A member of the
Avery Weigh-Tronix Group

Model 350/355

Digital Weight Indicator

User Instructions

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1.0 Installation

The standard Model 350 zinc die cast enclosure is a NEMA1 (IP 20) equivalent. The Model 350/355 stainless steel enclosure meets NEMA 4X/IP65 type specifications.

WARNING: Risk of electrical shock! Service of the indicator should only be performed by authorized service personnel.

If the Model 350/355 is being plugged into an outlet, it must have an earth ground. Make sure the supply voltage from the outlet meets the requirements of the indicator.

When choosing a mounting location for the Model 350 die cast, ensure that the unit is not installed in a wash-down area or conductive dust environment.

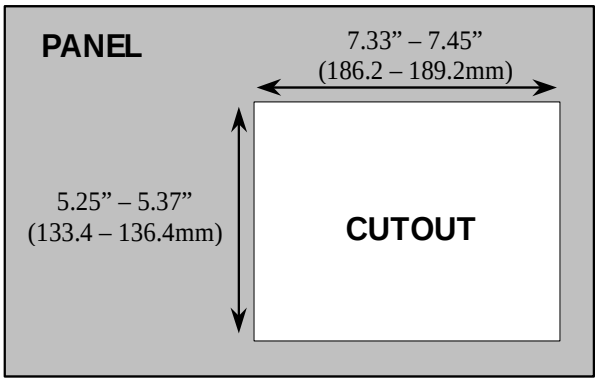
1.1 Desktop Mounting

The die cast enclosure is designed for desktop mounting. When set on a flat surface, the front face is angled for easy viewing. An optional swivel bracket is available for a broader range of viewing. All wiring enters from the rear and can be secured with the included screw mounted cable ties.

The stainless steel models have a swivel bracket for quick adjustment of viewing angle.

1.2 Panel Mounting (350 Die Cast Only)

The optional panel mount kit allows the zinc die cast enclosure to be installed in a user panel. Allow for 2.00" (57.2mm) depth behind the panel surface. See the Panel Mount cutout drawing below for dimensions.



1.3 Outline Drawings

1.3.1 350 Die Cast

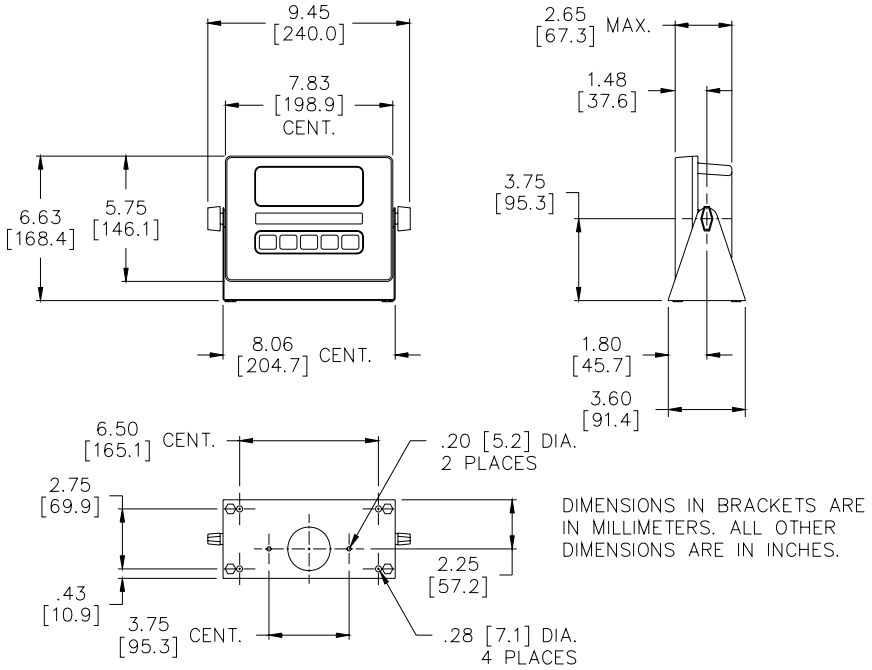


Figure 1: Model 350 Die Cast Dimensions

1.3.2 350 Stainless Steel

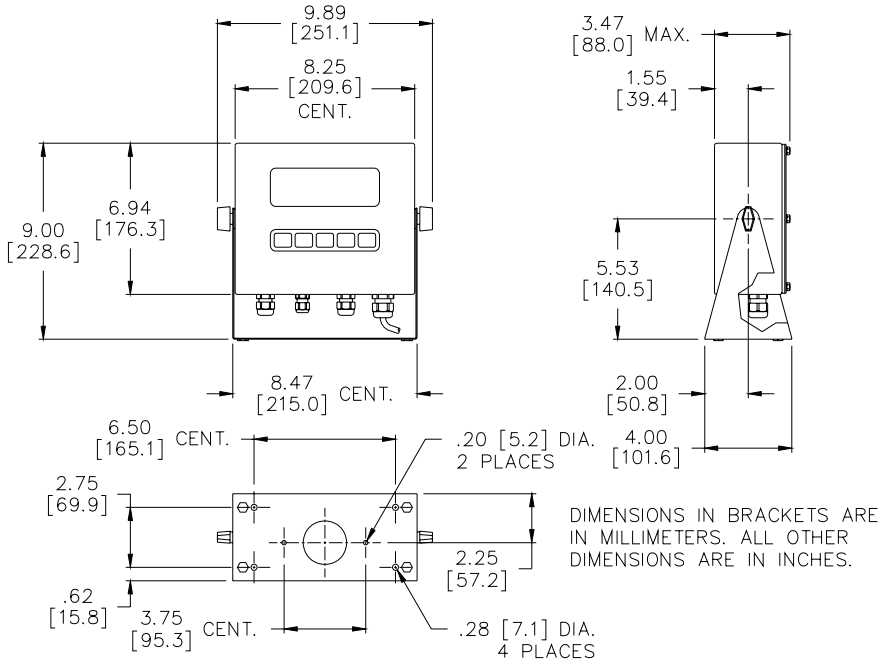


Figure 2: Model 350 Stainless Steel Dimensions

1.3.3 355 Stainless Steel

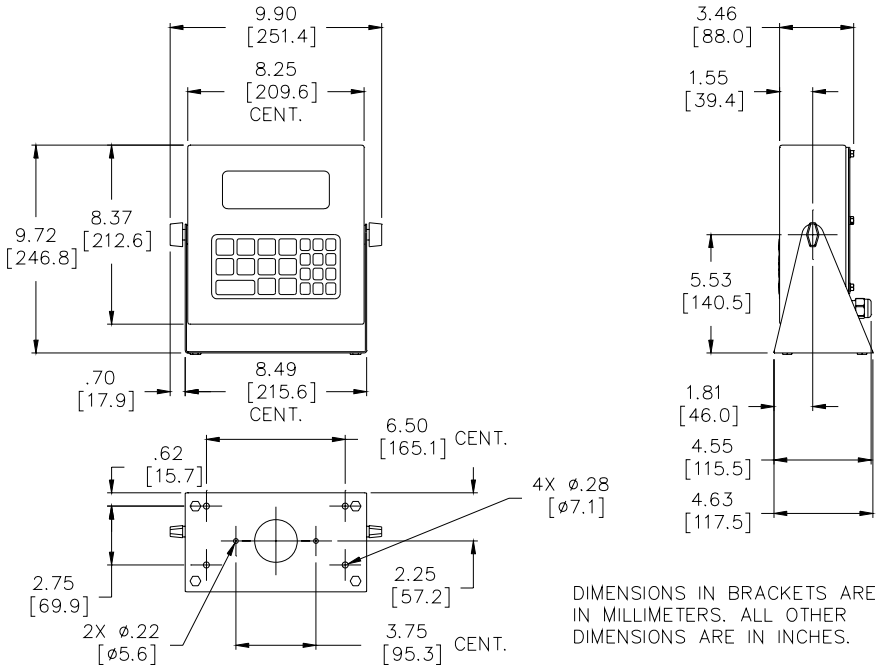


Figure 3: Model 355 Stainless Steel Dimensions

1.4 AC and DC Power

1.4.1 Battery Operated

The optional battery module gives the Model 350/355 portability, providing a Model 350 with a LCD display and one loadcell 20 hours minimum battery life, or a Model 350/355 with a LED display and one loadcell 8 hours minimum battery life.

1.4.1.1 ON/OFF Switch

The on/off switch for the Model 350 die cast is a rocker-type switch that is located on the rear of the enclosure.

The on/off switch for the Model 350/355 stainless is a toggle-type (washdown type) switch replaces one of the available strain reliefs on the bottom or rear of the enclosure.

The Model 350/355 will immediately switch to battery operation when AC power is interrupted if the switch is in the ON position. Placing the switch in the OFF position prevents the battery from running down when AC power is removed. The battery will be charged whenever there is AC power to the Model 350/355, regardless of the switch position.

1.4.2 AC Operated

The AC version does not have an On/Off switch. Plug the indicator into an appropriate AC outlet. Unplug the indicator to turn it off.

2.0 Keypad and Display

2.1 Keypads

2.1.1 Model 350 Keypad

The Model 350 offers a sealed 5-button elastomer keypad which is used for operator input. Each key is assigned two distinct functions. Various key combinations are also used. Each key has secondary functions; allowing an operator to enter target values, perform piece samples, access setup parameters, etc.

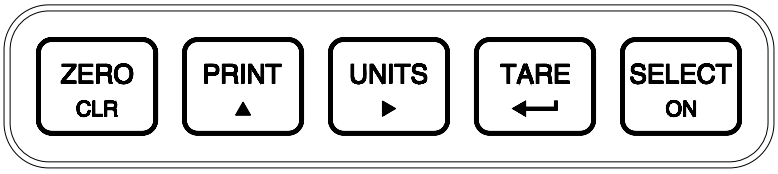


Figure 4: Model 350 Keypad

Key Press	Weigh Mode	Count Mode
ZERO CLR	Performs a gross zero function and/or clears an entry in progress. **Hold this key on power-up to turn on the display if in sleep mode.**	Performs a quantity zero function and/or clears an entry in progress.
PRINT ▲	Performs a print function and/or 'scrolls' through digits during setpoint entry.	Performs a print function and/or 'scrolls' through digits during setpoint entry.
UNITS ▶	Toggles between 'lb' and 'kg' and/or advances cursor to next entry position.	Toggles through standard sample sizes and/or begins a new sample entry.
TARE ↵	Performs an auto-tare function (if enabled) and/or accepts an entry in progress.	Performs an auto-tare function and requests a piece sample and/or accepts an entry in progress.
SELECT ON	Toggles between display modes and/or restores power to the indicator (if auto-shutoff enabled).	Toggles between display modes and/or restores power to the indicator (if auto-shutoff enabled).
ZERO CLR + TARE ↵	Absolute clear – clears an entry in progress and/or clears the value of a parameter.	No function.
ZERO CLR + PRINT ▲	Backspace – erases the right-most digit during data entry.	Backspace – erases the right-most digit during sample entry.
PRINT ▲ + SELECT ON	Extended gross.	Extended gross.
UNITS ▶ + TARE ↵	Turn off indicator by holding key for approximately 1 second. Battery mode only.	Turn off indicator by holding key for approximately 1 second. Battery mode only.
PRINT ▲ + UNITS ▶	Reverse character scroll during data entry.	Reverse character scroll during sample entry.

2.1.2 Model 355 Keypad

The Model 355 keypad performs different functions in the Weigh Mode and the Count Mode. The numeric keys make entering values such as tare or average piece weight easier.

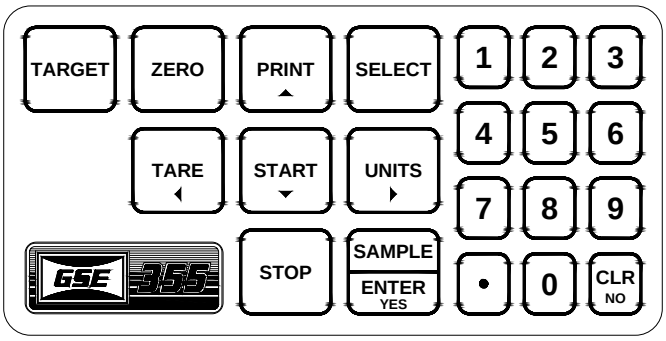


Figure 5: Model 355 Keypad

Key Press	Weigh Mode	Count Mode
ZERO	Performs a gross zero function and/or clears an entry in progress.	Performs a quantity zero function and/or clears an entry in progress.
PRINT ▲	Performs a print function and/or 'scrolls' through digits during setpoint entry.	Performs a print function and/or 'scrolls' through digits during setpoint entry.
UNITS ▶	Toggles between 'lb' and 'kg' and/or advances cursor to next entry position.	Toggles through standard sample sizes and/or begins a new sample entry.
TARE ◀	Performs an auto-tare function (if enabled) and/or accepts an entry in progress. If the tare weight is known, key in the value and press TARE ◀.	Performs an auto-tare function and/or accepts an entry in progress.
SELECT	Toggles between display modes and/or restores power to the indicator (if auto-shutoff enabled).	Toggles between display modes and/or restores power to the indicator (if auto-shutoff enabled).
SAMPLE ENTER YES	Performs a sample. If a number is keyed in before hand, it will be used as the sample size. Accepts an entry.	Performs a sample. If a number is keyed in before hand, it will be used as the sample size.
CLR NO	Clears an entry in progress. **Hold this key on power-up to turn on the display if in sleep mode.**	Performs a quantity zero function and/or clears an entry in progress.
START ▼	If setpoints are enabled, causes a process to start or resume.	If setpoints are enabled, causes a process to start or resume.
STOP	If setpoints are enabled, causes a pause. Press STOP again to abort the process.	If setpoints are enabled, causes a pause. Press STOP again to abort the process.
ON TARGET	Wake up the indicator if in sleep mode. Turn on the indicator if power is off. Access the target entry mode.	Wake up the indicator if in sleep mode. Turn on the indicator if power is off. Access the target entry mode.

2.1.3 Weigh Mode Functions

The Model 350 and Model 355 keypads have five primary Weigh Mode functions:

ZERO	Performs a gross zero and selects the gross mode
PRINT ▲	Initiates data transmission out the communication port
UNITS ►	Toggles the units of measure between lb, kg, (g, lb oz, oz if enabled)
TARE ◄	Tares any displayed weight and selects the net mode
SELECT	Toggles the display between GROSS, NET, QUANTITY and setpoint TARGETS (if enabled)

2.2 Displays

The Model 350 is available with a LED or LCD while the Model 355 is only available with a LED. The Model 350 and Model 355 will display alphanumeric data, but due to the nature of 7-segment LEDs/LCD and the limitation of six digits, some information is abbreviated.

All segments and annunciators are illuminated for a brief display test upon power up. The current gross weight is then displayed in default units.

2.2.1 LED

The LED display is a six digit, 7-segment bright green LED screen with 12 annunciators to show weight and status information. The SP1, SP2, and SP3 annunciators are red, green, and yellow. Also there is an annunciator for a third unit under kg. Place the third unit label above the third annunciator (the third unit is available on both the LED and LCD displays).

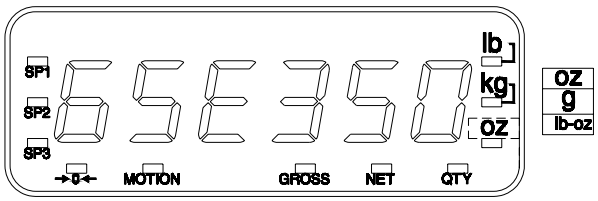


Figure 6: Model 350/355 LED

2.2.2 LCD

The LCD display is a six digit, 7-segment black LCD screen with 12 annunciators and a bargraph to show the operational status.

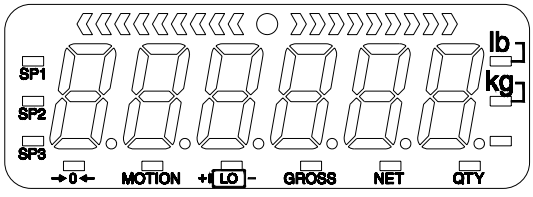


Figure 7: Model 350 LCD

2.3 Remote Display

The remote display function allows a master indicator (Model 350 or Model 355) to be echoed to another indicator (350 Series or 60 Series) and be used in a remote location. There are certain parameters that must be set in order to have the master and slave indicators communicate together. If the remote display mode is enabled, ***r-dsp*** will be shown on the display. Contact your GSE distributor for more information.

3.0 Operation

The Model 350 and 355 can operate in a variety of modes such as check-weighing, parts counting and filling etc. The functions described in this section are not available until enabled within the setup parameters. Contact your GSE distributor to configure the indicator for a specific operation.

3.1 Entering a Tare Value (Model 350)

If a tare value is known, it is possible to enter that value into the tare register if the setup parameter has been enabled.

1. From the gross or net mode press the SELECT key until tare is displayed.
2. Use the PRINT key to scroll in the first number.
3. Press the UNITS key to move to the next digit.
4. Repeat steps 2 and 3 until the desired number is showing on the display.
5. Press the TARE key to accept the entered tare value.

3.2 Entering a Tare Value (Model 355)

If a tare value is known, it is possible to enter that value into the tare register if the setup parameter has been enabled.

1. Enter the known tare value with the numeric keys and press TARE. The display will access the net mode.

3.3 Enter an ID Number

If the ID parameter has been enabled previously, a number may be entered to print on a ticket. Follow the instructions below to enter an ID number.

1. Press the PRINT key from the weigh mode. The display will show the current ID number if one has been entered previously.
2. Key in the desire ID number (numeric and/or alphanumeric) and press TARE (Model 350) or SAMPLE ENTER (Model 355). This will print a ticket.
   -or-
3. If the ID number shown is acceptable simply press TARE (Model 350) or SAMPLE ENTER (Model 355). This will print a ticket which includes the entered ID number.

3.4 Set Time & Date

The time and date feature is stored as non-volatile (time/date setting will not be lost when the unit power is reset).

The time and date can be accessed from the weigh mode with the SELECT key if the time/date parameter has been enabled. Time and date can be accessed via the communication port by sending **11%s**.

3.4.1 Model 350

To enter the date from the Enter~date~01.01.70 prompt
EXAMPLE: 01.09.09 (January 9, 2009)

1. Press PRINT to toggle through the numbers to enter the month.
2. Press UNITS twice to move the decimal point over to separate the month from the day. It is not necessary to enter a 0 before a single digit month. If it is a double-digit entry, press UNITS once to move the cursor and then PRINT to scroll through the digits.
3. Press PRINT to toggle through the numbers to enter the day.
4. Press UNITS twice to move the decimal point over to separate the day from the year. It is not necessary to enter a 0 before a single digit month. If it is a double-digit entry, press UNITS once to move the cursor and then PRINT to scroll through the digits.
5. Press PRINT to toggle through the numbers to enter the year.
6. Press UNITS once to move the cursor and then press PRINT to scroll through the digits.
7. Press TARE twice to accept the entry.

To enter the time from the Enter~tine~00.00.00 prompt
EXAMPLE: 16.32.41 (4:32:41 P.M.)

1. Press PRINT to toggle through the numbers to enter the hour. Hours must be entered as military time.
2. Press UNITS once to move the cursor. Press PRINT to select the next digit.
3. Press UNITS twice to move the decimal point over to separate the hour from the minutes. It is not necessary to enter a 0 before a single digit hour.

3.4.2 Model 355

To enter the date from the Enter~date~01.01.70 prompt
EXAMPLE: 01.09.09 (January 9, 2009)

1. Key in the date in the following format: 1.9.9. It is not necessary to enter a 0 before a single digit month.
2. Press SAMPLE ENTER to except the date and move to the time entry. Press SAMPLE ENTER again to bypass the time entry.

To enter the time from the Enter~tine~00.00.00 prompt
EXAMPLE: 16.32.41 (4:32:41 P.M.)

1. Key in the date in the following format: 16.32.41
2. Press SAMPLE ENTER to except the time and move to the weigh mode.

3.5 Parts Counting

The counting parameter must be enabled before using. Follow the instructions below for sampling and counting parts. A new sample must be performed for each unique part being counted. The indicator will not store the average piece weight.

3.5.1 Model 350

3.5.1.1 Sample selectable fixed counts from the weigh mode

1. From the weigh mode, press SELECT until the QTY annunciator is lit. The display may show ***do APS*** if an average piece weight is not found. This message is to let you know this is a new sample. Go to step 2.
2. Press TARE to perform a sample. Add 10 will be displayed. If 10 is the desired sample size, go to step 4. Otherwise go to step 3.
3. If a fixed sample size other than 10 is desired, press SELECT to toggle through sample size choices 5, 10, 20, 50 and 100. When the desired sample size is displayed, go to step 4.
4. Add the pieces to be sampled and press TARE**.** After motion is stabilized, the sampled quantity will be displayed.
5. Continue adding parts to be counted. The display will show the number of parts added.
6. If a different part needs to be counted, go to step 2.

3.5.1.2 To sample using variable counts

1. From the weigh mode, press SELECT until the QTY annunciator is lit. The display may show ***do APS*** if an average piece weight is not found. This message is to let you know this is a new sample. Go to step 2.
2. Press TARE to perform a sample. Add 10 will be displayed.
3. Add pieces and key in the number of pieces being sampled by entering the known sample size. First press the PRINT key until the first digit is displayed. Use the UNITS key to move to the next digit. Continue using the PRINT and UNITS keys until the desired sample size is displayed and press TARE**.**
4. Add the pieces to be sampled and press TARE**.** After motion is stabilized, the sampled quantity will be displayed.
5. Continue adding parts to be counted. The display will show the number of parts added.
6. If a different part needs to be counted, go to step 2.

3.5.1.3 View the average piece weight

1. From the QTY mode, press SELECT once. The display will show ***APS*** and then flash the last sampled average piece weight. This value cannot be altered.
2. Press the SELECT key to exit the average piece weigh mode. Continue to press SELECT until the desire weigh mode parameter is displayed.

3.5.2 Model 355

3.5.2.1 To sample using selectable fixed counts from the weigh mode

1. From the weigh mode press SAMPLE/ENTER. Add 10 will be displayed. If 10 is the desired sample size, go to step 3. Otherwise go to step 2.
2. If a fixed sample size other than 10 is desired, press SELECT or UNITS to toggle through sample size choices 5, 10, 20, 50 and 100. When the desired sample size is displayed, go to step 3.
3. Add the pieces to be sampled and press SAMPLE/ENTER. After motion is stabilized, the sampled quantity will be displayed.
4. Continue adding parts to be counted. The display will show the number of parts added.
5. If a different part needs to be counted, go to step 2.

3.5.2.2 To sample using variable counts

1. From the weigh mode press SAMPLE/ENTER. Add 10 will be displayed. If 10 is the desired sample size, go to step 3. Otherwise go to step 2.
2. Add pieces and key in the number of pieces being sampled with the numeric keys. Press SAMPLE/ENTER to accept the entry.
3. Add the pieces to be sampled and press SAMPLE/ENTER. After motion is stabilized, the sampled quantity will be displayed.
4. Continue adding parts to be counted. The display will show the number of parts added.
5. If a different part needs to be counted, go to step 2.

3.5.3 View the average piece weight

1. From the QTY mode, press SELECT once. The display will show ***APS*** and then flash the last sampled average piece weight. This value cannot be altered.
2. Press the SELECT key to exit the average piece weigh mode. Continue to press SELECT until the desire weigh mode parameter is displayed.

3.6 Percentage Checkweigh

This feature is commonly used in checkweigh applications and must be enabled before attempting to use.

After a target weight is entered, upper and lower tolerances are entered as a percentage of the target. Over and under tolerance values are automatically calculated according to the percentages entered. The desired target may be based on gross weight, net weight or quantity (if counting is enabled).

3.6.1 Enter a Target Value

3.6.1.1 Model 350

1. Press SELECT until *tArG1* is displayed. If the target value shown is correct, press TARE to go to the *PctLo* value. To change the target value, go to step 2.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered. Refer to the example below as a reference.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*

3. Press TARE to accept the entered value**.** Once the tare key is pressed, *PctLo* will be displayed. This is where the low percentage will be entered. Enter target percentage value in the same manner as the target weight was entered above. If the displayed value is correct, press TARE.
4. Next the *PctHi* value will be displayed. This is target percentage value for the high percentage. Enter this value in the same manner as the target weight was entered above. If the displayed value is correct press SELECT. The display will return to the weigh mode. Press SELECT to view the desired weigh mode parameter.

3.6.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the target weight with the numeric keys and press SAMPLE ENTER**.**
3. The *PctLo* value will be displayed. Key the in target percentage value with the numeric keys and press SAMPLE ENTER.
4. The *PctHi* value will be displayed. Key the in target percentage value with the numeric keys and press SAMPLE ENTER.
5. Press SELECT to select the desired weigh mode parameter.

3.6.2 Start Checkweighing

The checkweigh applications do not have a start function. Simply put the item to be weighed onto the scale platter. An annunciator will illuminate to indicate whether the item is within tolerance.

3.6.2.1 Annunciators

In order for the annunciators to activate, the displayed value must be at least five graduations above zero.

Status	Annunciator Status	Annunciator Color (LED)
OVER	SP 1 Illuminated	Red
GOOD	SP 2 Illuminated	Green
UNDER	SP 3 Illuminated	Yellow

3.7 Fill

The fill program is used for single-speed or dual-speed filling operations. The dual-speed fill operation allows for both a fast and a slow fill mode. During a fast-fill, setpoints 1 (SP1) and 2 (SP2) are activated. During a slow-fill or single-speed fill, only setpoint 1 (SP1) is activated. This feature must be enabled before attempting to use. Over filling can be prevented with the use of pre-act values (PA1 and PA2). Pre-act 1 (PA1) is used for switching the fast fill to a slow fill. Pre-act 2 (PA2) is used as a final cutoff value.

3.7.1 Enter a Target Value

Pressing [TARE] or [SAMPLE/ENTER] alone allows access to the subsets. PA1 and PA2 are the subsets for Targ 1.

3.7.1.1 Model 350

1. Press [SELECT] until *tArG1* is displayed.
2. Press [PRINT] until the first digit of the new target is displayed. Press [UNITS] to accept the number displayed. Continue this step until the desired number is entered. Refer to the example below.

   Example: Target of 20

   Press [PRINT] four times

   DISPLAY READS ▶ *2*

   Press [UNITS] to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press [PRINT] once

   DISPLAY READS ▶ *20*

   Press [TARE] to accept the target weight as 20

   DISPLAY READS ▶ *20*

3. Press [TARE]**.** Once the tare key is pressed, it is possible that *PA1* will be displayed if the pre-act parameter is enabled.

   If a value is desired, enter it in the same manner as the target weight was entered above. When the displayed value is correct, press [TARE].

If no value is to be entered or *PA1* is not displayed, press TARE to go to the next screen.

4. If *PA2* is displayed, enter the value in the same manner as the target weight was entered above and press TARE to accept or press TARE to return to the weigh mode. Press SELECT to view the desired weigh mode parameter.

3.7.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the desired target value with the numeric keys and press SAMPLE/ENTER.
3. The *PA1* value will be displayed. Key the in value with the numeric keys and press SAMPLE/ENTER.
4. The *PA2* value will be displayed. Key the in value with the numeric keys and press SAMPLE/ENTER.
5. Press SELECT to select the desired weigh mode parameter.

3.7.2 Start Fill

3.7.2.1 Activation Method

The fill begins with the selected activation method. The method is determined by the parameters in the setup mode.

The deactivation of the setpoints is automatic. The desired target may be based on net or quantity (if counting is enabled).

Activation types

- Tare key – Press the TARE key to start the process. A tare weight will be set and the weight will switch to net zero.
- Remote key – Press the remote key switch.
- Auto-start – The process is automatically activated. It waits for a no-motion condition and then adds the target to the current displayed weight to achieve a ***relative*** cutoff value.

3.7.2.2 Annunciators

Fill Status	Annunciator Status
Fast Fill	SP 1 & SP 2 Illuminated
Dribble Fill (or Single-Speed Fill)	SP 1 Illuminated
Fill Done or Pause	SP 1 & SP 2 Off

3.7.3 Fill Example

With a system set up to fill 55-gallon drums with motor oil, the following settings might be used to achieve an accurate final fill weight of 400 lbs.:

Parameter Setting	Actual Cutoff Value	Comments
Targ 1 = 400		Desired final weight.
Pre-act 1 = 28	400 – 28 = 372.0	Switch to dribble feed at 372.
Pre-act 2 = .5	400 – 0.5 = 399.5	Final fill valve closes at 399.5.

3.8 Batch

The standard batch program is used for batching up to three separate items. Ingredients 1 through 3 use setpoints and pre-acts 1 through 3 respectively. Ingredients are batched one at a time. Free falling product can be accounted for with the use of pre-act values (PA1 – PA3). This feature must be enabled before attempting to use.

3.8.1 Enter a Target

Pressing TARE or SAMPLE ENTER alone allows access to the subsets. PA 1 and PA 2 are the subsets for Targ 1.

3.8.1.1 Model 350

1. Press SELECT until *tArG1* is displayed.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*
3. Press TARE**.** Once the tare key is pressed, it is possible that *PA1* will be displayed if the pre-act parameter is enabled.

   If a value is desired, enter it in the same manner as the target weight was entered above. When the displayed value is correct, press TARE.

   If no value is to be entered or *PA1* is not displayed, press TARE to go to the next screen.
4. Repeat steps 2 and 3 until all targets and pre-acts are entered. Press TARE to return to the weigh mode.

3.8.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the desired target value with the numeric keys and press SAMPLE ENTER**.**
3. The *PA1* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
4. Repeat steps 2 and 3 for *tArG2, PA2, tArG3* and *PA3*.
5. Press SELECT to select the desired weigh mode parameter.

3.8.2 Start Batch

3.8.2.1 Activation Method

The batch begins with the selected activation method. The method is determined by the parameters in the setup mode. The deactivation of the setpoints is automatic. The desired target may be based on net or quantity (if counting is enabled).

Activation types

- Tare key – Press the TARE key to start the process. A tare weight will be set and the weight will switch to net zero.
- Remote key – Press the remote key switch.
- Auto-start – The process is automatically activated. It waits for a no-motion condition and then adds the target to the current displayed weight to achieve a ***relative*** cutoff value.

3.8.2.2 Annunciators

Batch Status	Annunciator Status	Setpoint Status (Requires Setpoint Option Board)
Fill 1	SP 1 Illuminated	Relay 1 Contacts Closed, Relay 2 and 3 Contacts Open
Fill 2	SP 2 Illuminated	Relay 2 Contacts Closed, Relay 1 and3 Contacts Open
Fill 3	SP 3 Illuminated	Relay 3 Contacts Closed, Relay 1 and 2 Contacts Open

3.8.3 Batch Example

With a system set up a system to make a 50,000 lb batch with water (30,000 lbs.), corn syrup (15,000 lbs.) and caramel color (5,000 lbs.), ingredient 1 should start with TARE and subsequent ingredients should auto-start.

Parameter Setting	Actual Cutoff Value	Comments
Target 1 = 30,000		Desired water weight.
Pre-Act 1 = 100	30,000 – 100 = 29,900	Water valve closes at 29,900 lbs. Free-fall will bring weight to 30,000.
Start 1 = Tare		Start water with TARE.
Target 2 = 15,000		Desired corn syrup weight.
Pre-Act 2 = 236	15,000 – 236 = 14,764	Corn syrup valve closes at 14,764 lbs. Free-fall will bring weight to 15,000.
Start 2 = Auto	Calculated cutoff value for corn syrup is added to current displayed weight	Start corn syrup when water is done and motion has stopped.
Target 3 = 5,000		Desired caramel coloring weight.
Pre-Act 3 = 142	5,000 – 142 = 4,858	Carmel coloring valve closes at 4,858. Free-fall will bring weight to 5,000.
Start 3 = Auto	Calculated cutoff value for caramel coloring is added to current displayed weight	Start caramel coloring when corn syrup is done and motion has ceased.

3.9 Discharge

The discharge program is designed for single-speed or dual-speed dispensing of product from a larger weigh vessel. Discharge is a loss-in-weight application similar in operation to the fill program. When a discharge is initiated, the scale automatically tares and comes to a net zero weight. The appropriate setpoints are activated and material is discharged until the decreasing net weight reaches the desired target value. Free falling product can be accounted for with the use of pre-act values (PA1 – PA3). This feature must be enabled before attempting to use.

3.9.1 Enter a Target

3.9.1.1 Model 350

1. Press SELECT until *tArG1* is displayed.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*
3. Press TARE**.** Once the tare key is pressed, it is possible that *PA1* will be displayed if the pre-act parameter is enabled.

   If a value is desired, enter it in the same manner as the target weight was entered above. When the displayed value is correct, press TARE.

   If no value is to be entered or *PA1* is not displayed, press TARE to go to the next screen.
4. Repeat steps 2 and 3 until all targets and pre-acts are entered.
5. Press TARE to return to the weigh mode.

3.9.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the desired target value with the numeric keys and press SAMPLE ENTER**.**
3. The *PA1* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
4. Repeat steps 2 and 3 until all targets and pre-acts are entered.
5. Press SELECT to select the desired weigh mode parameter.

3.9.2 Pre-acts

Pre-act 1 is used for dual-speed dispensing. Pre-act 1 specifies when the system should switch from fast-discharge to slow-discharge. When using a single-speed device, pre-act 1 should be set to 0 from the Setup Mode. Pre-act 2 specifies the point where the final cutoff should occur, regardless of a single-speed or dual-speed operation.

3.9.3 Start Discharge

3.9.3.1 Activation Method

The dispensing activation is limited to TARE or a remote key input. The deactivation of the setpoints is automatic. The desired target may be based on net or quantity (if counting is enabled).

The discharge begins with the selected activation method. The method is determined by the parameters in the setup mode.

The deactivation of the setpoints is automatic. The desired target may be based on net or quantity (if counting is enabled).

Activation types

- Tare key – Press the TARE key to start the process. A tare weight will be set and the weight will switch to net zero.
- Remote key – Press the remote key switch.

3.9.3.2 Annunciators

Discharge Status	Annunciator Status	Setpoint Status (Requires Setpoint Option Board)
Fast Discharge	SP 1 & SP 2 Illuminated	Relay 1 and 2 Contacts Closed
Slow (or Single-Speed) Discharge	SP 1 Illuminated	Relay 1 Contacts Closed
Fill Done or Pause	SP 1 & 2 Off	Relay 1 and 2 Contacts Open

3.9.4 Discharge Example

With a system set up to dispense ball bearings from a 50,000 lb weigh-bin and the fast-feed requiring an early cutoff to slow-feed, the following settings might be used to achieve accurate dispensing of 1000 bearings:

Parameter Setting	Actual Cutoff Value	Comments
Targ 1 = 1000	0 – 1000 = (-1000)	Desired quantity (decreasing value from a net zero: enter as a positive value).
Based = Qty		Targets are compared to quantity (P170 Enabled).
PA 1 = 200	1000 – 200 = 800 0 – 800 = (-800)	Switch to slow feed at –800 bearings (decreasing value from a net zero: enter as a positive value).
Start = TARE		Start discharge with TARE.
PA 2 = 15	1000 – 15 = 985 0 – 985 = (-985)	Final gate begins closing at 985 bearings. Delayed closure brings final quantity to 1000 (decreasing value from a net zero: enter as a positive value).

3.10 Fill and Discharge

The 'Fill and Discharge' program combines a fill operation with a discharge operation. This automates a single-speed vessel filling operation with a single-speed multiple dispensing function. Setpoint 1 is used for filling the vessel and Setpoint 2 is used for product discharge. Free falling product can be accounted for with the use of pre-act values (PA1 and PA2). This feature must be enabled before attempting to use.

3.10.1 Enter a Target

3.10.1.1 Model 350

1. Press SELECT until *tArG1* is displayed.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*
3. Press TARE**.** Once the tare key is pressed, it is possible that *PA1* will be displayed if the pre-act parameter is enabled.

   If a value is desired, enter it in the same manner as the target weight was entered above. When the displayed value is correct, press TARE.

   If no value is to be entered or *PA1* is not displayed, press TARE to go to the next screen.
4. Repeat steps 2 and 3 until all targets and pre-acts are entered. Press TARE to return to the weigh mode.

3.10.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the desired target value with the numeric keys and press SAMPLE ENTER**.**
3. The *PA1* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
4. Repeat steps 2 and 3 until all targets and pre-acts are entered.
5. Press SELECT to select the desired weigh mode parameter.

3.10.2 Pre-acts

Pre-act 1 is used for vessel filling. Pre-act 1 specifies the point where the final cutoff for the fill should occur. Pre-act 2 specifies the point where the final cutoff for the material discharge should occur.

Pre-act 1 controls setpoint 1. Pre-act 2 controls setpoint 2.

3.10.3 Activation Method

The fill and discharge functions begin with their selected activation methods. The deactivation of the setpoints is automatic. The desired target may be based on net or quantity (if counting is enabled).

Activation types

- Tare key – Press the TARE key to start the process. A tare weight will be set and the weight will switch to net zero.
- Remote key – Press the remote key switch.
- Auto-start – The process is automatically activated. It waits for a no-motion condition and then adds the target to the current displayed weight to achieve a ***relative*** cutoff value.

3.10.3.1 Annunciators

Status	Annunciator Status	Setpoint Status (Requires Setpoint Option Board)
Vessel Fill	SP 1 Illuminated	Relay 1 Contacts Closed
Vessel Discharge	SP 2 Illuminated	Relay 2 Contacts Closed
Fill Done or Pause	SP 1 & SP 2 Off	Relay 1 and Relay 2 Contacts Open

3.10.4 Pause

The 350/355 can pause setpoint operations. This is useful as a safety device, for mid-cycle operator breaks, mechanical adjustments, etc. This feature must be enabled before attempting to use.

When invoked, Pause deactivates all setpoints. The display will show: ***Tare= ~ Abort***. Pressing TARE will abort the current cycle; any other keypress will resume the cycle. The Pause feature has four settings:

Pause Setting	Action	Result
Keypad	350/355 Key Press	Current cycle paused – all setpoints deactivated.
Remote Key	Remote Key Contact Closure	Current cycle paused – all setpoints deactivated.
Both	350/355 Key Press OR Remote Key Contact Closure	Current cycle paused – all setpoints deactivated.

3.10.5 Fill and Discharge Example

Parameter Setting	Actual Cutoff Value	Comments
Targ 1 = 2000		Desired vessel fill target.
Based = Net		Targets are compared to net weight.
PA 1 = 5	2000 – 5 = 1995	Fill valve closes at 1995 lbs.
Start 1 = R-but		Start fill with remote key closure.
Targ 2 = 45	0 – 45 = (-45)	Desired discharge target (decreasing weight from a net zero: enter as a positive value).
PA 2 = 5	45 – 5 = 40 0 – 40 = (-40)	Discharge valve closes at (-40) lbs. (decreasing weight from a net zero: enter as a positive value).

3.11 Absolute Checkweigh

This program is commonly used for check-weigh applications where the accepted tolerance will be an absolute value between and upper and lower limit.

After a target weight is entered, upper and lower tolerances are entered as absolute values. The desired target may be based on gross weight, net weight, or quantity (if counting is enabled). Only the annunciators will light to indicator the setpoint status. Be sure to enter both the upper and limits. Failure to enter one of these values will cause a setpoint error. This feature must be enabled before attempting to use.

3.11.1 Enter a Target Value

3.11.1.1 Model 350

1. Press SELECT until *tArGL* is displayed. The low target value will need to be entered. Go to step 2.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*
3. Press TARE**.** Once the tare key is pressed, *tArGH* will be displayed. This is where the high target value will be entered. Enter this value in the same manner as the target weight was entered above. If the displayed value is correct, press TARE. The display will return to the gross mode.

3.11.1.2 Model 355

1. Press SELECT until *tArGL* is displayed.
2. Key in the low target weight with the numeric keys and press SAMPLE ENTER**.**
3. The *tArGH* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
4. Press SELECT to select the desired weigh mode parameter.

3.11.2 Start Checkweighing

The checkweigh applications do not have a start function. Simply put the item to be weighed onto the scale platter. An annunciator will illuminate to indicate whether the item is within tolerance.

3.11.2.1 Annunciators

In order for the annunciators to activate, the displayed value must be at least five graduations above zero.

Status	Annunciator Status	Annunciator Color (LED)
OVER	SP 1 Illuminated	Red
GOOD	SP 2 Illuminated	Green
UNDER	SP 3 Illuminated	Yellow

3.11.3 Absolute Checkweighing Example

With a system set up to check-weigh 50 lb. cement bags, the following settings might be used check-weigh bag from 49.5 to 51.5 lbs.:

Parameter Setting	Acceptable Values	Comments
Target = 50.00		Desired bag weight.
Low Value = 49.50	0 - 49.50 lbs.	Low acceptable range = 0 to 49.50 lbs.
Target Window	49.50 – 51.50 lbs	Good light within this range
High Value = 51.50	51.50 lbs. and above	High acceptable range = 51.50 lbs. and above

3.12 Target Deviation Checkweigh

The target deviation method uses a target value in which the upper and lower tolerances are deviated from the target. The upper and lower tolerances are fixed values. The accept window is varied by adding the high tolerance to the target and subtracting the low tolerance from the target. This feature is commonly used in check-weigh applications. The desired target may be based on gross weight, net weight or quantity (if counting is enabled). The annunciators will light on the indicator display or physical setpoints can be added. This feature must be enabled before attempting to use.

3.12.1 Enter a Target Value

3.12.1.1 Model 350

1. Press SELECT until *tArG1* is displayed. The target value will need to be entered. Go to step 2.
2. Press PRINT ▲ until the first digit of the new target is displayed. Press UNITS ▶ to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT ▲ four times

   DISPLAY READS ▶ *2*

   Press UNITS ▶ to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT ▲ once

   DISPLAY READS ▶ *20*

   Press TARE ⟵ to accept the target weight as 20

3. Press TARE. Once the tare key is pressed, *Lo* will be displayed. This is where the lower tolerance value will be entered. Enter this value in the same manner as the target weight was entered above. If the displayed value is correct, press TARE.

4. Press TARE. Once the tare key is pressed, *Hi* will be displayed. This is where the upper tolerance value will be entered. Enter this value in the same manner as the target weight was entered above. If the displayed value is correct, press TARE. The display will return to the gross mode.

3.12.1.2 Model 355

6. Press SELECT until *tArG1* is displayed.
7. Key in the target weight with the numeric keys and press SAMPLE ENTER.
8. The *Lo* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
9. The *Hi* value will be displayed. Key the in value with the numeric keys and press SAMPLE ENTER.
10. Press SELECT to select the desired weigh mode parameter.

3.12.2 Start Checkweighing

The checkweigh applications do not have a start function. Simply put the item to be weighed onto the scale platter. An annunciator will illuminate to indicate whether the item is within tolerance.

3.12.2.1 Annunciators

In order for the annunciators to activate, the displayed value must be at least five graduations above zero.

Status	Annunciator Status	Annunciator Color (LED)
OVER	SP 1 Illuminated	Red
GOOD	SP 2 Illuminated	Green
UNDER	SP 3 Illuminated	Yellow

3.12.3 Target Deviation Checkweighing Example

With a system set up to check-weigh ice cream containers, the following settings might be used to guarantee container weights from 1.98 to 2.04 lbs.:

Parameter Setting	Acceptable Values	Comments
Target = 10.00		Desired container weight.
Lo Value = 0.5	10.00 - 0.5 = 9.50	Low acceptable range = 9.50 to 10.00
Hi Value = 0.25	10.00 + 0.25 = 10.25	High acceptable range = 10.00 to 10.25

3.13 Batch 2

The batch 2 program is used for batching up to three separate items without using pre-act values. Ingredients 1 through 3 use setpoints 1 through 3 respectively. Ingredients are batched one at a time. The target values can only be set from the weigh mode by pressing the SELECT key.

After a batch is run all target values will be set back to 0. The target values will be set to 0 after accessing the setup mode or if power is cycled. If a new batch is started when all target values are set to 0 an error message *"No Targ"* will be displayed. This feature must be enabled before attempting to use.

3.13.1 Enter a Target

3.13.1.1 Model 350

1. Press SELECT until *tArG1* is displayed.
2. Press PRINT until the first digit of the new target is displayed. Press UNITS to accept the number displayed. Continue this step until the desired number is entered.

   Example: Target of 20

   Press PRINT four times

   DISPLAY READS ▶ *2*

   Press UNITS to accept the 2 that is displayed

   DISPLAY READS ▶ *2 .*

   Press PRINT once

   DISPLAY READS ▶ *20*

   Press TARE to accept the target weight as 20

   DISPLAY READS ▶ *20*
3. If more than one target is enabled, press SELECT to advance to the next target (e.g. *tArG2*). Repeat steps 2 and 3 until all values are entered.

3.13.1.2 Model 355

1. Press SELECT until *tArG1* is displayed.
2. Key in the target weight with the numeric keys and press SAMPLE/ENTER **.**
3. If more than one target is enabled, press SELECT to advance to the next target (e.g. *tArG2*). Repeat steps 2 and 3 until all values are entered.

3.13.2 Activation Method

The filling of each ingredient begins when one of three selectable start functions occur. Each ingredient may have its own start function. The deactivation of the setpoint is automatic. The desired targets may be based on net weight or quantity (if counting is enabled).

3.13.2.1 Annunciators

Status	Annunciator Status	Annunciator Color (LED)
Fill 1	SP 1 Illuminated	Relay 1 Contacts Closed, Relay 2 and 3 Contacts Open
Fill 2	SP 2 Illuminated	Relay 2 Contacts Closed, Relay 1 and 3 Contacts Open
Fill 3	SP 3 Illuminated	Relay 3 Contacts Closed, Relay 1 and 2 Contacts Open

3.13.3 Batch2 Example

With a system set up a system to make a 50,000 lb batch with water (30,000 lbs.), corn syrup (15,000 lbs.) and caramel color (5,000 lbs.), ingredient 1 should start with TARE and subsequent ingredients should auto-start.

Parameter Setting	Actual Cutoff Value	Comments
Target 1 = 30,000	Desired water weight.	Target 1 = 30,000
Based = Net	Targets are compared to net weight.	Based = Net
Start 1 = Tare	Start water with TARE	Start 1 = Tare
Target 2 = 15,000	Desired corn syrup weight.	Target 2 = 15,000
Start 2 = Auto	Start corn syrup when water is done and motion has stopped.	Start 2 = Auto
Target 3 = 5,000	Desired caramel coloring weight.	Target 3 = 5,000
Start 3 = Auto	Start caramel coloring when corn syrup is done and motion has ceased.	Start 3 = Auto

4.0 Troubleshooting

The Model 350/355 utilizes the following types of error messages: Operational Errors, Hardware Errors, Calibration Errors, Communication Errors, and Miscellaneous Errors.

4.1 Operational Errors

Code02	Under Load. Input signal is less than negative full scale. Check load cell wiring.
Code03	Over load input signal is greater than positive full scale. Use same checks as "under load" above.
Funct ~ Disbl	Attempted to perform a function disabled in the Setup Mode.
Code 04	The digits on the display have exceeded the six digit display capacity.
Code 05	Zero attempted beyond the value set.
Code 08	Input signal greatly exceeds the valid range. Check the load cell connection.
Tare ~ Error	Negative tare attempted when disabled.
Tare ~ GT FS	Tare value greater than full scale capacity.
Delay	Indicates that a motion delay is in effect (zero, tare, etc.).
Delay ~ Abort	Acknowledges that a motion delayed function was aborted.
Print ~ Abort	Acknowledges that a motion delayed print request was aborted.
Add ~ Load!	If displayed after performing a count sample, this message indicates that a larger sample size is required.
Out of ~ Range	Attempted to enter a value beyond the allowable range.
Need APS	A setpoint start is initiated and the setpoint is based on quantity and no piece weight has been established (start will not occur).
Edit Disbl	Unable to edit the time and date.

4.2 Miscellaneous Errors

T.X.YYYY	If catastrophic errors occur in the software, a trap error may occur and freeze the display with address information. (X = bank number and YYYY = the address of the trap error. Press any key five seconds after viewing message to reboot the unit).

4.3 Hardware Errors

Code00	An EPROM problem detected during power up.
A-D ~ Bad! ***Or Code17***	Problem with A/D chip detected. Disconnect any options installed and re-power the unit. Options are connected to the same serial lines as the A/D so they may prevent it from working properly.
Deflt ~ A-D	Bad A/D calibration values.
Re- ~ Boot!	EEPROM data could not be read. Attempting power-up reset.
Code21~E2rd	Error while reading data from EEPROM.
Code21~E2sd	Error while saving data to EEPROM.
Deflt ~ Setup	An error occurred when reading setup data from the EEPROM during power-up. All parameters are set to factory default.
Ch.XXXX	A checksum error occurred during power-up. All annunciators are lit. The EPROM integrity test failed or is improperly seated.
E2 ~ Full!	The EEPROM setup exceeds the memory capacity.
NoSpc ~ Free!	The current setup exceeds the setup RAM capacity.

4.4 Communication Errors

Par-Er	The selected parity does not match that of the connected device.
Buf-Er	The receive buffers capacity was exceeded. This indicates a handshaking problem.
Bit-Er	The stop bit of a received character did not occur when expected.
Trans~Hold1	Data transmission is inhibited due to a deasserted handshake on communication port 1. Press ZERO or CLR NO to abort transmission.
Trans~Hold2	Data transmission is inhibited due to a deasserted handshake on communication port 2. Press ZERO or CLR NO to abort transmission.
Error~BaudX	The X being either comm port 1 or comm. port 2. The baud rate selected is too high for the microprocessor rate.

5.0 Specifications

PERFORMANCE

Full Scale (F.S.)	Selectable 0 to 999,999
Resolution	20-bit A/D converter, 100,000d displayed, 1,000,000d internal
A/D Conversion	60 Hz
Zero Track	0 – 100% of Full Scale
Operating Temperature	-10°C to +40°C
Units of Measure	lb, kg, oz, g, lb-oz

ELECTRICAL

Power Requirement

350 Zinc Die Cast Enclosure

Input (J4): 12 – 26VAC / 12 – 36 VDC
Wall Transformer:
North American:
Input: 120VAC, 30W, 60 Hz
Output: 20VAC, 800mA
United Kingdom / Ireland:
Input: 230VAC, 28W, 50 Hz
Output: 20VAC, 800mA
Continental Europe:
Input: 230VAC, 28W, 50 Hz
Output: 20VAC, 800mA
IEC 320: (table top transformer with IEC 320 receptacle)
Input: 230VAC, 28W, 50 Hz
Output: 20VAC, 800mA

350/355 Stainless Steel Enclosure

Input (J10): 90 – 250VAC, 0.5A; 50/60 Hz (internal power supply version)
Input (J3): 12 – 36VDC, minimum 0.8A w/no options or 1.25A w/options installed (internal power supply version)

Excitation Voltage	10 VDC
Excitation Current	180 mA max. / (6) 350Ω bridge
F.S. Signal Input	0.1 mV/V min – 20 mV/V max
Signal Connection	4 lead or 6 lead with sense

PROCESS CONTROL

Remote Input	Programmable 1 momentary contact closure (100ms minimum): TARE, PRINT, ZERO

COMMUNICATION

Comm 1	RS232 bi-directional serial port standard, or RS-485 or 20mA optional
Comm 2	TTL port for optional Fiber Optic Module
Data Output	16 selectable fixed-format transmissions or 2 custom formats (programmable via RS232)

Protocol	Selectable
Baud Rate	150 – 115200 bps

DISPLAY

LED	6-digit weight display, 0.8” (22mm) height 11 LED annunciators for operational status
LCD (350 Only)	6-digit weight display, 1.0” (25.4mm) height 12 LCD annunciators for operational status. Built in LCD status bargraph

KEYPAD

350	Five key, durable elastomeric rubber
355	22 key, full numeric, durable elastomeric rubber

ENCLOSURE

Zinc Die Cast	Black powder coat paint, self-standing on flat surface
Wall/Ceiling Mount	Optional stainless steel swivel bracket
Stainless	Washdown stainless steel enclosure w/stainless steel swivel bracket (table, wall or ceiling mount)

OPTIONS

Analog Output Module	0–10 VDC/5mA, 0–20mA/10V, 4–20mA/10V, electrically isolated, 16 bit resolution with up to 10 updates per second response time, mounts internal to enclosure
Relay Output Module	Three (3) solid-state 24–280 VAC, 1A with up to 10 updates per second response time, mounts internal to enclosure or three (3) 3– 60 VDC, 2A
Wall Mount Kit	Swivel bracket/stand for zinc die cast enclosure
Panel Mount Kit	Mounts zinc die cast enclosure to user panel Cutout: 7.33” – 7.45”w x 5.25” – 5.37”h x 2.25”d 186.2 – 189.2mm x 133.4 – 136.4mm x 57.2mm
Two Option Mount Kit	Mounts up to two option boards inside the stainless enclosure
Battery Power Supply Kits	Two versions: one mounts inside the stainless steel enclosure, the other mounts inside the die cast enclosure
Splash Shield	Durable adhesive plastic that adheres to the front surface of the stainless steel enclosure model
20 mA Current Loop	Enables the communication port to be a digital 20 mA current loop port.
Fiber Optic Transceiver	Model 350/355 stainless steel, installs in the safe area and connects to a Model 350/355. Allows setpoints and/or analog output options. Communicates with hazardous area indicator via fiber-optic cable.

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