

## Cardinal 728

### SETUP AND CALIBRATION

Your 728 indicator has been thoroughly tested and calibrated before being shipped to you. If you receive the indicator attached to a scale, calibration is not necessary. If connecting the 728 to a scale for the first time or recalibration is necessary, proceed as indicated below. During the setup and calibration process it will be necessary to enter operational parameters via the 728 keypad. Pressing the **NET** key will cause the data entered or displayed to be retained and the 728 will advance to the next prompt. The cursor location is identified by the blinking character and can be advanced to the left to the next position by pressing the **TARE** key. Pressing the **GROSS** key will change the blinking character to the next value.

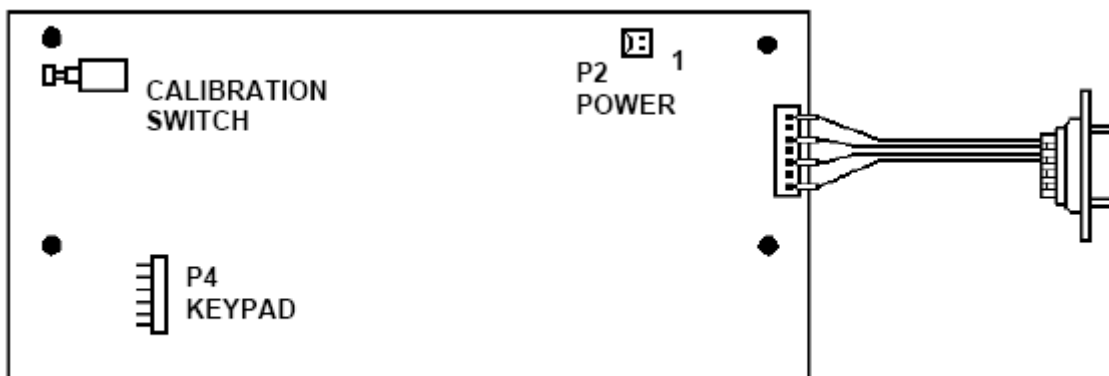


Figure No. 4

#### To begin Setup and Calibration:

With the unit turned off, remove the 8 screws holding the front panel to the rear enclosure. Carefully separate the front panel from the rear enclosure exposing the 728 main board. On the upper right back of the board, locate the calibration switch (S1) located.. Press and hold S1 in. Next, press and release the **ON/ZERO** key, then release the S1. This will turn the unit on and place it in the calibration mode. When the int= display prompt is shown in the 728 display window, setup and calibration may continue.

#### Scale Interval

With the display showing int= press the **NET** key. The stored interval will be displayed. Press the **GROSS** key until the proper scale interval (1, 2 or 5) is displayed then press the **NET** key to store the displayed value and proceed to the next prompt.

NOTE! Although the values of 1 through 9 are displayed for "int=", only 1, 2 or 5 are accepted.

#### Decimal Point Location

With the display showing dP= press the **NET** key then the **GROSS** key until the desired number of digits to the right of the decimal point is displayed then press the **NET** key to store this setting and proceed to the next step. Numbers zero (0) through three (3) are available and correspond to the following decimal point locations:

**0 = XXXX 1 = XXX.X 2 = XX.XX 3 = X.XXX**

#### Scale Capacity

With the display showing CAP= press the **NET** key then use the **GROSS** key to enter the proper digit at the blinking location then press the **TARE** key to step to the left and the next digit location. Repeat the process until all four (4) digits of the scale's capacity have been entered. Should you make a mistake and press the **TARE** key with an incorrect digit entered, it will be necessary to repeatedly press the **TARE** key until the blinking character returns to the proper location, then use the **GROSS** key to enter the correct digit. After all four (4) digits have been correctly entered; press the **NET** key to store the capacity and advance to the next step.

## Load Calibration Weight

The indicator will now display **Lod=** which is a prompt for the entry of the calibration weight value and placement of this amount of test weights on the scale platform. If the scale has been previously calibrated and you do not wish to change the calibration setting, simply press the **NET** key twice without taking any other action and the internal calibration factor will be retained. If, however, the scale needs to be calibrated press the **NET** key once and proceed as follows:

- 1 . Place the calibrated test weights on the scale platform. It is recommended that a minimum of 50% of the scale's capacity be used, but 70% to 100% is preferred.
2. Determine the exact amount of test weight placed on the scale platform and enter this value into the 728 by using the **GROSS** and **TARE** keys in the same manner used to enter the scale's capacity. Verify that the numbers entered are the same as the total weight of test weights, and the least significant digit agrees with the scale interval.
3. Press the **NET** key.

After a moment the indicator will display the message **UnLd** which is a request that the test weights be removed from the scale platform. Remove the weights then press the **NET** key. The calculated calibration factor is now stored in the 728's nonvolatile memory.

## Zero Tracking Range

The 728 display will now indicate **trA=**. Press the **NET** key to show the value assigned to the Automatic Zero Tracking range. This is the value in scale divisions that will be automatically zeroed off. That is, if the scale divisions are 0.5 and the zero tracking is set to 3, the 728 will automatically zero weights of 1.5 or less. Values of 0, 1, 2, 3 and 0.5 division are available for the zero tracking range. Use the **GROSS** key to step through these available values. Once the proper value is shown press the **NET** key to store the value.

## Four Percent Zero Tracking Range Limit

The display will next indicate **trL=** which is the prompt requesting whether a 4% limit be placed on the Automatic Zero Tracking feature. This 4% limit is a requirement by Canadian Weights and Measures, but at the time this was printed, is not a US requirement. Press the **NET** key then use the **GROSS** key to enter either YES, (use the 4% limit) or NO, (do not use the 4% limit) and press the **NET** key.

## Power Up Zero

With the display showing **PUO=** press the **NET** key to show current setting, then press **GROSS** to select YES (enable) or NO (disable). Press **NET** key to save setting.

## Digital Filter Level Selection

The display will now show **FLt=** which is the prompt for the selection of the digital filtering level. Four (4) levels of filtering (0, 1, 2 and 3) are available. They are as follows:

0 = NO FILTERING

1 = MINIMAL FILTERING (sample rate = 2)

2 = MODERATE FILTERING (sample rate = 1)

3 = CUSTOM FILTERING

Three (3) custom filtering is used when zero (0), one (1) or two (2) are inadequate. Press the **NET** key then use the **GROSS** key to select the desired level of filtering then press the **NET** key to save the setting.

### **Digital Filter Level Selection, Cont.**

If you select three (3), custom filtering, the 728 will respond with F= and the current setting for the filter level. The filter level is a number from 1 to 99 that corresponds to the level of filtering with 99 being the greatest filtering and 1 the least. Use the **GROSS** and **TARE** keys to select the filter weight level, then press the **NET** key to save the setting.

Next, the 728 will respond with b= and the current break range setting. The break range is a number from 1 to 99 that corresponds to the number of division change to break out of filtering. Use the **GROSS** and **TARE** keys to select the break range value then press the **NET** key to save the setting.

Your 728 should arrive from the factory with the proper filter setting already entered. Please check with your scale service technician should you wish to change the programmed filter weight and break range.

### **Motion (Unstable) Range**

The display will next indicate Un5= which is the prompt for the motion (unstable) range. Changes in weight exceeding the selected number of divisions will cause the stable indicator to turn off. Values from zero (0) to nine (9) divisions may be selected after pressing the **NET** key by pressing the **GROSS** key. Once the correct value is shown press the **NET** key to save the setting.

### **Sample Rate**

The display will now indicate Sr= which is the prompt for entry of the sample rate. The sample rate may be set from a minimum of one (1) sample per second to a maximum of twelve (12) samples per second in one (1) sample per second intervals. After pressing the **NET** key use the **GROSS** and **TARE** keys until the desired sample rate is displayed then press the **NET** key to save the setting.

The indicator will perform a display lamp test, display the software revision number then the gross weight. The setup and calibration process has been completed. Remove the power from the indicator and re-assemble for use.

## **POWER CONNECTION**

To apply power to your indicator, connect the power cable's connector (round) into the indicator and then connect the power cable's electrical connector (square) into a 115VAC 50/60 Hz (optional 230VAC 50/60 Hz) outlet. Your indicator is now ready for operation.

## **OPERATION**

After applying power, make certain that the scale platform is empty, then press the **ON/ZERO** key. After a second or so the display should indicate a zero weight with the ZERO annunciator turned on. Weighing may now begin. If the display does not indicate zero, press the **ON/ZERO** key again to zero the weight display.

## **SETUP REVIEW**

The 728 Setup Review mode allows you to review the operational parameters, but does not allow you to change them. To enter the setup review mode, simply turn the 728 off then press and hold the **NET** key then press the **ON** key. The 728 will display the value for the power up zero feature PUO=. Refer to the instructions listed in the Setup and Calibration section of this manual for information on each Setup parameter.

## **ERROR AND STATUS DISPLAYS**

The 728 is equipped with a diagnostic software program that tests various portions of the instrument's circuitry and verifies proper operation. Should a problem be detected, an error or status message will be displayed alerting the operator to that condition. The following lists these errors and status displays and their meaning:

### **Display Meaning**

UNSt Motion is present when the 728 is attempting to perform one of the following operations:

Power Up

Zero Weight Display

Tare Weight Entry

UnLd The weight on the scale platform exceeds the zero range on Power On.

LoAd The scale deadload is less than the zero range on Power On.

-oF- Attempting to display a negative number greater than -999 or a positive number greater than 9,999.

-OC- Scale weight exceeds scale capacity.

CALB Indicates improper stored calibration data, calibration is necessary.

Err Indicates a disallowed keypad entry: Attempt to zero when the weight is outside the scale zero range.

Attempting to enter a Tare value greater than 999

ErrA No load cell signal or load cell polarity reversed.

## **BEFORE YOU CALL FOR SERVICE**

The 728 has been designed to provide you with years of trouble-free operation. In spite of this, trouble sometimes happen. Before calling for service assistance you should make some initial checks to verify that a problem does exist. The following describes several types of symptoms along with suggested remedies.

### **Problem Possible Solutions**

Display does not turn on Is DC power supply cable plugged into 728? Is AC power adapter plugged into wall receptacle? Check 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 of any kind?

Incorrect weight displayed Has the instrument been calibrated? Insure that the scale platform isn't touching an adjacent object. Have proper operation procedures been followed?

Indicator will not display Refer to Error Display section and make certain that the weight UnLd or Lod= messages are not on. If so, and scale is not loaded, perform the calibration sequence.