Chapter 13
Accumulation Mode

13.1 Parameter Setup

P164.XX AcRTZ

This parameter determines the minimum weight (in terms of Full Scale established by P110) that the Gross Weight must fall below after an Accumulation before the next Accumulation can take place. This can be used to prevent unintended multiple Accumulations. The selections range from 0.01% to 100%.

13.2 Accumulation (Memory Modes) Operations

The indicator contains three memory registers into which weighing data may be accumulated. The three registers are the Gross Total, Net Total and Quantity Total. The manner in which the Accumulation operates depends on selections made during the Setup Mode. Remote key, keypad or serial methods will all perform accumulations. Refer to chapter 10 Remote Keys.

13.3 Performing Accumulations

(M450)
First, enter the desired Accumulation Mode either by pressing the **[SELECT]** key until one of the Accumulation Modes appears on the display, or by serially transmitting an accumulation *total* mode number shown in Table 13-1 and followed by %s. Once in the desired accumulation mode, press the **[ENTER]** key or serially send to the indicator a %e to add the displayed total. Accumulate operations are motion delayed. If motion is occurring when an accumulation is requested, the Mot'n Delay prompt is displayed until motion ceases. During this time, press **[CLR]** to abort the accumulation.

There are three (3) Accumulation Modes with corresponding Mode Numbers as shown in Table 13-1. The order of appearance of these modes can be assigned when setting up parameters **P300 - P309**. Refer to the section on Operation Modes.

When an Accumulation is made, both the Gross and Net totals are affected. The Quantity total is unaffected. The Totat Quantity register must be accessed directly to perform an accumulation of the quantity.

After an accumulation occurs, these values are frozen at their new accumulate total values until the Gross Weight again falls below the value set by parameter P164. Then the same procedure to perform another accumulation applies. Refer to section on Preventing Double Accumulations.

(M455)
First, enter the desired Accumulation Mode either by pressing the **[SELECT]** key until one of the Accumulation Modes appears on the display, by serially transmitting an accumulation *total* mode number shown in Table 13-1 and followed by %s or by directly keying in one of the mode numbers shown in table 13-1 followed by the **[SELECT]** key. Once in the desired accumulation mode, press the **[.] [ENTER]** keys or serially send to the indicator a **.%e** to add the displayed total. Accumulate operations are motion delayed. If motion is occurring when an accumulation is requested, the Mot'n Delay prompt is displayed until motion ceases. During this time, press **[CLR]** to abort the accumulation.

There are three (3) Accumulation Modes with corresponding Mode Numbers as shown in Table 13-1. The order of appearance of these modes can be assigned when setting up parameters **P300 - P309**. Refer to the section on Operation Modes.

When an Accumulation is made, both the Gross and Net totals are affected. The Quantity total is unaffected. The Total Quantity register must be accessed directly to perform an accumulation of the quantity.

ACCUMULATION MODE	MODE #
Gross Total	03
Net Total	06
Accumulation Counter	09
Quantity Total	31

Table 13-1 Accumulation Mode Numbers

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After an accumulation occurs, these values are frozen at their new accumulate total values until the Gross Weight again falls below the value set by parameter P164. Then the same procedure to perform another accumulation applies. Refer to section on Preventing Double Accumulations.

13.3.1 Performing Accumulations from within either the Gross or Net Display Modes

(not available in firmware releases before 072095)

Performing an accumulation is 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:

The **[UNITS] + [SELECT]** keys pressed simultaneously on a 450 from within the quantity mode will also perform a quantity accumulation.

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.

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

13.4 Initializing Accumulation Totals

(not available in firmware releases before 072095)

The Accumulation Registers may be reset to a new number. This would permit you to enter a total from the previous day or shift to continue the accumulation, or to reset the number to 0. Simply access the desired accumulation mode to reset, enter the desired number and press **[ENTER]**. Numeric values can be entered using the cursor keys on the 450 (**[PRINT]** and **[UNITS]**). Use the numeric keypad on the 455. You will then be prompted by a display of **MOD AC?** for 1 second followed by **ENTER =MOD**. Press **[ENTER]** to complete the change or any other key to abort the modification of the accumulation total.

The **[CLR]** key may be used to reset both the net and gross totals to zero. The prompt **CLEAR ACS?** will appear briefly followed by **ENTER =CLR!** Press **[ENTER]** to complete the clearing or press any other key to abort the clear operation.

13.5 Preventing Double Accumulations

A setup parameter (P164) can help to prevent accidental double accumulations. This parameter lets you choose a percent of capacity that the gross weight must fall below before a second accumulation can take place.

If an accumulate is attempted without first removing the last accumulated weight, the message **CLEAR WGHT!** is displayed briefly and the operation is aborted.

13.6 Accumulation Counter

Parameter 9, Accum, has been added to the list of preset parameters, refer to table 13-1. 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.

13.7 Printing Accumulation Parameters

Any of the accumulation parameters from table 13-1 can be transmitted out the 450 series COM port. Refer to chapter 8, Communications, for data formatting information, wiring information and protocol settings.

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.

13.8 Auto-Accumulation (firmware after 072095)

The 450 series indicators can be configured to perform an auto-accumulation each time an item is placed on the scale.

(M450)
The 450 must be set for "once per weighment" P210 "wghmt". This will send the custom transmit only *once*, each time an item is placed on the scale. The custom transmit should contain the characters **%e** (percent, lowercase "e". This combination of characters will serially perform an accumulation (This is equivalent to the front panel key combination **[UNITS] + [SELECT]**). **Jumper** the COM port's TX and RX lines together. This will *re-route* the transmission back into the 450.

13.8.1 Operation

Place an item on the scale. The weight increases, then settles. The custom transmit is sent (**%e**) out the com port and back into the 450. The indicator performs a motion inhibited accumulation. If the indicator was in the **net mode**, it will end up back in the net mode after the accumulation is performed. All items are forced to be removed before the next accumulation can occur in order to eliminate the possibility of double accumulations. The same setup is also possible for the **gross mode**.

All accumulation values can be viewed easily if they are placed as one of the selectable modes at P300-P309.

A drawback to this operation is that it completely ties up the indicator's communication port.

13.9 Auto-Accumulation (firmware before 072095)

The 450 indicator can be configured to perform an auto-accumulation each time an item is placed on the scale.

The 450 must be set for "once per weighment" P210 "wghmt". This will send the custom transmit only *once*, each time an item is placed on the scale. The custom transmit should contain the characters **6%s%e1%s** (6, percent, lowercase "s", percent, lowercase "e", 1, percent, lowercase "s"). This combination of characters will serially perform an accumulation (This is equivalent to pressing the **[SELECT]** key until viewing the *net total* register, then pressing **[ENTER]**, then pressing **[SELECT]** until back to the *net mode*). the front panel key combination **[UNITS] + [SELECT]**). **Jumper** the COM port's TX and RX lines together. This will *re-route* the transmission back into the 450.

13.9.1 Operation

Place an item on the scale. The weight increases, then settles. The custom transmit is sent (**6%s%e1%s**) out the com port and back into the 450. The 450 performs a motion inhibited accumulation. If the indicator was in the **net mode**, it will end up back in the net mode after the accumulation is performed. All items are forced to be removed before the next accumulation can occur in order to eliminate the possibility of double accumulations. The same setup is also possible for the **gross mode**. (Gross weight accumulation custom transmission: **3%s%e0%s**).

All accumulation values can be viewed easily if they are placed as one of the selectable modes at P300-P309.

A drawback to this operation is that it completely ties up the 450 communication port.

13.10 Auto-Accumulation (M455)

The 455 indicator can be configured to perform an auto-accumulation each time an item is placed on the scale.

(M455 firmware only)
The 455 must be set for "once per weighment" P210

"wghmt". This will send the custom transmit only *once*, each time an item is placed on the scale. The custom transmit should contain the characters **.%e** (decimal point, percent, lowercase "e"). This combination of characters will serially perform an accumulation (This is equivalent to the front panel key combination **[.][SELECT]**). **Jumper** the COM port's TX and RX lines together. This will *re-route* the transmission back into the 455.

13.10.1 Operation

Place an item on the scale. The weight increases, then settles. The custom transmit is sent (**.%e**) out the com port and back into the 455. The indicator performs a motion inhibited accumulation. If the indicator was in the **net mode**, it will end up back in the net mode after the accumulation is performed. All items are forced to be removed before the next accumulation can occur in order to eliminate the possibility of double accumulations. The same setup is also possible for the **gross mode**.

All accumulation values can be viewed easily if they are placed as one of the selectable modes at P300-P309.

A drawback to this operation is that it completely ties up the indicator's communication port.