Chapter 14
Standard Programs Operations

14.1 Introduction

The 450 indicator has several commonly used scale programs pre-programmed into its firmware. These standard programs are selectable from the setup mode. All the standard programs make use of the two setpoint outputs (Refer to the chapter titled Setpoints and Logic Outputs). The **six** Standard Programs featured in the 450 are listed below along with sub variations of these programs. These programs are selectable at parameter **P5100.X**. The **[ENTER]** key will toggle through all selections. See also Chapter 4 for the listing of all 450 parameters including the 5100 parameters associated with the Standard Programs.

- **Check Weighing-percent (Ckwgh)**
- **Two-Speed Filling (Fill)**
  - **Single-Speed Filling**
- **Two Ingredient Batch (Batch)**
  - **Single Ingredient Batch**
- **Two-Speed Emptying (Empty)**
  - **Single-Speed Emptying**
- **Both Fill and Empty (Both)**
- **Check Weighing-absolute (CkAbs)**
- **Independent Setpoints (Indep)**

Once **one** of these programs is selected specific information must be entered associated with the Standard Programs operations. The **[SELECT]** key will step to these parameters.

Each of the **six** Standard Programs are defined in the following sections. Only *one* of the Standard Programs can be initiated at one time. Parameter **P5100.0** sets the unit for **no** Standard Program operation. If no **(None!)** program is selected, no other parameters will appear associated with the Standard Programs.

14.2 Check Weighing (Ckwgh)

P5100.1 SPt Ckwgh

The Standard Check Weighing Program lends itself to the commonly used check weigh operation with some added features to mold itself to the application's specific operation.

SETTING THE TARGET

P5101. Targ1

All check weighing operations have an **absolute target** value for the items being weighed. Parameter **P5101** allows for an absolute target value entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

ACCEPTABLE PERCENTAGE BELOW TARGET

P5102. %Low

During an actual check weighing operation its **not** practical to weigh items to an absolute value for acceptance. Parameter **P5102** allows for entry of the percentage below the absolute target value that the item may still be considered acceptable.

ie. Target = 100 oz
%Low = 2

Acceptable Range below Target = 100 to 98 ozs. This is 2 percent below the absolute target value. This example is effectively allowing items to be accepted greater than or equal to 98 percent of the actual target value.

This parameter is normally used in conjunction with P5103. %High.

ACCEPTABLE PERCENTAGE ABOVE TARGET

P5103. %High

During an actual check weighing operation its **not** practical to weigh items to an exact absolute value for acceptance. Parameter **P5103** allows for entry of the percentage above the absolute target value that the item may still be considered acceptable.

ie. Target = 100 oz
%High = 2

Acceptable Range above Target = 100 to 102 ozs. This is 2 percent above the absolute target value. This example is effectively allowing items to be accepted at less than or equal to 102 percent of the actual target value.

This parameter is normally used in conjunction with P5102. %Low.

TARGET VALUE BASED ON GROSS OR NET

P5104.X Based

The previously entered target value must be based on either the gross or net weight. This parameter allows for the selection of one or the other.

The Open Drain Outputs are active when the 450 is in either the gross or net modes. The outputs are tripped based on the selected Parameter (gross or net). The Display Status will only be active for the active mode set in this parameter (gross or net). The outputs and Display Status are explained in the following sections.

DISPLAY INDICATION STATUS

P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the item placed on the scale platform. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the check weighing operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ
As the selected based parameter (gross or net) exceeds plus 5 graduations this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as weight is applied. Also an indication as to whether the displayed weight is under, within or over the predetermined target value is presented in the auxiliary display.

ie. 67.3%
Under

98.7%
Good

104%
Over

The above example does not indicate that the percentage can be reflected in the thousands of percent of the target value. This is if the item placed on the scale is grossly over the targeted value.

WtDev

As the selected based parameter (gross or net) exceeds plus 5 graduations this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the item is above or below the target value. This deviation is continually updated as

weight is applied. Also an indication as to whether the displayed weight is under, within or over the predetermined target value is presented in the auxiliary display.

ie. **-5.28**
Under

-0.18
Good

1.30
Over

The above example does not indicate that the percentage can be reflected in very large deviations above and below the target value. This is if the item placed on the scale is grossly over or under the targeted value.

Brief

Selecting **Brief** as the mode of display indication of the status of the items on the scale will only be indicated with **one word**.

Under
Good
Over

This indication will appear in the lower portion of the display immediately as the displayed weight falls within any of the **three categories** above. These prompts are conditional and will only be displayed when five graduations are exceeded from gross or net zero. This is dependent on the mode selection in parameter P5105 (gross or net). The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the check-weigh status on the display.

SETPOINT OUTPUT INDICATION

P5113.X Outpt

The 450 indicator offers two open drain outputs which can be configured for check-weigh operation. These outputs can be used for another indication as to the status of the material on the scale aside from the STAT parameter P5112. These outputs are located on J6 on the 450 main board. Refer to figure 14-2 for setpoint output connections. Also refer to chapter 15 for more information on the setpoint hardware and available options.

As mentioned above these outputs can be used for check-weigh status. Output status indicators may include lights (green and red for good and bad indication), buzzers, PLC's, etc.

Two Open Drain Outputs (FET)
- Lights
- Relays
- PLC's
- etc.

These outputs can be configured in one of **two conditions** of output status operation. These are mentioned below.

Setpoint Number	Active Condition
SP1	Over/Under
SP2	Good

Table 14-1 Two Condition Setpoint Output

"2 Cond" (Two Condition)
"3 Cond" (Three Condition)

Two condition:

Setpoint Number	Active Condition
SP1	Under
SP2	Over
SP1 and SP2	Good

Table 14-2 Three Condition Setpoint Output

The outputs can be configured as a two condition status verification. See table 14-1 for output status of the setpoints.

Note:
The setpoints are only active when they are above 5 graduations of gross or net zero (P5104) and motion has ceased. Motion can be disabled at parameter P114. Both outputs are de-activated if these conditions are not present. This **in effect** makes this a **three** condition status output.

Three condition:

Three condition operation offers additional output status of the material on the scale. Refer table 14-2 for the output status of the setpoints set for three condition status. This truth table offers more of a variation of the output status condition of the material on the scale.

Three condition output requires additional logic circuitry to make sense of the output status. Even though a "GOOD" indication will activate both outputs and an "OVER or UNDER" indication will activate one or the other output, it might be best to include additional circuitry for separate output status of each condition. Contact GSE, Inc. for more information.

Note:
The setpoints are only active when they are above 5 graduations of gross or net zero (P5104) and motion has ceased. Both outputs are de-activated if these conditions are not present. This **in effect** makes this a **four** condition status output.

CHECK WEIGH OPERATION

Standard 450 check-weigh operation dictates that as an item is placed on the scale, a 5 graduation threshold above either gross or net zero must be achieved.

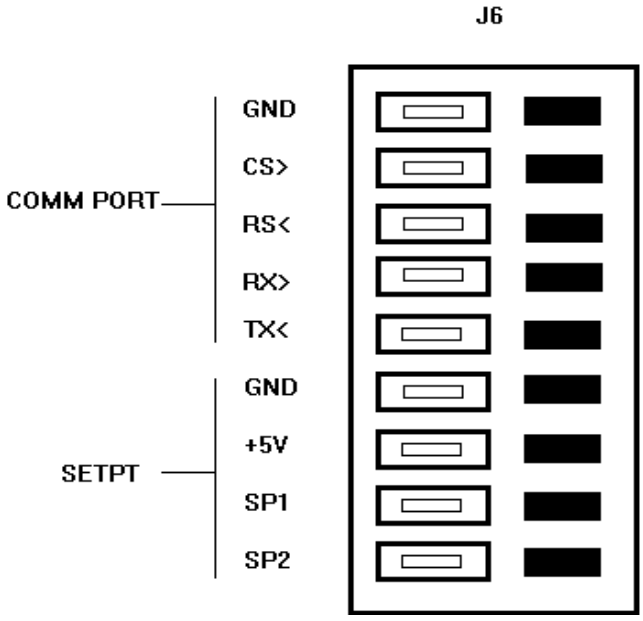
The ten character auxiliary display has the option of displaying the status of the item or material placed on the scale. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs however, follow the same operation but are motion inhibited. Motion must cease before the outputs are active. This can be changed if motion is turned **OFF** at parameter P114. These outputs can be 2 or 3 condition type outputs, refer to parameter P5113.

The 450 check-weigh operation can allow the operator to change the target value easily from the front keypad. This value is initially fixed when entered during the setup mode. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable percentage above and below the target will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

Figure 14-1 shows several check-weighs that require a target of 50 ounces. The lower tolerance is set for a 10 percent acceptance window below the actual target weight. The upper tolerance is set for a more forgiving tolerance of 20 percent above the target value. This example most likely is not practical based on the wide tolerances but it does however demonstrate that the tolerance values do not have to be symmetrical around the target value.

14.3 Two-Speed Filling (Fill)

P5100.2 SPt Fill



14-1 Setpoint Output Connections (J6)

The Standard Two-Speed Filling Program lends itself to many **single ingredient** filling applications. This program allows for setup of two Pre-act values for two-speed cut-off of material flow. This makes the 450 able to be molded to the most unforgiving filling applications. It also offers a selectable learn mode operation allowing the instrument to calculate a new target and adjust for its next fill. These and many other capabilities which are discussed later allow the 450 to mold itself to the application's specific operation.

SETTING THE TARGET

P5101. Targ1

Most ingredient or material filling operations have an **absolute target** value for the items being dispensed. Parameter **P5101** allows for an absolute target value entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

During the actual filling operation its desirable to reach the target value as quickly as possible. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the setpoint will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5105** allows for entry of the pre-act value that determines the early de-activation of the setpoint.

The P.A.1 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 7.5 lbs
P.A.1 = 2

7.5
- 2
——
5.5 lbs

The pre-act value is 5.5 lbs. Setpoint #2 will de-activate at 5.5 lbs leaving 2 lbs left to fill to achieve the actual target value.

Note:
P.A.1 is the pre-act value for setpoint #2 (SP2).

INITIATE THE FILLING OPERATION

P5107.X Strt1

To initiate a fill cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key	**(Tare)**
Remote Key	**(Remot)**
Automatic	**(Auto)**

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate the two setpoint outputs. Before the outputs are activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased the setpoints will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally requires a container to be placed on the scale. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate its setpoints. Once the remote key is initiated, both setpoints are activated. The unit determines the relative value of the starting point and proceeds to activate the setpoints. The relative value starting point is the displayed weight. The setpoint will cut-off when the net weight equals the target weight entered in P5101. ie. The *target* = 10 lbs. The display initially reads 2 lbs net. Once the remote key is initiated, the unit will proceed to fill to the *target* value of 10 lbs. All pre-actuation values are respected. The fill will not start if the net value is above the target value.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5107.2 Strt1

Auto start will automatically activate the two setpoint outputs when the NET weight falls between +/- 5 graduations of zero and motion has ceased.

Example #1:
(auto-fill)

The food canning or beverage industry must fill thousands of containers during a run. Each container is within 5 weight graduations of the other containers. Once the initial container is placed on the load cell and an initial tare operation is performed, the cycle begins. The first tare operation puts the indicator between +/- 5 graduations of NET zero. The auto-start sequence begins. Both outputs are activated and the container is filled to its target value and the outputs are deactivated. The container is moved off the load cell by a robotic indexing wheel putting the indicator well below +/- 5 graduations of NET zero. In the same motion the indexing wheel loaded with another empty container moves it into position over the load cell. This puts the indicator between +/- 5 graduations of Net zero which in turn automatically activates the outputs. The operation has come full circle.

Example #2:
(auto-fill)

The same scenario as in example 1 can be performed with a slightly different turn of events. An operator using the **same container** must manually add pre-measured hand added ingredients to a larger batch. The **auto mode** allows the operator to dispense multiple hand-adds quickly and accurately. After the initial container tare is established the operator would simply place the container on the scale, remove it after its filled, dump the material and then replace the container on the scale for the next auto-fill.

PRE-ACTUATION VALUE #2

P5109. P.A.2

During the actual filling operation its desirable to reach the target value as quickly as possible. One pre-act cut-off might not be sufficient. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value** such as P.A.1 at P5105 discussed earlier. This deactivates setpoint 2 of the filling operation. If further actions must be taken to accurately reach the target weight,

P5109 allows for a second Pre-Act value. This value deactivates setpoint 1 before the actual target is reached.

This value determines at what point setpoint #1 will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5109** allows for entry of the pre-act value that determines the early de-activation of the setpoint #1. *Both outputs* are de-activated at this point and the net displayed target has not yet been reached. The target weight can now be achieved only by true free-fall.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 7.5 lbs
P.A.2 = 0.5

7.5
-0.5
——
7.0 lbs

The second pre-act value is 7 lbs. Setpoint #1 will de-activate at 7 lbs leaving 0.5 lbs left for free-fall to achieve the actual target value.

Note:
P.A.2 is the pre-act value for setpoint #1 (SP1). P.A.2 value must be closer to the actual target value than P.A.1 or setpoint errors will be displayed upon exiting the setup.

ESTABLISH A ROLLING TARGET AVERAGE

P5110. Lern2

The theory behind a rolling target average is to gradually change the target value over 5 previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point.

This mode can be used to establish target values based on free-fall during initial system setup. As the operation progresses the target value damps out and remains fairly consistent.

DISPLAY INDICATION STATUS

P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the Two-Speed Filling operation. Press the **[ENTER]** key to scroll through the selections.

- %Targ
- WtDev
- Brief
- None

Each of the selectable status indications are described below.

%Targ
As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is dispensed into the scale container. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"Fast"** is displayed on the lower five segments. As the first Pre-act is reached, the prompt **"Slow"** is then displayed. When the target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next fill operation is initiated.

ie. 87.1%
Fast

98.7%
Slow

101%

Done!

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 851% or even 1000%

WtDev

As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the filling cycle has just begun or is completed. At the beginning of the fill this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"Fast"** is displayed on the lower five segments. As the first Pre-act is reached, the prompt **"Slow"** is then displayed. When the target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next fill operation is initiated.

ie. Target = 50 lbs

-17.1
Fast

-49.7
Slow

50.0
Done!

The above example does not indicate that the difference can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 453.0 or even 1042

Brief

Selecting **Brief** as the mode of display indication of the status of the material being dispensed will only be indicated with **one word**.

Fast
Slow
Done!

This indication will appear in the lower portion of the display immediately as the filling operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the filling status on the display.

ALLOW ACCESS TO PREACT VALUES FROM FRONT PANEL

The 450 indicator has the capability to access the preact values from the weigh mode. The Target Value must be added to the selectable modes via the P300 parameters.

P5114.X PrAc1

Disable/Enable access to preact 1 value.

P5115.X PrAc2

Disable/Enable access to preact 2 value.

IMPORTANT NOTE:

Any front panel key can abort any filling operation once it has started. Once a key is pressed, both outputs are de-activated. The operator is prompted with **"Tare = Abort"**. Pressing the **[TARE]** key will abort the fill and put the indicator in the weigh mode. Pressing any other key at this prompt will resume the filling operation. Any applicable outputs are again activated.

FILLING OPERATION

Standard 450 Two-Speed Filling operation dictates that

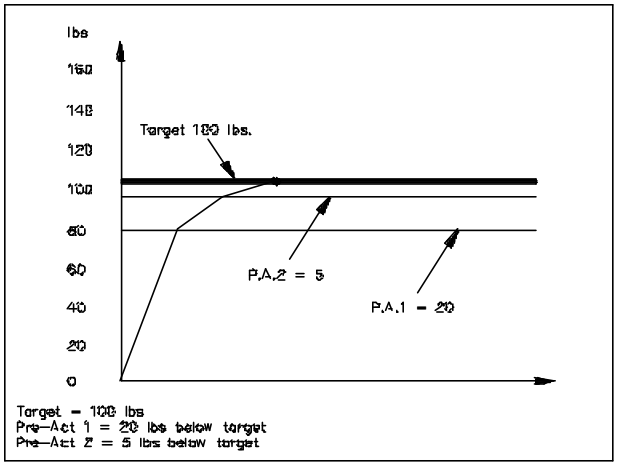


Figure 14-2 Two-Speed Single Ingredient fill vs

there are only three ways to initiate a filling operation. The **[TARE]** key, remote key or automatically.

The auxiliary display has the option of displaying the status of the filling operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs respond in the same manner.

The 450 Two-Speed, single ingredient filling operation includes the capability to allow the operator to change the target and pre-act values easily from the front keypad. These values are initially fixed when entered during the setup mode. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

Figure 14-3 shows a two-speed single ingredient fill versus time. The target is set for 100 pounds. The first pre-act value (P.A.1) is set for 20 lbs. This value is subtracted
from the target weight to establish the target value of the first cut-off point. The first cut-off point is 100 - 20 = 80 lbs. This is normally referred to as the fast fill cut-off point. Setpoint 2 (SP2) de-activates at this value.

If a second cut-off point is needed, the 450 has this capability. This example shows a second cut-off point of 5 (P.A.2). The second pre-act value is the target weight minus the value entered as P.A.2. The second cut-off value in this example is 100 - 5 = 95 lbs. This cut-off point is referred to as the slow fill cut-off point. Setpoint 1 (SP1) de-activates at this value. If applicable, the free falling material will bring the fill up to the specified target value set at parameter P5101.

14.3.1 Single-Speed Filling (Fill)

P5100.2 SPt Fill

The Standard Filling Program (Fill) can be configured to control 1 output with a preact value. This will accommodate any **single ingredient** filling applications utilizing only one relay. This program allows for setup of one Pre-act value for single-speed cut-off of material flow. This configuration offers a selectable learn mode operation allowing the instrument to calculate a new target and adjust for its next fill. These and many other capabilities which are discussed later allow the 450 to mold itself to the application's specific operation.

SETTING THE TARGET

P5101. Targ1

Most ingredient or material filling operations have an **absolute target** value for the items being dispensed. Parameter **P5101** allows for an absolute target value entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on

this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

Since this is a single-speed operation, it will only need one preact value defined. *If* necessary in order to make use of the auto-compensation (Learn mode), Preact #2 should be used. Set preact#1 value to **0** (P.A.1) and it will effectively be ignored. Proceed to Preact#2 (P5109) to define the actual preact value for the single setpoint. *Enable* the Learn mode if desired (P5110).

Set preact#2 to 0 if no preact is needed for this operation. The setpoint will cut-off exactly at the Target #1 value.

The single setpoint configuration uses setpoint output 1 (SP1).

INITIATE THE FILLING OPERATION

P5107.X Strt1

To initiate a fill cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key	**(Tare)**
Remote Key	**(Remot)**
Automatic	**(Auto)**

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate the setpoint output. Before the output is activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased the setpoint will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally requires a container to be placed on the scale. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate the setpoint. Once the remote key is initiated, **setpoint #1** is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off when the net weight equals the target weight entered in P5101. ie. The *target* = 10 lbs. The display initially reads 2 lbs net. Once the remote key is initiated, the unit will proceed to fill to the *target* value of 10 lbs. The pre-actuation value is respected (if enabled with a numeric entry). The setpoint will not activate if the net value is above the target value.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5107.2 Strt1

Auto start will automatically activate the setpoint output when the NET weight falls between +/- 5 graduations of zero and motion has ceased.

PRE-ACTUATION VALUE #2

P5109. P.A.2

In many applications as the fill operation reaches its target several physical laws have to be considered. This makes it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This deactivates **setpoint 1** of the *single-fill* operation.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The

value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 7.5 lbs
P.A.2 = 0.5

7.5
-0.5
——
7.0 lbs

The second pre-act value is 7 lbs. Setpoint #1 will de-activate at 7 lbs leaving 0.5 lbs left for free-fall to achieve the actual target value.

Since this is a single-speed operation, it will only need one preact value defined. *If* necessary in order to make use of the auto-compensation (Learn mode).

Set preact#2 to 0 if no preact is needed for this operation. The setpoint will cut-off exactly at the Target #1 value.

The single-fill setpoint configuration uses setpoint output 1 (SP1).

ESTABLISH A ROLLING TARGET AVERAGE

P5110. Lern2

The theory behind a rolling target average is to gradually change the target value over 5 previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point.

This mode can be used to establish target values based on free-fall during initial system setup. As the operation progresses the target value damps out and remains fairly consistent.

DISPLAY INDICATION STATUS

P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the *Single-Speed* Filling operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ
As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is dispensed into the scale container. The word **"Fill"** is displayed on the lower five segments throughout the fill operation. When the preact or target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next fill operation is initiated.

ie. 87.1%
Fill

101%
Done!

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an over-fill occurs.

ie. 851% or even 1000%

WtDev

As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the filling cycle has just begun or is completed. At the beginning of the

fill this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation. The prompt **"Fill"** is displayed on the lower five segments through the single fill operation. As the Pre-act or target is reached, the prompt **"Done!"** is then displayed momentarily. The indicator returns to the weigh mode until the next fill operation is initiated.

ie. Target = 50 lbs

-17.1
Fill

50.0
Done!

The above example does not indicate that the difference can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 453.0 or even 1042

Brief

Selecting **Brief** as the mode of display indicating the status of operation will only be indicated with **one word**.

Fill

This indication will appear in the lower portion of the display immediately as the filling operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the filling status on the display.

IMPORTANT NOTE:

Any front panel key can abort any filling operation once it has started. Once a key is pressed, both outputs are de-activated. The operator is prompted with **"Tare = Abort"**. Pressing the **[TARE]** key will abort the fill and put the indicator in the weigh mode. Pressing any other key at this prompt will resume the filling operation. Any applicable outputs are again activated.

ALLOW ACCESS TO PREACT VALUES FROM FRONT PANEL

The 450 indicator has the capability to access the preact values from the weigh mode. The Target Value must be added to the selectable modes via the P300 parameters.

P5114.X PrAc1

Disable/Enable access to preact 1 value.

P5115.X PrAc2

Disable/Enable access to preact 2 value.

FILLING OPERATION

Standard 450 Single-Speed Filling operation dictates that there are only three ways to initiate a filling operation. The **[TARE]** key, remote key or automatically.

The auxiliary display has the option of displaying the status of the filling operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Output responds in the same manner.

The 450 Single-Speed, single ingredient filling operation includes the capability to allow the operator to change the target and pre-act values easily from the front keypad. These value is initially fixed when entered during the setup mode. If these value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

14.4 Two Ingredient Batch (Batch)

P5100.3 SPt Batch

The Standard Single Speed-Two Ingredient Batch Program lends itself to many **two ingredient** filling (batch) applications. This standard program allows for setup of two targets and two Pre-act values (for each target) for single-speed cut-off of the two material flows. Each ingredient is filled consecutively (one after the other). Ingredient #1 is associated with SP1 and ingredient #2 is associated with SP2. This allows the 450 to be used in most simple two-ingredient batch routines (refer to GSE Models 550 and 650 series for multiple ingredient batch equipment). The 450 also offers a selectable learn mode operation for each ingredient allowing the instrument to calculate a new target and adjust for its next fill. These and many other capabilities which are discussed later allow the 450 to mold itself to the applications specific operation.

SETTING THE TARGET (TARGET 1)
P5101. Targ1

Most ingredient or material filling operations have an **absolute target** value for the item being dispensed. Parameter **P5101** allows for an absolute target value entry for the first ingredient of the batch. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above using the arrow keys. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

During the actual filling operation of the first ingredient its desirable to reach the target value as quickly as possible. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the setpoint will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5105** allows for entry of the pre-act value that determines the early de-activation of **setpoint SP1**.

The P.A.1 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 17.5 lbs
P.A.1 = 2

17.5
- 2
——
15.5 lbs

The pre-act value is 15.5 lbs. Setpoint #1 will de-activate at 15.5 lbs leaving 2 lbs left for free-fall to fill to achieve the actual target value of the first ingredient.

Note:
P.A.1 is the pre-act value for setpoint #1 (SP1).

ESTABLISH A ROLLING TARGET AVERAGE
P5106.X Lern1

The theory behind a rolling target average is to gradually

change the target value over 5 previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. This adds to inconsistent free-fall factors which creep up over time.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point. This **new** value is reflected in P5105.

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

INITIATE THE FILLING OPERATION

P5107.X Strt1

To initiate a fill cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key	**(Tare)**
Remote Key	**(Remot)**
Automatic	**(Auto)**

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate setpoint #1 output. Before the outputs are activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased setpoint #1 will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally requires a container to be placed on the scale. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate its setpoints. Once the remote key is initiated, both setpoints are activated. The unit determines the relative value of the starting point and proceeds to activate the setpoints. The relative value starting point is the displayed weight. The setpoint will cut-off when the net weight equals the target weight entered in P5101. ie. The *target* = 10 lbs. The display initially reads 2 lbs net. Once the remote key is initiated, the unit will proceed to fill to the *target* value of 10 lbs. All pre-actuation values are respected. The fill will not start if the net value is above the target value.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5107.2 Strt1

Auto start will automatically activate setpoint #1 when the NET weight falls between +/- 5 graduations of zero and motion has ceased.

SETTING THE TARGET (TARGET 2)
P5108. Targ2

The second ingredient in the batch has an **absolute target** value for the item being dispensed. Parameter **P5108** allows for an absolute target value entry for the second ingredient of the batch. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ2** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ2 entry mode. The numeric values

during operation are entered the same as above using the arrow keys. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #2

P5109. P.A.2

During the actual filling operation of the second ingredient its desirable to reach the target value as quickly as possible. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the second setpoint will de-activate prior to reaching the pre-determined target #2 value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5109** allows for entry of the pre-act value that determines the early de-activation of **setpoint SP2**.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5108 and hence the difference is the pre-act value or early cut-off point.

ie. Target #2 = 100 lbs
P.A.2 = 2

100
- 2
——
98 lbs

The pre-act value is 98 lbs. Setpoint #2 will de-activate at 98 lbs leaving 2 lbs left for free-fall to fill to achieve the actual target value of the second ingredient. This example holds true if the first ingredient was tared out leaving a net zero. If the second ingredient was set for *auto-start*, a relative starting value would be assumed. For instance, if the first ingredient left off at 50 pounds, the second ingredient would start at 50 pounds and finish at 150 pounds. This would yield 100 pounds of material of the second ingredient.

Note:
P.A.2 is the pre-act value for setpoint #2 (SP2).

ESTABLISH A ROLLING TARGET AVERAGE
P5110.X Lern2

The theory behind a rolling target average is to gradually change the target value over 5 previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a new pre-act value for SP2. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point. This **new** value is reflected in **P5109.**

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

INITIATE THE FILLING OPERATION
P5111.X Strt2

To initiate a fill cycle of the second ingredient there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5111** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key (Tare)
Remote Key (Remot)
Automatic (Auto)

Tare
P5111.0 Strt2

The **[Tare]** key will automatically activate setpoint #2

output. Before the outputs are activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased setpoint #2 will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally the container is already in place from the previous fill. This simply tares off the previous ingredient and starts the second fill. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5111.1 Strt2

The **"Remot"** start convention requires an external contact closure wired to J11 of the main board. This selection does not require a NET zero in order to activate its setpoint (SP2). Once the remote key is initiated, setpoint #2 is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off at this value plus the target weight entered in P5108. ie. Target = 10 lbs. display reads 37 lbs net or gross. Once the remote key is initiated, the unit will proceed to fill to a value of 47 lbs. The difference is the 10 pound target value. The pre-actuation value is respected.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5111.2 Strt2

Auto start of the second ingredient will automatically activate setpoint #2 when motion has ceased from the first ingredient fill. A relative starting point is assumed (displayed weight is the new start point).

Example #1:
(auto-fill 1st and 2nd ingredients)

The dairy industry makes use of a base ingredient in their flavoring of ice cream. The base ingredient consists of two basic items, water and sugar. These two items must be batched on a regular basis. This is a perfect application for the 450 two-ingredient fill program using auto start. Each container is within 5 weight graduations of the other containers. Once the initial container is placed on the scale and an initial tare operation is performed, the cycle begins. The first tare operation puts the indicator between +/- 5 graduations of NET zero. The auto-start sequence begins. Setpoint 1 is activated and the container is filled to the first ingredients target value leaving SP1's output deactivated.

When **motion ceases**, the second setpoint is activated. The relative starting point is the displayed weight. If the first ingredient is over-shot for any reason this is considered in the next ingredient fill. The new target for the second setpoint is the displayed weight plus **Targ2**. The auto-start sequence begins. Setpoint 2 is activated and the container is filled to the second ingredients target value leaving SP2's output deactivated.

The container is moved off the scale putting the indicator well below +/- 5 graduations of NET zero. Another empty container is positioned on the scale. This puts the indicator between +/- 5 graduations of Net zero which in turn automatically activates the first setpoint again. The operation has come full circle.

Example #2:
(tare 1st ingredient and auto-fill 2nd)

The same scenario as in example 1 can be performed with a slightly different routine of starting each fill. A **container** is positioned on the scale. The **operator** presses the **[TARE]** key and the first ingredient begins to dispense. The moment the tare key is pressed, a tare is performed on the container and when motion ceases setpoint #1 is activated.

Once the first target is reached and motion ceases, setpoint #2 is auto-activated. The unit determines the relative value of the starting point of the second fill from where the first fill left off. The relative value starting point is the displayed weight.

This operation allows the operator to dispense multiple mixes quickly and accurately without having to monitor the process. The next fill cycle is ready.

DISPLAY INDICATION STATUS
P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the Two-Ingredient Batching operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ

As the fill starts for the first ingredient and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is dispensed into the scale container. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"FILL1"** is displayed on the lower five segments for the first ingredient. When the target is reached the prompt **"Done"** is displayed momentarily. The indicator is ready to fill the next ingredient.

ie. 87.1%
FILL1

100%
Done

Next Ingredient:

55.3%
FILL2

100%
Done

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 851% or even 1000%
WtDev

As the fill starts for the first ingredient and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the filling cycle for the first ingredient has just begun or is completed. At the beginning of the fill this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"FILL1"** is displayed on the lower five segments. When the target is reached for the first ingredient the prompt **"Done"** is displayed momentarily. The indicator is ready to fill the next ingredient.

ie. Target = 50 lbs

-18.2
FILL1

50.0
Done

Next Ingredient:

-48.5
FILL2

50.0
Done

The above example does not indicate that the difference can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 453.0 or even 1042

Brief

Selecting **Brief** as the mode of display indication of the status of the material being dispensed will only be indicated with **one word**.

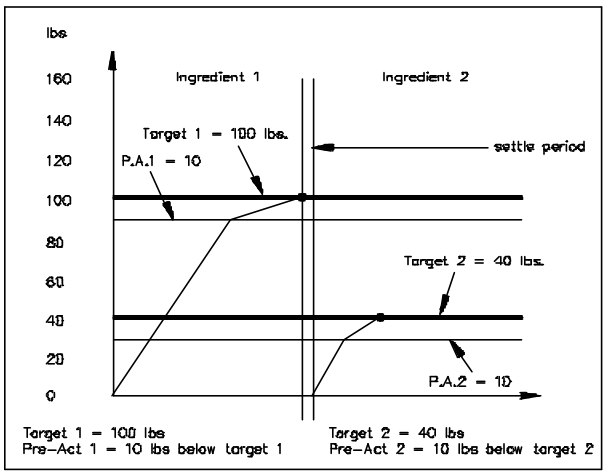


Figure 14-3 Two-Ingredient batch vs Time (TARE)

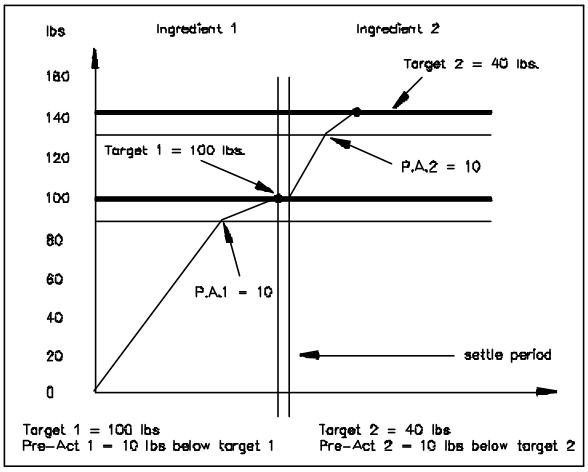


Figure 14-4 Two-Ingredient batch vs Time (AUTO)

FILL1
FILL2
Done!

This indication will appear in the lower portion of the display immediately as each fill operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

IMPORTANT NOTE:

Any front panel key can abort any filling operation once it has started. Once a key is pressed, both outputs are de-activated. The operator is prompted with **"Tare = Abort"**. Pressing the **[TARE]** key will abort the fill and put the indicator in the weigh mode. Pressing any other key at this prompt will resume the filling operation. Any applicable outputs are again activated.

None

This selection will provide **no** indication of the filling status on the display.

BATCHING OPERATION (TWO INGREDIENT)

Standard 450 Two Ingredient Batching operation allows three ways to initiate a batching operation. The **[TARE]** key, a remote key or automatically.

The auxiliary display has the option of displaying the status of the filling operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs respond in the same manner.

The 450 Two-Ingredient Batching operation includes the capability to allow the operator to change the values of either Target 1 or Target 2 easily from the front keypad. These values are initially fixed when entered during the setup mode. If these values must be changed during operation which is normally the case, place the **Targ1** and **Targ2** parameters in the set of selectable modes. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 and Targ2 entry modes. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for

more information on this capability.

Figures 14-4 and 14-5 show a two-ingredient batching curve versus time. The first figure reflects a tare operation between fills and the second figure shows a continuous fill leading to the second ingredient at the point where the first fill left off. The target is set for 100 pounds for the first ingredient. The first pre-act value (P.A.1) is set for 10 lbs. This value is subtracted from target 1 weight at P5101 to establish the target value of the first cut-off point. The first ingredient cut-off point is 100 - 10 = 90 lbs. Setpoint 1 (SP1) de-activates at this value. The rest is left to free-fall.

The second ingredient target is entered at P5108. The target for the second ingredient is set for 40 pounds in this example. This example shows a second cut-off point of 10 (P.A.2). The second pre-act value is the target weight minus the value entered as P.A.2. The second cut-off value in this example is 40 - 10 = 30 lbs. Setpoint 2 (SP2) de-activates at this value. The free falling material will bring the fill up to the specified target value set at parameter P5108.

14.4.1 Single Ingredient Batch (Batch)

P5100.3 SPt Batch

The Standard Single Speed-Single Ingredient Batch Program lends itself to many **single ingredient** filling (batch) applications. This standard program allows for setup of one target and one Pre-act value for single-speed cut-off of material flow. Ingredient #1 is associated with SP1. (refer to GSE Models 550 and 650 series for multiple ingredient batch equipment). The 450 also offers a selectable learn mode operation for the ingredient allowing the instrument to calculate a new target and adjust for its next fill.

SETTING THE TARGET (TARGET 1)
P5101. Targ1

Most ingredient or material filling operations have an **absolute target** value for the item being dispensed. Parameter **P5101** allows for an absolute target value entry for the ingredient to fill. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above using the arrow keys. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

During the actual filling operation it is desirable to reach the target value as quickly as possible. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the setpoint will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5105** allows for entry of the pre-act value that determines the early de-activation of **setpoint SP1**.

The P.A.1 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. **Target = 17.5 lbs**
P.A.1 = 2

17.5
- 2

15.5 lbs

The pre-act value is 15.5 lbs. Setpoint #1 will de-activate at 15.5 lbs leaving 2 lbs left for free-fall to fill to achieve the actual target value of the first ingredient.

Note:
P.A.1 is the pre-act value for setpoint #1 (SP1).

ESTABLISH A ROLLING TARGET AVERAGE
P5106.X Lern1

The theory behind a rolling target average is to gradually change the target value over 5 previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. This adds to inconsistent free-fall factors which creep up over time.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point. This **new** value is reflected in P5105.

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

INITIATE THE FILLING OPERATION

P5107.X Strt1

To initiate a fill cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key	**(Tare)**
Remote Key	**(Remot)**
Automatic	**(Auto)**

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate setpoint #1 output. Before the outputs are activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased setpoint #1 will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally requires a container to be placed on the scale. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate its setpoint. Once the remote key is initiated, the setpoint is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off when the net weight equals the target weight entered in P5101. ie. The *target* = 10 lbs. The display initially reads 2 lbs net. Once the remote key is initiated, the unit will proceed to fill to the *target* value of 10 lbs. All pre-actuation values are respected. The fill will not start if the net value is above the target value.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5107.2 Strt1

Auto start will automatically activate setpoint #1 when the NET weight falls between +/- 5 graduations of zero and motion has ceased.

SETTING THE TARGET (TARGET 2)
P5108. Targ2

Make sure this value is set to **zero (0)**. This will lockout the two ingredient batch mode.

PRE-ACTUATION VALUE #2

P5109. P.A.2

Make sure this value is set to **zero (0)**. This will lockout the two ingredient batch mode.

ESTABLISH A ROLLING TARGET AVERAGE
P5110.X Lern2

Make sure this parameter is **disabled**. This will lockout the two ingredient batch mode.

INITIATE THE FILLING OPERATION
P5111.X Strt2

Ignore this setting.

DISPLAY INDICATION STATUS
P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the Single-Ingredient Batching operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ

As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is dispensed into the scale container. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"FILL1"** is displayed on the lower five segments for the first ingredient. When the target is reached the prompt **"Done"** is displayed momentarily.

ie. **87.1%**
FILL1

100%
Done

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. **851% or even 1000%**

WtDev

As the fill starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the filling cycle for the first ingredient has just begun or is completed. At the beginning of the fill this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"FILL1"** is displayed on the lower five segments. When the target is reached the prompt **"Done"** is displayed momentarily.

ie. **Target = 50 lbs**

-18.2
FILL1

50.0
Done

The above example does not indicate that the difference can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. **453.0 or even 1042**

Brief

Selecting **Brief** as the mode of display indication of the status of the material being dispensed will only be indicated with **one word**.

FILL1
Done!

This indication will appear in the lower portion of the display immediately as the fill operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the filling status on the display.

BATCHING OPERATION (SINGLE)

Standard 450 Single Ingredient Batching operation allows three ways to initiate a batching operation. The **[TARE]** key, a remote key or automatically.

The auxiliary display has the option of displaying the status of the filling operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Output respond in the same manner.

The 450 Single-Ingredient Batching operation includes the capability to allow the operator to change the values of Target 1 easily from the front keypad. These values are initially fixed when entered during the setup mode. If these values must be changed during operation which is normally the case, place the **Targ1** parameters in the set of selectable modes. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

14.5 Two-speed Emptying (Empty)

P5100.4 SPt Empty

The Standard Two-Speed Emptying Program lends itself to many **single material** dispensing applications. This standard program allows for setup of two Pre-act values for two-speed cut-off of material flow. It also offers a selectable learn mode operation allowing the instrument to calculate a new target and adjust for its next emptying cycle. These and many other capabilities which are discussed later allow the 450 to mold itself to the applications specific operation.

SETTING THE TARGET
P5101. Targ1

Most emptying operations have an **absolute target** value for the contents being dispensed. Parameter **P5101** allows for an absolute target value entry. Note that the value entered at this parameter is entered as a positive number. The indicator will empty to the negative value of this entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in. Note that a negative value may not be valid as an entry.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

During the actual emptying operation its desirable to reach the target value as quickly as possible. In many applications as the emptying operation reaches its

target several physical laws have to be considered. These physical properties make it impossible to empty to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the setpoint will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the emptying operation. Parameter **P5105** allows for entry of the pre-act value that determines the early de-activation of the setpoint.

The P.A.1 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 100 lbs (positive entry)
P.A.1 = 2 (positive entry)

- 100 (assumes negative)
- 2 (assumes negative)
——
- 98 lbs

will The pre-act value is -98 lbs. Setpoint #2 de-activate at -98 lbs leaving 2 lbs left to empty to achieve the actual target value (-100 lbs).

Note:
P.A.1 is the pre-act value for setpoint #2 (SP2).

INITIATE THE EMPTYING OPERATION
P5107.X Strt1

To initiate an empty cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for two methods of starting the emptying cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key (Tare)
Remote Key (Remot)

Tare
P5107.0 Strt1

The indicator should be **zeroed** properly with the emptying device attached to the cell or platform. This will establish a good reference point. The **[Tare]** key will automatically activate the two setpoint outputs. Before the outputs are activated, a motion inhibited tare operation is performed. The indicator compares the gross weight value to the target value. The gross weight value should be greater than the target value, if not the following prompt will appear momentarily.

Wt < Targt

This prompt is followed by a second prompt.

Tare = Cont

If the **[TARE]** key is pressed, the remaining material will be dispensed. The target required will not be achieved. Otherwise, any other keypress at this prompt will abort the empty operation. The hopper or tank can be replenished at this point in order to complete the dispensing.

If the established gross weight is less than the target value after the tare operation, the unit will yield a net zero display. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased the setpoints will activate.

As the gross weight fall within +/-5 graduations of zero, the following prompt will be displayed.

Need Fill

This indicates that there is practically nothing left in the emptying device.

Note that this mode requires an operator to press the **[TARE]** key to abort the process. Make sure a holding device is beneath the emptying apparatus. Refer to chapter 5 Tare Operations for additional information.

Remot
P5107.1 Strt1

The indicator should be **zeroed** properly with the emptying device attached to the cell or platform. This

will establish a good reference point. The **"Remot"** start convention requires an external contact closure wired to J11 of the main board. The indicator compares the gross weight value to the target value. The gross weight value should be greater than the target value, if not the following prompt will appear momentarily.

Wt < Targt

This prompt is followed by a second prompt.

Tare = Cont

If the **[TARE]** key is pressed, the remaining material will be dispensed. The target required will not be achieved. Otherwise, any other keypress at this prompt will abort the empty operation. The hopper or tank can be replenished at this point.

If the established gross weight is less than the target value after the tare operation, the unit will yield a net zero display. Hence, as the NET weight is within +/- 5 grads of zero and motion has ceased the setpoints will activate.

As the gross weight fall within +/-5 graduations of zero, the following prompt will be displayed.

Need Fill

This indicates that there is practically nothing left in the emptying device.

This selection does not require a NET zero in order to activate its setpoints. Once the remote key is initiated, both setpoints are activated. The unit determines the relative value of the starting point and proceeds to activate the setpoints. The relative value starting point is the displayed weight. The setpoint will cut-off at this value plus the target weight entered in P5101. This value is assumed to be negative. ie. Target = 10 lbs. display reads -37 lbs net or gross. Once the remote key is initiated, the unit will proceed to empty to a value of -47 lbs. The difference is the 10 pound target value. All pre-actuation values are respected.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

PRE-ACTUATION VALUE #2

P5109. P.A.2

During the actual emptying operation its desirable to reach the target value as quickly as possible. One pre-act cut-off might not be sufficient. In many applications as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to empty to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value** such as P.A.1 at P5105 discussed earlier. This deactivates setpoint 2 of the emptying operation. If further actions must be taken to accurately reach the target weight, P5109 allows for a second Pre-Act value. This value deactivates setpoint 1 before the actual target is reached.

This value determines at what point setpoint #1 will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the emptying operation. Parameter **P5109** allows for entry of the pre-act value that determines the early de-activation of the setpoint #1. Both outputs are de-activated at this point and the target has not yet been reached. The target weight can now be achieved only by true free-fall.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 7.5 lbs
P.A.2 = 0.5

(-7.5) - (-0.5) = - 7.0 lbs

The second pre-act value is at -7 lbs. Setpoint #1 will de-activate at -7 lbs leaving 0.5 lbs left for free-fall to achieve the actual target value.

Note:

P.A.2 is the pre-act value for setpoint #1 (SP1). P.A.2 value must be closer to the actual target value than P.A.1 or setpoint errors will be displayed upon exiting the setup.

ESTABLISH A ROLLING TARGET AVERAGE
P5110.X Lern2

The theory behind a rolling target average is to gradually change the target value over 5 previous empties. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. This adds to inconsistent free-fall factors which creep up over time.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous empties) are averaged and the total is subtracted from the target value establishing a new cut-off point.

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

DISPLAY INDICATION STATUS
P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the Two-Speed emptying operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ
As the empty starts this indication will activate. The **percentage of the target weight emptied** is presented in the auxiliary display. The indication starts at 0.00%. This percentage is continually updated as material is dispensed from the live emptying device. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"Fast"** is displayed on the lower five segments. As the first Pre-act is reached, the prompt **"Slow"** is then displayed. When the target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next empty operation is initiated.

ie. 87.1%
Fast

98.7%
Slow

100%
Done!

Again, the final prompt is displayed momentarily and the indicator enters the weigh mode awaiting the next empty command.

WtDev

As the emptying operation is invoked this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value starts at the target value and proceeds down in value. This deviation is continually updated during the emptying operation. Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"Fast"** is displayed on the lower five segments. As the first Pre-act is reached, the prompt **"Slow"** is then displayed. When the target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next empty operation is initiated.

ie. Target = 50 lbs

17.1
Fast

1.7
Slow

0.00
Done!

The above example does not indicate that the difference can be reflected in very large deviations above and below the target value. This is if the material being dispensed into the scale container is grossly above or below the targeted value.

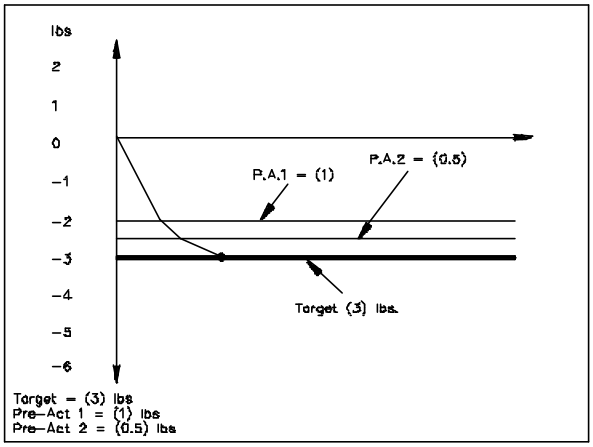


Figure 14-5 Two-Speed Emptying vs Time (TARE)

Brief

Selecting **Brief** as the mode of display indication of the status of the material being emptied will only be indicated with **one word**.

Fast
Slow
Done!

This indication will appear in the lower portion of the display immediately as the emptying operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

IMPORTANT NOTE:

Any front panel key can abort any filling or emptying operation once it has started. Once a key is pressed, both outputs are de-activated. The operator is prompted with **"Tare = Abort"**. Pressing the **[TARE]** key will abort the fill or empty and put the indicator in the weigh mode. Pressing any other key at this prompt will resume the filling or emptying operation. Any applicable outputs are again activated.

None

This selection will provide **no** indication of the emptying status on the display.

ALLOW ACCESS TO PREACT VALUES FROM FRONT PANEL

The 450 indicator has the capability to access the preact values from the weigh mode. The Target Value must be added to the selectable modes via the P300 parameters.

P5114.X PrAc1

Disable/Enable access to preact 1 value.

P5115.X PrAc2

Disable/Enable access to preact 2 value.

EMPTYING OPERATION

Standard 450 Two-Speed Emptying operation allows two ways to initiate an emptying operation: The **[TARE]** key and a remote key.

The auxiliary display has the option of displaying the status of the emptying operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs respond in the same manner.

The 450 Two-Speed, single material emptying operation includes the capability to allow the operator to change the target value easily from the front keypad. This value is initially fixed when entered during the setup mode. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

Figure 14-6 shows a two-speed single ingredient emptying versus time. The target is set for (3) pounds. The first pre-act value (P.A.1) is set for (1) lbs. This value is entered as a positive number. This value is subtracted from the target weight to establish the target value of the first cut-off point. The first cut-off point is 3 - 1 = 2 lbs. This value is assumed negative during the emptying operation. This is normally referred to as the fast fill cut-off point. Setpoint 2 (SP2) de-activates at this value.

If a second cut-off point is needed, the 450 has this capability. This example shows a second cut-off point of 0.5 (P.A.2). This value is entered as a positive number. The second pre-act value is the target weight minus the value entered as P.A.2. The second cut-off value in this example is 3 - 0.5 = 2.5 lbs. This cut-off point is referred to as the slow fill cut-off point. Setpoint 1 (SP1) de-activates at this value. This value is assumed negative during the emptying operation. If applicable, the free falling material will bring the emptying to the specified target value set at parameter P5101.

Note that during the emptying operation after a tare operation, the display will reflect a negative value. The displayed value is the negative sense of the positive entered target value. If remote operation is selected, the value being displayed will proceed to a lesser value.

14.5.1 Single-Speed Emptying (Empty)

P5100.4 SPt Empty

The Standard Emptying Program (Empty) can be configured to control 1 output with a pre-act value. This will accommodate any **single ingredient** emptying applications utilizing only one relay. This program allows for setup of one Pre-act value for single-speed cut-off of material flow. This configuration offers a selectable learn mode operation allowing the instrument to calculate a new target and adjust for its next empty. These and many other capabilities which are discussed later allow the 450 to mold itself to the application's specific operation.

SETTING THE TARGET

P5101. Targ1

Most ingredient or material emptying operations have an **absolute target** value for the items being dispensed. Parameter **P5101** allows for an absolute target value entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

Since this is a single-speed operation, it will only need one pre-act value defined. *If* necessary in order to make use of the auto-compensation (Learn mode), Pre-act #2 should be used. Set pre-act#1 value to **0** (P.A.1) and it will effectively be ignored. Proceed to Pre-act#2 (P5109) to define the actual pre-act value for the single setpoint. *Enable* the Learn mode if desired (P5110).

Set pre-act#2 to 0 if no pre-act is needed for this operation. The setpoint will cut-off exactly at the Target #1 value.

The single setpoint configuration uses setpoint output 1 (SP1).

INITIATE THE EMPTYING OPERATION

P5107.X Strt1

To initiate a fill cycle there must be an operator or mechanical interface with the controlling device. The 450 allows for several conventions of starting the filling cycle. Parameter **P5107** allows for the selection of

one of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key (Tare)
Remote Key (Remot)

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate the setpoint output. Before the output is activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased the setpoint will activate. This mode will not allow an auto-start.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally requires a container to be placed on the scale. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate the setpoint. Once the remote key is initiated, **setpoint #1** is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off when the net weight equals the target weight entered in P5101. ie. The *target* = 10 lbs. The display initially reads 2 lbs net. Once the remote key is initiated, the unit will proceed to fill to the *target* value of 10 lbs. The pre-actuation value is respected (if enabled with a numeric entry). The setpoint will not activate if the net value is above the target value.

Note that the remote key can be a momentary contact switch, relay, photo-eye, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

PRE-ACTUATION VALUE #2

P5109. P.A.2

In many applications as the empty operation reaches its target several physical laws have to be considered. This makes it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This deactivates **setpoint 1** of the *single-empty* operation.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Display (net)
50.0

Target = 7.5 lbs
P.A.2 = 0.5

7.5
-0.5
——
7.0 lbs

50.0
- 7.0
——
43.0 lbs

The second pre-act value is 7 lbs. Setpoint #1 will de-activate at 43 lbs leaving 0.5 lbs left for free-fall to achieve the actual target value.

Since this is a single-speed operation, it will only need one pre-act value defined. *If* necessary in order to make use of the auto-compensation (Learn mode).

Set pre-act#2 to 0 if no pre-act is needed for this operation. The setpoint will cut-off exactly at the Target #1 value.

The single-fill setpoint configuration uses setpoint output 1 (SP1).

ESTABLISH A ROLLING TARGET AVERAGE

P5110. Lern2

The theory behind a rolling target average is to gradually change the target value over 5 previous empties. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point.

This mode can be used to establish target values based on free-fall during initial system setup. As the operation progresses the target value damps out and remains fairly consistent.

DISPLAY INDICATION STATUS

P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being dispensed. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the *Single-Speed* Emptying operation. Press the **[ENTER]** key to scroll through the selections.

- %Targ
- WtDev
- Brief
- None

Each of the selectable status indications are described below.

%Targ
As the empty starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is dispensed into the scale container. The word **"Slow"** is displayed on the lower five segments throughout the fill operation. When the pre-act or target is reached the prompt **"Done!"** is displayed momentarily. The indicator returns to the weigh mode until the next fill operation is initiated.

ie. 87.1%
Slow

101%
Done!

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an over-empty occurs.

ie. 851% or even 1000%

WtDev

As the empty starts and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the emptying cycle has just begun or is completed. At the beginning of the empty this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation. The prompt **"Slow"** is displayed on the lower five segments through the single empty operation. As the Pre-act or target is reached, the prompt **"Done!"** is then displayed momentarily. The indicator returns to the weigh mode until the next empty operation is initiated.

ie. Target = 50 lbs

300.0
Slow

250.0
Done!

The above example does not indicate that the difference can reflect many times more than the pre-determined target weight if an over empty occurs.

ie. 453.0 or even 1042

Brief

Selecting **Brief** as the mode of display indicating the status of operation will only be indicated with **one word**.

Slow

This indication will appear in the lower portion of the display immediately as the emptying operation is occurring. These prompts are conditional and will only be displayed when five graduations are exceeded from net or relative zero. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the emptying status on the display.

ALLOW ACCESS TO PREACT VALUES FROM FRONT PANEL

The 450 indicator has the capability to access the preact values from the weigh mode. The Target Value must be added to the selectable modes via the P300 parameters.

P5114.X PrAc1

Disable/Enable access to preact 1 value.

P5115.X PrAc2

Disable/Enable access to preact 2 value.

EMPTYING OPERATION

Standard 450 Single-Speed Emptying operation dictates that there are only two ways to initiate an emptying operation. The **[TARE]** key or remote key.

The auxiliary display has the option of displaying the status of the emptying operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Output responds in the same manner.

The 450 Single-Speed, single ingredient emptying operation includes the capability to allow the operator to change the target and pre-act values easily from the front keypad. These value is initially fixed when entered during the setup mode. If these value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable pre-act values will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

14.6 Both Fill and Empty (Both)

P5100.5 SPt Both

The Standard Both Fill and Empty Program lends itself to many **tank or hopper** dispensing applications. This standard program allows for setup of a tank fill target with pre-act and dispensing target value and pre-act.

The first target setting and pre-act is used for the filling operation. This is tied to setpoint 1 (SP1). This is generally setup for the fill of a holding tank or hopper. The tank or hopper are normally filled to full capacity for multiple material dispensing.

Target 2 and pre-act 2 are setup for multiple material dispensing. Unless the tank or hopper is used for a one cycle holding vessel, the target value is generally set smaller than target 1. This value is associated with setpoint 2 (SP2). The material is dispensed consecutively (one after the other). Each dispensing cycle can be initiated with the tare key or a remote key.

The 450 also offers a selectable learn mode operation for each ingredient allowing the instrument to calculate a new target and adjust for its next fill. These and many other capabilities which are discussed later allow the 450 to mold itself to the applications specific operation.

SETTING THE TARGET (TARGET 1)
P5101. Targ1

This setting is the first target value of a two cycle operation. The value entered here is an **absolute target** value for the filling of a larger vessel. Parameter **P5101**

allows for an absolute target value entry for the first part of the two part cycle. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is generally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above using the arrow keys. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #1

P5105. P.A.1

During the actual filling operation of the primary vessel it might be desirable to reach the target value as quickly as possible (depends on operation). If this is the case, as the fill operation reaches its target several physical laws have to be considered. These physical properties make it impossible to fill to an absolute target value instantaneously. Free falling material in the valve, pipes, conveyor, etc. cause problems. The response time the valve or relay actually cuts-off or deactivates must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the setpoint will de-activate prior to reaching the pre-determined target value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the filling operation. Parameter **P5105** allows for entry of the pre-act value that determines the early de-activation of **setpoint SP1**.

The P.A.1 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5101 and hence the difference is the pre-act value or early cut-off point.

ie. Target = 1000 lbs
P.A.1 = 10

1000
- 10
——
990 lbs

The pre-act value is 990 lbs. Setpoint #1 will de-activate at 990 lbs leaving 10 lbs left for free-fall to fill to achieve the actual target value of the first cycle fill.

Note:
P.A.1 is the pre-act value for setpoint #1 (SP1).

ESTABLISH A ROLLING TARGET AVERAGE P5106.X Lern1

The idea behind a rolling target average is to gradually change the target value based on the previous fills. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a pre-act value for SP1. Every five readings (previous fills) are averaged and the total is subtracted from the target value establishing a new cut-off point. This **new** value is reflected in P5105.

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

INITIATE THE FILLING OPERATION (PRIMARY) P5107.X Strt1

To initiate the **primary** fill cycle there must be an operator or mechanical interface with the controlling device. An automatic mode of operation does not need an operator interface. The 450 allows for several methods of starting the primary filling cycle. Parameter **P5107** allows for the selection of **one** of these conventions. The start fill conventions are stated below for the primary fill mode and are individually defined thereafter.

Tare Key (Tare)
Remote Key (Remot)

Automatic (Auto)

Tare
P5107.0 Strt1

The **[Tare]** key will automatically activate setpoint #1 output. Before the output is activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is within +/- 5 grads of zero and motion has ceased setpoint #1 will activate.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad. This mode generally requires a holding tank or vessel. Refer to chapter 5 Tare Operations for additional information on the "tare" operation.

Remot
P5107.1 Strt1

The **"Remot"** start convention requires an external contact closure wired to J11 of the main board. This selection does not require a NET zero in order to activate its setpoint (SP1). Once the remote key is initiated, setpoint #1 is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off at this value plus the target weight entered in P5101. ie. Target = 1000 lbs. display reads 87 lbs net or gross. Once the remote key is initiated, the unit will proceed to fill to a value of 1087 lbs. The difference is the 1000 pound target value. The pre-actuation value is respected.

Note that the remote key can be a momentary contact switch, relay, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

Auto
P5107.2 Strt1

Auto start will automatically activate setpoint #1 when the NET weight falls between +/- 5 graduations of zero and motion has ceased.

SETTING THE TARGET (TARGET 2) (SECONDARY)
P5108. Targ2

The secondary target value is generally smaller than the primary target value. This value is for individual material dispensing and has an **absolute target** value for the material being dispensed. Parameter **P5108** allows for an absolute target value entry for the secondary mode of operation. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is occasionally the case, place the **Targ2** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ2 entry mode. The numeric values during operation are entered the same as above using the arrow keys. See Chapter 12 Operating Modes for more information on this capability.

PRE-ACTUATION VALUE #2

P5109. P.A.2

During the actual emptying operation of the secondary mode its desirable to reach the target value as quickly as possible. In many applications as the empty operation reaches its target several physical laws have to be considered. These physical properties make it impossible to empty to an absolute target value instantaneously. Free falling material in the valve, pipes, etc. cause problems. The response time of the valve or relay must be considered. The idea of reaching the target value as quickly as possible without over-shooting the target requires the **calculation** of a **Pre-Act value**. This value determines at what point the second setpoint will de-activate prior to reaching the pre-determined target #2 value. This value should be experimented with to achieve the optimum pre-cut-off point without over-shooting the target and not slowing the emptying operation. Parameter **P5109** allows for entry of the pre-act value that determines the early de-activation of **setpoint 2 (SP2)**.

The P.A.2 value is a keyed in value. The **ARROW keys** as described earlier can be used to make this entry. The value entered here is subtracted from the target value entered at parameter P5108 and hence the difference is the pre-act value or early cut-off point.

ie. Target #2 = 100 lbs
P.A.2 = 2

-100
- 2
——
- 98 lbs

The pre-act value is 98 lbs. Setpoint #2 will de-activate at (-98) lbs leaving 2 lbs left for free-fall dispense to achieve the actual target value of the secondary mode. This example holds true if the first ingredient was tarred out leaving a net zero. If the secondary mode was set for auto-start, a relative starting value would be assumed. For instance, if the first ingredient left off at 500 pounds, the second ingredient would start at 500 pounds and finish at 400 pounds. This would yield 100 pounds of material of the secondary mode being emptied.

Note:
P.A.2 is the pre-act value for setpoint #2 (SP2).

ESTABLISH A ROLLING TARGET AVERAGE (SECONDARY DISPENSING)
P5110.X Lern2

The idea behind a rolling target average is to gradually change the target value over 5 previous empties. This compensates for non-systematic mishaps such as valves gumming up, air-pressure changes, etc. which can add to inconsistent free-fall factors.

If this mode is enabled it will automatically calculate a new pre-act value for SP2. Every five readings (previous empties) are averaged and the total is subtracted from the target value establishing a new cut-off point. This **new** value is reflected in **P5109.**

This mode can be used to establish target values based on free-fall during initial setup of application. As the operation progresses the target value damps out and remains fairly consistent.

INITIATE THE EMPTYING OPERATION
P5111.X Strt2

To initiate an empty cycle for the secondary mode there must be an operator or mechanical interface with the controlling device. The 450 allows for two methods of starting the emptying cycle. Parameter **P5111** allows for the selection of **one** of these conventions. The start fill conventions are stated below and individually defined thereafter.

Tare Key (Tare)
Remote Key (Remot)

Tare
P5111.0 Strt2

The **[Tare]** key will automatically activate setpoint #2 output. Before the outputs are activated, a motion inhibited tare operation is performed. The tare operation will yield a net zero. Hence, as the NET weight is between +/- 5 grads of zero and motion has ceased setpoint #2 will activate.

Note that this mode requires an operator to press the **[TARE]** key on the 450 keypad and generally the container being emptied to is already in place. The tare key simply tares off the previous empty value and starts the second empty. Refer to chapter 5 Tare Operations for additional information on the “tare” operation.

Remot
P5111.1 Strt2

The **“Remot”** start convention requires an external contact closure on J11 of the main board. This selection does not require a NET zero in order to activate its setpoint (SP2). Once the remote key is initiated, setpoint #2 is activated. The unit determines the relative value of the starting point and proceeds to activate the setpoint. The relative value starting point is the displayed weight. The setpoint will cut-off this value plus the target weight entered in P5108. ie. Target = 10 lbs. display reads 37 lbs net or gross. Once the remote key is initiated, the unit will proceed to empty to a value of 27 lbs. The difference is the 10 pound target value. The pre-actuation value is respected.

Note that the remote key can be a momentary contact switch, relay, etc. Refer to chapter 10 Remote Keys for connections and additional information on remote keys.

DISPLAY INDICATION STATUS
P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the material being both **filled and emptied**. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the both the filling and emptying operations. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Each of the selectable status indications are described below.

%Targ

As the fill starts for and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as material is filling the primary tank or hopper. Also an indication as to the status of the outputs is reflected on the display. If the Pre-Act is not reached, the prompt **"FILL"** is displayed on the lower five segments for the primary mode. When the target is reached the prompt **"Done"** is displayed momentarily. The indicator is ready to empty material following the parameters entered for the secondary mode.

ie. Primary Mode (FILL)

87.1%
FILL

100%
Done

Secondary Mode (EMPTY)

75.3%
Empty

100%
Done

The above example does not indicate that the percentage can reflect many times more than the pre-determined target weight if an overfill occurs.

ie. 851% or even 1000%

WtDev

As the fill starts for the primary mode and the weight exceeds plus 5 graduations of net or relative zero, this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is negative and represents the absolute value the displayed value should achieve in order to reach the pre-determined target. At the beginning of the fill this value is negative (-) showing the difference needed to achieve the target value. This deviation is continually updated during the filling operation (Primary Mode). Also an indication as to the status of the outputs is reflected on the display. If the first Pre-Act is not reached, the prompt **"FILL"** is displayed on the lower five segments. If the secondary mode is running and the target is not yet reached, the prompt **"Empty"** is displayed. When the target is reached for the primary or secondary modes, the prompt **"Done"** is displayed momentarily. During the secondary mode (Empty) the indicator is ready for the next empty cycle.

ie. (Primary Mode)

IMPORTANT NOTE:

Any front panel key can abort any filling or emptying operation once it has started. Once a key is pressed, both outputs are de-activated. The operator is prompted with **"Tare = Abort"**. Pressing the **[TARE]** key will abort the fill or empty and put the indicator in the weigh mode. Pressing any other key at this prompt will resume the filling or emptying operation. Any applicable outputs are again activated.

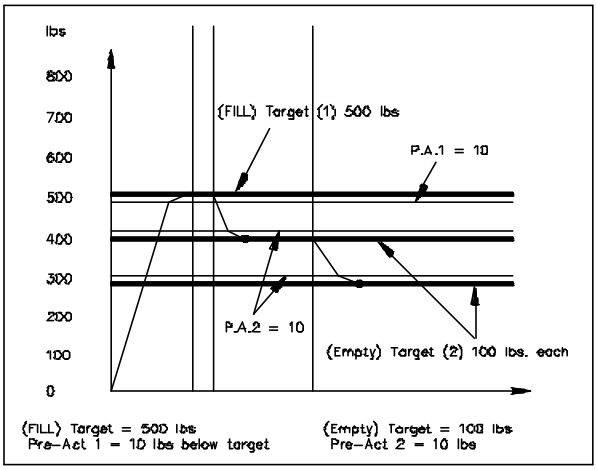


Figure 14-6 Filling and Emptying vs Time

Target = 2000 lbs

19.2
FILL

2000.00
Done

(Secondary Mode) Empty:

2000
Empty

0.00
Done

The above example does not indicate that the difference can be reflected in very large deviations above and below the target value. This is if the material being filled or emptied is grossly above or below the targeted value.

Brief

Selecting **Brief** as the mode of display indication of the status of the material being dispensed will only be indicated with **one word**. This is dependent on the mode of operation. The primary mode will reflect "FILL" and the secondary mode will reflect "Empty". The prompt "Done" is used in both modes of operation.

FILL
Empty
Done!

This indication will appear in the lower portion of the display immediately as each fill or empty operation is occurring. The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the filling or emptying status on the display.

FILLING AND EMPTYING OPERATION (BOTH)

Standard 450 Filling and Emptying operation dictates that there are three ways to initiate a filling operation and two ways to initiate an emptying operation. The **[TARE]** key and a remote key (Auto for fill mode only).

The auxiliary display has the option of displaying the status of both the filling and emptying operation. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs respond in the same manner.

The 450 Filling and Emptying operation includes the capability to allow the operator to change the target value for either the filling and emptying modes easily from the front keypad. These values are initially fixed when entered during the setup mode. If the values must be changed during operation which is normally the case, place the **Targ1** and **Targ2** parameters in the set of selectable modes. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 and Targ2 entry modes. The numeric values during operation are entered using the **ARROW** keys. The acceptable pre-act values will move around the new targets as usual. See Chapter 12 Operating Modes for more information on this capability.

Figure 14-7 shows a Filling and Emptying curve versus time. The target is set for 500 pounds. The first pre-act value (P.A.1) is set for 10 lbs. This value is entered as a positive number. This value is subtracted from the target

weight to establish the target value of the first cut-off point. The first cut-off point is 500 - 10 = 490 lbs. This is normally referred to as the fast fill cut-off point. Setpoint 1 (SP1) de-activates at this value. Setpoint 1 is solely associated with the primary filling mode of operation.

This example shows a secondary mode curve for smaller individual empties. The target value for the smaller empties is 100 pounds. The second cut-off point for each empty is set at 10 pounds (P.A.2). This value is entered as a positive number. The second pre-act value is the target weight minus the value entered as P.A.2. The second cut-off value in this example is 100 - 10 = 90 lbs. Setpoint 2 (SP2) de-activates at this value. If applicable, the free falling material will bring the emptying to the specified target value set at parameter P5108.

Note that during the emptying operation after a tare operation, the display will reflect a negative value. The displayed value is the negative sense of the positive entered target value. If remote operation is selected, the value being displayed will proceed to a lesser value.

14.7 Check Weighing (CkAbs)

P5100.6 SPt CkAbs

The Standard Absolute Value Check Weighing Program lends itself to the commonly used check weigh operation with some added features to mold itself to the application's specific operation.

SETTING THE TARGET

P5101. Targ1

All check weighing operations have an **absolute target** value for the items being weighed. Parameter **P5101** allows for an absolute target value entry. Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

ACCEPTABLE ABSOLUTE TOLERANCE BELOW TARGET

P5102. Low

During an actual check weighing operation its **not** practical to weigh items to an exact value for acceptance. Parameter **P5102** allows for entry of a tolerance value below the absolute target value that the item may still be considered acceptable.

ie. Target = 100 oz
Low = 2

Acceptable Range below Target = 100 to 98 ozs. This is 2 ozs below the absolute target value. This example is effectively allowing items to be accepted between and including 98 and 100 ozs.

This parameter is normally used in conjunction with P5103. High.

ACCEPTABLE ABSOLUTE TOLERANCE ABOVE TARGET

P5103. High

During an actual check weighing operation its **not** practical to weigh items to an exact value for acceptance. Parameter **P5103** allows for entry of the a tolerance above the absolute target value that the item may still be considered acceptable.

ie. Target = 100 oz
High = 2

Acceptable Range above Target = 100 to

102 ozs. This is 2 ozs above the absolute target value. This example is effectively allowing items to be accepted between and including 100 and 102 ozs.

This parameter is normally used in conjunction with P5102. Low.

TARGET VALUE BASED ON GROSS OR NET

P5104.X Based

The previously entered target value must be based on either the gross or net weight. This parameter allows for the selection of one or the other.

The Open Drain Outputs are active when the 450 is in either the gross or net modes. The outputs are tripped based on the selected Parameter (gross or net). The Display Status will only be active for the active mode set in this parameter (gross or net). The outputs and Display Status are explained in the following sections.

DISPLAY INDICATION STATUS

P5112.X Stat

The 450 indicator can provide a visual indication in the 10 character auxiliary display of the status of the item placed on the scale platform. The four types of Status Indications are listed below. Selecting one of the following will determine the use of the 10 character display during the check weighing operation. Press the **[ENTER]** key to scroll through the selections.

- **%Targ**
- **WtDev**
- **Brief**
- **None**

Setpoint Number	Active Condition
SP1	Over/Under
SP2	Good

Table 14-3 Two Condition Setpoint Output Status

Each of the selectable status indications are described below.

%Targ
As the selected based parameter (gross or net) exceeds plus 5 graduations this indication will activate. The **percentage of the target weight achieved** is presented in the auxiliary display. This percentage is continually updated as weight is applied. Also an indication as to whether the displayed weight is under, within or over the predetermined target value is presented in the auxiliary display.

ie. 67.3%
Under

98.7%
Good

104%
Over

The above example does not indicate that the percentage can be reflected in the thousands of percent of the target value. This is if the item placed on the scale is grossly over the targeted value.

WtDev

As the selected based parameter (gross or net) exceeds plus 5 graduations this indication will activate. The **weight deviation from the target weight** is presented in the auxiliary display. This value is either + or - depending on whether the item is above or below the target value. This deviation is continually updated as weight is applied. Also an indication as to whether the displayed weight is under, within or over the predetermined target value is presented in the auxiliary display.

ie. -5.28

Setpoint Number	Active Condition
SP1	Under
SP2	Over
SP1 and SP2	Good

Table 14-4 Three Condition Setpoint Output

Under

-0.18
Good

1.30
Over

The above example does not indicate that the percentage can be reflected in very large deviations above and below the target value. This is if the item placed on the scale is grossly over or under the targeted value.

Brief

Selecting **Brief** as the mode of display indication of the status of the items on the scale will only be indicated with **one word**.

Under
Good
Over

This indication will appear in the lower portion of the display immediately as the displayed weight falls within any of the **three categories** above. These prompts are conditional and will only be displayed when five graduations are exceeded from gross or net zero. This is dependent on the mode selection in parameter P5105 (gross or net). The upper portion of the display will perform as usual. The current units indication will appear as motion ceases.

None

This selection will provide **no** indication of the check-weigh status on the display.

SETPOINT OUTPUT INDICATION

P5113.X Outpt

The 450 indicator offers two open drain outputs which can be configured for check-weigh operation. These outputs can be used for another indication as to the status of the material on the scale aside from the STAT parameter P5112. These outputs are located on J6 on the 450 main board. Refer to figure 14-2 for setpoint output connections. Also refer to chapter 15 for more information on the setpoint hardware and available options.

As mentioned above these outputs can be used for check-weigh status. Output status indicators may include lights (green and red for good and bad indication), buzzers, PLC's, etc.

Two Open Drain Outputs (FET)
- Lights
- Relays
- PLC's
- etc.

These outputs can be configured in one of **two conditions** of output status operation. These are mentioned below.

"2 Cond" (Two Condition)
"3 Cond" (Three Condition)

Two condition:

The outputs can be configured as a two condition status verification. See table 14-3 for output status of the setpoints.

Note:
The setpoints are only active when they are above 5 graduations of gross or net zero (P5104) and motion has ceased. Motion can be disabled at parameter P114. Both outputs are de-activated if these conditions are not present. This **in effect** makes this a **three** condition status output.

Three condition:

Three condition operation offers additional output status of the material on the scale. Refer table 14-4 for the output status of the setpoints set for three condition status. This truth table offers more of a variation of the output status condition of the material on the scale.

Three condition output requires additional logic circuitry to make sense of the output status. Even though a "GOOD" indication will activate both outputs and an "OVER or UNDER" indication will activate one

or the other output, it might be best to include additional circuitry for separate output status of each condition. Contact GSE, Inc. for more information.

Note:
The setpoints are only active when they are above 5 graduations of gross or net zero (P5104) and motion has ceased. Both outputs are de-activated if these conditions are not present. This **in effect** makes this a **four** condition status output.

CHECK WEIGH OPERATION

Standard 450 check-weigh operation dictates that as an item is placed on the scale, a 5 graduation threshold above either gross or net zero must be achieved.

The ten character auxiliary display has the option of displaying the status of the item or material placed on the scale. This indication is displayed immediately and therefore ignores any motion. The Setpoint Outputs however, follow the same operation but are motion inhibited. Motion must cease before the outputs are active. This can be changed if motion is turned **OFF** at parameter P114. These outputs can be 2 or 3 condition type outputs, refer to parameter P5113.

The 450 check-weigh operation can allow the operator to change the target value easily from the front keypad. This value is initially fixed when entered during the setup mode. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered using the ARROW keys. The acceptable percentage above and below the target will move around the new target as usual. See Chapter 12 Operating Modes for more information on this capability.

14.8 Independent Setpoints (Indep)

P5100.7 SPt Indep

The Independent Setpoints lend themselves to many **standard setpoint** applications. There are 2 setpoints available associated with the 2 TTL type outputs located on the main board (SP1 and SP2). The independent setpoint setup allows for setup of two independently configured setpoints. Target and Reset values can be entered for each setpoint and a different parameter for each setpoint to be based on is selectable.

SELECTING THE PARAMETER THE SETPOINT IS BASED ON (SETPOINT 1)

P5121. Parm1

The *target value* (determined later) must be based on either the gross, net, quantity, gross total, net total or quantity total registers. This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

- Setpoint #1 will be **active** *above* and **deactive** *below* target1 as compared to a common parameter.
- Setpoint #1 to be **deactive** *above* and **active** *below* target1 as compared to a common parameter.

SELECTING THE CONDITION OF SETPOINT ACTIVATION (SETPOINT 1)

P5122. Actv1

This parameter specifies the condition which will activate the setpoint. The following selections are provided:

- The parameter value defined at P5121 *rises above* the target value (target value determined later).
- The parameter value defined at P5121 *falls below* the target value (target value determined later).

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

Note:
The selection of "Above" corresponds to greater than or equal to the target value while the selection "Below" corresponds to less than the target value.

SETTING THE TARGET VALUE (SETPOINT 1)

P5123. AVal1

Most ingredient or material filling operations have an

absolute target value for the items being dispensed. Parameter **P5123** allows for an absolute target value entry.

(M450)
Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

(M455)
Use the numeric keypad to keyin the target value and press **[ENTER]**.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

(M455)
Use of the **[TARGET]** key will allow entry of target1, then target2 just as with the *Batch* or *Empty* modes. Refer to the Target Key Operations.

SETPOINT ACTIVATION CONDITION OF MOTION (SETPOINT 1)

P5124. AMtn1

This parameter specifies whether or not motion will be ignored by the setpoint or will inhibit setpoint activation. The selections are:

- **Ignrd** (ignored)
- **Inhib** (inhibited)

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

SELECTING THE CONDITION OF SETPOINT RESET (SETPOINT 1)

P5125. Rset1

This parameter specifies the condition which will reset the setpoint. The following selections are provided:

- The **[TARE]** key. Once the setpoint is activated it will remain latched (activated) until the **[TARE]** key is pressed. The output will remain activated if the parameter value defined at P5121 is *above* the target value regardless of the **[TARE]** key press (output is pulsed on/off).

- Remote key input "Remot". Once the setpoint is activated it will remain latched (activated) until a remote key operation is sensed.

- "Auto" will reset the setpoint output when the parameter the setpoint is based on falls +/-5 graduations of zero and motion has ceased.

- Immediate reset "Non-L". The setpoint will reset immediately once the parameter the output is based on falls below the specified target value (non-latching setpoint).

- Specified value "Value". The setpoint will reset below a specified value (keyed in) once the parameter the output is based on falls below the specified target value (latching setpoint).

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

Note:
The selection of "Above" corresponds to greater than or equal to the target value while the selection "Below" corresponds to less than the target value.

SETTING THE RESET VALUE (SETPOINT 1)

P5126. RVal1

Parameter **P5126** allows for an absolute reset value entry. This parameter will appear only if P5125 is set for "Value".

(M450)
Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

(M455)
Use the numeric keypad to keyin the reset value and press **[ENTER]**.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Rval1** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Rval1 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

(M455)
Use of the **[TARGET]** key will allow entry of Rval1, then Rval2. Refer to theTarget Key Operations.

SETPOINT RESET CONDITION OF MOTION (SETPOINT 1)

P5127. RMtn1

This parameter specifies whether or not motion will be ignored by the setpoint or will inhibit setpoint reset. The selections are:

- **Ignrd** (ignored)
- **Inhib** (inhibited)

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

SELECTING THE PARAMETER THE SETPOINT IS BASED ON (SETPOINT 2)

P5131. Parm2

The *target value* (determined later) must be based on either the gross, net, quantity, gross total, net total or quantity total registers. This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

- Setpoint #2 will be **active** *above* and **deactive** *below* target2 as compared to a common parameter.
- Setpoint #2 to be **deactive** *above* and **active** *below* target2 as compared to a common parameter.

SELECTING THE CONDITION OF SETPOINT ACTIVATION (SETPOINT 2)

P5132. Actv2

This parameter specifies the condition which will activate the setpoint. The following selections are provided:

- The parameter value defined at P5131 *rises above* the target value (target value determined later).
- The parameter value defined at P5131 *falls below* the target value (target value determined later).

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

Note:
The selection of "Above" corresponds to greater than or equal to the target value while the selection "Below" corresponds to less than the target value.

SETTING THE TARGET VALUE (SETPOINT 2)

P5133. AVal2

Most ingredient or material filling operations have an **absolute target** value for the items being dispensed. Parameter **P5133** allows for an absolute target value entry.

(M450)
Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The

RIGHT Arrow key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

(M455)
Use the numeric keypad to keyin the target value and press **[ENTER]**.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Targ2** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Targ2 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

(M455)
Use of the **[TARGET]** key will allow entry of target1, then target2 just as with the *Batch* or *Empty* modes. Refer to the Target Key Operations.

SETPOINT ACTIVATION CONDITION OF MOTION (SETPOINT 2)

P5134. AMtn2

This parameter specifies whether or not motion will be ignored by the setpoint or will inhibit setpoint activation. The selections are:

- **Ignrd** (ignored)
- **Inhib** (inhibited)

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

SELECTING THE CONDITION OF SETPOINT RESET (SETPOINT 2)

P5135. Rset2

This parameter specifies the condition which will reset the setpoint. The following selections are provided:

- The **[TARE]** key. Once the setpoint is activated it will remain latched (activated) until the **[TARE]** key is pressed. The output will remain activated if the parameter value defined at P5131 is *above* the target value regardless of the **[TARE]** key press (output is pulsed on/off).

- Remote key input "Remot". Once the setpoint is activated it will remain latched (activated) until a remote key operation is sensed.

- "Auto" will reset the setpoint output when the parameter the setpoint is based on falls +/-5 graduations of zero and motion has ceased.

- Immediate reset "Non-L". The setpoint will reset immediately once the parameter the output is based on falls below the specified target value (non-latching setpoint).

- Specified value "Value". The setpoint will reset below a specified value (keyed in) once the parameter the output is based on falls below the specified target value (latching setpoint).

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

Note:
The selection of "Above" corresponds to greater than or equal to the target value while the selection "Below" corresponds to less than the target value.

SETTING THE RESET VALUE (SETPOINT 2)

P5136. RVal2

Parameter **P5136** allows for an absolute reset value entry. This parameter will appear only if P5135 is set for "Value".

(M450)
Use the **arrow keys** to key in numeric entries. The **UP Arrow** key will start the numeric selection and will scroll through the first digit entry. Pressing the **[PRINT] + [UNITS]** simultaneously will step backwards one digit each time the combination is pressed. The **RIGHT Arrow** key will move to the next digit entry location. The selections also include the negative sign (-) and a decimal point. Press the **[ENTER]** key when the full value is keyed in.

(M455)
Use the numeric keypad to keyin the reset value and press **[ENTER]**.

This value is fixed once the setup mode is exited. If this value must be changed during operation which is normally the case, place the **Rval2** parameter in the set of selectable modes **P30X.X**. Pressing the **[SELECT]** key will scroll through the specified modes of operation including the Rval2 entry mode. The numeric values during operation are entered the same as above. See Chapter 12 Operating Modes for more information on this capability.

(M455)
Use of the **[TARGET]** key will allow entry of Rval1, then Rval2. Refer to theTarget Key Operations.

SETPOINT RESET CONDITION OF MOTION (SETPOINT 2)

P5137. RMtn2

This parameter specifies whether or not motion will be ignored by the setpoint or will inhibit setpoint reset. The selections are:

- **Ignrd** (ignored)
- **Inhib** (inhibited)

This parameter allows for the selection of any one of these by toggling through the selections with the **[ENTER]** key.

14.9 Target Key Operations (M455 only)

The target mode of operation is modeled after the M455 setpoint configurations with some enhancements.

14.9.1 Enable/Disable Target Key

Parameter P5000 allows the operator use of the **[TARGET]** key. If this is set for *disabled*, the rest of this section can be skipped.

14.9.2 Target Key Access Code

Parameter P5001 offers the ability to personalize use of the **[TARGET]** key with an *access code*.

Entering a Target Key PIN Number

The **[TARGET]** key access number is entered at parameter:

5001.— TCode (Target Code)

The factory method for entering the 455's setup mode is listed below.

[5001] [SELECT] [23640] [ID] [ENTER].

Parameter **P5001** allows a "**TCode**" to be entered for gaining access to the setpoint target/reset registers.

Setup Target Key Access Code

Key in up to 5 numeric entries in any combination. The **[PRINT/ENTER]** key will complete the entry.

Clearing Target Key Access Code

If for any reason the **[TARGET]** key access code is to be changed, press the following keys at parameter P5001.

Press **[CLR]**, the **[TARGET]** key access code will be reinstated to the GSE manufacturer default code of *none!*.

Operation:

Press the **[TARGET]** key. The prompt **Keyin Code:** will appear. Keyin the Target key access code and press **[ENTER]** (note that each character of the code is represented as a dash "-". If the wrong code is entered the message "**WRONG CODE!**" is displayed briefly.

14.9.3 Filling/Emptying/Batching/Both Operations

Pressing the **[TARGET]** key will provide a one-key

method of allowing access to the target entry process when P5100 is set for *Fill, Batch, Empty* or *Both*.

When P5100 is set for *Fill, Batch, Empty* or *Both*, if P5000 is set for *enabled* and P5001 is set for *none!*, then the **[TARGET]** key will function as follows.

Target Value Entry *(Fill) and (Empty) modes*

1 Pressing **[TARGET]** will access the Targ1 register. Proceed to key in a target value and press **[ENTER]**. The unit will prompt, **=NEW TARG?** to confirm your intention to accept that weight as the new target. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter the preact values (*P.A.1 and P.A.2 values).*

2 Keying in a number followed by a **[TARGET]** keypress will enter the keyed in value as the new target value. The unit will then show the new target value in the main display and Prompt **=NEW TARG?**. Press **[ENTER]** to verify this value as the new entered value. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter the preact values (*P.A.1 and P.A.2 values).*

Preact Value Entry *(Fill) and (Empty) modes*

P.A.1 (Preact 1) value must be keyed in as an absolute value smaller than the target value.

After the target value has been entered, the P.A.1 register entry mode is accessed. The display will show "**NEW? P.A.1**" if no preact has been entered or "**X.XX P.A.1**" if a previous value has been entered. Key in a value lower than the target value and press **[ENTER]**. The unit will indicate the entered P.A.1 value in the main display and prompt, **NEW ? P.A.1**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME PA!**. The previous target will remain as before.

Press **[ENTER]** to proceed to the P.A.2 (preact2) value entry mode.

The display will show "**NEW? P.A.2**" if no preact has been entered or "**X.XX P.A.2**" if a previous value has been entered. Key in a value smaller than P.A.1 value and press **[ENTER]** (P.A.2 must be smaller than P.A.1 or setpoint errors will occur). The unit will indicate the entered P.A.2 value in the main display and prompt, **NEW ? P.A.2**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME PA!**. The previous target will remain as before.

Press **[ENTER]** to advance out of the Target Entry mode and back to the weigh mode.

Target 1Value and Preact 1Entry
(*Batch) and (Both) modes*

1 Pressing **[TARGET]** will access the Targ1 register. Proceed to key in a target value and press **[ENTER]**. The unit will prompt, **=NEW TARG?** to confirm your intention to accept that weight as the new target. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter the preact value (*P.A.1).*

2 Keying in a number followed by a **[TARGET]** keypress will enter the keyed in value as the new target value. The unit will then show the new target value in the main display and Prompt **=NEW TARG?**. Press **[ENTER]** to verify this value as the new entered value. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter the preact value (*P.A.1).*

P.A.1 (Preact 1) value must be keyed in as an absolute value smaller than the target value.

After the target value has been entered, the P.A.1 register entry mode is accessed. The display will show "**NEW? P.A.1**" if no preact has been entered or "**X.XX P.A.1**" if a previous value has been entered. Key in a value lower than the target value and press **[ENTER]**. The unit will indicate the entered P.A.1 value in the main

display and prompt, **NEW ? P.A.1**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME PA!**. The previous target will remain as before.

Press **[ENTER]** to proceed to Target2.

Target 2Value and Preact 2Entry
(*Batch) and (Both) modes*

1 Proceed to key in a target value and press **[ENTER]**. The unit will prompt, **=NEW TARG?** to confirm your intention to accept that weight as the new target. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter the preact value (*P.A.2).*

Press **[ENTER]** to proceed to the P.A.2 (preact2) value entry mode.

The display will show "**NEW? P.A.2**" if no preact has been entered or "**X.XX P.A.2**" if a previous value has been entered. Key in a value smaller than P.A.1 value and press **[ENTER]** (P.A.2 must be smaller than P.A.1 or setpoint errors will occur). The unit will indicate the entered P.A.2 value in the main display and prompt, **NEW ? P.A.2**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME PA!**. The previous target will remain as before.

Press **[ENTER]** to advance *out* of the Target Entry mode and back to the weigh mode.

14.9.4 Check Weighing Operations

When P5100 is set for *Ckwgh* or *CkAbs*, if P5000 is set for *enabled* and P5001 is set for *none!*, then the **[TARGET]** key will function as follows.

Target Value Entry *(Ckwgh) and (CkAbs)*

1 Pressing **[TARGET]** with an applied weight (exceeding 5 graduations from zero) will display the weight value in the main display and prompt, **=NEW TARG?** to confirm your intention to accept that weight as the new target. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME TARG!**. The previous target will remain as before. Proceed to enter *HI* and *LOW* limits.

2 Pressing **[TARGET]** without an applied weight (5 graduations or less from zero) will allow access to the **Targ1** register. This will allow for a value to be keyed in at this point. Proceed to keyin a target value and press **[ENTER]**. The unit will then show the new target value in the main display and Prompt **=NEW TARG?**. Press **[ENTER]** to verify this value as the new entered value. Proceed to enter *HI* and *LOW* limits.

3 Keying in a number followed by a **[TARGET]** keypress will enter the keyed in value as the new target value regardless of any weight on the scale. The unit will then show the new target value in the main display and Prompt **=NEW TARG?**. Press **[ENTER]** to verify this value as the new entered value. Proceed to enter *HI* and *LOW* limits.

Lower and Upper Limit Entry *(CkAbs)*

Lower limit value must be keyed in as an absolute value lower than the target value.

After the target value has been entered, the lower limit register entry mode is accessed. The display will show "**LOWER**" indicating access to this register. Key in a value lower than the target value and press **[ENTER]**. The unit will indicate the entered lower absolute value in the main display and prompt, **NEW ? LOWER**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME LOWER**. The previous target will remain as before.

Press **[ENTER]** to proceed to the UPPER absolute value entry mode.

The display will show "**UPPER**" indicating access to this register. Key in a value higher than the target value and press **[ENTER]**. The unit will indicate the entered upper absolute value in the main display and prompt, **NEW ? UPPER**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the

[ENTER] key is pressed, the unit will briefly display **SAME UPPER**. The previous target will remain as before.

Lower and Upper Limit Entry *(Ckwgh)*

The value entered here is a percentage value. This percentage value is an amount lower than the target value.

After the target value has been entered, the lower limit register entry mode is accessed. The display will show "**0.00% LOWER**" indicating access to this register. Key in a percentage value for the lower limit and press **[ENTER]**. The unit will indicate the entered lower percentage value in the main display and prompt, **%NEW? LOWER**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME LOWER**. The previous target will remain as before.

Press **[ENTER]** to proceed to the UPPER percentage value entry mode.

The display will show "**0.00% UPPER**" indicating access to this register. Key in a percentage value for the upper target value and press **[ENTER]**. The unit will indicate the entered upper absolute value in the main display and prompt, %**NEW? UPPER**. Press **[ENTER]** to confirm or any other key to abort. If any other key besides the **[ENTER]** key is pressed, the unit will briefly display **SAME UPPER**. The previous target will remain as before.

14.9.5 Independent Setpoint Operations

When P5100 is set for *Indep*, if P5000 is set for *enabled* and P5001 is set for *none!*, then the **[TARGET]** key will function as follows.

Activation Value 1 and 2 Entry *(Indep)*

1 Pressing **[TARGET]** will allow access to the *AVal1* register (setpoint#1 activation value). Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This will then proceed to the *AVal2* register. Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This will then proceed back to the initial display mode.

Activation Value 1 and 2 Entry, Reset Value 1 and 2 Entry *(Indep)*

P5125 Rset1 and/or P5135 Rset2 must be set for *Value*.

2 Pressing **[TARGET]** will allow access to the *AVal1* register (setpoint#1 activation value). Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This will then proceed to the RVal1 register (setpoint#1 reset value). Keyin the *reset value* and press **[ENTER]**. To confirm your intention to accept this value as the reset value, press **[ENTER]**. This will then proceed to the *AVal2* register (setpoint#2 activation value). Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This will then proceed to the RVal2 register (setpoint#2 reset value). Keyin the *reset value* and press **[ENTER]**. To confirm your intention to accept this value as the reset value, press **[ENTER]**. This will then proceed back to the initial display mode.

Direct Access to Activation Value 1 *or* 2 Entry *(Indep)*

3 Pressing **[X] [TARGET]** (X = 1 or 2) will allow direct access to the *AVal1* or AVal2 register (setpoint#1 or #2 activation value). Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This will then proceed back to the initial display mode.

Direct Access to Activation Value 1 *or* 2 Entry, Reset Value 1 *or* 2 Entry *(Indep)*

P5125 Rset1 and/or P5135 Rset2 must be set for *Value*.

4 Pressing **[X] [TARGET]** (X = 1 or 2) will allow direct access to the *AVal1* or AVal2 register (setpoint#1 or #2 activation value). Keyin an *activation value* and press **[ENTER]**. To confirm your intention to accept this value as the activation value, press **[ENTER]**. This

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