GSE MODEL 672

PRECISION SCALE

USERS GUIDE

Version 1.0

SPX GSE scale systems

MODEL 672

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Version 1.0

GSE 672 Precision Scale Users Guide

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Table Of Contents

Chapter 1: Reference

This chapter describes the major components of the Model 672 Precision Scale. Keypad functions are explained in this chapter. Also tables show the connections for the second scale and comm ports.

ENCLOSURE

The enclosure is powder coat die cast aluminum with a handle for ease of portability. The Model 672 offers a small footprint which will conserve space.

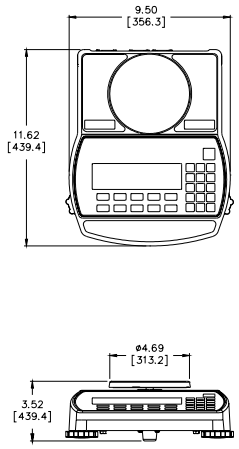


Figure 1: Model 672 Outline Drawing

LOAD CELL

The load cell can be exchanged by first removing the stainless steel top plate. Turn the unit over and remove the six 8 mm screws (size) from the bottom plate. Separate the top enclosure from the bottom plate. Remove the two Phillips head screws from the bottom plate. Extract the load cell out by lifting it off of the bottom plate.

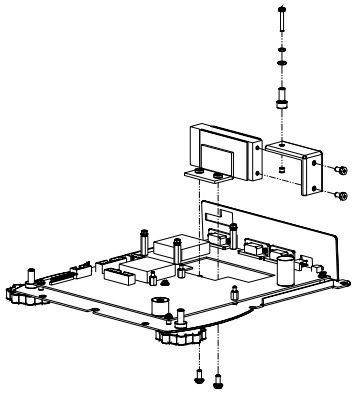


Figure 2: Model 672 Load Cell Installation

MAIN BOARD

Refer to Figure 3 for the location of connectors for the load cell, keypad, display, Ethernet port, power supply and database option.

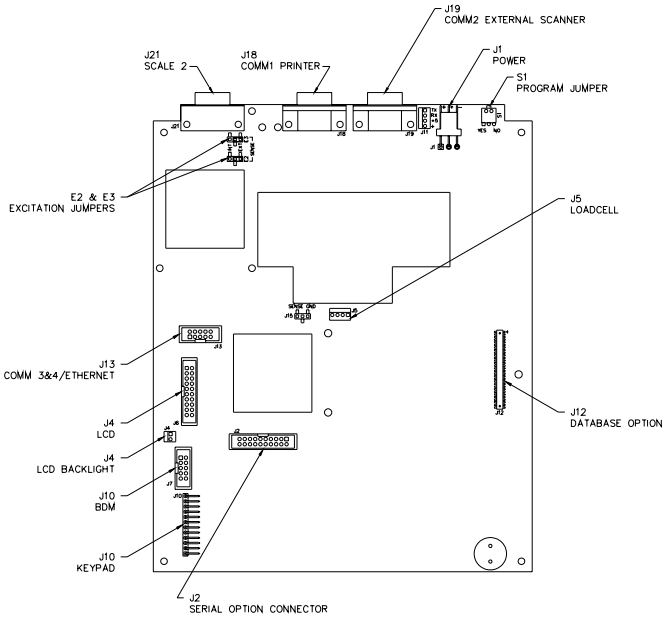


Figure 3: Model 672 Main Board

KEYPAD

The Model 672 comes with a durable and versatile Polymeric switch plate with large keys for ease of use. The keypad is easily cleaned with a damp cloth or non-abrasive cleaner.

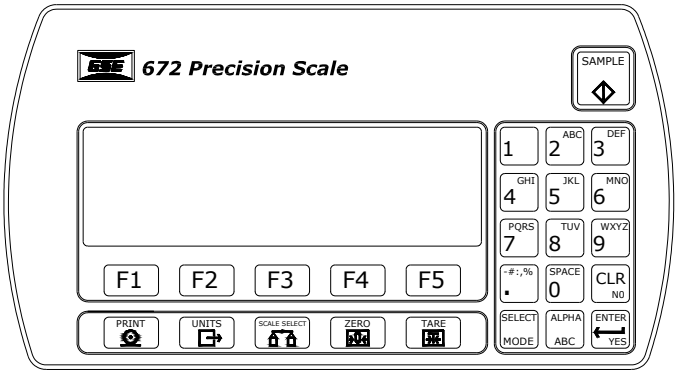
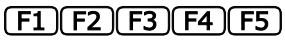


Figure 4: Model 672 Keypad

Keypad Functions

All of the keys perform different functions. Some keys have more than one function.



Act as soft keys which will perform a specific function. Refer to the text on the display for the function of each soft key.

Subtracts the weight of the tare from the displayed weight. Commonly used for removing the weight of a container.

Performs a gross zero and displays the gross mode.

Performs a sample for an accurate parts counting and calculates an average piece weight.

Toggles the units of measure between lb, kg, g, ounce, etc.

Selects between all enabled scales. Will display current scale number.

Print data from a specified communication port.

Select among modes such as Gross, Net, Tare, Quantity and Average Piece Weight.

Clear the entry buffer or answer “NO” to a question.

Enter data or answer “YES” to a question.

Enter alpha or numeric characters or a combination of both depending on the ALPHA key parameter configuration..

Numeric keys used to manually enter a value for tare weight, average piece weight, sample size etc.

DISPLAY

A graphic 8 line x 40 character LCD provides excellent visibility with user defined help screens and prompting. The graphic display features a backlight for use in poorly lit areas.

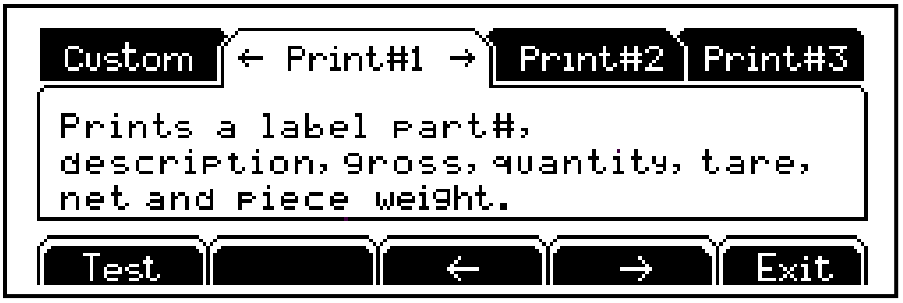


Figure 5: Model 672 Graphic Display

BACK PANEL CONNECTIONS

The Model 672 comes standard with 2 communication ports which use Male DB-9 connectors. Also a remote base can be connected to the SCALE 2 Female DB-9 connector.

The Ethernet Option Module is optional and is accessible from the rear panel. Simply cut along the dotted line with a knife where the Ethernet Option Module will be installed. Refer to the Model 675 Technical Reference Manual for complete details on installing options.

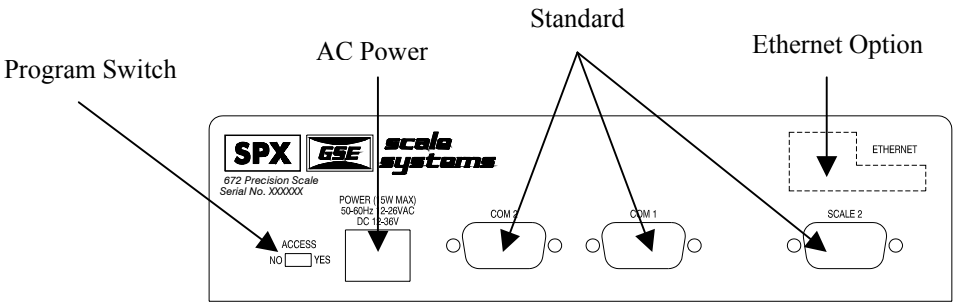


Figure 6: Model 672 Rear Panel

Table 1: Scale 2 DB 9 Connector Pin Out

DB9 pin designation	Function	Load Cell Cable
1	+ Signal	4 or 6 wire
2	- Signal	4 or 6 wire
3	+ Sense	4 wire (connect a wire jumper to pin 8)
4	- Sense	4 wire (connect a wire jumper to pin 9)
5	- Excitation	4 or 6 wire
6	+ Excitation	4 or 6 wire
7	Chassis Ground	4 or 6 wire
8	+ Excitation	4 wire (connect a wire jumper to pin 3)
9	- Excitation	4 wire (connect a wire jumper to pin 4)

Table 2: ***Communication Port1 and Port2 Pin Out***

DB9 pin designation	Function Com 1	Function Com 2
1	No connection	No connection
2	RXD	RXD
3	TXD	TXD
4	No connection	No connection
5	Ground	Ground
6	No connection	No connection
7	RTS	RTS
8	CTS	CTS
9	+5 V	+5 V

Chapter 2: Configuration

The GSE 672 Precision Scale comes from the factory with the BASIC WEIGH mode enabled. . It is possible to enable the APW Lookup method of counting. See the explanations of each method below. After each different method are the instructions for setting up that method.

Refer to Chapter 3 for operating instructions of each method.

BASIC WEIGH

The Basic Weigh method offers basic weighing with three different display styles. The default display style shows the gross, net and tare weights.

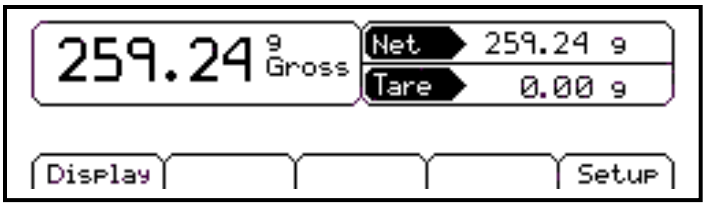


Figure 7: Basic Weigh Default Screen

Display – Chose between three different display styles.

Display Style

Different display styles are offered to help customize the Model 672 to fit your needs. Press F1 to choose one of the display types. By using the SELECT MODE select key several modes can be viewed from the BASIC WEIGH screen.

STYLE 1

This style uses the classic GSE 2x5 display in large font. . Press the SELECT MODE key to toggle through the different parameter choices.

STYLE 2

This style incorporates the classic GSE 2x5 display and a second display, which will show two other parameters. Press the SELECT MODE key to toggle through the different parameter choices.

Medium display	Small display	Small display
Gross	Net	Tare
Net	Net	Tare
Tare	Net	Tare
Quantity Total	Net	Tare
Part #	Net	Tare
Quantity	Net	Tare
Average Piece Weight (APW)	Net	Tare

STYLE 3

This style incorporates the classic GSE 2x5 display style along with three smaller displays which will show the gross, tare and net parameters. Press the SELECT MODE key to toggle through the different parameter choices.

Medium Display	Small Display	Small Display	Small display
Gross	Gross	Tare	Net
Net	Gross	Tare	Net
Tare	Gross	Tare	Net
Quantity Total	Gross	Tare	Net
Part #	Gross	Tare	Net
Quantity	Gross	Tare	Net
APW (average piece weight)	Gross	Tare	Net

Setup - Access application menu,

Application Menu

The application menu provides access to other built in applications. Loading the application menu will erase the current application.

From the application menu explanation screen press ENTER YES to load the application menu or press CLR NO exit back to the BASIC WEIGH mode.

If ENTER YES was pressed in the previous step the display will show *ARE YOU SURE ???*. Press ENTER YES to proceed or press CLR NO exit back to the BASIC WEIGH mode.

If ENTER YES was pressed in the previous step the display will show *ENTER ACCESS CODE.* Key in the access code and press ENTER YES or press CLR NO exit back to the BASIC WEIGH mode.

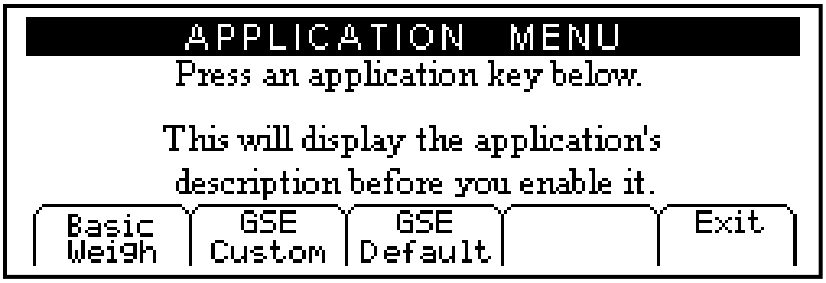


Figure 8: Application Menu Screen

Note: Enable the APW LOOKUP from the GSE CUSTOM tab. Press F2.

CAL (Calibration)

Refer to Chapter 4: Calibration on page 20 for complete instructions on calibrating the Model 672.

APW LOOKUP

The APW LOOKUP offers the flexibility of storing and recalling part numbers. The average piece weight and part description will be stored and recalled with the part number.

F1 ***Sample -*** Uses default sample size and prompts user to add that many pieces.

F2 ***Store –*** Store a part number with average piece weight and description.

F3 ***Rec/New –*** Add a new part number or recall a part number from the database.

F4 ***Entry –*** This only appears when a part number is entered. Scan in or key in the part number and press F3. Press F4 to access the Description, Lot #, Bin # and APW fields.

F5 ***Setup -*** Access setup menus, see page 9 for further details.

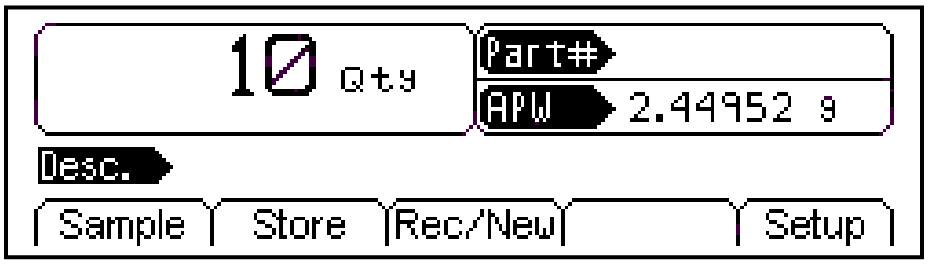
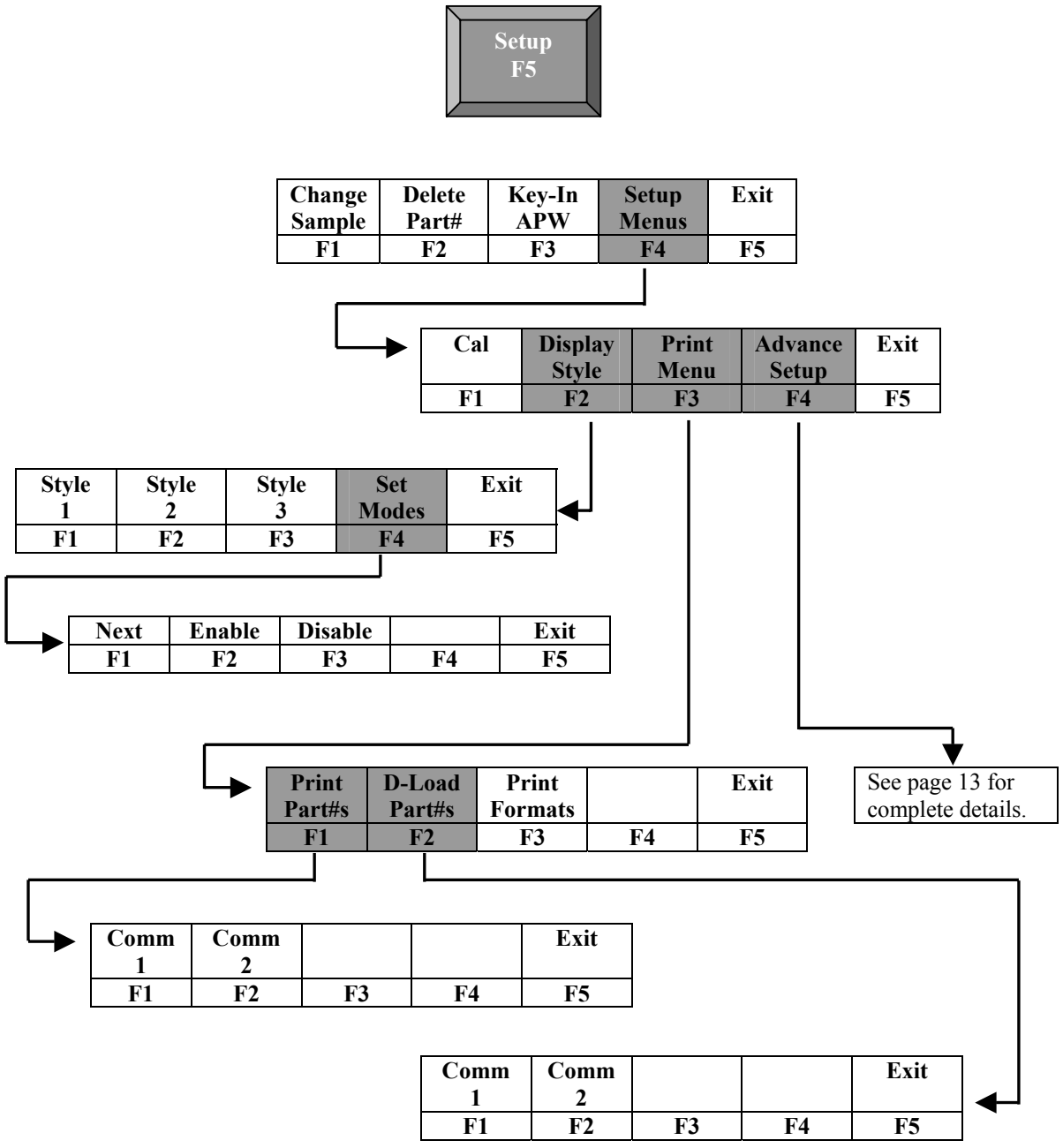


Figure 9: APW Lookup Screen Example

APW Lookup Configuration Setup Menu

Use the F5 Setup key from the APW LOOKUP screen to gain access to different menus.



Setup

This menu was designed for accessing the items that will need to be changed the most often. Below is an explanation of the choices in the menu. Follow the instructions on the display for each key. The cell shaded in gray has a multiple level menu.

FUNCTION KEY	PARAMETER	DESCRIPTION	DEFAULT SETTING	KEYPRESSES
F1	CHANGE SAMPLE	Change the default sample size	10	Key in new sample size and press ***Enter*** to accept or ***F5*** to escape
F2	DELETE PART #	Delete specified part number	Will not show until a part number is established	Key in part # and press ***F3***. Press ***F5*** to enter the setup. Press ***F2*** to delete part #.
F3	KEY-IN APW	Key in an average piece weight for sample	0	Key in new average piece weight and press ***Enter*** or ***F5*** to escape
F4	SETUP MENUS	Continues on to the Setup Menus	Not applicable	Press ***F4*** to continue

The YES key is ENTER/YES the NO key is CLR/NO.

Setup Menus

This is the next level of menus, which offer more advanced setup. Cells shaded in gray have multiple level menus.

	PARAMETER	DESCRIPTION	DEFAULT SETTING	KEYPRESSES
F1	CAL	Calibration any of the enabled scales	Not applicable	Key in access code and press ***Enter*** or press ***F5*** to escape
F2	DISPLAY STYLE	Chose how the display will appear	Style 2	Press either ***F1 – F3*** to chose the desired display style or ***F5*** to escape
F3	PRINT MENU	Choose what information to print out	Not applicable	Continues on to the Print Menu selections
F4	ADVANCE SETUP	Continues on to the Advanced Setup Menu	Not applicable	See page 13

CAL (Calibration)

Refer to Chapter 4: Calibration on page 20 for complete instructions on calibrating the Model 672.

Display Style

Different display styles are offered to help customize the Model 672 to fit your needs. Choose one of the display types and press F5 (EXIT) to save the change and return to the main menu. By using the SELECT MODE select key several modes can be viewed from the APW LOOKUP screen. See the instructions on enabling and disabling display selections under *Set Modes* on page 12.

STYLE 1

This style incorporates the classic GSE 2x5 display. The large display will show the weight or quantity. The part number is shown in small font. Press the SELECT MODE key to toggle through the different parameter choices.

Large display
Gross
Net
Tare
APW (average piece weight)
% Accuracy
Last Sample
Quantity Total
Accumulations
Quantity

STYLE 2

This style incorporates the classic GSE 2x5 display in medium font and two smaller displays which will show two other parameters. The part description can also be viewed with this style. Press the SELECT MODE key from the APW LOOKUP screen to toggle through the different parameter choices.

Medium display	**Small display**	**Small display**
Quantity	% Accuracy	Sample
Quantity	Gross	Tare
Quantity	Part #	APW * K
Quantity	Lot #	Bin #
Quantity	Quantity Total	# of Accumulations
Quantity	Part #	APW
Gross	Part#	APW
Net	Part#	APW
Tare	Part#	APW

STYLE 3

This style incorporates the classic GSE 2x5 display style in medium font along with three smaller displays which will show three other parameters. Press the SELECT MODE key to toggle through the different parameter choices.

Medium Display	Small Display	Small Display	Small display
Gross	Part #	Accuracy	APW
Quantity	Part #	Accuracy	APW * K
Quantity	APW	Accuracy	Tare
Quantity	Part #	Lot #	Bin #
Quantity	Gross	Tare	Net
Quantity	Part #	APW	Tare
Quantity	Net	Tare	Gross Total

SET MODES

After choosing a display style, you have the ability to choose which screens are accessible by using the SELECT MODE. The ability exists to enable or disable each choice.

1. Press F4 to access the SET MODES menu.
2. Use the F1 Next Mode key to toggle through the available screens.
3. Use the F2 Enable key to enable the screen.
4. Use the F3 Disable key to disable the screen.
5. Press F5 to backup one screen. Continue pressing F5 to exit to the main screen.

Print Menu

PARAMETER	DESCRIPTION	DEFAULT SETTING	KEYPRESSES
Print Part#s	Print stored part numbers to printer or computer	Not applicable	Print data to comm. 1, 2 or display. Use ***F1 or F2***
D-Load Part#s	Download part number, description, average piece weight and tare weight in comma delimited format	Not applicable	Print data to comm. 1or 2. Use ***F1 or F2***
Print Formats	Chose a preformatted printout style	Print Style 1	Use ***F3*** and ***F4*** to view print format choices. Press ***F5*** to save the format

PRESET PRINTOUTS

The preset print formats are viewable on the LCD display. Use the F3 left arrow and F4 right arrow keys to view all transmit styles. Chose the desired format by viewing it on the screen. Press the F5 (EXIT) key to save the format and return to the main menu.

Print# 1

```
P/N:      ABCD123WXYZ
Desc:  Red Cable Ties
Gross           .370 lb
Qty:              30
Tare:          0.000 lb
Net:            .370 lb
```

Print# 2

```
P/N:       ABCD123WXYZ
APW:         0.0123456
Tare:          0.000 lb
```

Print# 3

```
P/N:       ABCD123WXYZ
APW:         0.0123456
Tare:          0.000 lb
Lot #
Bin #
```

Print# 4

```
10:10:00  09/13/2003
P/N:       ABCD123WXYZ
Lot #
Bin #
APW:         0.0123456
Tare:            0.000 lb
Qty:              30
```

Print# 5 - 9

```
Reserved for future use.
```

Custom

```
CREATE A CUSTOM TRANSMIT FORMAT!

➔ See the Tech Manual for details

➔ Create and load as transmit #130
```

Advanced Setup Menu

The advanced menu will allow access to the time/date and setup mode. Use the F3 and F4 keys to navigate to the desired tab.

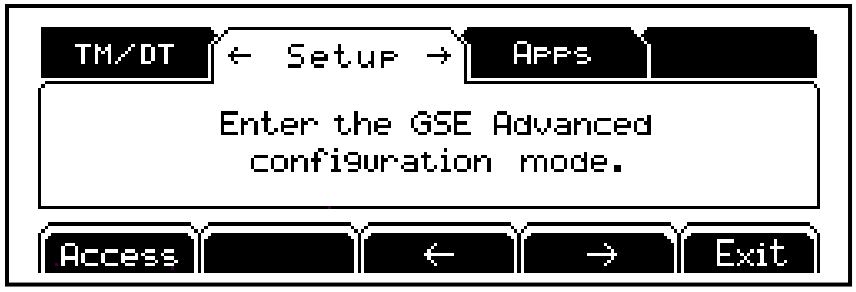


Figure 10: Advanced Setup Menu

TIME/DATE

1. From the time/date tab, press F1 to access the configuration screen. The time can be changed with the F1 key. The date can be changed with the F2 key.
2. Key in the time or date by following the format on the display and press ENTER to accept the entry.
3. Press F5 (EXIT) to return to the main menu.

SETUP MODE ACCESS (SETUP)

This tab allows access to the setup mode to make changes to parameters such as full scale, count accuracy and baud rate etc. Please refer to the 675 Series Technical Reference Manual for details on more advanced setups and configurations. An access code is required to enter the Model 672 setup mode.

APPS (APPLICATION MENU)

Access the Application Menu to switch to another operating mode or the factory default mode.

1. From the Apps tab press F1.
2. Key in the access code and press ENTER. The Apps Menu will automatically load.

NOTE: Press F5 at any time to abort loading the Apps Menu.

Chapter 3: Operation

This chapter will give detailed operation instructions on how to use each preprogrammed mode. The Model 672 is designed to operate from the 5 soft keys or the dedicated keys of the keypad. The advantage of using the soft keys is they are placed in succession for easy operation.

TIP	Bypass the GSE splash screen on power up by pressing the CLR NO key when the splash screen appears.

BASIC WEIGH

Follow the steps below to perform a sample and count parts.

Sample and Count

AUTO TARE METHOD

1. Sampling Pieces:

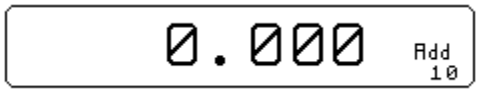
   (a) If a container is used:

   (i) Place container on scale and press the SAMPLE key. The scale will automatically tare the container.

   - or -

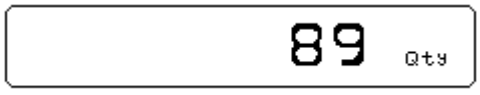
   (b) If a container is not used:

   (i) Press the SAMPLE key without the sample pieces on the scale. The scale will tare to establish a net zero reference.



2. Add the sample pieces and press the SAMPLE key to accept the sample.

3. Continue to add pieces to count.



WITHOUT AUTO TARE

1) If the sample size is known and a container is used:

a. Place an empty container on the scale and press TARE key.

b. Place the sample in the container.

c. Key in the sample size and then press the SAMPLE key. The scale will accept the current weights as a sample and will display the quantity.

-or-

1) If the sample size is known and no container is used:

a. Place the sample on the scale.

b. Key in the sample size and then press the SAMPLE key. The scale will accept the current weights as a sample and will display the quantity.

Example: 5 JKL 0 SPACE SAMPLE

APW LOOKUP

Follow the steps below to perform a sample and count parts. Also the ability exists to store part numbers, lot numbers, bin numbers and average piece weight (APW).

Sample and Count

AUTO TARE METHOD

4. Sampling Pieces:

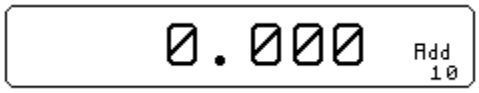
(c) If a container is used:

(i) Place container on scale and press the F1 ***Sample*** or SAMPLE key. The scale will automatically tare the container.

- or -

(d) If a container is not used:

(i) Press the F1 ***Sample*** or SAMPLE key without the sample pieces on the scale. The scale will tare to establish a net zero reference.



5. Add the sample pieces and press the F1 ***Accept*** key to accept the sample.

6. Continue to add pieces to count.

WITHOUT AUTO TARE

2) If the sample size is known and a container is used:

a. Place an empty container on the scale and press [TARE] key.

b. Place the sample in the container.

c. Key in the sample size and then press the [F1] ***Sample*** or [SAMPLE] key. The scale will accept the current weights as a sample and will display the quantity.

-or-

2) If the sample size is known and no container is used:

a. Place the sample on the scale.

b. Key in the sample size and then press the [F1] ***Sample*** or [SAMPLE] key. The scale will accept the current weights as a sample and will display the quantity.

Example: [5] [0] [F1] or [SAMPLE]

Store a New Part Number

Part numbers can be stored in a database and can be recalled later with necessary data such as the average piece weight and description. Make sure you enter a part number before entering a bin #, Lot # or APW.

1. Scan in a part number or key in the part number and press the [F3] (Rec/New) key. The other data fields will be cleared.
2. If you want to add a part description, bin #, Lot # and/or an APW either scan it in or press [F4] (Entry).

   If the field was scanned it will automatically be populated. Go to step 4.

   If none of these fields are desired, go to step 4.
3. Press the key associated with the desired field. Key in the text and press [ENTER].
4. Press [F2] to store the part number, APW, lot #, bin # and description.

Update a Part Number

It is possible to update the data that is stored with a part number.

1. While viewing the part number and data press [F2] (Store). The data will be updated in the database.

Recall a Part Number

A part number that was stored previously can be recalled to count parts without having to sample the part.

1. Key in the part number to recall and press [F3] (Rec/New). If any other fields were entered they will appear as well.
2. Place pieces on the platform to count.

Delete a Part Number

Any part number that is stored may be deleted.

1. Recall the part number to be deleted by keying in the part number and pressing [F3] (Rec/New). The part number does not have to be recalled if it already being viewed.
2. Press [F5] (Setup).
3. Press [F2] (Delete Part#). You will be prompted with the part number to be deleted and the choice of deleting the part number or aborting the process. This key will not appear if a part number has not been recalled.
4. Press [CLR NO] to cancel and return to the APW LOOKUP screen or [ENTER YES] to continue deleting the part number.

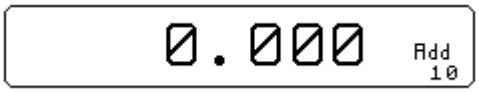
Simple Keypad Sample

AUTO TARE METHOD

1. Sampling Pieces:
   (a) If a container is used - Place container on scale and press the [SAMPLE] key. The scale will automatically tare the container.

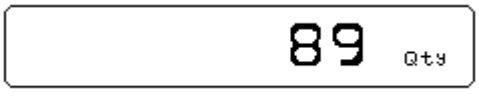
   - or -

   (b) If a container is not used - Press the [SAMPLE] key without the sample pieces on the scale. The scale will tare to establish a net zero reference.



2. Add the sample pieces and press the [SAMPLE] key to accept the sample.

3. Continue to add pieces to count.



WITHOUT AUTO TARE

1) If the sample size is known and a container is used:

a. Place an empty container on the scale and press [TARE] key.

b. Place the sample in the container.

c. Key in the sample size and then press the [SAMPLE] key. The scale will accept the current weights as a sample and will display the quantity.

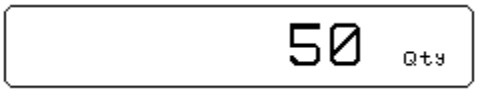
-or-

1) If the sample size is known and no container is used:

a. Place the sample on the scale.

b. Key in the sample size and then press the [SAMPLE] key. The scale will accept the current weights as a sample and will display the quantity.

Example: [5 JKL] [0 SPACE] [SAMPLE]



Chapter 4: Calibration

The calibration mode is accessible through the configuration menu or from the weigh mode.

ACCESS CALIBRATION FROM APW LOOKUP MODE

1. From the main menu press the [F5] (Setup) key.
2. Press [F4] (Setup Menus) key.
3. Press [F1] (CAL) key.
4. Enter the access code and press [ENTER YES]

ACCESS CALIBRATION FROM THE BASIC WEIGH MODE

1. Key in [1] [0 SPACE] [0 SPACE] [SELECT MODE]
2. Enter access code [5 JKL] [4 GHI] [3 DEF] [2 ABC] [1] [ENTER YES]
3. Select a calibration method from the list below.

CALIBRATION METHODS

There are six methods of calibration. Press [SELECT MODE] to select a calibration method. Press [ENTER YES] to begin the calibration method selected. Refer to the appropriate section for calibration instructions.

- **New Zero** - Establishes a new zero (no load) and span (test load) calibration reference.
- **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 zero 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 NO] at any point in the calibration routine moves back one step.

- Pressing CLR NO 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 YES at the ENTER=SAVE prompt. If power is lost during calibration, the previously saved calibration values will be in effect when power is restored.
- If replacing one indicator with another, it is possible to set the total gain value (P61108) of the new indicator with that of the original. This will optimize the coarse & fine gain values, greatly increasing the likelihood of a successful calibration on the first attempt.

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. Enter calibration as described on page 20.
3. Select the New Zero calibration method as described in *Calibration Methods* on page 20.
4. Press ENTER YES 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 CalWt** prompt.
6. Apply the calibration weight, key in the calibration weight value in terms of the default calibration units and press ENTER YES 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 YES.
7. 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.
8. Accept the calibration by pressing ENTER YES at the **CAL OK?** prompt or CLR NO at the **ReCal???** prompt.

   - or -

   Repeat the calibration by pressing CLR NO at the **CAL OK?** prompt or ENTER YES at the **ReCal???** prompt.
9. Once the calibration is accepted in step 6, press ENTER YES 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 NO at the **ENTER=SAVE** prompt. Then press ENTER YES 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.

Last Zero

Last Zero allows span re-calibration without removing the applied test weight. The last zero established by pressing ENTER 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 20.
5. Select the Last Zero calibration method as described in *Calibration Methods* on page 20 .
6. Press ENTER at the **Last Zero?** prompt to display the **Keyin CalWT** 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 <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.

⚠	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 20.
2. Select the Temp Zero calibration method as described in *Calibration Methods* on page 20.
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.

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 20.
3. Select the Only Zero calibration method as described in *Calibration Methods* on page 20.
4. Press ENTER at the **Only Zero?** prompt to establish the new zero reference.
5. After establishing zero, **CAL OK?** is displayed 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.

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.

TO PERFORM A CALIBRATION RESET:

1. Access the calibration mode as described on page 20.
2. Select the Cal Reset calibration method as described in *Calibration Methods* on page20.
3. Press ENTER at the `Cal Reset` prompt reset the A/D amplifier.
4. The display prompts `New Zero?`. Proceed with calibration.

ⓘ 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.

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 20.
2. Select the Known LCOut calibration method as described in *Calibration Methods* on page 20.
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 mVv** (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.
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 **CurWt Zero?**.
11. Press ENTER to establish the current input signal as the zero reference.

    - or -

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

    - or -

    Press SELECT MODE to display **Keyin CurWt**. Key in the known gross weight already applied to the scale and press ENTER.

    - or -

    Press CLR NO 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 NO at the **CAL OK?** prompt.

13. Once the calibration is accepted in step5, press ENTER YES 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 NO at the **ENTER=SAVE** prompt. Then press ENTER YES 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 YES. Proceed with a calibration method as described in *Calibration Methods* on page 20. After completing a calibration, the **Keyin Scl#** appears once again. Enter the next scale number to be calibrated, or press CLR NO to exit the calibration mode and save the new calibration data.

Chapter 5: Legal For Trade

The Model 672 default parameter setup does not ensure compliance with legal-for-trade installations as mandated by local weights and measures authorities. This chapter contains information on NTEP and OIML regulations, sealing and audit trails, and other requirements.

Since legal-for-trade requirements may vary, you must ensure that the Model 672 installed in accordance with all local regulations.

NTEP REQUIREMENTS

The National Type Evaluation Program (NTEP) is a widely accepted weights and measures standard in the United States, with most states abiding by some or all of the NTEP requirements. A complete list of these regulations is available in the "Handbook 44" publication distributed by the National Institute of Standards and Technology (NIST). For more information, call (301) 975-3058, or visit http://www.nist.gov.

The Model 672 NTEP Certificate of Conformance (C.O.C.) is **pending**.

In order to configure the Model 672 to comply with NTEP requirements, parameter P440 (NTEP) must be enabled. This ensures the following:

- Serial data will not be received while in the Setup Mode.
- Weight values that exceed the minimum width specified at P240 will be transmitted as dashes "-------".
- Pressing TARE with a gross weight of zero (0) pressing 0 TARE will not automatically switch to the net mode.
- Printing using the PRINT key is only possible from the gross, net or quantity mode.
- Numeric tare entries cannot be received through the serial port.
- Pressing TARE with a gross weight of zero (0) will not automatically switch to the net mode.
- Negative tare values are not accepted regardless of the selection for the "Negative Tare Enable" parameter (P162).
- Tare values are automatically rounded regardless of the selection for the "Tare Rounding Enable" parameter (P163).
- Accumulations using the . ENTER method can only be performed from the gross, net or quantity mode.

Where applicable, enabling the *restrict* parameter will over-ride the current setting of other parameters.

If the counting feature is enabled, NTEP requires a label on the front of the indicator stating *"The counting feature is not legal for trade"*. See *Other Requirements* on page 31 for other application specific considerations.

NTEP CUSTOM SETUP

The "Custom Setup" parameter, P60205 of the information parameters, displays a list of parameters which, if configured improperly, could facilitate fraud in a legal-for-trade installation. A weights & measures inspector might check this parameter and inquire about the configuration of any parameters that appear in this list.

Accessing the Custom Setup List

DO NOT ATTEMPT TO ACCESS THE CUSTOM SETUP LIST DURING CRITICAL WEIGHT PROCESSING! It is important to note that all functions of the operating mode will be suspended immediately upon accessing the information parameters. This includes suspension of weight conversions, deactivation of all setpoints and cancellation of custom transmits. The "Custom Setup" list may be accessed from the weigh mode as shown in the example – *Accessing the NTEP Custom Setup List*. An access code is not required to view this list.

To access the custom setup list:

1. From the weigh mode, key in 6 0 2 0 5 SELECT/MODE.
2. The Custom Setup list begins scrolling through each parameter to check. If there are no parameters to check, `Std. Setup` is displayed.
3. The Custom Setup list may be repeated by pressing ENTER/YES at P60205.
4. Press ZERO to return to the weigh mode.

Custom Setup Parameters

A setup parameter that appears in the "Custom Setup" does not imply that it is improperly configured. Consider the application and refer to the following descriptions to determine if the parameter is configured appropriately.

P205 – Receive Mode

If the receive mode is enabled for any of the four communication ports, any device connected to that port should not be used to transmit data to the indicator which could facilitate fraud.
P205 will appear in the "Custom Setup" list for each receive port enabled. For example, if the receive mode is enabled for all four ports, the list will display `P2051`, `P2052`, `P2053`, and `P2054`.

P240 – Minimum Transmit Width

A weight value that cannot be displayed due to the 6-digit limitation of the standard VF display may not be printed. To ensure this is not possible, P240 must be set to a width of not greater than 7 (6 digits and a decimal point). NTEP must also be enabled at P440. Any weight value that exceeds the minimum width specified will be printed as dashes "-------".

P440 – NTEP Enable

P440 appears in the "Custom Setup" list if disabled.

P9990 – Macro Instance Selection

P9990 appears in the "Custom Setup" list if at least one macro is configured. Macro operation should be checked to verify its conformance to all regulations.

Additional Conformance Considerations

Several parameters must be considered on an individual basis as their configuration may vary with different applications. These parameters include, but are not limited to those listed in Table 3.

Table 3: Additional Conformance Parameters

PARAMETER	DESCRIPTION	COMMENT
P110	Full Scale Capacity	Verify proper scale capacity.
P111	Division Size	Verify allowable scale divisions.
P112	Zero Track	Verify required selection.
P114	Motion	Verify required selection.
P118	Zero Range	Verify required selection.
P212	Print Stability	Verify required selection.
P126 → P130	Multi-Range	Verify proper configuration.
P131 → P134	Unit selection	Verify certifiable unit selection. †
P151 → P154	Custom Units	Verify name and conversion factor.
P600 → P646	Rename Parameters	Verify acceptable names.
† Custom units must be site approved. Lb/oz is not approved for legal-for-trade installations.		

SEALING AND AUDIT TRAILS

Most legal-for-trade installations will require the Model 672 to be sealed. A sealed indicator cannot be accessed for setup or calibration changes without breaking a physical seal or incrementing an event counter, thus providing evidence of tampering.

The Model 672 has two types of sealing provisions, a physical seal and a three event audit trail counter. Check with your local weights and measures authority to determine your requirements.

Physical Seal

The most common sealing method is a lead-wire seal. The Model 672 provides an easy means of applying this type of seal as shown in Figure 12.

1. Before applying a wire seal, move the program switch to the 'NO' position as shown in Figure 11. This will prevent access to the Setup and Calibration Modes.

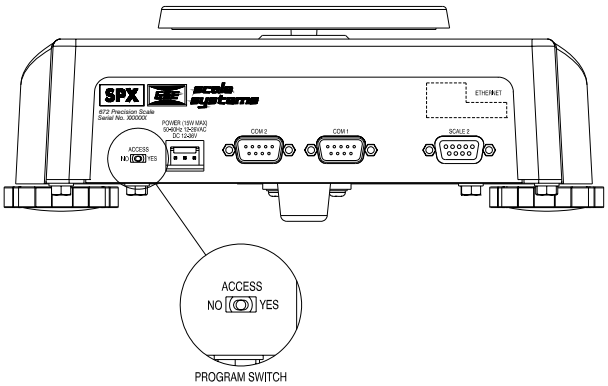


Figure 11: Program Switch

2. Remove the two screws from the bottom plate nearest the back panel.
3. Install the program switch cover over the program switch hole on the back panel. The cover will loop over the back panel and bottom plate. Refer to Figure 12.

4. Line up the hole of the switch cover with the screw hole of the bottom plate.
5. Install both bottom plate screws. Make sure the screws have a hole to pass a lead seal through.
6. Pass the lead seal through the holes of both screws.

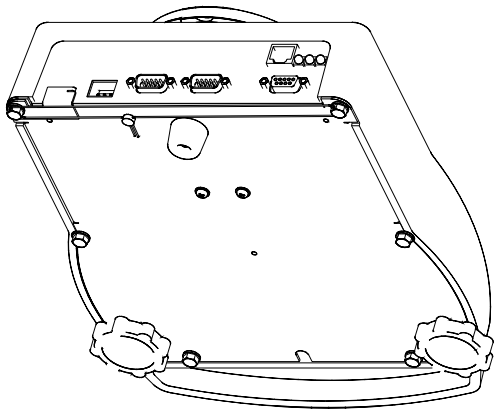


Figure 12: Physical Seal

AUDIT TRAILS

Three separate incrementing, non-resetable audit trail parameters are used by the Model 672 to indicate changes to various parameters, P60201 – OIML, P60203 – Calibration , and P60204 – Setup. An audit trail counter will increment only once upon exiting the Setup Mode and saving changes regardless of how many settings were changed.

OIML Audit Trail

Changes to any of the following parameters will increment the OIML (Euro) audit trail at P60201:

- P109 – P119 (Scale Setup)
- P122 (Return to Zero)
- P131 – P134 (Units)
- P150 – P154 (Calibration and Custom Units)
- P162, P163 (Negative Tare Enable, Tare Rounding Enable)
- P300 – P309 (Selectable Modes)
- P410, P412 (OIML Enable, Preset Enable)
- P420 (Standard VF Display Mode)
- P600 – P646 (Rename Parameters)
- P800 – P820 (Key Functions)
- P989 – P4999 (Custom Transmit)
- P61101 – 61140 (Calibration and Linearization)
- P65001, P65002 (Default All, Default –Cal)

Calibration Audit Trail

Any changes to the existing calibration will increment the Calibration (CAL) audit trail at P60203. This includes any changes to P60101 – P61140 of the information parameters.

Setup Audit Trail

Changes to any of the Setup Mode parameters will increment the setup audit trail at P60204.

Viewing Audit Trail Parameters

Audit trail parameters may be viewed at any time.

To view audit trail parameters:

1. Press 6 0 2 0 3 SELECT.

   DISPLAY READS ▶ *Audit ~ Trail~CAL. ~ 00001*

2. Press SELECT again to view the Setup Audit Trail parameter.

   DISPLAY READS ▶ *Audit ~ Trail~Setup. ~ 00003*

3. Press ZERO to return to the Weigh Mode.

   DISPLAY READS ▶ *0.00*

OMIL REQUIREMENTS

The International Organization of Legal Metrology is an inter-governmental body which harmonizes the national metrology regulations of its worldwide members. A list of regulation publications can be obtained from the Bureau International de Métrologie Légale (BIML) in Paris, France.

In order to configure the indicator to comply with OIML requirements, P410 must be enabled in the setup mode. Doing this will ensure the following:

- An over-load condition will result when the gross weight exceeds nine (9) graduations over the full scale capacity.
- Full scale capacity is always referenced from the last zero calibration reference, not the last zero acquired by pressing ZERO.
- Presettable parameters will give indication that a value has been entered manually

Most NTEP requirements will also apply. See the *NTEP* section of this chapter for additional considerations.

Enabling OIML Operation

See the Model 672 Technical Reference Manual for details on enabling the OIML parameters.

OTHER REQUIREMENTS

Several parameters must be considered on an individual basis as their configuration may vary with different applications. These parameters include, but are not limited to:

Parameter	Description	Comment
P110	Full Scale Capacity	Verify proper scale capacity.
P111	Division Size	Verify that the maximum allowable number of scale divisions are not exceeded.
P112	Zero Track	Verify required selection.
P114	Stability	Verify required selection.
P118	Zero Range	Verify required selection.
P212	Print Stability	Verify required selection.

Chapter 6: Troubleshooting

OPERATIONAL ERRORS

MESSAGE	DESCRIPTION
CodE02 Under Load!	Input signal less than negative full scale. If this is due to excessive loading, reduce the load. Otherwise check the load cell connections. If a 4 wire load cell cable is being used, check that the sense jumpers are in place. Verify that the capacity selection **P110** is correct. Use the information parameters, especially **P61103** and **P61104**, to check the setup and input signal.
CodE03 Over- Load!	Input signal is greater than positive full scale. Use same check as for underload.
CodE04 #> Dsply	Number to be displayed will not fit within 6 digits. This will not normally occur for the Gross, Net or Tare Weights but may result while displaying the accumulated totals if the amount exceeds 999,999. Either clear the totals or settle for only being able to transmit the totals.
CodE05 Zero> Max.!	An attempt was made to zero out more than allowed per **P118** selection. Use the TARE key for subtracting off container weights or if large dead-load is always to be present, apply this dead-load during the No Load? prompt during calibration to permanently eliminate the offset.
CodE06 Tare> F.S.!	Tare entry was greater than full scale. Most likely the entered tare value was incorrect.
CodE07 Tare< 0!	Negative tare attempted, but not allowed per **P162**. For auto-tares, the GROSS Weight must be greater than zero unless **P162** is changed to allow negative tares.
CodE08 Check Conn	The signal into the A/D is greater than +/- 2 times the expected full scale signal. For example if the full scale capacity at P110 is 100, then the error message will be displayed at +/- 208 taking into consideration the 4% overload. This error usually indicates a defective or incorrectly wired load cell.

SETUP MODE ERRORS

MESSAGE	DESCRIPTION
CodE 10 Entry >Max!	An entry was made which had more characters than allowed. The most likely cause is making an entry for an ID that is longer than the programmed size of that ID.
CodE 11 WRONG CODE!	The incorrect access code was entered, thus preventing changes. In order to access the Setup Mode, either the proper code must be entered or the ENTER key must be pressed alone (to view selections without making changes).
CodE 12 No Mods!	The Setup Mode is being accessed, but changes are prevented.
CodE 13 Outof Range	An entry made for a selection was beyond the range of valid choices. Also, an out of range error will occur during the execution of a macro utilizing the "%m" command. For example, If the command wants to strip out characters 5 through 8 and the string is only set for 2 characters, this error will occur.
CodE 14 Must Keyin	The choice for the current parameter must be keyed in.

MESSAGE	DESCRIPTION
CodE 15 Size >Max!	The size of one of the input interpreter, macro or custom transmit tables has exceeded it's limit. Input interpreter size is limited to 198 for 660 Series, 98 for all other products; macro size is limited to 9996; custom transmit size is limited to 3997.
CodE 16 CHECK JUMPR	A programming operation was attempted when the program jumper is installed. Installation of this jumper will prohibit any programming changes.

HARDWARE ERRORS

MESSAGE	DESCRIPTION
No Macro	An attempt was made to abort a macro when no macros were defined.
Macro error	An error occurred during macro execution. Check for proper syntax. Analyze the macro debug buffer to help determine the cause of the error.
No Start	A serial or A/D database collection command (%' or %*) was executed prior to the "start collection" command.
Must Free	A serial or database start collection command (S%' or S%*) was issued without first freeing memory with the F%' or F%* command.
Wrong Parm	The parameter specified for data collection using the %* command was invalid or not of type float.
CodE81 Macro Stack	The maximum number of macros pushed onto the stack has been exceeded. This error usually indicates that macros are being invoked faster than they can be executed (for example, macros invoked by continuous, short-interval input setpoints, multiple macro "calls", etc.) The maximum number of macros on the stack is 200.
CodE82 Macro Abort	A macro was aborted from within a macro via one of the macro abort operations or from the front keypad by pressing CLR NO + SELECT MODE
CodE83 Macro UnDef	A call or similar reference to an undefined macro occurred. Make sure the intended macro is configured beginning at P9990.
CodE84 Math error	An incorrect math operation has been performed. This could be caused by trying to divide by zero or any other non-acceptable algebraic operation. This message will also occur if trying to take the negative or zero modulus of a number.
CodE85 Syntx Error	An error occurred during macro execution as the result of invalid syntax. Re-check the macro or analyze the macro debug table to find out where the error occurred. Refer to *Chapter 9* for proper macro syntax.
CodE86 Macro Brace	The number of opening and closing braces within a macro are different. When nesting conditional statements or grouping conditional Boolean statements, make sure the proper use the %{ and %} brace commands.
CodE87 NoTag Found	An attempt was made to jump to an undefined tag. When using simple jump-tag commands, make sure the intended tag is properly specified and that the tag command is executed **before** the jump. When using macro-independent jump-tag commands, make sure the correct macro number is specified and that the jump text matches that of the tag.

CALIBRATION ERRORS

MESSAGE	DESCRIPTION
CodE92 ✓Stpt Setup	A parameter entry is required for a setpoint's Activation Limit, Deactivation Limit, or Compare parameter. Pressing any key will automatically select the offending parameter and allow you to correct it.
CodE95 SyErr NvRam	The EEPROM size is too small to allocate the database requested.
CodE95 SyErr HSR00	An error occurred at startup or during operation. Contact GSE.
CodE95 SyErr Typ04	An error occurred at startup. Contact GSE.
CodE96 Erase Boot!	An attempt was made to enter an instrument serial number or board serial number with the flash already programmed.
CodE99 Can't Set!	An attempt to enter a value for a parameter which is not field changeable, such as the serial numbers or the audit trail counter results in this message.
P_ _ _ Invld Mode!	An attempt was made to access a non-existent parameter. Key in a valid parameter and press SELECT MODE, or press only SELECT MODE or SCALE ZERO to proceed to the nearest lower valid parameter.
Mode <100!	An attempt was made to access a weigh mode parameter from within the setup mode. Valid setup mode parameters contain three or more digits.
Press Enter	The SELECT MODE key was pressed at a "pick instance" prompt. You must press ENTER YES to select an instance, or CLR NO to abort the instance entry.
Okay? #####	This is not an error. Press ENTER YES to acknowledge your entry, or CLR NO to re-enter.
Cksum error	Upon each power-up, the indicator tests the integrity of its firmware. If the result is not correct this message is displayed and the indicator is not usable. ReFlash the indicator.
MdBus Max!	An attempt was made to modify the modbus parameter map past its limit of P6999.

COMMUNICATION ERRORS

MESSAGE	DESCRIPTION
prtyX error	The parity of a received character did not match the parity specified in the setup mode at P202. This could also result if the baud rate (P200) or the number of data bits (P201) are incorrect. The 'X' in the error message represents the COMM port number on which the problem occurred.
ovrnX error	An overrun error occurred where additional characters were received while the receive buffer was full. The additional characters will be lost. The 'X' in the error message represents the COMM port number on which the problem occurred.
frmgX error	The stop bit of a received character did not occur when it was expected. This could be the result of an incorrect baud rate (P200), incorrect number of data bits (P201), or incorrect parity setting (P202). The 'X' in the error message represents the COMM port number on which the problem occurred.

MESSAGE	DESCRIPTION
portX error	The indicator did not check its receive data register in time, thus missing a character. To prevent the problem, try reducing the baud rate (P200). The 'X' in the error message represents the COMM port number on which the problem occurred.
NoTxX Allow	Associated with Modbus. This is selected at P205. This message indicates that a transmission out the specified port was attempted. This is not acceptable if the port is set for Modbus. The 'X' in the error message represents the COMM port number on which the problem occurred.
tx on hold	Occurs if a data transmission is held up for two seconds of more due to a deasserted handshake. Refer to the description of parameter P209 for more information.
tx abort	Occurs if the CLR NO key is pressed when the tx on hold error message is shown or if P209 is set for abort and the transmit buffer becomes full.
tx Con'd	Appear briefly when the handshake is re-asserted after the tx on hold message occurs.
BadTx Port	Appears briefly after an attempt was made to put a byte in an invalid comm port receive buffer.
Wrong Comm#	An invalid communication port number was specified.

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