Chapter 20 Information Parameters

20.1 Model Type or Remote Display Use

160.XX Model 450 **(or Model 455)**

This parameter can not be accidentally changed. Key **9 9 9 0 [ENTER]** to select the Model 450/455 or key **9 9 9 2 [ENTER]** to select the Remote Display (RmDsp) operation. If these codes are entered, the verification prompt **"Sure? ???"** appears. Press **[ENTER]** to verify the change or any other key to abort the change. Refer to Chapter 25 for more information on the 450 series configured as a remote display.

20.2 Memory Information Parameters

The Model 450 Indicator has a series of parameters that are used for informational and diagnostic purposes. They may be reached by entering the 450 access code and gaining access to the 60000 parameters by keying in 60000 **[SELECT]**. Once in the Information Mode, you may move about as you would in the Setup Mode: press **[SELECT]** to move to the next parameter, or press **[PRINT] [SELECT]** to back up one parameter.

There are three types of memory used by the indicator:

EPROM which contains the program, EEPROM (E^2) which holds the chosen selections of all setup parameters and stored rows of data, and RAM which is used during operation for temporary data storage. The following parameters provide some information about E2 and RAM memory space. Refer to Chapter 17 Memory Expansion (OPTION) for information on memory storage.

P60000. E2Ins

This parameter shows the installed amount of EEPROM (E2) memory space. This may help determine how much information can be stored in the indicator when setting up the Custom Transmit and other parameters.

P60001. E2Avl

This parameter shows how much E2 memory space is available for use. If a setup mode entry or selection requires more storage space than is presently available (as indicated by this parameter), the indicator will display a message indicating that condition. You can then refer to P60000 and P60001 to determine how much storage space is installed and available.

20.3 Identification Information Parameters

P60100. ©1993 *GSE*

This parameter provides the software copyright statement.

P60101.0450-02002

This parameter provides the firmware revision code. This should match the label on the EPROM at U4 inside the indicator. Refer to this parameter along with P60102 to determine the exact firmware version in your indicator.

P60102. YYMMDD

This Parameter provides the date code of the firmware release. Displayed in the auxiliary display.

ie. **Jul 20**
1995

20.4 Audit Trail Parameters, Legal-for-Trade (H-44) and Hardware Tracking Information

This note is in reference to the revision 2 firmware release (July 20, 1995) for the model 450 with internal power supply (P/N 200450-02003). These changes have not been implemented into model 450 with external power supply (P/N 200450-00001) at this time. Contact GSE for more information.

NTEP Firmware Documentation for the GSE 450 (Firmware Date: July 20, 1995 / Revision 450450-02002)

20.4.1 NTEP Parameter

P440 has been added as a setup parameter to insure NTEP compliance when printing and when performing accumulations. When enabled, this parameter changes the operation of standard printing and accumulating as follows:

1 Printing via the **[PRINT]** key or execution of a **%p** or **%Q** command is only possible while in the gross or net display mode. Attempting to print from any other display mode will have no effect on the printer. These rules also apply to the remote key input if configured for ***Print*** at P800.

Note: Continual and once per weighment transmits are unaffected by P440's setting.

2 Keyboard accumulations are only possible while in the gross or net display mode.

3 If the value of an accumulation register exceeds six digits, and the transmission width specified at P208 is 7 or less (allowing for 6 digits and a decimal point), then any attempt to print the accumulation value will transmit dashes in place of the actual value. This is necessary for certified installations to prevent printing data which can not be displayed by the scale.

Note: For certified installations, accumulation parameters must be formatted to transmit a decimal point regardless of the number's increment size. To insure transmission of a decimal point, always add 8 to the gross total or net total format code.

In order to transmit accumulation values greater than 6 digits in length with P440 enabled, select a transmission width greater than 7 at P208. This can be useful when using an alternate display such as the GSE 4 line by 20 character VF Prompting Display, which makes it possible to display larger numbers for certified installations. This also allows printing large accumulation values when accumulating is not considered part of the certified installation.

When P440 is enabled and P208 is greater than 7, P208 appears in the MUST! CHECK list at P60205. (See Custom Configuration.)

The default setting for P440 is **Disbl** (disabled). Performing a system default at P65001 or P65002 will set P440 to its default setting.

20.4.2 Accumulations

Performing an accumulation is now possible from the gross or net display mode. Press the **[UNITS] + [SELECT]** keys simultaneously to accumulate from either of these two modes. When the NTEP parameter (P440) is enabled, keyboard accumulating is only possible in the gross or net display mode. With the NTEP parameter disabled, accumulating is also possible from the gross total and net total display modes in the same way.

When the remote key is configured for **GrAcc** (gross accumulation) or **NtAcc** (net accumulation) at P800, the corresponding accumulation will be performed regardless of P400's setting and the current display mode. Remote key accumulations are performed as follows:

1 If P800 is set for gross accumulations, pressing the remote key will set the display to the gross mode, pause, perform a motion inhibited accumulation, display the new gross total, pause, and return to the gross display mode.

2 If P800 is set for net accumulations, pressing the remote key will set the display to the net mode, pause, perform a motion inhibited accumulation, display the new net total, pause, and return to the net display mode.

The accumulation parameters may be assigned to an Operational Mode to be accessed along with other modes via the **[SELECT]** key. Refer to chapter 12 on selectable operating modes.

Note: The accumulation parameters must be accessible for certified accumulation installations. (See also: Accumulation Counter.)

For more information on performing accumulations, initializing totals and preventing double accumulations, refer to chapter 13.

20.4.3 Accumulation Counter

Parameter 9, **Accum**, has been added to the list of preset parameters. This parameter automatically increments by one (1) each time an accumulation is performed and is reset to zero (0) when the accumulation parameters are reset. It is not possible to change the accumulation counter in any other way.

The accumulation counter may be assigned to an Operational Mode to be accessed along with other modes via the **[SELECT]** key. Refer to chapter 12 on selectable operating modes.

Note: The accumulation count parameter must be accessible for certified accumulating installations which do not use a printer. For certified installations which do use a printer, the accumulation count must be printed with each accumulation total.

20.4.4 Dual Audit Trail

The indicator supports a recently accepted technique, called the Audit Trail, to control the modification of calibration and setup parameters. To prevent fraud in weighing, lead seals have generally been used in the past to seal an instrument by a Weights and Measures inspector after having verified its operation and accuracy. The lead seal is placed in such a manner as to prevent the removal of an access plate which would need to be removed to change the setup of the weighing device. However, with the advent of weighing devices that are completely controlled by software, it has become practical to require the keying in of a special code in order to allow changes to the setup parameters. The Audit Trail method is becoming more accepted by Weights and Measures officials as a way of controlling setup changes in electronic scales. Basically, the Audit Trail provides a count of the number of times that calibration or other controlled parameters have been changed. Using this method, the Weights and Measures inspector can verify the operation and accuracy of the instrument and log the Audit Trail counter by recording it in a log book or writing it somewhere on the indicator. The inspector can then verify during future inspections that the Audit Trail counter has not changed since the last approval. If the counter was changed, this would be the equivalent of finding a broken lead seal. In addition, for the indicator to be considered an NIST approved, certain parameters must be set to specific choices.

Note: In units with firmware revisions ***before*** 072095 if these parameters are not set to the allowed choices, a warning message NOT H-44! is displayed alternately with the Audit Trail value for one second each.

20.4.5 Traditional Sealing Method

Some states and Canada have not yet accepted the Audit Trail method. Therefore, the traditional method of sealing the indicator is available. A three pin header, E1, is located in the upper right corner of the Main Board, just above the display module. You can place a jumper on this header, which is labeled PROGRAM, in one of two positions, NO or YES. With the jumper in the YES position, the indicator operates the same as it does without the jumper at all. However, the jumper must be removed from the NO position at least momentarily while the indicator is displaying the access code prompt "Setup Keyin" CODE in order to make changes. If this requirement is not met, then when the access code is entered, the warning message "**Code 16 Check Jumpr**" is displayed and changes will not be allowed. Once an instrument has been finalized, this jumper is moved to the NO position to prevent further Setup Mode changes. In order to seal the instrument, specially modified rear panel screws are available which have holes through the head. These screws accept a wire which can be sealed using the Weights and Measures inspector's lead seal. These optional sealing accessories are available from GSE for installations which require them.

Current regulations require that a security seal consist of a physical seal or a non-resetable two event counter: one for calibration parameters and one for configuration parameters. To comply with these requirements, a dual audit trail has been implemented as follows:

P60203 has been added to the diagnostic parameters as a calibration event counter. Selecting this parameter will briefly display **Audit Trail**, followed by the current calibration event count.

This counter is incremented by one (1) if any of the

parameters from P61101 (Cal Factor) through P61121 (VREF NROff) is changed.

The calibration event counter will be incremented only if changes to the above are saved prior to exiting the setup mode.

P60204 has been added to the diagnostic parameters as a configuration event counter.
Selecting this parameter will briefly display **Audit Trail**, followed by the current setup event count.

This counter is incremented by one (1) if any changes are made to any of the setup parameters (excluding P61101 through P61121 referenced above). As with the calibration event counter, the setup event counter will be incremented only if changes are saved prior to exiting the setup mode.

P60201 , the original audit trail, has been deleted from the setup parameters. This parameter also displayed the **NOT H-44** message if the indicator was not set up according to NIST standards. Since some of the pertinent parameters were application dependent, this message was deleted to avoid confusion during installation.

P60201. AudTr (Only in Firmware versions before 072095)

This parameter displays the Audit Trail Number which starts at 00000 when the board is new. This number is incremented by 1 when changes are saved after one or more of the NIST controlled parameters (P110 - P119, P150 - P158, P160, P162, P163, P212, P1XXX are changed or after a calibration is performed. Clearing any CAL factors will also flag a change for the audit trail. If the indicator is not set up according to NIST standards, the Audit Trail Number will alternate with a display of NOT H-44!

The "NOT H-44" command also checks for the resolution of the indicator. If the resolution is greater than 10,000d then the warning will appear when viewing the audit trail, P60201. Also the zero track is checked.

However, the absence of this message does not guarantee that the indicator is setup to within NIST standards. This warning indication is simply intended to be a tool for the Weights and Measures inspector to help insure that certain selections have not been made.

20.4.6 Custom Configuration

Due to the programmable nature of the GSE 450, there has been concern that these instruments could be inconspicuously configured to facilitate fraud in certified installations. In order to increase the confidence level of NTEP conformance, **P60205** was added to the diagnostic parameters. This parameter will display **Std. Setup** if all of the following conditions are met:

P168 (numeric select) is disabled, and
P206 (RX enable) is disabled, and
P208 (TX width) is less than 8, and
P440 (NTEP enable) is enabled, and
P900 (input interpreter) is disabled.

Any configuration of these parameters other than the above will result in a brief **Custm Setup** display at **P64205**, followed by a **MUST! CHECK** prompt, followed by a display of each parameter which must be checked. Pressing **[ENTER]** will repeat this list. This allows a Weights & Measures Official an easy method of identifying the presence of custom setups so that he may request an explanation and demonstration of each.

Note that the **Std. Setup** prompt does not guarantee NTEP conformance for all parameters. It serves only to insure that the checked parameters are configured such that displayed and printed information can not be altered.

20.4.7 Instrument and Main Board Tracking

P60200. B SN XXXXX

This parameter displays the serial number of the main PC board in the 450. This is a non-enterable information parameter provided for identification and control purposes for GSE and NIST officials or their agents.

P60202. ISN XXXXX

This parameter shows the serial number of the instrument. This is to provide additional identification and warranty tracking.

20.5 Diagnostic and Calibration Information Parameters

P61100. Crrnt

This parameter shows an approximation of the present mV/V output of the load cell connected to the indicator, ranging from 0 to +/-10.0. The accuracy of this value is approximately +/-0.02%.

P61101. CAL Factr

This parameter shows the calibration adjustment factor. This value is normally 1.000 however, if the full scale has changed since calibration this number will be slightly greater than 1.000. The internal resolution will also be decreased. If there is a high gain due to low load cell output, less than 0.625 mV/V at full scale, this will cause this value to be greater than 1.000 and also decrease the internal resolution.

P61102.ReZro Wght

This parameter shows the amount of weight (in default units) that has been zeroed out though use of the **[ZERO]** key since the last calibration. This value can be cleared by pressing the **[CLR]** key. New values can also be entered.

P61103.ZrTrk Wght

This parameter shows the amount of weight (in default units) that has been tracked off by the zero track feature since the last use of the **[ZERO]** key.

P61104 thru P61107 show the values established by the indicator during the last calibration. These values are established are compensating for variations in the A/D itself specific to the board A/D installed. If these values are to be entered into another 450, record these values and then proceed to key them into the new 450. The setup file can be modified with a %e replacing the %c effectively entering the new number instead of clearing the entered number.

P61104.CZero

This parameter allows for adjustment of the coarse zero in 25% increments. The ranges are between 175% to -175%. Each 25% is approximately 2,000,000 parts. These values are not normally entered but can be entered when transferred from another 450 (see above). There are 16 selections available, 0 - 15. ASCII file can be modified with one of the following entries if transferring selections from one 450 to another.

Selection	Coarse Zero
0%e	0%
1%e	25%
2%e	50%
3%e	75%
4%e	100%
5%e	125%
6%e	150%
7%e	175%
8%e	0%
9%e	-25%
10%e	-50%
11%e	-75%
12%e	-100%
13%e	-125%
14%e	-150%
15%e	-175%

P61105.Fine Zero

This parameter shows a number ranging approximately between +/- 8,000,000. This number is calculated during the calibration mode. Every 2,000,000 increments corresponds to 25% of the full range.

P61106.CGain

This value is established by the indicator during the calibration mode. The 4 values are 25, 50, 100 and 200. If transferring to another 450 from an ASCII file, modify the file with one of the following selections.

Selection	Coarse Gain
0%e	25
1%e	50
2%e	100
3%e	200

P61107.Fine Gain

This parameter shows the fine calibration factor established as of the last calibration routine, ranging from 0.4 to 1.5 and normally near 1. The absolute maximum range is 0 - 2.0. If Multi-Point Linearization is enabled (P119) then Not Used will appear. Refer to P61110-P61119 for more multi-point linearization information.

P61110 thru P61121 are established at the factory (GSE) for each individual 450. If the indicator's A/D is changed, the procedure in the Trouble Shooting and Service chapter must be followed (Swapping the A/D Converter).

P61110.Zero Adj25

This is a number between +/-2,000,000. Adjusts variations in the coarse zero adjustments.

P61111.Zero Adj50

This is a number between +/-2,000,000. Adjusts variations in the coarse zero adjustments.

P61112.Zero Ad100

This is a number between +/-2,000,000. Adjusts variations in the coarse zero adjustments.

P61113.Gain Adj1

This number is established to compensate for variations in adjustments in the coarse gain values established in the preceding parameters. The normal range is 0.94 to 0.98.

P61114.Gain Adj2

This number is established to compensate for variations in adjustments in the coarse gain values established in the preceding parameters. The normal range is 0.94 to 0.98.

P61115.Gain Adj4

This number is established to compensate for variations in adjustments in the coarse gain values established in the preceding parameters. The normal range is 0.94 to 0.98.

P61116.Gain Adj8

This number is established to compensate for variations in adjustments in the coarse gain values established in the preceding parameters. The normal range is 0.94 to 0.98.

P61117.AIN1 NROff

Compensates zero offsets in A/D for all four gain factors during the calibration procedure.

P61118.AIN2 NROff

Compensates zero offsets in A/D for all four gain factors during the calibration procedure.

P61119.AIN4 NROff

Compensates zero offsets in A/D for all four gain factors during the calibration procedure.

P61120.AIN8 NROff

Compensates zero offsets in A/D for all four gain factors during the calibration procedure.

P61121.VREF NROff

This value compensates for zero offsets of the A/D's reference voltage which is derived by the sense leads.

NOTE:
When making a firmware update in the field, it may be desirable to write the values for the following parameters to avoid a re-calibration: P61100 thru P61121. If the values are written down before removing the old EPROM, they may be keyed-in after the new EPROM is installed and will maintain calibration accuracy unless other changes have been made to the hardware or setup. However the optimum method of restoring a previous setup is to make use of P64000. This parameter will allow the download of the complete setup to a PC or a printer.

20.5.1 Calibration Reset

A Cal Reset option has been added to the calibration routine. When at the "**New Zero?**" prompt in the Cal mode, press **[SELECT]** repeatedly until "**Cal Reset**" is displayed. The Cal Reset adjusts the zero and gain factors of the amplifier on the A/D. The parameters being adjusted are listed below.

P61101	Cal Factor
P61104	CZero
P61106	CGain

When reset, these parameters are adjusted to normal values.

Normally a Cal Reset is performed if the amplifier is locked in at extremely high gain factors and will not allow a new calibration to be performed. If an over or under load condition exists while in the Cal mode, press **[CLR]** to perform a Cal Reset. This has the same effect as pressing the **[ENTER]** key at the "**Cal Reset**" prompt. After a Cal Reset is performed, the unit goes back to the "**New Zero?**" prompt. The **[SELECT]** key will toggle to the desired calibration routine.
After performing a Cal Reset, a re-calibration should be performed before exiting the calibration or setup modes. The reset will not be saved unless a re-calibration is performed and changes are saved.

20.6 Linearization Data Parameter Setup

If Multi-Point Linearization is enabled (P119), the following ten parameters (P61130-P61139) show the calibration weights used and the resulting calculated factors. Otherwise the message "Not Used" is shown.

P61130.Cal WGHT1

This parameter shows the weight used for the first cal point (if Multi-Point Linearization is enabled). A value of 0.000 indicates that a linearization has not yet been performed.

P61131.Cal FACT1

Calibration factor for the first point of the multi-Point Linearization feature.

P61132. through P61139.

These parameters show the calibration weights and their respective factors for the remaining 4 points of the Multi-Point Linearization feature. These values will be transmitted from the indicator when a parameter download is performed (refer to the section on Parameter Download and Upload. However, the actual values will contain a %c command (instead of the %e command that is normally sent with such information) to prevent the linearization values from being loaded into another scale.

20.7 Test Mode

P62000.Dsply Test

This parameter performs a test of the display when you press **[ENTER]**. This will illuminate all display elements so that you may examine them to insure that they are all functional. Press any other key to end the test.

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20.8 Parameter Download And Upload

Since use of the terms download and upload can create confusion when explaining the sending and receiving of data, we will refer to transmission of the indicator setup data to some external device as download and the receiving of setup information from an external device as upload.

The indicator generates an ASCII transmission (see parameter P64000) which contains all the commands necessary to duplicate the setup data along with comments describing each setup parameter selection. The transmission may be sent to a printer to get a hard copy of the setup to more easily review the setup selections. It could be sent to another Model 450 Indicator in order to copy the setup from the first one to the second. The data may also be sent to a computer for permanent storage. This would simplify restoration of the setup when servicing is required or an additional indicator with the same setup is needed. The transmitted data contains the selection for every parameter within the indicator, including the information parameters (P60000-P65XXX). However these informational parameters are sent without the commands that would enter these values into a receiving indicator. Refer to

the Appendix for an example of the file generated by this parameter.If a significant number of parameters in the indicator are set up for a specific application, it is strongly recommend that parameter P64000 be selected and the final setup downloaded to a computer and saved on disk for backup and future reference.

P64000. Send Setup

This parameter can be used to transmit all the current setup parameter selections out the COMM port. To send this transmission, press **[ENTER]** while this parameter is displayed. Press any other key to cancel the download.

P64100. LnCnt XX

This parameter simplifies the debugging of a setup file upload. It displays the number of carriage return codes that have been received, acting as a line counter during the upload process. This counter is cleared to 0 every time the access code prompt "Setup Keyin" Code is displayed. Viewing this parameter lets you verify the total number of lines that have been processed during an upload.

P64101. ErCnt XX

This parameter shows the total number of transmission errors which have occurred to the indicator. This counter is cleared to 0 every time the access code prompt Setup, Keyin Code is displayed. This would normally be used only during an upload in order to determine how many, if any, errors occurred during the upload.

P64102. 1stEr Ocr'd

This indicates the first transmission error which occurred to the indicator since this parameter was last cleared. As with the above parameters, this parameter is cleared to 0 every time the access code prompt Setup, Keyin Code is displayed. If an error has occurred, the display will cycle through four messages indicating the line number, parameter number, and the error message which were present when the error occurred. For example, the messages 1st Er Ocr'd ... Line = 1 ... Parm = 112 ... Entry Error will be each displayed for one second, continuously. This can be very helpful in determining the cause of any problems after an upload. Pressing **[CLR]** from any of these three previous modes (**P64100 - P64102**) will clear all three of these values.

P64103. Debug Off

The Debug Mode is a selection which when enabled will transmit the warning messages described above for **P64102** through the specified port as soon as the error occurs. This can be especially useful during the upload of a setup file. If no errors occur, there will be no transmission out of the Indicator. Press **[ENTER]** to select Debug ON or OFF.

NOTE:
All of the above parameters are functional regardless of whether or not an actual parameter file upload to the indicator is in progress. The error counter will also increment if an error is made while making entries through the front panel.

20.9 Utility Parameters

P65001.Deflt All

This parameter is used to change ALL parameters including calibration to their factory default values. Press **[ENTER]** twice to default the selections. Changes must be saved when leaving the Setup Mode for this operation to take effect! Press **[SELECT]** to see the next parameter.

Defaulting Parameters and the Model 450 Indicator

When the default setup modes **P65001- P65002** are invoked, the model number parameter **P160** determines the model number and the subsequent default values. If the model number is the 450, then the Model 450 default parameters are used. If the Remote Display mode is selected, then Model 450 will default as a remote display.

P65002.Deflt - CAL (default all minus calibration)

This works the same as P65001 above except that all the *calibration* parameters are *retained*. Press **[ENTER]** twice to default the selections. Changes must be saved when leaving the Setup Mode for this operation to take effect! When you are finished reviewing these informational parameters press **[ZERO]** to return directly to the Weigh Mode.