CALIBRATION

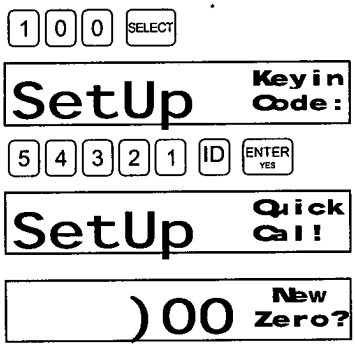
The weight indicator to load cell(s) is calibrated by establishing zero (no load) and span (known test load) reference points. There are two ways to access the calibration menu, directly from the weight mode using the Quick Calibration procedure, or upon exiting the setup mode.

QUICK CALIBRATION

Once all setup parameters are configured, the Quick Cal procedure is the easiest way to access the calibration routine. Typically used for re-calibration, Quick Cal can be accessed directly from the weigh mode without entering the setup mode.

QUICK CAL ACCESS

Example:
Accessing Quick Calibration Mode



An access code is required to enter the Quick Cal. From the weigh mode, key in **100 [SELECT]** to access the **Keyin Code:** display. Key in the Quick Cal access code routine (see example: *Accessing Quick Calibration Mode*). The default Quick Cal access code is **54321 [ID] [ENTER]**.

QUICK CAL ACCESS (460)

The GSE default Quick Calibration access code for the 460 is

ZERO + SELECT ZERO PRINT UNITS TARE

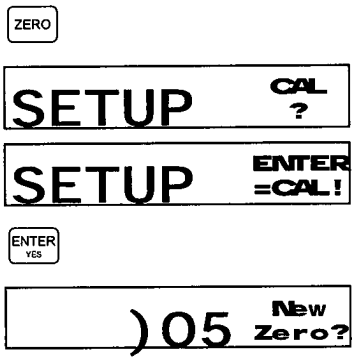
Changing the Quick Cal Access Code

The default Quick Cal access code can be changed at P401 of the setup mode. Access the setup mode (see *Accessing The Parameter Setup Mode* on page 3-3), then key in **401 [SELECT]** to access the Quick Calibration Access Number parameter. If P401 displays **QCAL None!**, then the default access code is in effect. Otherwise the custom code will be displayed. To enter a new Quick Cal access code, key in the new code and press **[ENTER]**. To restore the default Quick Cal access code, press **[CLR]**.

The Quick Cal access code consists of up to five alpha-numeric characters. Alpha characters may be entered through the front panel (see Character Entry on page 5-6). Alpha characters should not be included in the access code unless an alpha keyboard is used to access the calibration routine. Although it is possible to scroll in the code from the front keypad, characters are not viewable during entry.

CALIBRATION UPON EXITING SETUP MODE

Example:
Calibration When Exiting Setup



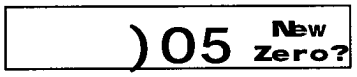
You should calibrate the scale system after making changes to the setup parameters, especially after setting the capacity and division size.

Every time you exit the setup mode, the prompt **ENTER=CAL!** is displayed. Press **[ENTER]** at this prompt to access the calibration routine (see example: *Calibration When Exiting Setup*). Changes to parameters and calibration are saved upon exiting the calibration routine.

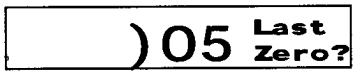
CALIBRATION METHODS

There are six methods of calibration. Press **[SELECT]** to select a calibration method (see example: *Selecting a Calibration Method*). Press **[ENTER]** to begin the calibration method selected. Refer to the appropriate section for calibration instructions.

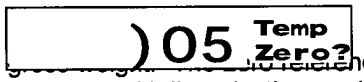
Example:
Selecting a Calibration Method



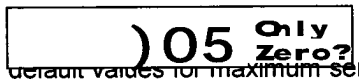
SELECT



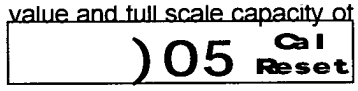
SELECT



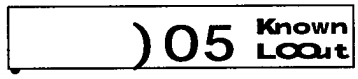
SELECT



SELECT



SELECT



New Zero - Establishes a new zero (no load) and span (test load)

Last Zero - Performs a span re-calibration without removing the test load. (This selection is not available with linearization enabled.)

Temp Zero - Performs a calibration without removing the current gross weight. The tare reference determined during the last calibration is maintained. *(This selection is not available with linearization enabled.)*

Only Zero - Establishes a new zero reference without affecting span.

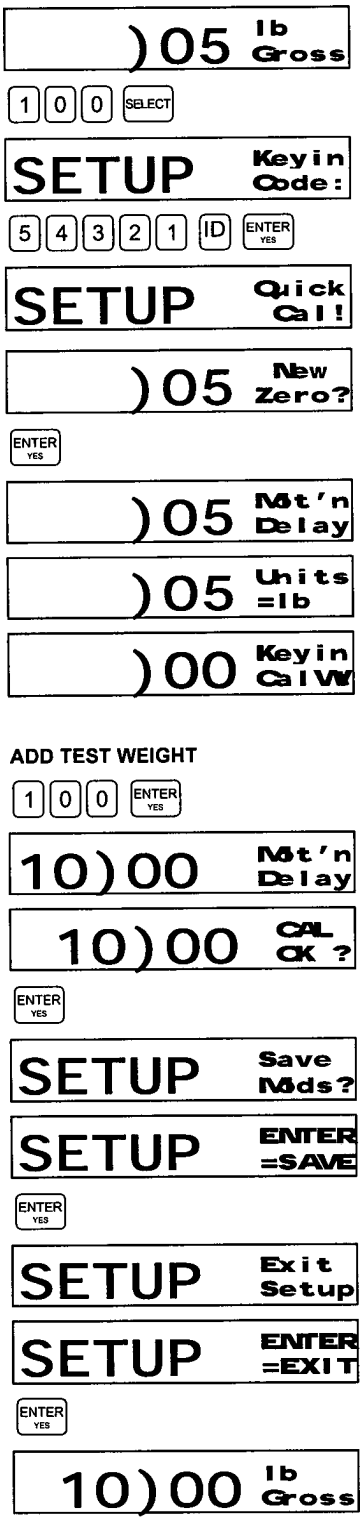
Cal Reset - Adjusts the zero and gain factors of the A/D amplifier to default values for maximum sensitivity.

Known LCOut - Calibrates without the use of test weights. The mV/V value and full scale capacity of each load cell must be known.

GENERAL NOTES ON CALIBRATION

- Pressing **[CLR]** at any point in the calibration routine moves back one
- Pressing **[CLR]** at the New Zero? prompt exits calibration mode.
- A calibration weight can be applied before or after entering the calibration weight value. The display prompts you to Keyin CalWt (key in calibration weight) or Add CalWT (add calibration weight) at the appropriate time.
- The digital filter is automatically set to 4 seconds during calibration.
- A motion delay is enforced during zero and span calibration.
- New calibration values are not permanently saved until the calibration mode is exited and changes are saved by pressing **[ENTER]** at the **ENTER=SAVE** prompt. If power is lost during calibration, the previously saved calibration values will be in effect when power is restored.

Example:
New Zero Calibration



NEW ZERO

The most common calibration procedure, **New Zero** establishes a new zero (no load) and span (test load) calibration reference. Use this method for first-time calibration and complete re-calibration.

To perform a New Zero calibration:

1. Remove all weight from the scale.
2. Access the calibration mode as described on page 4-2.
3. Select the New Zero calibration method as described in *Calibration Methods* on page 4-3.
4. Press **[ENTER]** at the **New Zero?** prompt to establish the new zero reference.
5. After establishing the zero reference, the default calibration units are displayed momentarily followed by the **Keyin CalW** prompt.

   Apply the calibration weight, key in the calibration weight value in terms of the default calibration units and press **[ENTER]** to establish span.

⚠ If the calibration weight value was entered before the weight was applied, the display will prompt **Add CalW**. Add the calibration weight and press **[ENTER]**.

6. After establishing span, **CAL CK?** is displayed suggesting that the calibration is acceptable, or **ReCal???** is displayed suggesting that the calibration procedure should be repeated.

   Accept the calibration by pressing **[ENTER]** at the **CAL CK?** prompt or **[CLR]** at the **ReCal???** prompt.

   - or -

   Repeat the calibration by pressing **[CLR]** at the **CAL CK?** prompt or **[ENTER]** at the **ReCal???** prompt.

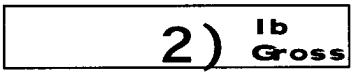
8. Once the calibration is accepted in step 6, press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

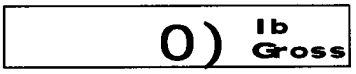
   - or -

   To exit the calibration mode without saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

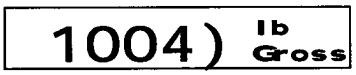
⚠ If you choose to "undo" the calibration when exiting the setup mode, you will also undo any unsaved changes made to the setup parameters.

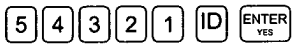
Example:
Last Zero Calibration

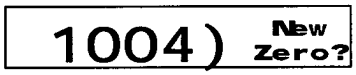


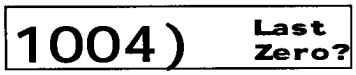


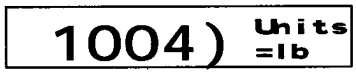
ADD 10,000 LB TEST WEIGHT

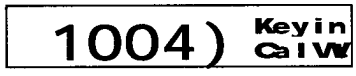


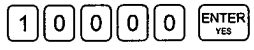


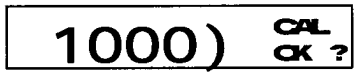












LAST ZERO

Last Zero allows span re-calibration without removing the applied test weight. The last zero established by pressing **[ZERO]** from the weigh mode will be used as the zero reference. This procedure is especially useful when performing routine tolerance checks on large capacity scales. A scale found to be out-of-tolerance can be easily calibrated without having to remove the test weights to reestablish a zero reference.

To perform a Last Zero calibration:

1. Remove all weight from the scale.
2. Press **[ZERO]** to zero the scale in the weigh mode.
3. Apply the calibration test weight.
4. Access the calibration mode as described on page 4-2.
5. Select the Last Zero calibration method as described in *Calibration Methods* on page 4-3.
6. Press **[ENTER]** at the **Last Zero?** prompt to display the **Keyin CalW** prompt.
7. Key in the calibration weight value in terms of the default calibration units and press **[ENTER]** to establish span.
8. After establishing span, **CAL OK?** is displayed suggesting that the calibration is acceptable, or **ReCal???** is displayed suggesting that the calibration procedure should be repeated.

   Accept the calibration by pressing **[ENTER]** at the **CAL OK?** prompt or **[CLR]** at the **ReCal???** prompt.

   - or -

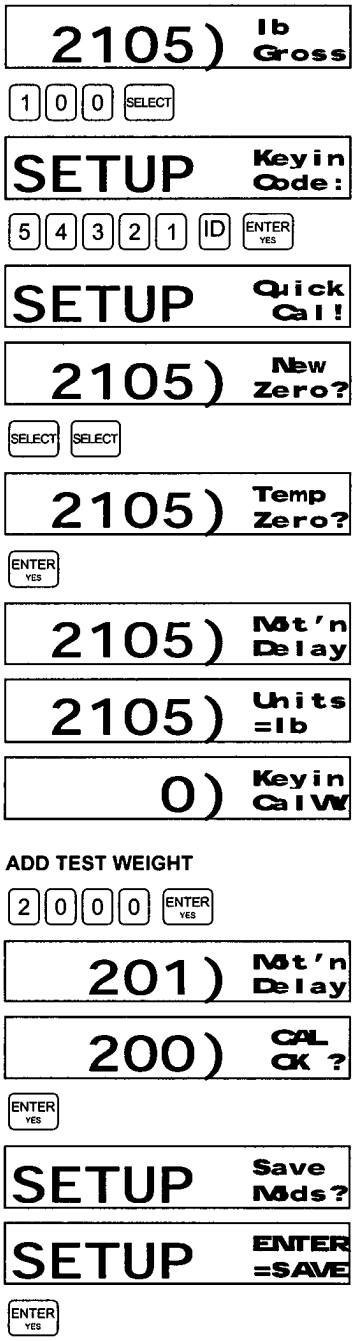
   Repeat the calibration by pressing **[CLR]** at the **CAL OK?** prompt or **[ENTER]** at the **ReCal???** prompt.
9. Once the calibration is accepted in step 6, press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

   - or -

   To exit the calibration mode without saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

⚠ If you choose to "undo" the calibration when exiting the setup mode, you will also undo any unsaved changes made to the setup parameters.

Example:
Temporary Zero Calibration



If you choose to "undo" the calibration when exiting the setup mode, you will also undo any unsaved changes made to the setup parameters.

TEMPORARY ZERO

Temp Zero is used to calibrate without establishing a new zero. Calibration can be performed without removing the currently applied gross load. A temporary zero is established so that test weights can be added during calibration. The original zero reference determined during the previous calibration is not affected. This procedure is commonly used to calibrate hopper scales where it is impractical to empty the product before calibrating.

To perform a Temp Zero calibration:

1. Access the calibration mode as described on page 4-2.
2. Select the Temp Zero calibration method as described in *Calibration Methods* on page 4-3.
3. Press **[ENTER]** at the **Temp Zero?** prompt to establish a temporary zero reference.
4. After establishing the temporary zero reference, the default calibration units are displayed momentarily followed by the **Keyin CalWt** prompt.
5. Apply the calibration weight, key in the calibration weight value in terms of the default calibration units and press **[ENTER]** to establish span.

   If the calibration weight value was entered before the weight was applied, the display will prompt **Add CalWt**. Add the calibration weight and press **[ENTER]**.
6. After establishing span, **CAL OK?** is displayed suggesting that the calibration is acceptable, or **ReCal???** is displayed suggesting that the calibration procedure should be repeated.

   Accept the calibration by pressing **[ENTER]** at the **CAL OK?** prompt or **[CLR]** at the **ReCal???** prompt.

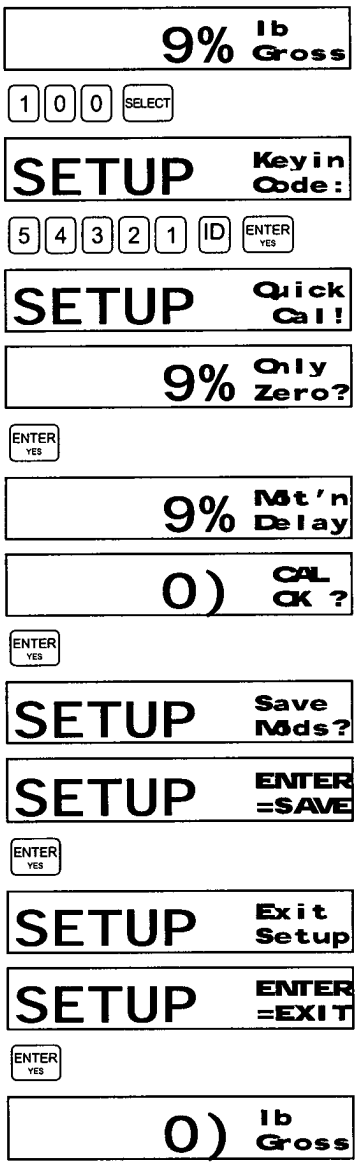
   - or -

   Repeat the calibration by pressing **[CLR]** at the **CAL OK?** prompt or **[ENTER]** at the **ReCal???** prompt.
7. Once the calibration is accepted in step 6, press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

   - or -

   To exit the calibration mode without saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

Example:
Only Zero Calibration



ONLY ZERO

Only Zero is used for zero calibration only. This calibration procedure is primarily used for the zero reference after changing a scale's dead-load, such as adding safety rails to a scale deck or installing a mixer motor on a hopper scale. Because the full scale capacity is referenced from the last zero calibration, performing a zero calibration helps to ensure that the full scale over-load will not occur prematurely due to the additional dead-load.

To perform an Only Zero calibration:

1. Remove all weight from the scale.
2. Access the calibration mode as described on page 4-2.
3. Select the Only Zero calibration method as described in *Calibration Methods* on page 4-3.
4. Press **[ENTER]** at the **Only Zero?** prompt to establish the new zero reference.
5. After establishing zero, **CAL CK?** is displayed suggesting that the calibration is acceptable.

   Accept the calibration by pressing **[ENTER]** at the **CAL CK?** prompt.

   - or -

   Repeat the calibration by pressing **[CLR]** at the **CAL CK?** prompt.
6. Once the calibration is accepted in step 5, press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

   - or -

   To exit the calibration mode *without* saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

⚠ If you choose to "undo" the calibration when exiting the setup mode, you will also undo any unsaved changes made to the setup parameters.

CALIBRATION RESET

Cal Reset sets the gain factors of the A/D amplifier to minimum values and clears the A/D's zero offset. These gain values are stored in the Information Parameters at P61104 → P61107 (see the *Calibration Parameters* section). A Cal Reset should be performed if calibration is not possible due to an over-load condition, or if the displayed weight value does not change when the test weight is applied.

If an over-load condition exists at the time of calibration, the calibration method prompts are replaced by an Over load! message. Press [CLR] to proceed directly to the Cal Reset procedure.

To perform a Calibration Reset:

1. Access the calibration mode as described on page 4-2.
2. Select the Cal Reset calibration method as described in *Calibration Methods* on page 4-3.
3. Press **[ENTER]** at the **Cal Reset** prompt reset the A/D amplifier.
4. The display prompts **New Zero?**. Proceed with calibration.

KNOWN LOADCELL OUTPUT

Known LCOut is used to calibrate without test weights. The exact full scale mV/V rating must be known for each load cell. All load cells must be of the same full scale capacity. This procedure works best for hopper scales where weight is evenly distributed and signal trimming is not required.

To perform a Known Loadcell Output calibration:

1. Access the calibration mode as described on page 4-2.
2. Select the Known LCOut calibration method as described in *Calibration Methods* on page 4-3.
3. Press **[ENTER]** at the **Known LCOut** prompt to display **#of LC**

   The number of load cells specified during the last calibration will also be displayed. A value of zero (0) indicates that this calibration method has not yet been performed.
4. Key in the number of load cells (8 maximum) and press **[ENTER]**.

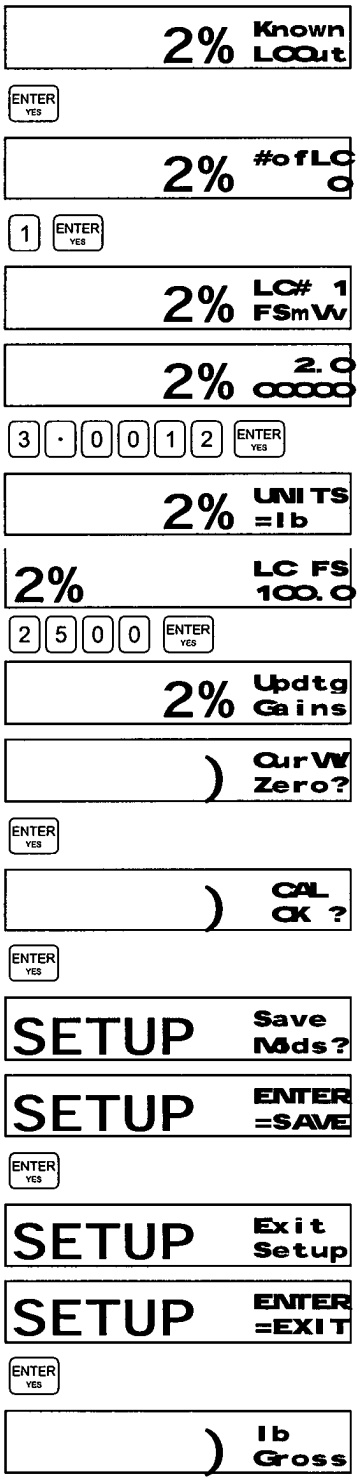
   - or -

   Press **[ENTER]** to accept the displayed value.
5. The display prompts **LC#x mV** (where 'x' is the load cell number) and then shows the mV/V value (0.1 → 5.0) last entered for this load cell.
6. Key in the load cell's mV/V value and press **[ENTER]**.

   - or -

   Press **[ENTER]** to accept the displayed value.

Example:
Known Loadcell Calibration



7. Steps 5-6 will be repeated for as many load cells as specified in step 4.
8. The display prompts **LC FS** showing the value last entered for the load cell full scale.
9. Key in the full scale capacity for the load cell(s) and press **[ENTER]**.

   - or -

   Press **[ENTER]** to accept the displayed value.
10. The display briefly shows **Updtg Gains** as it updates the gain values, then prompts **CurW Zero?**.
11. Press **[ENTER]** to establish the current input signal as the zero reference.

    - or -

    Press **[SELECT]** to display **Zero=0mV?**. Press **[ENTER]** to use a 0mV/V output as the zero reference.

    - or -

    Press **[SELECT]** to display **Keyin CurW**. Key in the known gross weight already applied to the scale and press **[ENTER]**.

    - or -

    Press **[CLR]** to bypass the zeroing option.
12. The display shows **CAL OK?** suggesting that the calibration is acceptable.

    Accept the calibration by pressing **[ENTER]** at the **CAL OK?** prompt.

    - or -

    Repeat the calibration by pressing **[CLR]** at the **CAL OK?** prompt.
13. Once the calibration is accepted in step5, press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

    - or -

    To exit the calibration mode <u>without</u> saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

MULTI - SCALE CALIBRATION

When more than one scale is enabled, the prompt **Keyin Scl#** appears before accessing the calibration method selections. Key in the scale number to be calibrated and press **[ENTER]**. Proceed with a calibration method as described in *Calibration Methods* on page 4-3.

After completing a calibration, the **Keyin Scl#** appears once again. Enter the next scale number to be calibrated, or press **[CLR]** to exit the calibration mode and save the new calibration data.

CALIBRATION UNITS

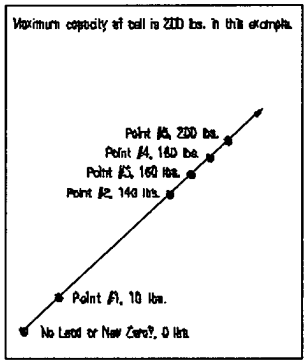
It is not possible to select lb/oz as calibration units.

It is expected that a calibration weight will be entered in terms of the selected calibration units as determined by P150 in the setup mode. The default calibration units are displayed briefly during calibration just prior to the **Keyin CalW** prompt.

Alternate units may be used during calibration by pressing the **[UNITS]** key at the **Keyin CalW** prompt. This will scroll through any units that have been assigned to P131 → P134 of the setup mode for the selected scale.

MULTI - POINT LINEARIZATION

Multi-point linearization provides up to five calibration points for each scale input. This allows you to compensate for load cell non-linearity. Multi-point linearization must be enabled in the setup mode at P119. Once enabled, you can define up to five points of linearization in during the calibration routine.



To perform Multi-Point Linearization:

1. Access the calibration mode as described on page 4-2.
2. Select a calibration method as described in *Calibration Methods* on page 4-3 and proceed with the calibration routine.
3. Enter the calibration weight value for the first linearization point when prompted to **Keyin CalW**.
4. Once the first linearization point is established, **Keyin Pnt2** is displayed.

If there was a significant change in span for the first linearization point, ReCal??? is displayed suggesting that the calibration procedure must be repeated for the first point.

5. Enter the calibration weight value for the second linearization point.
6. Repeat this process for up to five linearization points. If fewer than five linearization points are specified, press **[ENTER]** without keying in the next weight value to end calibration.
7. After establishing all linearization points, CAL OK? is displayed suggesting that the calibration is acceptable.

   Press **[ENTER]** at the CAL OK? prompt to accept the calibration and exit.

   - or -

   Press **[CLR]** at the CAL OK? prompt to repeat the calibration.

Linearization calibration weights and calibration factors can be viewed at P61130 → P61139 in the information parameters.

A/D CALIBRATION

A/D calibration is performed at the factory and should never require re-calibration.

Electrical characteristics of every Analog-to-Digital converter vary slightly. The analog-to-digital converter for each scale input is factory calibrated to achieve optimum linear response throughout the entire signal input range.

Disabling a scale at P109 de-allocates memory reserved for it's A/D calibration values. A/D values will be lost!

A/D calibration should not be confused with the load cell calibration procedure. It is a one-time factory procedure that requires the use of a precision load cell simulator with a 1 mV/V output. This procedure calculates a series of A/D calibration values which can be viewed in the information parameters P61110 → P61121. These values are stored in EEROM. A copy of these values are also permanently stored in the FLASH ROM for the purposes of restoring them in the EEPROM as needed. Defaulting the instrument will not affect the A/D calibration values.

PRINTING A/D CALIBRATION VALUES

A/D calibration values should be printed or transferred to another storage medium for permanent record. They can then be restored in the event they are inadvertently deleted or when transferring multi-scale options from one scale to another.

The following figure shows a typical list of A/D calibration values. A similar printout is provided with each multi-scale option. Once saved in EEPROM, this information can be transmitted out any of the communication ports to a printer or computer as described in the following procedure.

```
100%s23640%i%e          Access Setup Modes, Allowing Changes

61099%s2%e              P61099.  Scale     2

61100%s%e               P61100.  Crrnt mv/v
61101%s  1.000000%e     P61101.   CAL Factr   1.000000
61102%s  0.000000%e     P61102.  ReZro Wght   0.000000
61103%s  0.000000%e     P61103.  ZrTrk Wght   0.000000
61104%s8%e              P61104.  CZero    0%%
61105%s    704623%e     P61105.  Fine Zero      704623
61106%s2%e              P61106.  CGain   100
61107%s  0.914005%e     P61107.  Fine Gain    0.914005
61110%s     71451%e     P61110.  Zero Adj25     71451
61111%s     -9366%e     P61111.  Zero Adj50     -9366
61112%s   -164049%e     P61112.  Zero Adl00   -164049
61113%s  0.941097%e     P61113.  Gain Adj1   0.941097
61114%s  0.944094%e     P61114.  Gain Adj2   0.944094
61115%s  0.950346%e     P61115.  Gain Adj4   0.950346
61116%s  0.951587%e     P61116.  Gain Adj8   0.951587
61117%s   -186805%e     P61117.  AIN  NROff   -186805
61118%s   -372531%e     P61118.  AIN  NROff   -372531
61119%s   -739554%e     P61119.  AIN  NROff   -739554
61120%s  -1571870%e     P61120.  AIN  NROff  -1571870
61121%s     -3374%e     P61121.  VREF NROff      -3374
61122%s 123456%e        P61122.  SN:  123456

64102%s                 View errors after uploading!
```

Figure 4-1: *A/D Calibration Values*

If A/D calibration values have not been entered for P61110 → P61121, these parameters will show values of 0 or 1.

To print A/D calibration values:

1. From the weigh mode, key in **60100 [SELECT]** to access the GSE copyright parameter.
2. Select A/D calibration values for the scale(s):

   Key in **23640 [PRINT]** to send A/D calibration values for all scales.*

   Key in **23641 [PRINT]** to send A/D calibration values for scale #1.*

   Key in **23642 [PRINT]** to send A/D calibration values for scale #2.*

   Key in **23643 [PRINT]** to send A/D calibration values for scale #3.

   Key in **23644 [PRINT]** to send A/D calibration values for scale #4.

   Key in **23645 [PRINT]** to send A/D calibration values for scale #5.

   Key in **23646 [PRINT]** to send A/D calibration values for scale #6.

   Key in **23647 [PRINT]** to send A/D calibration values for scale #7.

   Key in **23648 [PRINT]** to send A/D calibration values for scale #8.
3. The display prompts Enter Comm#. Key in the communication port number (1 → 4).*
4. A/D calibration values are transmitted (note that all parameters from P60000 → P61122 are transmitted if you use the code **23640**).

* *When using the 460, scroll in the number and press **[ENTER]** instead of **[PRINT]** in step #2. It is also necessary to press **[ENTER]** after scrolling in the comm# in step #3.*

RESTORING A/D CALIBRATION VALUES

The error **Code 39 ƒA/D Cal** appears when exiting the setup mode if a scale's A/D calibration values are not found. This will occur after installing a new multi-scale option without completing the entire installation procedure. Since A/D calibration values must be stored in EEPROM, a list of the factory calibration values accompanies each option and must be entered in P61110 → P61121 of the information parameters. Once a multi-scale's A/D calibration data has been saved in the EEPROM, a copy of these values are also permanently stored in FLASH ROM.

Likewise, if a scale is disabled at P109 and changes are saved when exiting the setup mode, reserved EEPROM memory is de-allocated and A/D calibration values will be lost for that scale. To avoid this problem when temporarily disabling a scale, set P109 for "Saved" rather than "Disabled". This retains the scale's A/D calibration values in EEPROM yet the scale will not be accessible from the weigh mode. The scale can later be enabled without having to restore the calibration values.

If an error **Code 39 ƒA/D Cal** appears but you know that the A/D calibration values were previously entered and saved, it is possible to recover them from the FLASH ROM by pressing **[ENTER]** at the **Code 39** prompt and entering the module's serial# as prompted.

The serial number of the 60 Series main PC board and multi-scale options is used to reference A/D calibration values. Compare the board serial number with the serial number recorded at P61122 to ensure the correct values will be entered. If you do not have access to the correct values, contact GSE to obtain them or perform the A/D calibration procedure described in the *Entering A/D Calibration* section.

ENTERING A/D CALIBRATION VALUES

If the A/D calibration values are stored as a text file on a computer using the method described in *Printing A/D Calibration Values* on page 4-11, then the same file can be transmitted back to the scale to restore the values. These values can also be entered manually through the front panel keypad by accessing each parameter and entering the appropriate value.

Always verify that the serial number of the multi-scale option board or 60 Series main board matches the serial number shown for P61122.

To perform an A/D Calibration:

1. Power down the scale and disconnect existing load cell connections.
2. Move the E1 & E2 sense jumpers to the external (EXT) position. Failure to do so will short the load cell input connections resulting in a system reset!
3. Short together the following load cell J1 connections:

Press [F1] to begin an entry with a minus (-) sign.

+ SIG	positive signal
- SIG	negative signal
+ SEN	positive sense
- SEN	negative sense
SHD	shield connection

4. Restore power and enter the calibration routine:

   100 [SELECT] 54321 [ID] [ENTER]

5. At the **New Zero?** prompt, key in **23640 [ENTER]**.
6. The display prompts **ReCAL A/D?**. Press **[ENTER]**.
7. The display prompts **Gnd. Input**. Assuming you have already made the connections in step 3, press **[ENTER]**.
8. The display will show **Mt'n Delay** and begin processing calibration values for several seconds.
9. The display prompts **Undo GND**, then **Set To 0 mV**.
10. Remove the connections from step 3 which short the signal, sense and shield.
11. Attach a precision load cell simulator to the J1 load cell connector using excitation and signal connections.
12. Move the sense jumpers E1 & E2 back to the internal (INT) position.
13. Set the simulator to 0 mV and press **[ENTER]**.
14. The display will show **Mt'n Delay** and begin processing calibration values for several seconds.
15. The display prompts **Set To 1 mV**. Set the simulator to 1 mV and press **[ENTER]**.
16. The display shows **Mt'n Delay** and begin processing calibration values for several seconds.
17. The display shows **A/D CAL'd** indicating that calibration is complete. Press **[ENTER]**.
18. Press **[ENTER]** at the **ENTER=SAVE** prompt and again at the **ENTER=EXIT** prompt to save the new calibration and exit the calibration mode.

    - or -

    To exit the calibration mode *without* saving the new calibration, press **[CLR]** at the **ENTER=SAVE** prompt. Then press **[ENTER]** at the **ENTER=UNDO** prompt and again at the **ENTER=EXIT** prompt to exit the calibration mode.

⚠ **If the calibration was performed for a multi-scale option, you must enter a serial number. Key in the serial number found on the option board and press [ENTER]. This number is stored in P61122.**

CALIBRATION ERROR MESSAGES

If calibration problems occur despite an apparently proper configuration, carefully inspect all hardware. Moisture, obstructions, defective or worn components, improper grounding techniques, and an unsuitable environment are factors which could contribute to calibration problems.

Table 4-1: Calibration Error Messages

ERROR MESSAGE	DESCRIPTION
Error Messages During Calibration	
Code30 F.S.> MAX !	The entered calibration weight, together with the currently applied signal, results in a full scale output that exceeds the maximum allowed. Verify that correct calibration weight was entered, and that the capacity at P110 of the setup mode is appropriate for the connected load cell(s). Refer to P61100 of the information parameters to view the mV/V output of the connected load cell(s).
Code31 F.S.< .1mV	The entered calibration weight, together with the currently applied signal, results in a full scale output less than the minimum allowed. Verify that correct calibration weight was entered, and that the capacity at P110 of the setup mode is appropriate for the connected load cell(s). Refer to P61100 of the information parameters to view the mV/V output of the connected load cell(s).
Code32 ADD MORE!	The calibration weight applied does not produce an adequate change in the output signal. Increase the test weight.
Code33 ReCal ???	The calibration is insufficient to guarantee accurate results due to the calibration weight being less than 5% of capacity, or because the coarse gain was adjusted due to a significant difference in the calibration values. Repeating calibration is recommended.
)00 CalWt <0.1%	The calibration weight is less than 0.1% of full scale. Increase the test weight.
)00 CalWt <Nbrm	The calibration weight is less than 2% of full scale. Increasing the test weight is recommended.
)00 Entry >F.S.	The calibration weight value entered exceeds the scale capacity set at P110 of the setup mode. Verify the weight entry and the full scale capacity.
)00 Large Offst	The zero reference has changed by more than ±175%. This usually indicates the presence of a significant load on the scale when the zero reference was established. Remove all weight from the scale, press **[CLR]** and recalibrate.
)00 Add CalWt	The calibration weight was not added prior to entering the weight value. Apply the test weight and press **[ENTER]**.
)00 Mist Keyin	The calibration weight value was not entered before pressing **[ENTER]**. Key in the test weight value and press **[ENTER]**. This message is also displayed if a scale number was not entered at the **Keyin Scl#** prompt before pressing **[ENTER]**.
)00 Entry Error	An invalid entry was made. For example, entering scale #3 at the **Keyin Scl#** prompt with only 2 scales enabled, or entering a test weight value during multi-point linearization that was less than the previously calibrated value.
Errors Messages When Entering or Exiting Calibration	
Code02 Under Load!	The input signal is less than negative full scale. Verify that the signal connections are not reversed and that the load cell is properly installed. Check **P61100** of the information parameters to view the mV/V output of the connected load cell(s).
Code03 Over Load!	The input signal is greater than full scale. Verify that the load cell is properly installed and that all dead load has been removed from the scale. Check **P110** of the setup mode for the correct capacity. If this is a first-time calibration, a calibration reset may be necessary. Press **[CLR]** from the calibration mode to access the Cal Reset method.
Code08 Check Conn.	The input signal is greater than ±2 times full scale. Check for proper load cell connections.
Code39 f A/D Cal	The A/D calibration values for one or more enabled scales have not been entered. Press any key to continue. Enter the A/D calibration values as described in the *Restoring A/D Calibration Values* section beginning on page 4-13.

RESTORING THE CALIBRATED ZERO REFERENCE

The calibrated zero reference cannot be changed by pressing **[ZERO]** from the weigh mode or through zero tracking. These actions only serve to establish a new gross zero reference. In the case of a larger hopper scale partially full of material, the possibility of inadvertently zeroing out the existing material can pose a significant problem if it is not possible or practical to empty the hopper to reestablish zero. Should this situation occur, you can restore the last zero calibration reference, and thus restore the gross weight, by clearing P61102 (re-zero weight) and P61103 (zero track weight) in the information parameters. To prevent this situation, set the zero tracking parameters (P112, P113) and zero range parameter (P118) appropriately.