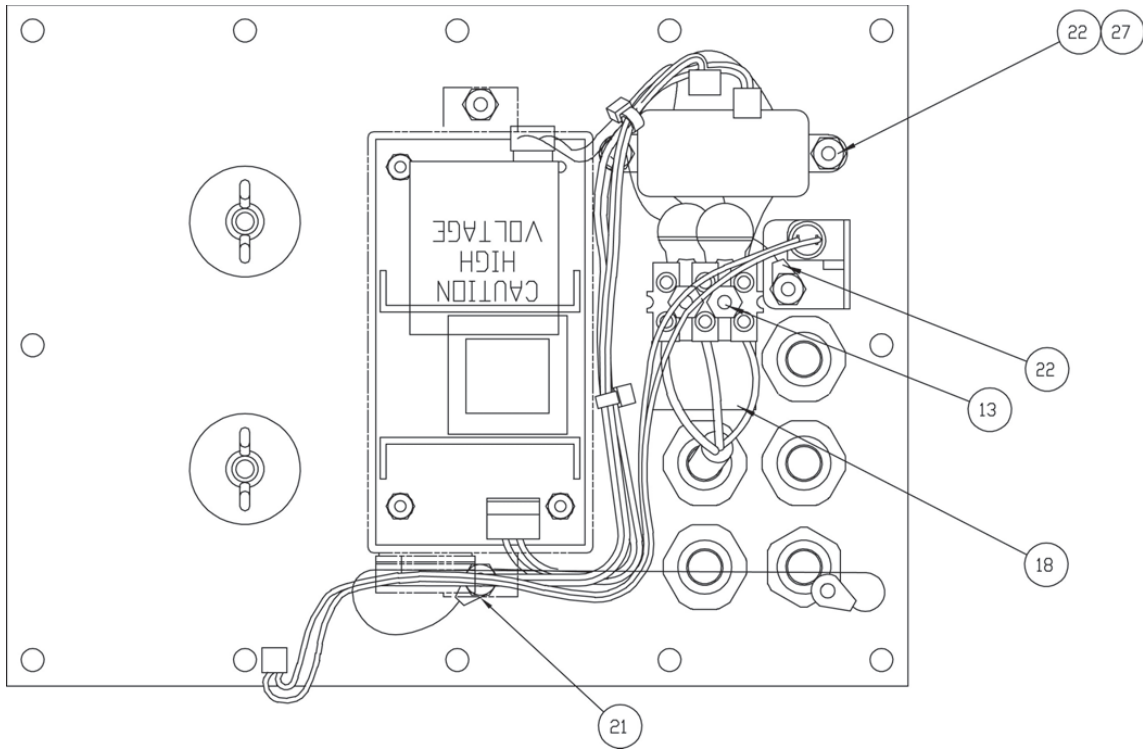| ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	5	6013-0039	HEX NUT #6-32
2	3	6680-1107	SPACER #4-40 X 0.75"
4	1	6021-1108	SCW FILLISTER MACHINE-SCW #10-32 x .375 S.S.
6	1	6024-1081	WASHER FLAT #10 NEOPRENE BACKING S.S.
7	4	6540-1104	PLUG, HOLE 0.173-.240 RED POLYETH
8	4	6610-2248	CONN GLAND .187-.312 GRIP .599 MTG BLK
9	1	6610-5007	CABLE CLIP
10	5	6680-0004	WASHER LOCK INT. TOOTH #6 Z/P
11	4	6680-0138	SPACER #6 x .187 NYLON
13	2	6680-0203	SPACER (PCB) #6-32 x .500
14	1	6800-1032	POWER SUPPLY BOARD
16	1	6980-1030	POWER CORD 18/3 SVT CEE 6.3 FT (UL APPROVED)
17	1	8200-B019-08	BRACKET: CALIBRATION SWITCH
18	1	8200-B104-08	LABEL: 205/210 TERM. BLOCK
19	1	8200-B238-0A	CABLE: 205/210 POWER SUPPLY OUTPUT
21	1	8200-B212-0A	CABLE: GND
22	1	8200-B237-0A	CABLE: AC POWER W/FILTER 205/210 DWI (EU)
24	1	8200-C016-0A	WELDMENT: ENCLOSURE REAR
25	1	8200-C363-08	POWER SUPPLY COVER
26	1	8510-C346-0I	LABEL – HIGH VOLTAGE
27	1	8200-B392-0A	CABLE: AC POWER W/FILTER 205/210 DWI (US)
30	1	8539-B254-0A	ASSEMBLY: CABLE, CALIBRATION SWITCH
32	1	6980-0250	POWER CORD H05VV-F3G 1mm, 10A/250V, BLACK
33	1	6610-1506	GLAND CONN. NICKEL
34	2	3502-B217-0A	HOLE PLUG, ASSEMBLY 1-1/8" DIA. S.S.

PART IDENTIFICATION, CONT.
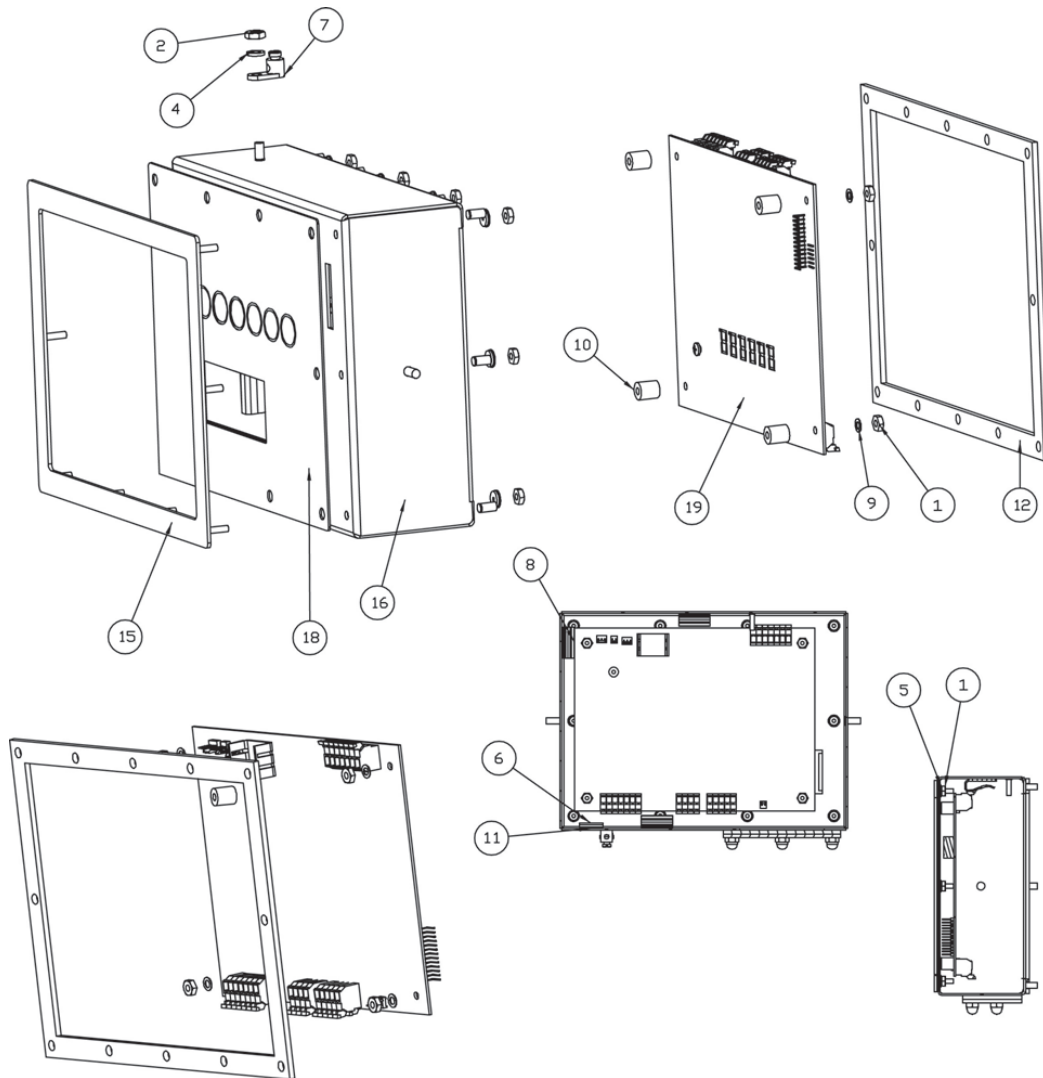
(Rear Enclosure Sub Assembly)

POWER SUPPLY COVER
IS SHOWN AS TRANSPARENT
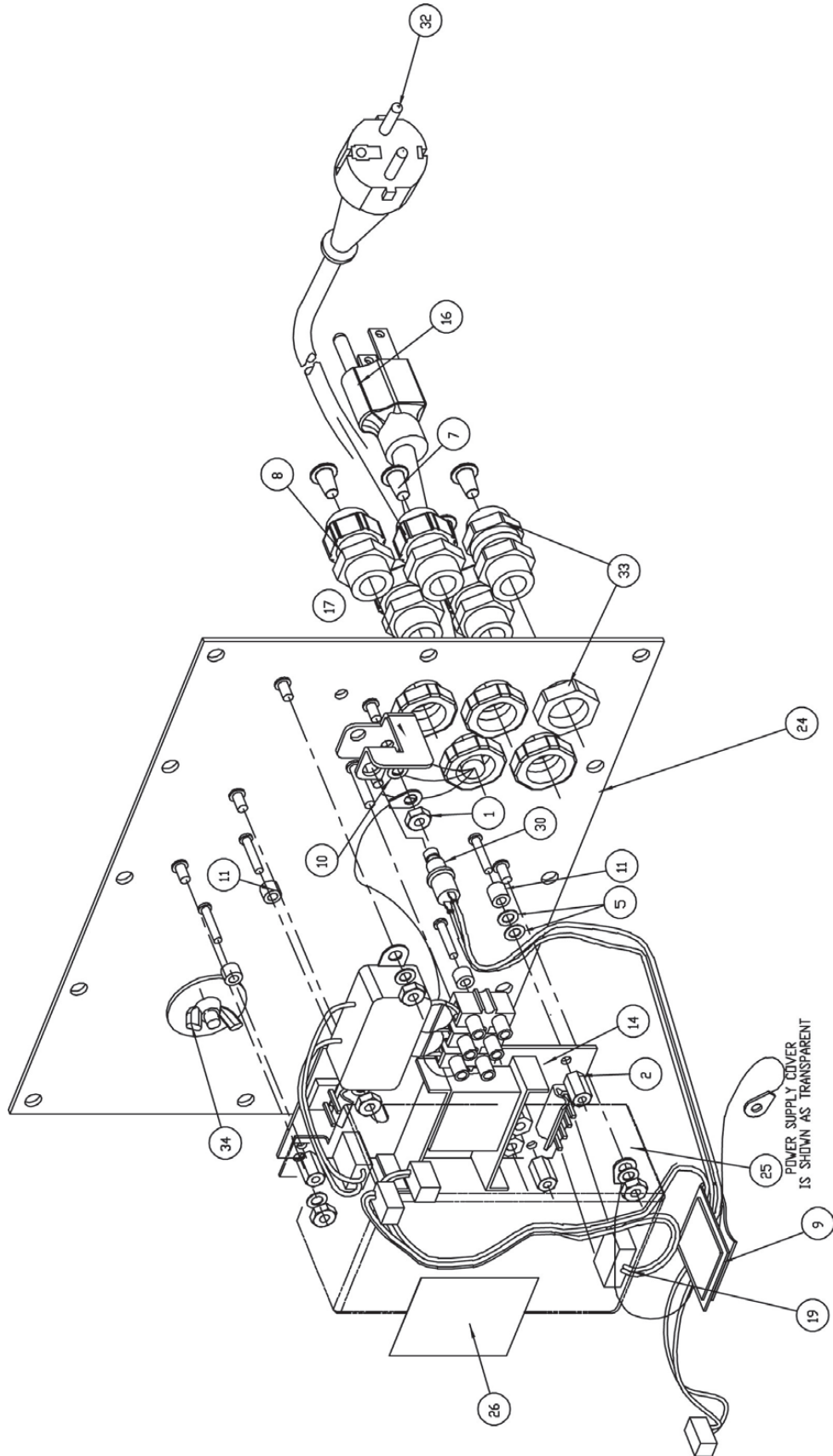
PART IDENTIFICATION, CONT.

(Rear Enclosure Sub Assembly)

PART IDENTIFICATION, CONT.

(Front Enclosure Sub Assembly)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	14	6013-0039	NUT HEX #6-32
2	1	6013-0297	NUT 10-32 HEX
3	3	6013-0433	NUT HEX #10-32 ACORN S.S.
4	1	6021-0623	SCW PAN HEAD #6-32 x .750 PDMS
5	10	6024-1078	WASHER FLAT #6 NEOPRENE BACKING S.S.
6	1	6560-0064	DESICCANT 1 x 1 BAG
7	1	6610-5002	GROUND LUG
8	3	6610-5007	CABLE CLIP
9	4	6680-0004	WASHER LOCK INT. TOOTH #6 Z/P
10	4	6680-1049	SPACER (PCB) #6 x ..438
11	1	6710-1017	TAPE DBL-SIDED 1.0 WIDE 45 MIL THK.
12	1	8200-B014-08	GASKET FOR 210 ENCLOSURE
15	1	8200-C015-0A	WELDMENT: BEZEL FOR 210
16	1	8200-C017-0A	WELDMENT: ENCLOSURE, FRONT
18	1	8200-D100-08	KEYPAD: 205 DWI
19	1	8200-D124-0A	PCB ASSEMBLY - 205 CONTROLLER
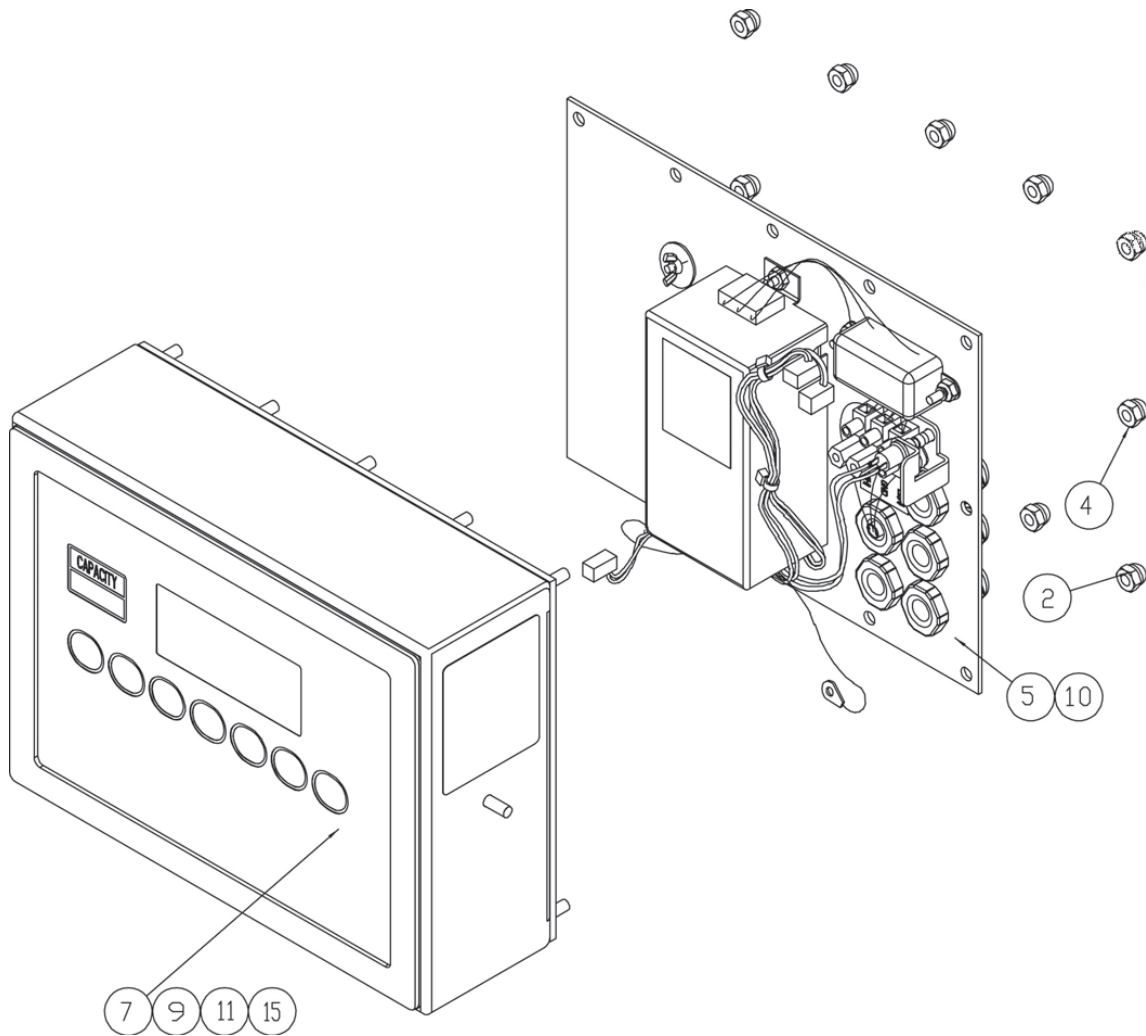
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
2	11	6013-0433	NUT HEX #10-32 ACORN S.S.
4	1	8200-B026-08	NUT HEX #10-32 ACORN S.S. DRILLED
5	1	8200-D207-0A	SUBASSEMBLY: REAR ENCLOSURE (205, 205-A)
7	1	8200-D208-1A	SUBASSEMBLY: FRONT (205)
9	1	8200-D208-3A	SUBASSEMBLY: FRONT (205-A)
10	1	8200-D207-1A	SUBASSEMBLY: REAR ENCLOSURE (205EU)
10	1	8200-C247-0A	SUBASSEMBLY: REAR ENCLOSURE (205DC)
11	1	8200-D208-4A	SUBASSEMBLY: FRONT (205DC)
15	1	8200-D208-8A	SUBASSEMBLY: FRONT (205EU)

STATEMENT OF LIMITED WARRANTY

WARRANTY TERMS

Cardinal Scale Manufacturing Company warrants the equipment we manufacture against defects in material and workmanship. The length and terms and conditions of these warranties vary with the type of product and are summarized below:

PRODUCT TYPE	TERM	MATERIAL AND WORKMANSHIP	LIGHTNING DAMAGE See note 9	WATER DAMAGE See note 7	CORROSION See note 4	ON-SITE LABOR	LIMITATIONS AND REQUIREMENTS
WEIGHT INDICATORS	90 DAY REPLACEMENT ---------- 1 YEAR PARTS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
LOAD CELLS (Excluding Hydraulic)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased with Guardian Vehicle Scale)	LIFE	YES	YES	YES	YES	90 DAYS	1, 5, 6, 8 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased separately)	10 YEARS	YES	YES	YES	YES	NO	1, 5, 6, 8, 9 A, B, C, D
VEHICLE SCALE (Deck and Below Excl. PSC Series)	5 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6 A, B, C, D, E
PSC and LSC SCALE STRUCTURES (Deck and Below)	3 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6, 11 A, B, C, D
GUARDIAN FLOOR SCALES	10 YEARS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6, 9, 10 A, B, C, D
ALL OTHER CARDINAL PRODUCTS	1 YEAR	YES	YES	YES	YES	NO	1, 2, 5, 6 A, B, C, D, E
REPLACEMENT PARTS	90 DAYS	YES	YES	YES	YES	NO	1, 2, 4, 5, 6 A, B, C, D
IN-MOTION VEHICLE SCALES	1 YEAR	YES	YES	YES	YES	90 DAYS	1, 2, 5, 6 A, B, C, D
SOFTWARE	90 DAYS	YES	N/A	N/A	N/A	NO	1, 6 B, C, D

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Webb City, MO 64870

Cardinal®
Cardinal Scale Manufacturing Co.

APPLICABLE LIMITATIONS AND REQUIREMENTS

1. This warranty applies only to the original purchaser. The warranty does not apply to equipment that has been tampered with, defaced, damaged, or had repairs or modifications not authorized by Cardinal or has had the serial number altered, defaced or removed.
2. This warranty is not applicable to equipment that has not been grounded in accordance with Cardinal's recommendations.
3. This equipment must be installed and continuously maintained by an authorized Cardinal dealer.
4. Applies only to components constructed from stainless steel.
5. This warranty does not apply to equipment damaged in transit. Claims for such damage must be made with the responsible freight carrier in accordance with freight carrier regulations.
6. Warranty term begins with date of shipment from Cardinal.
7. Only if device is rated NEMA 4 or better or IP equivalent.
8. Lifetime warranty applies to damages resulting from water, lightning, and voltage transients and applies only to the hydraulic load cell structure itself (does not include pressure transducers, rubber seals, o-rings, and associated wiring).
9. 10 Year prorated warranty on hydraulic load cells.
10. 1 Year warranty for scale structure.
11. PSC models' warranty coverage applies only to agricultural installations on farms up to 3,000 acres (LSC models not limited in this manner).
12. Load cell kits MUST be installed in accordance with Cardinal Scale instructions. Failure to follow these instructions will void the warranty.

EXCLUSIONS

A.) This warranty does not include replacement of consumable or expendable parts. The warranty does not apply to any item that has been damaged due to unusual wear, abuse, improper line voltage, overloading, theft, fire, water, prolonged storage or exposure while in purchaser's possession or acts of God unless otherwise stated herein.

B.) This warranty does not apply to peripheral equipment not manufactured by Cardinal. This equipment will normally be covered by the equipment manufacturer's warranty.

C.) This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of our product. Cardinal will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract. Cardinal reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate said improvements in equipment previously manufactured.

D.) This warranty is in lieu of all other warranties expressed or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Cardinal products installed in the forty-eight contiguous United States and Canada.

E.) This warranty does not cover paint coatings due to the variety of environmental conditions.

F.) Do not cut load cell cables on load cells returned for credit or warranty replacement. Cutting the cable will void the warranty.

G.) Software is warranted only for performance of the functions listed in the software manual and/or the Cardinal proposal.

H.) The software warranty does not cover hardware. Warranties on hardware are provided from the hardware vendor only.

I.) The software warranty does not cover interfacing issues to non-Cardinal supplied hardware.

J.) The software warranty does not include automatic software upgrades unless purchased separately.

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