# DIGITAL FILL CONTROL

## For The 225 Weight Indicator

### Installation, Setup and Operation Manual

**ISO**
**REGISTERED 9001**

# INTRODUCTION

The Digital Fill Control (DFC) is a single ingredient filling system, with single or two speed relay control outputs that can automatically control material filling and dumping or decumulative filling. The DFC controls relays in an external enclosure and adds a number of features to the Model 225 indicator. Note that the DFC is only available in a single scale configuration.

# LOGIC LEVEL OUTPUTS

Your Model 225 indicator has logic level outputs that can be used to control peripheral devices used to manage the flow of material or signal when the weight is within preset limits. Note that these outputs (defined on the next 3 pages) are at logic level and cannot drive external devices directly. Solid-state relays can be used to accept the logic level output from the 225 and in turn, drive the external device.

## Output Cable Installation
1.  If the rear panel of the indicator has been removed, proceed to step 2. Otherwise, remove the 14 acorn nuts securing the rear panel to main housing
2.  Loosen a gland connector for the cable.
3.  Slip the cable through the gland connector and into the enclosure.
4.  Remove 2 inches of the cable outer insulation jacket
5.  Next, remove 1/4 inch of insulation from each of the wires.
6.  Connect each of the wires to the Remote Outputs terminal block (P19 or P18).
7.  To terminate a wire, use a small flat blade screwdriver and press down on the release bar for the terminal. Insert the wire into the terminal opening. Remove the screwdriver, allowing the release bar to return to its original position, locking the wire in place.
8.  Repeat procedure until all wires are in place.

## AC and DC Output Relay Board(s)
The AC and DC Output Relay Boards are mounted in an external junction box for use with the 225 Indicator. The RB4-ACOUT and RB4-DCOUT contains one board and supports four outputs (jumper selectable). The RB8-ACOUT and RB8-DCOUT contains two boards and supports eight outputs. The relay board used in all boxes is (Cardinal p/n 8539-C062-0A). Connect the devices to be controlled as shown in Figures No. 1 (AC) or 2 (DC).
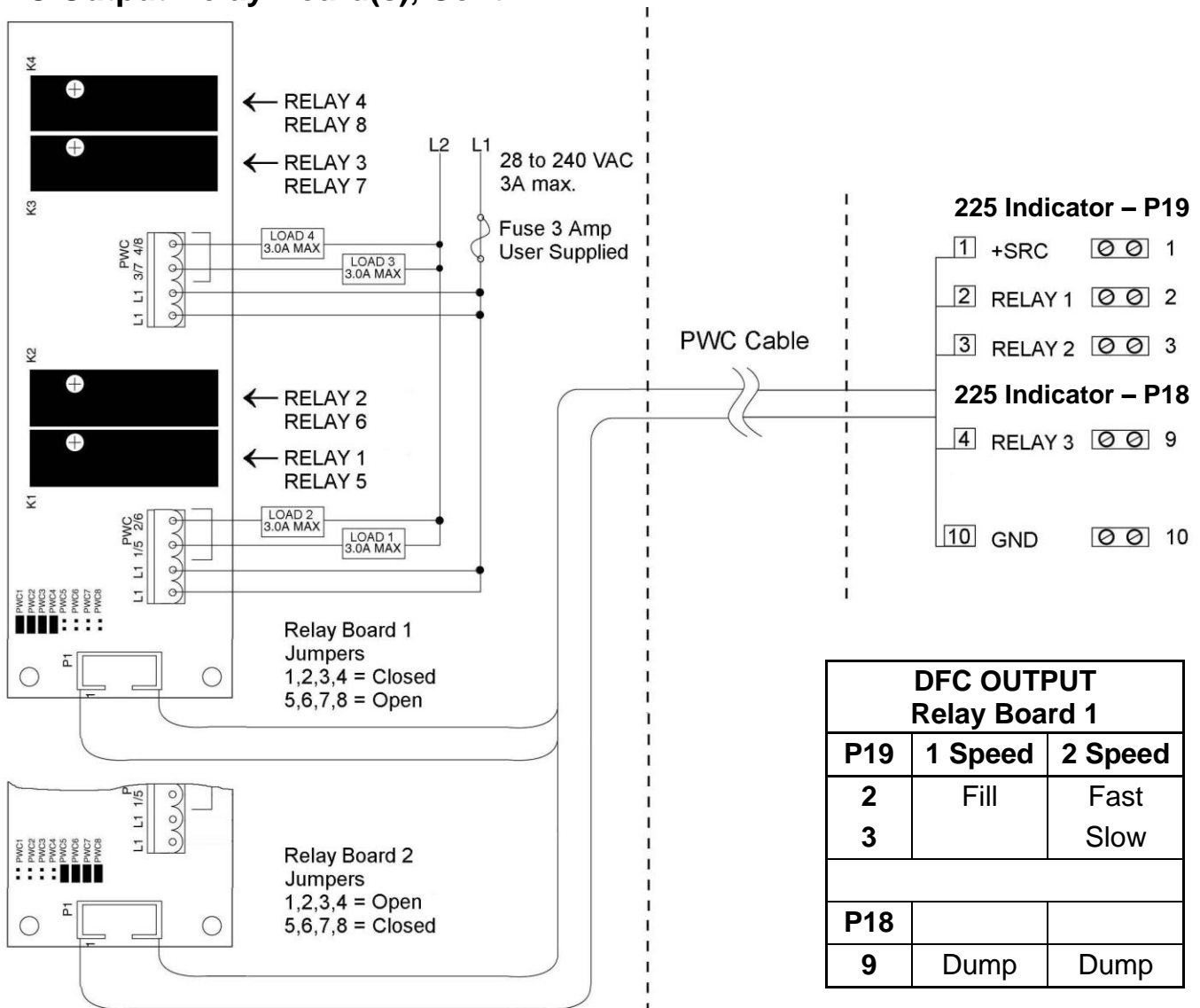
The individual relays can be configured to be on (closed) or off (open) at weights under the preset weight then switch at the preset weight from on-to-off or off-to-on by setting the under weight condition to on or off during setup and calibration or setup review.

| OUTPUT (closed) | 28 to 240VAC @ 3A maximum for each plug-in relay |
|---|---|
| OUTPUT (closed) | 3 to 60VDC @ 3A maximum for each plug-in relay |
| CONTROL INPUT | 5VDC @ 12mA from the 225 main pc board assembly P8 |
| CONNECTION | Removable plug-in screw terminals for up to 14 AWG wire |

**NOTE!** All relays are the normally-open type that will open when power to indicator is lost.

# LOGIC LEVEL OUTPUTS, CONT.

## AC Output Relay Board(s), Cont.



**Relay Box Assembly RB4-ACOUT or RB8-ACOUT**

**Figure No. 1**

| DFC OUTPUT Relay Board 1 | | |
|---|---|---|
| **P19** | **1 Speed** | **2 Speed** |
| **2** | Fill | Fast |
| **3** | | Slow |
| | | |
| **P18** | | |
| **9** | Dump | Dump |

## Relay Box Cable Wire Number to Relay Number Table

The relay box cable wire numbers correspond to the 225 indicator P19 terminal connections.

| CABLE WIRE NUMBER | RELAY NUMBER (Set Proper Jumpers) | CABLE WIRE NUMBER | RELAY NUMBER (Set Proper Jumpers) |
|---|---|---|---|
| 1 | +SRC (For AC Input Relays) | 6 | 5 |
| 2 | 1 | 7 | 6 |
| 3 | 2 | 8 | 7 |
| 4 | 3 | 9 | 8 |
| 5 | 4 | 10 | GND |

# LOGIC LEVEL OUTPUTS, CONT.

## DC Output Relay Board(s), Cont.



RELAY 4
RELAY 8

RELAY 3
RELAY 7

DC  DC
−   +

3 to 60 VDC
3A max.

LOAD 4
3.0A MAX

LOAD 3
3.0A MAX

Fuse 3 Amp
User Supplied

PWC
K1 K2 3/7 4/8

RELAY 2
RELAY 6

RELAY 1
RELAY 5

LOAD 2
3.0A MAX

LOAD 1
3.0A MAX

PWC
K1 K2 1/5 2/6

Relay Board 1
Jumpers
1,2,3,4 = Closed
5,6,7,8 = Open

K1 K2 1/5

Relay Board 2
Jumpers
1,2,3,4 = Open
5,6,7,8 = Closed

PWC Cable

**225 Indicator – P19**

| 1 | +SRC | ⊘ ⊘ | 1 |
| 2 | RELAY 1 | ⊘ ⊘ | 2 |
| 3 | RELAY 2 | ⊘ ⊘ | 3 |

**225 Indicator – P18**

| 4 | RELAY 3 | ⊘ ⊘ | 9 |
| 10 | GND | ⊘ ⊘ | 10 |

| DFC OUTPUT Relay Board 1 | | |
|---|---|---|
| P19 | 1 Speed | 2 Speed |
| 2 | Fill | Fast |
| 3 | | Slow |
| | | |
| P18 | | |
| 9 | Dump | Dump |

**Relay Box Assembly RB4-DCOUT or RB8-DCOUT**

**Figure No. 2**

# 225 DFC OPTIONAL RELAY FOR RB3

4.4" (11.2 cm)

2.6" (6.6 cm)

HEIGHT 0.9" (2.4 cm)

LINE 3    LINE 2    LINE 1
IN  OUT   IN  OUT   IN  OUT

VWRB 3

INPUT 5V

PWC 3  GND    PWC 2  GND    PWC 1  GND

MOUNTING DIMENSION
4" (10 cm)

0.25" (0.65 cm)

LINE 3 IN
LINE 3 OUT
LINE 2 IN
LINE 2 OUT
LINE 1 IN
LINE 1 OUT
LINE 120 VAC

CAUTION! HIGH VOLTAGE

225 INDICATOR
P15

LOGIC 3 IN
LOGIC 2 IN
LOGIC 1 IN
LOGIC GROUND
LOGIC: 5 VDC

4
3
2
10
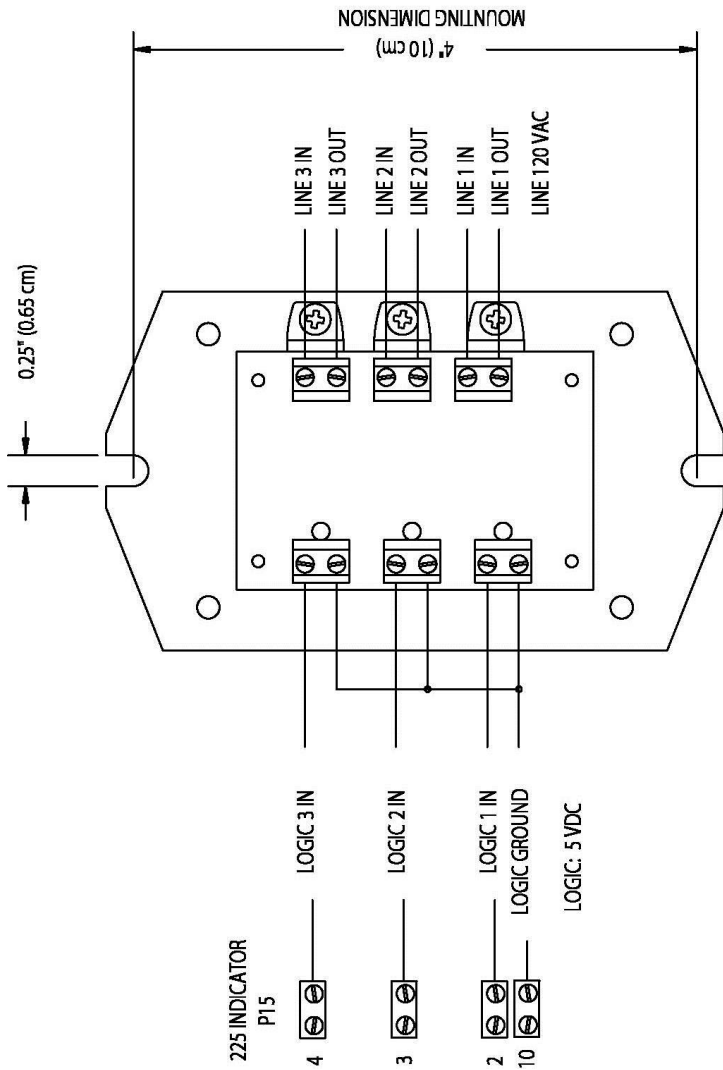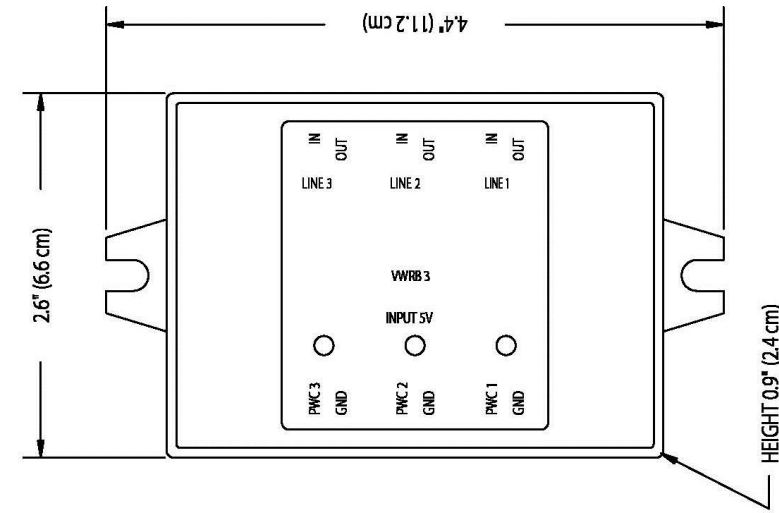
NOTE:
1. MOUNTING & WIRING BY CUSTOMER.
2. WIRING SHALL BE PERFORMED BY LICENSED ELECTRICIAN ONLY.
3. THIS MODULE IS NOT PROVIDED WITH ANY WIRING ENTRIES.
4. ASSEMBLY MUST MEET ALL LOCAL ELECTRICAL WIRING CODES.
5. THE METAL MOUNTING PLATE MUST BE CONNECTED TO ELECTRICAL SAFETY GROUND.

**Figure No. 3**

# MAIN PCB

**CAUTION!** This board contains static sensitive components. Improper handling can result in damage to or destruction of the components or board. Such actual and/or consequential damage IS NOT covered under warranty.
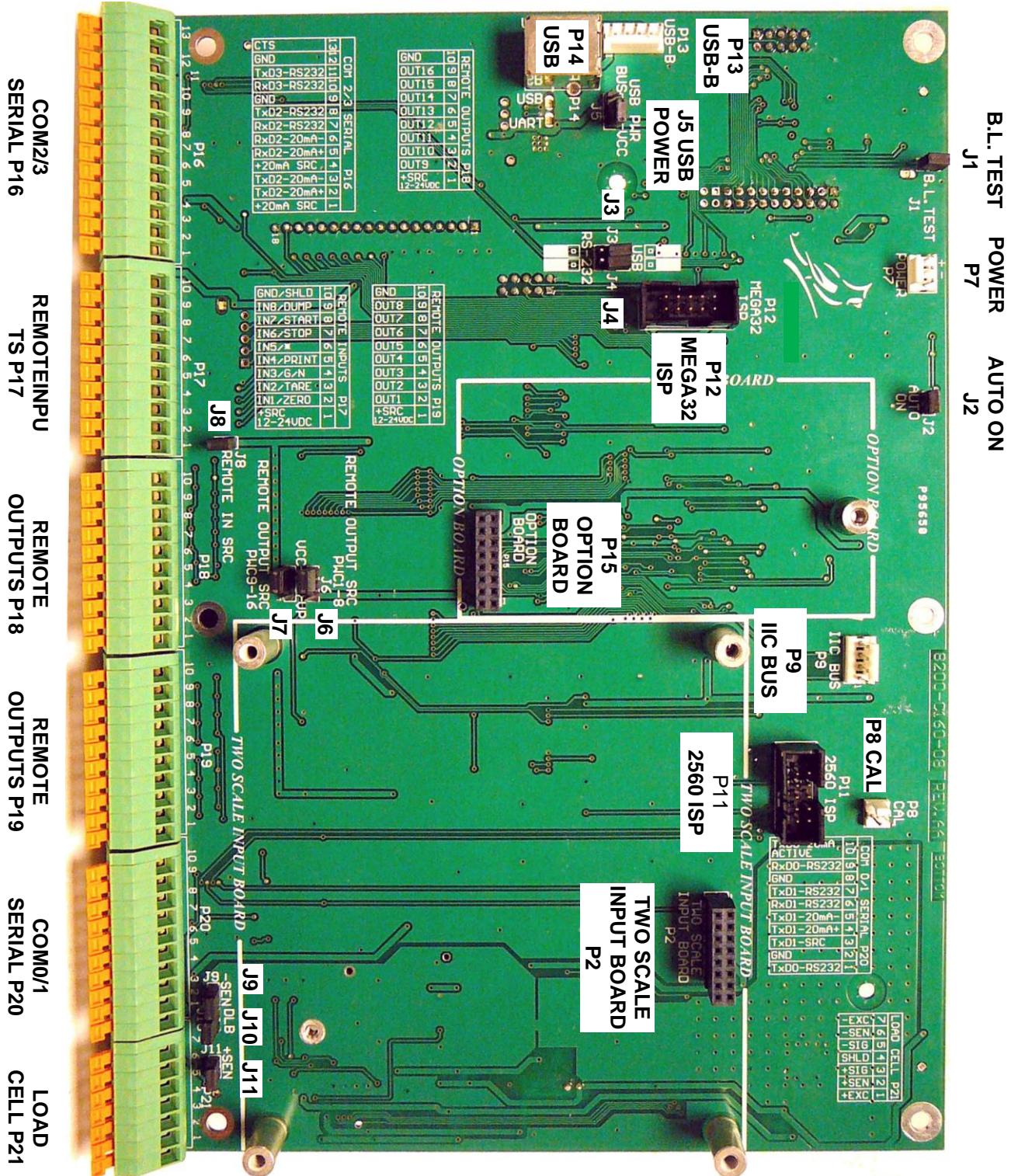


**Figure No. 4**

# MAIN PC BOARD, CONT.

## Main PCB Jumpers

### J1 (TEST) – B.L. TEST
When installed, this jumper will turn the backlight on, ignoring the `BACK LITE=` setting.

### J2 (AUTO ON) – AUTO-ON
When installed, this jumper will cause the indicator to power on automatically whenever power is applied to the power input connector.  If power is lost momentarily and then reapplied, the indicator will turn on without pressing the **ON** key.

### J3 AND J4 – RS-232/USB PORT
These jumpers control whether COM3 is RS-232 and uses Serial I/O P16 (pins 10, 11, and 12) or USB and uses the USB-B header, P13 or USB-B port, P14.

### J6 (PWC1-8) and J7 (PWC9-16) – REMOTE OUTPUT SRC (SOURCE)
When installed, these jumpers allow the 225 indicator to supply (source) 5 VDC (VCC) or 15VDC (VP) to a solid-state relay or other load of 200 ohms or greater.  To operate from the 5 VDC (VCC) or 15VDC (VP) source, the positive connection from the relays must be connected to P18 (P19) pins 2 through 9 and the negative wire from the relays to P18 (P19) pin 10 (GND).  See Figure No. 4 for the location of connector P18 and P19.

   For completely isolated outputs, J6 (J7) must be open (on one pin only or removed) and the user must provide 5 to 24 VDC to P18 (P19) pin 1 (+SRC) and a ground return to the load. The load must still be 200 ohms or greater and P18 (P19) pin 10 (GND) is not connected.

### J8 (REMOTE IN) – REMOTE IN SRC (SOURCE)
When installed, this jumper allows the 225 indicator to supply (source) 5 VDC to a remote input circuit.  Connecting P17 pins 1 through 9 to P17 pin 10 (GND) through a switch will cause the selected action.  See Figure No. 4 for connector P17 location.

   For completely isolated inputs, J8 must be open (on one pin only or removed) and the user must provide 5 to 24 VDC to P17 pin 1 (+SRC) and a ground return to the switch connected to P17 pin 2 through 9.  Note that P17 pin 10 (GND) is not connected.

### J9 (-SEN) and J11 (+SEN) – SENSE JUMPERS
If the sense leads are NOT used, you must install jumpers at J9 and J11 (near the P20 and P21 terminal blocks).  These jumpers connect the sense leads to the excitation leads.  If sense leads ARE used (as in motor truck scales), these jumpers should be open (on one pin only or removed).

### J10 (DLB) – DEAD LOAD BOOST JUMPER
For very low dead loads (less than 10% of the combined load cell capacity), connect J8, the DLB (dead load boost) jumper on the printed circuit board.

# MAIN PC BOARD, CONT.

**P8 (CAL) – CALIBRATION INHIBIT JUMPER**

When installed, this jumper inhibits (prevents) calibration of the 225 indicator.

When removed, CAL will be shown on the display (to indicate calibration is allowed) and calibration of the 225 indicator can be performed.

# RE-INSTALLING THE REAR PANEL

After all terminations have been made,

1. Remove the excess cable from the instrument enclosure and securely tighten each of the cable gland connectors.

   - Do not over-tighten these connectors but make certain they are snug.

   - **DO NOT USE TOOLS!** Finger-tighten only!

2. Ensure any unused gland connectors are plugged and replace the rear panel.

3. Secure the rear panel with the 14 acorn nuts removed earlier.

4. Follow a diagonal pattern when tightening the acorn nuts.

# SETUP
## Digital Fill Control (Mode of Operation = 2)

The 225 Digital Fill Control (DFC) is a single ingredient filling control system.  The DFC operation features are selected in the Digital Fill Control Menu.  To access the setup menus:

1.  Press the **SHIFT** key and then the **RED SQUARE** navigation key.
2.  The display will change to show the `SETUP/REVIEW MENU`.
3.  Press the **1** key and then the **ENTER** key.
4.  The display will change to show `SETUP MENU #1`.

With SETUP MENU #1 displayed, the current setting for the `10. MODE OF OP=X` parameter will be shown.  Press the **1** and **0** keys and then the **ENTER** key.  The display will change to show the `MODE OF OPERATION MENU`.  Press the **2** key and then the **ENTER** key to select `2. Digital Fill Ctrl`.  The display will change to the `Digital Fill Control Menu`.

The Digital Fill Control Menu shows the selections for the Digital Fill Control setup parameters.

```
         Digital Fill Control Menu
1.  SPEED=X              6.  DUMP GATE=XXX
2.  GATE SEQ=X XXXX      7.  AUTO DUMP=XXX
3.  AUTO TRIM=XXX        8.  DECUMLATE=XXX
4.  AUTO PRINT=XXX       9.  AUTO TARE=XXX
5.  MULT DROP=XXX
Enter Selection:   0   EXIT
```

## 1. SPEED=X – SINGLE OR TWO SPEED OPERATION
The 225 Digital Fill Control may be configured for either single speed (`SPEED=1`) or two speed (`SPEED=2`) filling operation.

If the current setting is acceptable, continue to `2. GATE SEQ=X XXXXX`.

To change the current setting, press the **1** key and then the **ENTER** key.  `SPEED=X` will be displayed at the bottom of the display.  Using the numeric keys, enter the new setting and then press the **ENTER** key to save it.

If **SINGLE SPEED OPERATION** is selected (`SPEED=1`), proceed to the `3. AUTO TRIM` section to continue setup. `2. GATE SEQ=X XXXXX` will display as `2. GATE SEQ=N/A` (Not Applicable).

If **TWO SPEED OPERATION** is selected (`SPEED=2`), proceed to `2. GATE SEQ=X` to continue setup.

# SETUP, CONT.

## 2. GATE SEQ=X XXXXX – GATE SEQUENCE

**IMPORTANT!  This selection requires two speed operation (SPEED=2).**

If the current setting is acceptable, continue to 3. AUTO TRIM=XXX.

To change the current setting, press the **2** key and then the **ENTER** key.
GATE SEQ=X will be displayed at the bottom of the display.  Using the numeric keys, enter the new setting and then press the **ENTER** key to save it.

### GATE SEQ=1 AB->B

The GATE SEQ=1 AB->B selection will begin the operation with both outputs on until the weight reaches the FAST= value.  At that weight, the "A" (fast) output will be turned off. The "B" (slow) output will remain on until the SLOW= (final preset wt.) weight is reached. At that weight, the "B" (slow) output will be turned off.

### GATE SEQ=2 A->B

With A->B selected, the operation will begin with only the "A" (fast) output on until the weight reaches the FAST= value.  At that weight, the "A" (fast) output will be turned off and the "B" (slow) output will be turned on.  The "B" (slow) output will remain on until the SLOW= (final preset wt.) weight is reached.  At that weight, the "B" (slow) output will be turned off.

### GATE SEQ=3 CHTR (Chatter)

The Chatter Gate selection and will control one relay.  It begins the operation with the "A" (fast) output on until the weight reaches the FAST= value.  At that weight, the "A" (fast) output will be turned off.  The "A" (now as slow) output will then be turned on for a preset time (CHATTER=, 0 to 99.9 seconds, set at the DFC PRESET PARAMETERS MENU).  The "A" (slow) output will be turned off and the weight value will be compared to the SLOW= (final preset wt.) value less the TRIM= value.  This will be repeated until the weight is equal to or greater than the SLOW= (final preset wt.) value less the TRIM= value.

## 3. AUTO TRIM=XXX – AUTO TRIM WEIGHT COMPENSATION

The trim weight is a weight value used to compensate for material that will continue to flow after a "stop" action has been initiated.  The stop action will be initiated at the preset weight value minus the trim weight value.  A manual trim value for the material can be entered, after exiting SETUP, by pressing the **PRESET** key and selecting 3. TRIM= XXXXXX.  If auto trim is selected (AUTO TRIM=YES), trim weight compensation will be automatically adjusted after each fill, based on the difference between the preset weight and the weight actually filled.  If automatic trim is not selected (AUTO TRIM=NO), the manually entered trim weight value will not be automatically adjusted after each fill.

The display will show 3. AUTO TRIM=XXX where XXX is the current value.  If the current setting is acceptable, continue to 4. AUTO PRINT=XXX.

To change the current setting, press the **3** key and then the **ENTER** key.
AUTO TRIM=XXX will be displayed at the bottom of the display.  Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

# SETUP, CONT.

## 4. `AUTO PRINT=XXX` – AUTOMATIC PRINT

The automatic print feature will cause an optional printer to automatically record the total weight, time, and date of the fill at the conclusion of the fill.

The display will show `4. AUTO PRINT=XXX` where XXX is the current value. If the setting displayed is acceptable, continue to `5. MULT DROP=XXX`.

To change the current setting, press the **4** key and then the **ENTER** key. `AUTO PRINT=XXX` will be displayed at the bottom of the display. Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

## 5. `MULT DROP=XXX` – MULTIPLE DROP CAPABILITY

This feature allows up to 9 (equal) drops to be made to achieve the preset weight value. Note that although the drops are equal amounts, the trim feature will adjust the last drop to compensate for any over-fill or under-fill of the previous drops so the total of all drops will equal the total preset weight value.

The display will show `5. MULT DROP=XXX` where XXX is the current value. If the setting displayed is acceptable, continue to `6. DUMP GATE`.

To change the current setting, press the **5** key and then the **ENTER** key. `MULT DROP=XXX` will be displayed at the bottom of the display. Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

## 6. `DUMP GATE =XXX` – DUMP GATE ENABLE

This feature is used when filling a hopper instead of a truck on a scale. The optional dump gate can be manually, automatically, or remotely controlled. Note that output 16 is used to activate the dump gate and that display annunciator 16 will turn on when the dump is active.

The display will show `6. DUMP GATE =XXX` where XXX is the current value. If the setting displayed is acceptable, continue to `7. AUTO DUMP`.

To change the current setting, press the **6** key and then the **ENTER** key `DUMP GATE=XXX` will be displayed at the bottom of the display. Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

> **NOTE!** If `6. DUMP GATE =NO`, the `AUTO DUMP` selection will automatically be set to `AUTO DUMP=N/A`.

## 7. AUTO DUMP=XXX – AUTOMATIC DUMP MODE

Selection of this feature is disabled if 6. DUMP GATE =NO. If 7. AUTO DUMP=YES, the completed fill operation will discharge automatically and the DUMPING          16 will appear in the weight display to indicate that dumping is taking place.  The discharge will continue until the scale weight returns to zero within the ZERO TOL=XX value.

If AUTO DUMP=NO, the indicator will halt after discharging, the **DUMP** key will appear on the display and the indicator will wait for the manual discharge of the material.  The material must be discharged before the next fill can be started.

To discharge the material, press the **DUMP** key.  DUMPING          16 will appear on the display to indicate the dumping is taking place.

## AUTOMATIC RECYCLING

Automatic recycling can be achieved by connecting the START remote input to the GND remote input terminal on the Remote Input terminal block P17.  This will cause the 225 to always "sense" a START command when the weight is within the ZERO TOL=XX range and automatically begin another filling operation.

The display will show 7. AUTO DUMP=XXX where XXX is the current value.  If the setting displayed is acceptable, continue to 8. DECUMLATE.

To change the current setting, press the **7** key and then the **ENTER** key.
AUTO DUMP=XXX will be displayed at the bottom of the display.  Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

> **NOTE!**  If 6. DUMP GATE=NO, AUTO DUMP is forced to 7. AUTO DUMP=N/A and cannot be changed.

## 8. DECUMLATE=XXX – DECUMULATIVE OPERATION (Weigh Out)

In a decumulative filling operation **(Weigh Out)**, the weigh hopper is first filled with a desired amount of material.  When the DFC operation is started, the material is dumped until the proper amount has been discharged.

The display will show 8. DECUMLATE=XXX where XXX is the current value.  If the setting displayed is acceptable, continue to 9. AUTO TARE.

To change the current setting, press the **8** key and then the **ENTER** key.
DECUMLATE=XXX will be displayed at the bottom of the display.  Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

> **NOTE!**  If DECUMLATE=YES, 9. AUTO TARE will be forced to
> 9. AUTO TARE=YES.

# SETUP, CONT.

## 9. AUTO TARE =XXX – AUTOMATIC TARE

This feature is a two-position toggle that controls whether the fill operation fills to the gross or net weight on the scale. If the automatic tare is selected, the weight on the scale will be used as the TARE weight before beginning the fill operation. Note that with automatic tare enabled (ON), the operation will fill to the target net weight and with automatic tare disabled (OFF), the operation will fill to the gross weight.

The display will show 9. AUTO TARE =XXX where XXX is the current value. If the setting displayed is acceptable, continue to the next section.

To change the current setting, press the **9** key and then the **ENTER** key.
AUTO TARE =XXX will be displayed at the bottom of the display. Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

> **NOTE!** If 8. DECUMLATE=YES, 9. AUTO TARE=XXX is forced to 9. AUTO TARE=YES and cannot be changed.

# DIGITAL FILL CONTROL OPERATION

The Digital Fill Control (DFC) feature has been designed to control the filling or discharge of material automatically using relays in an external enclosure. The DFC adds a number of operation features to the indicator. Those features include:

## Start Validation

Pressing the **START** key changes the display to $START=YES$ to verify you are sure you want to start the fill operation. To start the fill, press the **ENTER** key. To abort the fill, press the **NO** key and then the **ENTER** key.

## Single or Two Speed or Two Speed Operation

The single speed operation provides a single output control. The two speed operation provides a two relay (fast and slow) output control.

The two speed operation without chatter gate control, depending on the gate sequence ($GATE\ SEQ=1,2$, or $3$) setting at setup, can begin the fill operation with one or two relay output controls (fast and slow) on until the weight reaches the $FAST=$ value. At that weight, the fast output will be turned off and only the slow output will remain on until the $SLOW=$ weight less the $TRIM=$ weight value is reached. At that weight, the slow output will be turned off and the fill operation is complete.

## Two Speed Operation with Chatter Gate

The two speed with Chatter Gate operation uses only the fast relay control output. It will begin the fill operation with the fast relay control output on and cycle the fast relay from continuous on to chatter when the weight reaches the $FAST=$ weight value. At that weight, the fast relay will be turned on for the preset chatter time ($CHATTER=$) 0.1 to 99.9 seconds and then turned off. When the weight reading becomes stable, the weight value will be compared to the $SLOW=$ value less the $TRIM=$ value. If the weight is less than the preset $SLOW=$ value less the $TRIM=$ value the fast relay will again be turned on for the preset chatter time (**$CHATTER=$**) 0.1 to 99.9 seconds and then turned off. This will be repeated until the container weight is equal to or greater than the $SLOW=$ value less the $TRIM=$ value.

## Dump Gate (Auto Dump or Manual Dump)

If $7.\ AUTO\ DUMP=YES$, the completed fill operation will immediately discharge and $DUMPING\qquad 16$ will appear in the weight display to indicate that dumping is taking place. The discharge will continue until the scale weight returns to zero within the $ZERO\ TOL=XX$ value. At this point the dump gate timer will turn on and maintain the gate open until the timer has expired at which time the gate will close.

If $7.\ AUTO\ DUMP=NO$, the indicator will halt after filling and will wait for the **DUMP** key to be pressed (or a remote manual dump command) before the material is discharged and the next fill started.

# DIGITAL FILL CONTROL OPERATION, CONT.

## Auto Trim

Auto Trim option is a feature that will automatically adjust the trim weight value, after every completed fill operation, to achieve accurate fill weights. For example, if the preset SLOW= weight is set at 5000 lbs and the TRIM= is set at 100 lbs, the cut-off will be at 4900 lbs. If the actual weight of the trim is 50 lbs, the total weight of the material discharged will be 4950 lbs, not 5000. With Auto Trim enabled, starting with the next operation, the TRIM= value will be gradually adjusted until the 5000 lbs preset weight total is achieved. Depending on how much difference there is between the programmed trim and the actual trim, it may take several operations before the full preset weight amount is reached.

## Auto Print

This feature, when enabled, produces an automatic print of the delivered net or gross weight at the end of each fill operation. The following is an example of the information printed.

```
14:54   11/02/2008
#53
  12000 lb G
      00 lb T
  12000 lb N
```
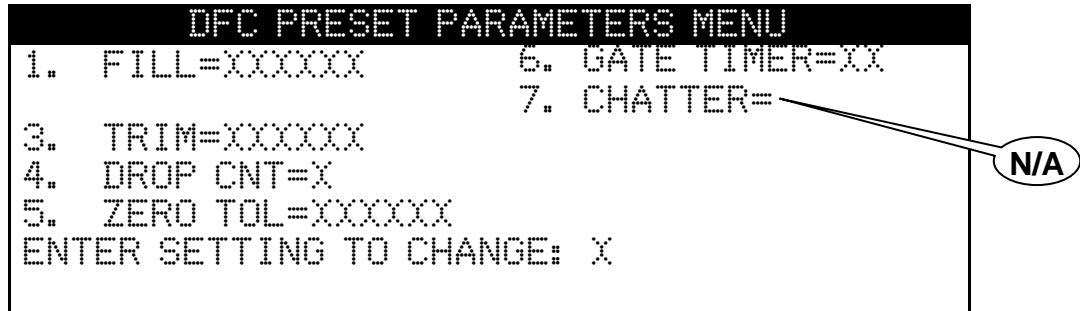
## Multi-Drop

This feature allows up to 9 (equal) drops to be made manually to achieve the preset weight value. Note that although the drops are equal amounts, the trim feature, if enabled, will adjust the last drop to compensate for any over-fill or under-fill of the previous drops so the total of all drops will be as close as possible to the total preset weight value.

# SINGLE SPEED OPERATION

## DFC PRESET PARAMETERS MENU

With the indicator showing gross or net weight press the **PRESET** key. The display will change to show the DFC PRESET PARAMETERS MENU.

```
    DFC PRESET PARAMETERS MENU
1.  FILL=XXXXX         6.  GATE TIMER=XX
                       7.  CHATTER=
3.  TRIM=XXXXX
4.  DROP CNT=X
5.  ZERO TOL=XXXXX
ENTER SETTING TO CHANGE: X
```

N/A

1. FILL=XXXXX, where XXXXX is the current value of the stored target weight. If the displayed value is acceptable, proceed to TRIM=XXXXX, the prompt for the trim weight.

   To change the target weight, press the **1** key and then the **ENTER** key. The display will show FILL=XXXXX at the bottom of the display. Use the numeric keys to enter a new value and then press the **ENTER** key to save it.

3. TRIM=XXXXX, where XXXXX is the current value of the stored trim weight. The trim weight is weight of the material that will continue to flow after the output control is switched to off. The filling will be automatically stopped when the displayed weight equals the target weight minus the trim weight.

   If the displayed value is acceptable, continue to 4. DROP CNT=X.

   To change the trim weight, press the **3** key and then the **ENTER** key. The display will show TRIM=XXXXX at the bottom of the display. Use the numeric keys to enter a new value and then press the **ENTER** key to save it.

   If AUTO TRIM=YES was selected in setup, the trim weight will be recalculated and stored in memory and the displayed weight value added to the PRESET and GROSS or NET accumulators.


If MULTI DROP=YES was selected during setup:

4. DROP CNT=X, where X is the current value of the stored drop count. The drop count is the number of individual manual drops to be used in the fill operation. If the displayed value is acceptable, continue to 5. ZERO TOL=XXXXX.

   To change the drop count, press the **4** key and then the **ENTER** key. The display will show DROP CNT=X at the bottom of the display. Use the numeric keys to enter a new value of 0 – 9 and then press the **ENTER** key to save it.

# SINGLE SPEED OPERATION, CONT.

## Dump Gate Parameters

If `DUMP GATE=YES` was selected during setup:

`5. ZERO TOL=XXXXX`, where XXXXX is the current value of the Zero Tolerance.  Zero tolerance is the maximum weight at which the scale is considered empty.  If the displayed value is acceptable, continue to `6. GATE TIMER=XX`.

To change the current setting, press the **5** key and then the **ENTER** key.
`ZERO TOL=XXXXX` will be displayed at the bottom of the display.  Using the numeric keys, enter the new value and then press the **ENTER** key to save it.

`6. GATE TIMER=XX` where XX is the current value of the gate timer.  The gate timer is used to control the amount of time (in seconds) the gate is left open after the weight falls below the zero tolerance (`ZERO TOL=`) weight value.  If the displayed value is acceptable, press the **ENTER** key to return to weighing mode.

To change the current setting, press the **6** key and then the **ENTER** key.
`GATE TIMER=XX` will be displayed at the bottom of the display.  Using the numeric keys, enter the new value and then press the **ENTER** key to save it.  Allowable values are: 0 through 99 seconds.

If `AUTO DUMP=YES` was selected in setup, the completed fill operation will immediately begin to discharge.  The weight display will change from net to gross.  The display **PAUSE** and **STOP** will be replaced with `DUMPING    16` to indicate that dumping is taking place.  The discharge will continue until the scale weight returns to zero within the `ZERO TOL=XX` value.

# SINGLE SPEED OPERATION, CONT.

## To Start a Fill Operation

**1.** Press the **START** key. If the gross weight is within the zero tolerance weight (and `DUMP GATE=YES`), the indicator will tare off the gross weight and display zero net weight (if `AUTO TARE=YES`) and the display will show `START=YES`. Note that if the Gross weight is not within the zero tolerance weight, `-CHECK ZERO-` will be momentarily displayed.

**2.** Press the **ENTER** key to start the fill operation, *or* press the **NO** key and then the **ENTER** key to abort the operation.

**3.** The indicator will display **PAUSE** and **STOP** with PWC 1 or 1 & 2 (depending on the `GATE SEQ=` value) above the **PAUSE**. FILL output control will turn on and the fill operation will begin.

**4.** When the displayed weight reaches the `FILL=XXXXXX` value (minus the `TRIM=XXXXXX` value), the fast output control is switched off and the display **PAUSE** and **STOP** keys are changed to **START** and **PRESET**.

**5.** When all motion stops, the weight will be printed (if a printer is attached and automatic print was enabled in setup). The following is an example of the information printed.

```
 14:54   11/02/2008
#53
  12000 lb G
      00 lb T
  12000 lb N
```

**6.** If `AUTO TRIM=YES` was selected in setup, the trim weight will be recalculated and stored in memory and the displayed weight value added to the PRESET and GROSS or NET accumulators.

**7.** If `AUTO DUMP=YES` was selected in setup, and the completed fill operation will immediately begin to discharge. The weight display will change from net to gross. The display **PAUSE** and **STOP** will be replaced with DUMPING    16 to indicate that dumping is taking place. The discharge will continue until the scale weight returns to zero within the `ZERO TOL=XX` value

# SINGLE SPEED OPERATION, CONT.

## To Suspend (Pause) or Stop (Abort) a Fill Operation in Progress

The fill operation can be suspended (paused) or stopped (aborted) by the operator if needed by pressing the **PAUSE or STOP** key.

**1.** To pause the filling operation, press the **PAUSE key**.

**2.** The fill operation will be suspended (paused) and the **PAUSE** key will change to **RESTRT**.

**3.** To continue the fill operation, press the **RESTRT** key.

**4.** To stop (abort) the fill operation, press the **STOP** key.

> **NOTE!** If `DUMP GATE=YES`, the fill operation cannot be restarted after a STOP if the material weight is above the zero tolerance.

**5.** The 225 will return to normal operation, displaying the Gross weight on the scale.

# TWO SPEED OPERATION

## Weight Parameter Presets

With the indicator showing gross or net weight press the **PRESET** key. The display will change to show the `DFC PRESET PARAMETERS MENU`.

```
       DFC PRESET PARAMETERS MENU
1.  FAST=XXXXX        6. GATE TIMER=XX
2.  SLOW=XXXXX        7. CHATTER=XX
3.  TRIM=XXXXX
4.  DROP CNT=X
5.  ZERO TOL=XXXXX
ENTER SETTING TO CHANGE: X
```

1. `FAST=XXXXX`, where XXXXX is the current value of the FAST FILL weight. If the displayed value is acceptable, proceed to `SLOW=XXXXX`, the prompt for the trim weight.

   To change the FAST FILL weight value, press the **1** key and then the **ENTER** key. The display will show `FAST=XXXXX` at the bottom of the display. Use the numeric keys to enter a new value and then press the **ENTER** key to save it.

2. `SLOW=XXXXX`, where XXXXX is the final preset weight value of the stored weight. If the displayed value is acceptable, proceed to `TRIM=XXXXX`, the prompt for the trim weight.

   To change the final preset weight value, press the **2** key and then the **ENTER** key. The display will show `SLOW=XXXXX` at the bottom of the display. Use the numeric keys to enter a new value, then press the **ENTER** key to save it.

3. `TRIM=XXXXX`, where XXXXX is the current value of the stored trim weight. The trim weight is weight of the material that will continue to flow after the output control is switched to off. The filling will be automatically stopped when the displayed weight equals the target weight minus the trim weight.

   If the displayed value is acceptable, continue to `4. DROP CNT=X`.

   To change the trim weight, press the **3** key and then the **ENTER** key. The display will show `TRIM=XXXXX` at the bottom of the display. Use the numeric keys to enter a new value, then press the **ENTER** key to save it.

# TWO SPEED OPERATION, CONT.

If `MULTI DROP=YES` was selected during setup:

4. `DROP CNT=X`, where X is the current value of the stored drop count. The drop count is the number of individual manual drops to be used in the fill operation. If the displayed value is acceptable, continue to `5. ZERO TOL=XXXXX`.

To change the drop count, press the **4** key and then the **ENTER** key. The display will show `DROP CNT=X` at the bottom of the display. Use the numeric keys to enter a new value, then press the **ENTER** key to save it.

**NOTE!** If `MULTI DROP = NO` in setup, then `4. DROP CNT=1` and can not be changed.

## Dump Gate Parameter Presets

If `DUMP GATE=YES` was selected during setup:

5. `ZERO TOL=XXXXX`, where XXXXX is the current value of the Zero Tolerance. Zero tolerance is the maximum weight at which the scale is considered empty. If the displayed value is acceptable, continue to `6. GATE TIMER=XX`.

To change the current setting, press the **5** key and then the **ENTER** key. `ZERO TOL=XXXXX` will be displayed at the bottom of the display. Using the numeric keys, enter the new value and then press the **ENTER** key to save it.

6. `GATE TIMER=XX` where XX is the current value of the gate timer. The gate timer is used to control the amount of time (in seconds) the gate is left open after the weight falls below the zero tolerance (`ZERO TOL=`) weight value. If the displayed value is acceptable, continue to `7. CHATTER=XX.X`.

To change the current setting, press the **6** key and then the **ENTER** key. `GATE TIMER=XX` will be displayed at the bottom of the display. Using the numeric keys, enter the new value and then press the **ENTER** key to save it. Allowable values are: 0 through 99 seconds.

If `AUTO DUMP=YES` was selected in setup, the completed fill operation will immediately begin to discharge. The weight display will change from net to gross. The display **PAUSE** and **STOP** will be replaced with `DUMPING      16` to indicate that dumping is taking place. The discharge will continue until the scale weight returns to zero within the `ZERO TOL=XX` value.

# TWO SPEED OPERATION, CONT.

## To Start a Fill Operation

**1.** Press the **START** key.  If the gross weight is within the zero tolerance weight (if DUMP GATE=YES), the indicator will tare off the gross weight and display zero net weight (if AUTO TARE=YES) and the display will show START=YES.  If the Gross weight is not within the zero tolerance weight, –CHECK ZERO– will be momentarily displayed.

**2.** Press the **ENTER** key to start the fill operation, *or* press the **NO** key and then the **ENTER** key to abort the operation.

**3.** When the fill starts, the indicator will display PAUSE    STOP, the appropriate fill annunciator(s) (dictated by the GATE SEQ=X XXXXX setting in setup) and the appropriate control output(s) will turn on.

**4.** When the displayed weight reaches the FILL=XXXXX value, the fast output control is switched off, the slow fill will continue to the SLOW=XXXXX (final preset weight) (minus the TRIM=XXXXX value) and the display **PAUSE** and **STOP** keys are changed to **START** and **PRESET**.

**5.** When all motion stops, the weight will be printed (if a printer is attached and automatic print was enabled in setup).

**6.** If AUTO TRIM=YES was selected in setup, the trim weight will be recalculated and stored in memory and the displayed weight value added to the PRESET and GROSS or NET accumulators.

**7.** If AUTO DUMP=YES was selected in setup, and the completed fill operation will immediately begin to discharge.  The weight display will change from net to gross.  The display **PAUSE** and **STOP** will be replaced with DUMPING    16 to indicate that dumping is taking place.  The discharge will continue until the scale weight returns to zero within the ZERO TOL=XX value

## To Suspend (Pause) or Stop (Abort) a Fill Operation in Progress

The fill operation can be suspended (paused) or stopped (aborted) by the operator if needed by pressing the **PAUSE or STOP** key.

**1.** To pause the filling operation, press the **PAUSE key**.

**2.** Fill operation will be suspended (paused) and the **PAUSE** key will change to **RESTRT**.

**3.** To continue the fill operation, press the **RESTRT** key.

**4.** To stop (abort) the fill operation, press the **STOP** key.

   **NOTE!**  If DUMP GATE=YES, the fill operation cannot be restarted after a STOP if the material weight is above the zero tolerance.

**5.** The 225 will return to normal operation, displaying the Gross weight on the scale.

# DECUMULATIVE FILL OPERATION

The decumulative operation is used when weighing material as it is removed from of a weigh hopper. The fast output control will be used to open and close a weigh hopper gate. The Digital Fill Control Menu settings for the DFC decumulative operation to function properly are as follows:

```
MODE OF OP=2
DUMP GATE=NO
DCUMULATE=YES
CLR TARE=NO
```

## To Start a Decumulative Fill Operation

The weigh hopper must be filled with material that equals or exceeds the amount of the preset value to be removed; otherwise an error message ─CHECK MATL─ will be displayed. This message indicates that the weigh hopper does not have enough material to meet the requirement of the preset weight value. Either more material has to be added to the weigh hopper or the preset weight value must be reduced.

1. With the indicator showing Gross Weight (the G annunciator displayed), press the **START** key.

2. The display will change to show START=YES.

3. Press the **ENTER** key to start the fill (discharge) operation, *or* press the **NO** key and the **ENTER** key to abort the operation.

4. The indicator will switch to the Net Weight mode (the N annunciator displayed) displaying zero weight and the fast relay control output will turn on beginning the operation.

5. The weight will increase on the display. The weight is actually being discharged from the weigh hopper.

6. When the displayed weight reaches the preset value, the fast relay control output and annunciator will turn off and the fill operation will stop.

7. When all motion stops, the weight will be printed (if a printer is attached and automatic print was enabled in setup).

8. The indicator will remain in the NET mode. The Gross Weight can be viewed by pressing the **NET/GROSS** key to select the Gross Weight.

9. The operation is repeated, by pressing the **START** key, until the weigh hopper weight goes below the preset weight value. At that time, more material must be placed into the weigh hopper.