MAGNUM SYSTEMS

SMOOT TAYLOR PRODUCTS

# Electronic Weigh Controller

## Model T3000


Quick Reference Guide

2205 Jothi Avenue
Parsons, Kansas 67357-8460

Toll Free: 888.882.9567
Phone: 620.421.5550
Fax: 620.421.5531

Web: www.magnumsystems.com
Email: customerservice@magnumsystems.com

**Machine Serial Number:** _____

**Sales Order Number:** _____

# Important Information

# Conventions

## Safety Alert Symbols

The ⚠ symbol indicates that important personal safety information follows. Carefully read this text for the warnings information it contains. The signal word next to each safety alert symbol is defined as:

| | | |
|---|---|---|
|  | ***WARNING*** | *Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.* |
|  | **CAUTION** | Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or damage to the equipment. This single word may also be used to identify unsafe practices. |
|  | **LOCKOUT** | This symbol will be used anytime that a procedure requires an electrical lockout. |

**Static Sensitive Symbols for Equipment Handling Instructions**

The  and  symbols indicate important handling guidelines for proper handling of electronic equipment modules and sensitive components for the prevention of potential damage that could be caused by ESD (electrostatic discharge) during routine maintenance, handling and transportation.

| | | |
|---|---|---|
|  | **ESD NOTICE** | To protect against ESD damage to electronic equipment, follow the Standard ESD Prevention Procedures. Failure to use protective measures could result in permanent equipment damage, either immediate or latent, when handling modules. |
|  | **ESD NOTICE** | To protect against ESD damage to electronic equipment containing components, follow the Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components. |

**Standard Electro-static Discharge (ESD) Prevention Procedures**
The T3000 Electronic Weigh Controller utilizes electronic components that are susceptible to damage from Electro Static Discharge. Anytime electronic components are serviced, the following precautions should be followed:

1. Wear a commercial grounding wrist strap.
2. Remove power from the machine.
3. Leave all static sensitive components in their protective packaging until it is time to install the component
4. Always hold static sensitive components by their metal mounting tabs, and/or by their edges

**Important/Notable Information**
While all of the information in this manual is important, there are some pieces of information where special attention needs to be paid to avoid equipment damage, or specific information needs to be emphasized. This information will be handled as follows:

> ***Important:*** *Indicates an operating procedure, practice, or condition that, if not strictly followed, may cause equipment damage.*
>
> ***Note:*** *Indicates additional information or emphasizes a topic related to the subject being discussed.*

**Personal Safety Instructions**
Only qualified personnel should work on or around this equipment. To ensure the highest degree of personal safety, all who use this equipment are required to become thoroughly familiar with all safety instructions contained in this document. Successful and safe operation of this equipment depends upon proper handling, operation, maintenance, and application of associated equipment. Refer to Appendix A of this manual for all safety instructions. Safety instructions are also provided where they apply within the body of this manual.

***WARNING***

*No information in this manual supersedes or replaces your employer's operating rules. If there is a difference in instructions between this manual and the employer's operating rules, follow the most restrictive instruction.*

*Deliberate misuse or abuse of electronic components may cause personal injury or death.*

**Warranty Information**

Seller warrants that the Products will operate substantially in conformance with Seller's published specifications, when subjected to normal, proper and intended usage by properly trained personnel, for a period of one (1) year from the date of shipment to Buyer (the "Warranty Period"). Seller agrees during the Warranty Period, provided it is promptly notified in writing upon the discovery of any defect and further provided that all costs of returning the defective Products to Seller are pre-paid by Buyer, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said specifications. Replacement parts may be new or refurbished, at the election of Seller. All replaced parts shall become the property of Seller. Replacement Parts will be billed at list price, unless they are approved as warranty replacement item(s) by the service technician and the technical services manager.

**Lamps, fuses, bulbs and other expendable items are expressly excluded from the warranty. Seller's sole liability with respect to equipment, materials, parts or software furnished to Seller by third party suppliers shall be limited to the assignment by Seller to Buyer of any such third party supplier's warranty, to the extent the same is assignable. In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage of the Products or (vii) use of the Products in combination with equipment or software not supplied by Seller. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by the warranty, the Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.**

**Field Service**

Magnum Systems can provide field service for start-up assistance, training, maintenance, and replacement/spare parts for new and existing equipment. Contact Magnum Systems at (888) 882-9567.

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# T3000 Electronic Weigh Controller

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# T3000 Electronic Weigh Controller

## General Description

The T3000 is a digital control panel that has been jointly designed by Magnum Systems and Hardy Instruments. The T3000 has the ability for total monitoring and instrument control. This control set allows the operator to monitor and control a variety of scale applications. The T3000 features the following functions:

- Weigh Meter
- Alphanumeric Keypad
- Function Keys
- Enter/Exit Keys
- Arrow Keys
- Infrared (IR) Port


**Figure 1.** T3000 Control Panel

The front of the T3000 is equipped with a weigh meter, an alphanumeric keypad, directional arrow keys, function keys, an infrared PDA port, an Enter key, and an Exit key.

The display has one line of large fonts (5.5 alphanumeric characters), and four lines of smaller fonts (20 alphanumeric characters). The top line displays the currently selected container weight. The remaining four lines are used for monitoring system statuses, historical data, and configuration settings of the machine.

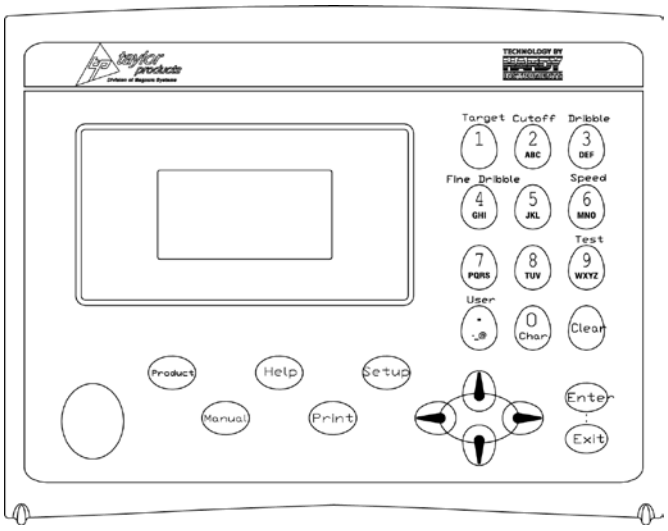


**Figure 2.** T3000 Faceplate

The function keys on the faceplate are used to access the different function menus. The five function keys are:

- Product – Pressing this key will access the Product Menu. The Product Menu is used to setup or modify the Target Weight, Target Window, Cutoff and Dribble weights, Fill speeds, and four user defined variables. The T3000 can be configured to fill up to 25 different products.
- Help – Pressing this key will access the Help Menu. This key does not function when at the Standby Menu.
- Setup – Pressing this key will access the Configuration Menu. The Configuration Menu is where detailed configuration tasks are performed.
- Manual – Pressing this key will allow the operator to either tare the scale or to zero the scale.
- Print – Pressing this key will initiate a print, if the printer port has been configured. Configuration of the printer port is accomplished via the Configuration Menu, which is accessed through the use of the Setup key.

The T3000 has been loaded with software that defines all functions of the controller.

# Important System Definitions

The definitions discussed here will provide some information on different menus and individual settings within the menu system.

- ***Adjust Product*** – This feature in the program will allow the operator to program up to 25 different types of products into the weigh controller. Each product type is assigned a name (Product 1 through Product 25) from the factory. The menu under each product name will provide different variables for the operator to configure the machine for that specific product. The concept behind this is to allow a company to be able to package multiple products with one machine, while limiting the setup time between product changes.
- ***Application Type*** – This setting is set prior to shipping the machine. DO NOT change this setting, or the machine will not run.
- ***Auto Tare*** – This feature will allow the weigh controller to zero itself after a new package has been installed for filling. When using this feature, it is important that the operator does not have their hand, or anything else coming in contact with any portion of the weigh mechanism. This feature also includes some internal controls to set the Tare Limit and the Min AutoTare.
- ***Fill Cycles*** – This setting is the number of fills before the meter has to be restarted. If set to 0, it indicates that the meter will start automatically every time. If the setting is set to a number other than zero, it indicates that the controller will run for that number of fill cycles and will then start. For example, if it is set to 1, it indicates that the unit will run one fill cycle and will then stop. If it is set to 2, the unit will run two fill cycles and will then stop.
- ***Fill Proof Menu*** – This is the menu that is used for proofing switches. This function looks at the switches on the pneumatic valves to determine if the valves are open or closed.
- ***Fill Timer*** – An internal timer mechanism to the weigh controller that compares the amount of time required to fill a package to the preset limit. This setting is used to stop a fill cycle in the event of a problem to avoid damage to the machine and wasting product. For example, if the fill cycle is initiated on an auger packer, and the belts have come off or broken, the motor will turn but the package will not fill. After the preset fill timer setting has been reached, the weigh controller will stop the fill cycle, even if the package has not achieved the target weight. If the fill timer expires, an alarm message is displayed on the weight display that reads " !FEED TIMEOUT ALARM! ". Once the condition has been corrected, the operator will press the Clear key and the weight display message will read " RESUME FILLING FAST PRESS ENTER ".
- ***Instrument ID*** – This is the name that has been given to the controller.
- ***Jog*** – This function is designed to add product to a package that comes up short of the target weight. However, this feature is typically disabled by setting it to 0.000. If this parameter is set to any other setting, it may cause operational problems that are hard to diagnose. If this function is desired, contact Magnum Systems technical assistance for instruction on how to configure it.
- ***Motion Tol***. – Used at the start and the end of the fill cycle, this parameter specifies how close weight readings must be to each other before the scale is considered to no longer be in motion. The controller samples the weight readings at one-second increments. These readings are continuously compared to the motion tolerance value. Lower values will result in increased accuracy, but will also slow the controller significantly. A higher value will result in less accuracy, but the controller will be quicker in providing the final package weight. This parameter MUST be set to a number higher than 0. Also, a low setting may result in the controller overriding the Wait Timer.

- ***Operator ID*** – This is a 3-character designation that is assigned to an individual. Operator IDs are used by the weigh controller for tracking purposes. The manager will determine the level of access for each ID and will assign passwords to each ID, if a password is assigned at all. Those operators who have been assigned a high-level password can access all levels of the menu system. Those operators who have been assigned a medium-level password can access menus that have been assigned a Medium or Low security level. Those operators who have not been assigned a password can only access menus that have been assigned a Low security level.
- ***Printer Port*** – The T3000 is equipped with a port on the rear of the unit that allows for a printer to be connected. The internal software also has a Printer Port menu that allows the operator to configure the port.
- ***Scale Cap*** – Is used in loss in weight applications, when the refill mode is on. It is used to determine if the refill weight is too high.
- ***Set LCD Contrast*** – This menu option will allow the operator to set how the LCD screen appears. Different environments have different lighting conditions. This part of the program allows the operator to adjust the settings to provide maximum viewability.
- ***Smart PreAct*** – If turned on, this function may automatically adjust both the dribble and final cutoff points by comparing the weight of the previous two packages to the target weight.
- ***Speeds*** – This setting allows the operator to select the type of fill cycle that the machine will use. It can be set to single, dual, or triple.
- ***Totalizer*** – A function that is used in bulk packaging, or in some cases in printing. The function adds a number of weighments and provides a total. The function is not used for single cycle fills.
- ***Unit of Measure*** – This setting allows the operator to switch between several standard or metric units of measure. The choices are pounds (Lb), ounces (Oz), kilograms (Kg), or grams (G).
- ***Wait Timer*** – This internal timer setting determines the amount of time that the weigh controller will wait after the fill cycle has ended before it will check the weight of the package. This timer can be over ridden by the Motion Tolerance value if the Motion Tolerance value is set too low and motion has not ceased at timeout.
- ***WAVERSAVER*** – This setting allows the operator to adjust how vibrations from surrounding equipment will affect the operation of the weight display. When the operator keys in a value, in Hertz (Hz), the controller will filter out any vibration frequencies above that setting. A lower number setting will eliminate most vibrations from affecting the weighment. However, the reaction of the weight display will be very slow. A higher number setting will filter out less vibration, but reaction of the weight display will be quicker. Magnum Systems typically recommends a setting of approximately 3.5 Hz.
- ***Zero Tolerance*** – This setting controls how close the zero process has to get to zero for the controller to accept the reading as zero. For example, if you set the Zero Tolerance to 0.01, the controller would accept a scale reading within the range of -0.01 to 0.01 as zero.

# Menu System

The T3000 menu system is designed to allow machine operators to manage the operation of the machines that they are using. The following paragraphs will provide detail on the function of each of the menus and how to make changes to individual parameters.

**CAUTION** Never change a parameter without understanding how that change will affect the operation. ALWAYS make note of the current setting before changing it. This is done in case the change adversely affects the operation of the machine and the parameter needs to be restored to its previous setting.

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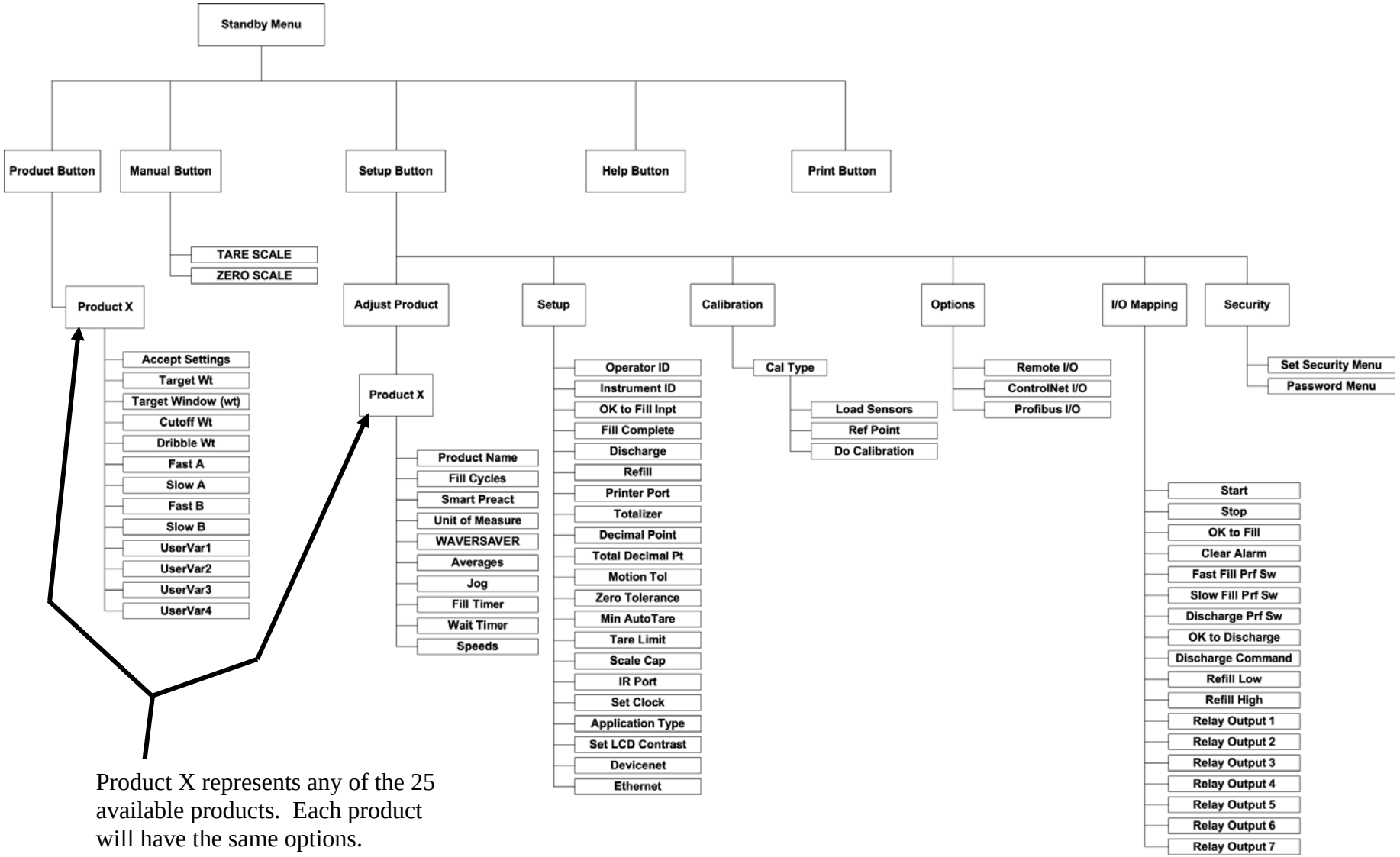


**Figure 3.** T3000 Menu Tree

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# Standby Display

The Standby Display is the screen that is displayed during normal operation. This screen shows the current weight that is currently being applied to the load cell, the product name of the product that is currently being filled, the AMT REQ (target weight) for that product, the FINAL package weight, and either the NET WT or GROSS WT, depending on how the screen is set. The operator can toggle between NET WT and GROSS WT by pressing the Enter key.

# Product Key

Pressing the Product key will access the Product Menu. The Product Menu is used to select the product that is going to be filled. The menu allows access to the 25 available product configurations. All 25 product configurations will be displayed, regardless as to whether they have all been configured or not. Each product configuration contains the specific parameters for packaging that specific product.

## Selecting a New Product

1. Press the Product key.
2. Use the up/down arrow keys to scroll through the list of 25 available products. Place the cursor next to the desired product name.
3. Press the Enter key.
4. The menu for that product will appear and the cursor will be located next to the Accept Settings line. To accept the product as is, press the Enter key.

## Making Product Adjustments From the Product Menu

1. Press the Product key.
2. Use the up/down arrow keys to scroll through the list of 25 available products. Place the cursor next to the desired product name.
3. Press the Enter key.
4. Use the up/down arrow keys to scroll through the available parameters and position the cursor next to the parameter that needs adjusted. Each parameter, and its description, is listed below.
    a. Accept Settings – Used to accept the current product settings
    b. Target Wt – Used to set the desired final package weight
    c. Target Window (wt)
        i. Target Max – Used to set the upper tolerance of package weight
        ii. Target Min – Used to set the lower tolerance of package weight
    d. Cutoff Wt – Used to set the point where the filler will shut off.
    e. Dribble Wt (on dual set point units) – Used to set the point where the controller will switch from bulk feed rate to the dribble feed rate.
    f. Fast A (on dual set point units) – Used to set the bulk feed rate during the bulk stage.
    g. Slow A – Used to set the bulk feed rate during the dribble stage.
    h. Fast B (on dual set point units) – Used to set the dribble feed rate during the bulk stage.
    i. Slow B – Used to set the dribble flow during dribble stage.
    j. UserVar1 – User defined variable 1
    k. UserVar2 – User defined variable 2
    l. UserVar3 – User defined variable 3
    m. UserVar4 – User defined variable 4
5. Key in the new parameter and press the Enter key.

6. The “Entry Accepted” message will flash in the line for that parameter. When all changes have been made, use the up/down arrows to navigate back to the Accept Settings line
7. Press the Enter key.
8. The Standby Menu should reappear with the new product listed.

***Note:*** *The Product Menu does not allow the operator to configure all of the parameters for each product. The operator must use the Adjust Product function from the Setup Menu. Refer to Adjust Product Menu in this document.*

# Help Key

The Help key is designed to provide answers for some common questions/situations that the operator may have. This function only works when the operator has accessed a menu system. It does not work when on the Standby Display screen. The user does not need to be logged in to use this function.

# Setup Key

When the operator presses the Setup key, the Configuration Menu appears. This menu allows personnel with the appropriate security clearance to setup and/or calibrate the machine. This menu will also allow for modifications to individual product configurations.

## Adjust Product Menu

This menu allows the operator to configure each of the 25 available products. Each product has the same parameters that must be setup.

- Product name – This parameter is where the user can define the name of the product being filled. The default naming for these configurations is Product 1 through Product 25. Magnum Systems recommends that when programming a new product configuration, the user should provide a new name for that configuration that tells the operator what that setting is going to be used for. For example, if the configuration is going to be used to package rice into 2 pound packages, the product name might be Rice, 2lb. However, the product name cannot be changed from the Product Menu.
- Fill Cycles – This setting is the number of fills before the meter has to be restarted. If set to 0, it indicates that the meter will start automatically every time. If the setting is set to a number other than zero, it indicates that the controller will run for that number of fill cycles and will then start. For example, if it is set to 1, it indicates that the unit will run one fill cycle and will then stop. If it is set to 2, the unit will run two fill cycles and will then stop. **DO NOT ADJUST**.
- Smart Preact – This parameter can be toggled ON or OFF. When ON, this feature will allow the controller to automatically adjust the cutoff point to compensate for changes in flow or density during production and achieve the desired final product weight. It also has a Preact Limit Menu, which is used to set the maximum change in Preact weight per cycle, if using Smart Auto Preact. When OFF, the controller will not make any changes to the cutoff points.
- Unit of Measure – The operator can select Lb, Oz, Kg, or G.

- WAVERSAVER – This setting will allow the operator to adjust how vibrations from surrounding equipment will affect the operation of the weight display. This parameter is a frequency setting and the unit of measure is Hertz (Hz). The controller will filter out any vibrations that are at a frequency that is higher than the current setting. Setting this parameter to a low frequency will filter out most of the vibrations, but will result in slower response from the weight display. A higher frequency setting will result in a faster response rate from the controller, but the controller will filter out less of the vibration. Magnum Systems recommends setting to 3.50 Hz.
- Averages – This is the number of weigh cycles that the controller will perform and average before displaying the package weight. Magnum Systems recommends setting to 10. A setting higher than this may result in a slow controller and may cause an unstable condition that is difficult to troubleshoot.
- Jog – The jog function allows the machine to correct for low package weights by "jogging" additional product into the package to bring the package weight up. This feature is typically not used and should be set to 0.00. This will disable the jog function. If this function is desired, contact Magnum Systems for configuration instructions.
- Fill Timer – This timer should be set to a value that is longer than the amount of time required to fill the package. This timer is used to determine the maximum amount of time that the controller will attempt to fill a package, regardless of any other setting.
- Wait Timer – This parameter is the amount of time that the controller will wait at the conclusion of a fill cycle before it will display the final package weight and accept/reject the package. Typically, this is set to 2.000 seconds. It can be adjusted as needed. This parameter will be overridden by the motion tolerance if the wait timer is set too low and motion still exists in the system when the fill cycle completes.
- Speeds – The fill speeds are adjustable between single, dual, or triple. This is dependent on the configuration of the machine.

## Setup Menu (a submenu of the Configuration Menu)

The Setup Menu has 21 different parameters that the operator can access and modify.

- Operator ID – A 3-digit alphanumeric code that is used to identify the operator of the machine. Designated by the manager. These IDs are not programmed in the T3000.
- Instrument ID – This information is used to identify the machine that the T3000 is controlling.
- OK to Fill Inpt – This parameter is preset at the factory. **DO NOT ADJUST**.
- Fill Complete – This parameter is preset at the factory. **DO NOT ADJUST**.
- Discharge – This parameter is preset at the factory. **DO NOT ADJUST**.
- Refill
    - Refill Menu
        - Refill – This parameter is preset at the factory. **DO NOT ADJUST**.
        - Initial Refill – This parameter is preset at the factory. **DO NOT ADJUST**.

- Printer Port
    - Printer Port Menu
        - Baud Rate – Used to determine the communication rate of the printer port.
        - Parity – Used to set the parity of the port. Choices are NONE, ODD, or EVEN.
        - Data Bits
        - Print prints – The user can choose between FILL, CYCLE, TOTALS, and SETUP. Can be used in conjunction with Totalizer to print weighments. Contact Magnum Systems for instructions on setting this feature up.
        - Auto Print – The user can toggle the auto print function ON/OFF.
- Totalizer – Typically this is left OFF. However, if using the controller in a bulk filling or in a printing application, this function may be used. Contact Magnum Systems for information on setting this feature up.
    - Totalizer Menu
        - Choose Totalizer
            - Totalizer Number
                - Total Wt
                - Total Count
                - Clear Totalizer
        - Clear All Totals
- Decimal Point – Used by the operator to set the decimal point location for the weight display. This parameter determines the accuracy of the weight that is displayed on the weight display.
- Total Decimal Pt – This sets the decimal setting for the totalizer. Typically set to zero, but can be set to another number, up to 6.
- Motion Tol – Used at the start and the end of the fill cycle, this parameter specifies how close weight readings must be to each other before the scale is considered to no longer be in motion. The controller samples the weight readings at one-second increments. These readings are continuously compared to the motion tolerance value. Lower values will result in increased accuracy, but will also slow the controller significantly. A higher value will result in less accuracy, but the controller will be quicker in providing the final package weight. This parameter MUST be set to a number higher than 0. Also, a low setting may result in the controller overriding the Wait Timer.
- Zero Tolerance
    - Zero Tolerance Menu
        - Zero Toler – This parameter is used set how close the weight must be to zero to be considered zero for the purpose of checking if the vessel has completely discharged.
        - Use Auto Zero. – The operator can use the left/right arrow keys to toggle the auto zero function ON/OFF. Auto zero, when turned ON, will zero the weight display automatically before the start of each fill cycle.
        - Azero Tol – This parameter is used to set the amount of tolerance that the auto zero function will accept.
        - AutoZero Time – This parameter determines the maximum zero time.
- Min AutoTare – Used to set the minimum amount of time that is used to tare the load cell before the fill cycle starts. The tare function begins immediately upon the “start fill” signal being captured. This timer is used to allow an initial disturbance to settle.

- Tare Limit – Used to set the maximum amount of correction that the AutoTare will be able to make without error.
- Scale Cap – Is used in loss in weight applications, when the refill mode is on.
- IR Port – Used to toggle the IR Port ON or OFF. When ON, this allows for infrared operation of the controller, via a Personal Data Assistant (PDA).
- Set Clock
    - Clock Setup Menu
        - Set Hours
        - Set minutes
        - Set month
        - Set day
        - Set year
        - Set time zone
- Application Type – This parameter is preset at the factory. **DO NOT ADJUST**.
- Set LCD Contrast – Used to adjust the contrast of the T3000 display for different ambient light conditions. Use the left/right arrow keys to adjust as needed.
- Devicenet – Used to toggle DeviceNet Port ON or OFF.
- Ethernet – Used to toggle Ethernet Port ON or OFF.

## Calibration Menu

The Calibration Menu is used to calibrate the weighing system of the T3000. There are two methods of calibration, based on the type of load cells that are used. The two methods are:

- TRAD – Used with traditional Hardy load cells.
- C2 – Used when Hardy C2 load cells have been installed on the filler.

When the operator selects CALIBRATION from the Configuration Menu, the CALIBRATION screen appears. There is one line on that screen, it is the Cal Type line. The currently selected method of calibration will appear at the far right on the Cal Type line. The operator can toggle between the two available methods using the left/right keys. Once the desired method appears on the screen, press the Enter key to access the screen for that calibration method.

Make sure that the machine is ready to be calibrated. Follow the steps below:

1. Make sure the load system is free of binding and that nothing is draped over the equipment, such as hoses, electrical cords, tubes, etc.
2. Verify that the load cell is mounted so that 100% of the load always passes vertically through the load cell at the same point.
3. Check all communication and power cables to be sure they are securely fastened to their connectors on the rear of the control panel.
4. Make sure that power is supplied to the controller. The panel display should illuminate.

    ***Important:*** *The operator MUST be logged in with the proper security level to initiate calibration. Once logged in, an access timer will run. Once the timer has expired (typically about 5 minutes), the operator will be logged out. The operator will have to log in again to regain access.*

**TRAD Calibration**

The operator should toggle the Cal Type line to TRAD using the left/right arrow keys and press the Enter key. The TRADITIONAL CAL screen will appear. This screen will provide the following lines for the operator.

- Zero Value – This value should be set to zero.
- Zero Ct – This parameter is controlled by the controller.
- Do Trad. Cal (Zero) – Start the calibration procedure.
- Span Value – The amount of weight being used for calibration.
- Span Ct – This parameter is controlled by the controller.
- Do Trad. Cal (Span) – Start the calibration procedure.

Use this procedure to calibrate a machine with traditional load cells.

1. Turn on the meter.
2. Press the User key.
3. Enter the username.
4. Enter the password.
5. Note the security level once the password has been accepted. The user must have at least Medium-level security access to perform a calibration.
6. Press the Setup key.
7. Use the up/down arrow keys to scroll to the Calibration selection. Press the Enter key.

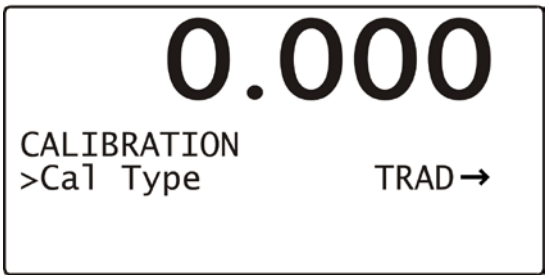


**Figure 4.** Calibration Type Screen (TRAD selected)

8. Use the left/right arrow keys to toggle to the Trad selection. Press the Enter key.
9. Check the display to make sure that the Zero value reads 0.0.
10. Use the up/down arrow keys to scroll to the Do Trad. Cal (Zero). Press the Enter key. The weight display will display !Calibration in Progress! and will then return to its calibration screen.

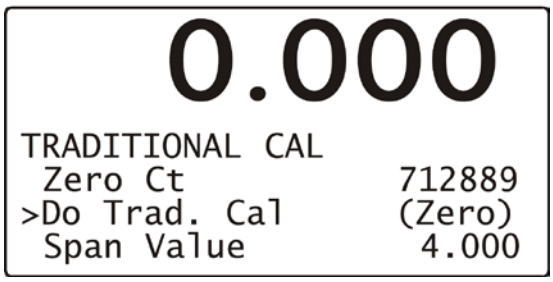


**Figure 5.** Do Trad. Cal (Zero)

11. Use the up/down arrow keys to scroll to the Span Value selection and use the numerical keypad to enter the weight that will be used for calibration. Press the Enter key.
12. Use the up/down arrow keys to scroll down to the Do Trad. Cal (Span). Place the calibration weight on the scale by hanging it on the fill spout directly under the bag clamp cylinder. Press the Enter key. The weight display will display !Calibration in Progress! and will then return to its calibration screen.

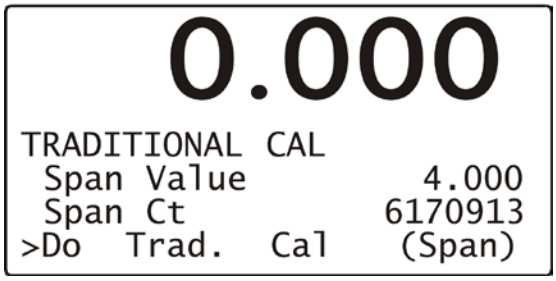


**Figure 6.** Do Trad. Cal (Span)

13. Press the Exit key three times to return to the Standby Display.

**C2 Calibration**

If the operator has toggled the Cal Type line to C2, and presses Enter, the C2 CAL screen will appear. This screen will provide the following lines for the operator.

- C2 Load Sensors
- Ref Point
- Do C2 Calibration

Use the procedure below to use the T3000 control panel to quickly calibrate an APV using C2® load cells.

***Note:*** *Use only Hardy C2® load cells. The procedure will not work on non-C2 load cells.*

1. Turn on the meter.
2. Press the User key.
3. Enter the username.
4. Enter the password.
5. Note the security level once the password has been accepted. The user must have at least Medium-level security access to perform a calibration.
6. Press the Setup key. The CONFIGURATION MENU will appear on the display.
7. Press the down arrow key, until the cursor is in front of CALIBRATION.

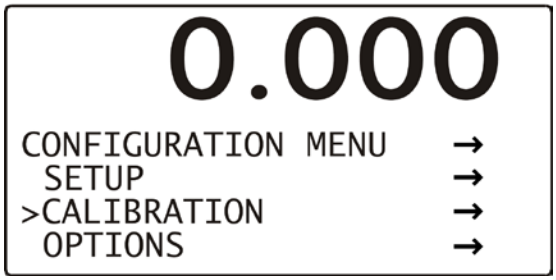


**Figure 7.** Calibration Menu

8. Press the Enter key. The *CALIBRATION Menu* appears with the C2 Cal Type.

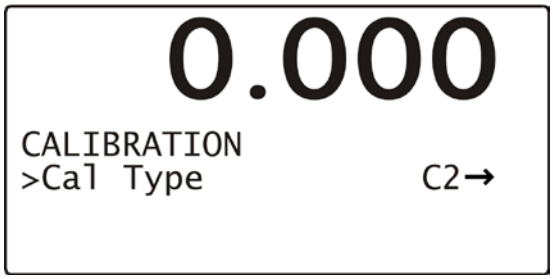


**Figure 8.** Calibration Menu/C2 CAL

9. Press the Enter key. The *C2 CAL Sub-Menu* will appear.

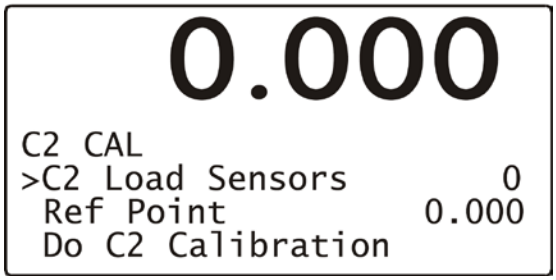


**Figure 9.** C2 CAL Sub-menu

10. Press the down arrow to position the cursor in front of the Ref Point line. The Reference Point refers to the amount of weight that is currently on the load cell. If there is no weight on the load cell, the reading is 0.00. If there is 1-¼ lbs on the load cell, the reading will be 1.25.
11. Use the alphanumeric keypad to enter the weight that is currently on the load cell.
12. Press the down arrow key to position the cursor in front of the Do C2 Calibration line.
13. Press the Enter key to accept the calibration.
14. The message “Calib in Progress”, followed by the “function OK” message will briefly appear on the weight display, indicating that the calibration was successful.
    a. If a “Function Error” message appears, then the calibration was not successful. Refer to Chapter 6, Troubleshooting for details.
    b. If a “Security Violation” message appears, then the user does not have the security level that is required to perform the calibration.
    c. If the message “No C2 Sensors” appears, the Traditional Calibration procedure MUST be performed.
15. Press the Exit key three times to return to the Standby Display. Calibration is now complete.

## Options Menu

This submenu allows the operator to enable/disable each of the following items:

- Remote I/O
- ControlNet I/O
- Profibus I/O
- EtherNet/IP I/O

If the selection is toggled off, pressing the Enter key will result in an Entry Accepted flash message on that line. If the selection is toggled ON, pressing the Enter key will result in accessing the configuration screen for that I/O function. Use the left/right arrow keys to toggle each selection on/off. Press the Enter key to accept the changes.

## I/O Mapping Menu

Once the I/O Mapping Menu has been accessed, the operator is presented with the following options:

- Basic I/O Mapping
  - Start
  - Stop
  - OK to Fill
  - Clear Alarm
  - Fast Fill Prf. Sw
  - Slow Fill Prf Sw
  - Discharge Prf Sw
  - OK to Discharge
  - Discharge Command
  - Refill Low
  - Refill High
  - Relay Output 1
  - Relay Output 2
  - Relay Output 3
  - Relay Output 4
  - Relay Output 5
  - Relay Output 6
  - Relay Output 7

## Security Menu

The T3000 uses a security system to protect specific functions from being accessed and modified by personnel who do not have the proper authority to make those modifications. To access secured settings, the operator must enter a User ID and password. Follow the steps below:

1. Press the User shortcut key.
2. Use the keypad to type the User's ID. Any 3-digit code will work.
3. Press the Enter key.
4. Use the keypad to type the password.
5. Press the Enter key.
6. After a couple of seconds, the main screen will re-appear.

Selecting the Security Menu will provide the operator with the following choices:

- Set Security Menu
- Password Menu

**Set Security Menu**
The T3000 software application provides the security capability so the manager can set the security levels for each Top-Level menu. Each Top-Level menu is set to Low as the default, but their level of security can be adjusted. The Top-Level menus are:

- Product Select
- Adjust/Setup
- Calibration
- Options
- I/O Mapping

There are additional menu choices that can have their security levels changed. The menus are:

- Controls
- Local Alarm Clear
- Test

There are three menus that are reserved for supervisors, engineers, or service personnel. The three menus have their security level set to HI and the level cannot be changed. These menus are:

- Security Menu
- Application Type Menu
- Factory Default Menu

**Password Menu**
After the controller has been configured or calibrated, Magnum Systems recommends that the menus be secured by setting their security level to Medium or High. This will considerably reduce the possibility of problems that might arise from unauthorized personnel changing critical control parameters. Changing these parameters may result in catastrophic system failure or in operational instability.

- Low – No password required.
- Medium – A password is required to access some, but not all of the top level menus. The factory-preset password for this level of security is 7878.
- High – A password is required to access all top-level menus. The factory-preset password for this level of security is 1232.
- If a menu has a Non-Low Security Level, when a user presses the Enter key to access the menu, the system display a !SECURITY VIOLATION! message. The user will need to backup to the Standby Display, and then press the User key to log in to the controller. If the user enters an invalid password or no password the user is given read access only to all sub-menus.

**CAUTION**

**DO NOT** change the default passwords. If the default passwords are changed, and the new passwords are lost or forgotten, they cannot be recovered. A backdoor into the system does not exist. If this happens, the memory of the unit will have to be erased and a new program will have to be installed. All stored information, such as product definitions, will be lost.

The T3000 will accept any 3-digit alphanumeric Operator ID that is entered. The T3000 will ask for a password after the user has signed in. The password is what determines the level of access. It is recommended that the manager create a list of individual Operator IDs. For the greatest level of control and for historical tracking purposes, Magnum Systems recommends that each person that has access to the menu systems be assigned their own unique ID. When changes are made to the configuration of the machine, or when a calibration occurs, the T3000 will log the time and date of those changes and the operator ID that was used when making the changes.

The manager should assign each operator ID either a High, Medium, or Low security clearance. Those operator IDs with High security level would be provided the High-level password. They can access all levels of the menu system. Those IDs with Medium security level would be provided the Medium-level password. They can access menus that have been assigned a Medium or Low security level. Those IDs with Low security level will not be assigned a password and can only access menus that have been assigned a Low security level.

## Setting Menu Security Levels

Use the procedure below to assign security levels to the Top-Level menus.

> ***Important:*** *Only personnel who have been assigned the High-Level password have the ability to change the security level of a given menu.*

1. From the Standby Display, press the Setup key. The CONFIGURATION MENU will appear.
2. Use the up or down arrow keys to move the cursor until it is positioned in front of the SECURITY line.
3. Press the Enter key. The SECURITY MENU will appear.
4. Use the up or down arrow keys to move the cursor until it is positioned in front of the SET SECURITY MENU line.
5. Press the Enter key. The SET SECURITY MENU will appear. All menus will be listed with their current security level. The default level for most of the menus is Low. The exceptions are the Security Menu, the Application Type Menu, and the Factory Default Menu. These menus have a default security setting of High.
6. Use the up or down arrow keys to move the cursor until it is positioned in front of the menu that is going to be selected to have its security level changed.
7. Press the Left or Right arrow key to change the security level of the selected menu.
8. When the desired level of security is displayed for that menu, press the Enter key to store the change.
9. Repeat Steps 4 through 8 as needed until all Top-Level menus have the desired security settings.
10. Press the Exit key to return to the Standby Display.

## Manual Key

Pressing the Manual key allows the operator to do one of the following functions:

- MANUAL MODE
  - TARE SCALE – Pressing the Clear key will tare the scale.
  - ZERO SCALE – Pressing the Clear key will zero the scale.

The TARE SCALE option allows the operator to eliminate the containers weight from the weighment. The ZERO SCALE option allows the operator to reset the scale to zero, with no package on the weighing device.

## Print Key

Pressing this key will initiate a print function, if a printer has been connected and the printer port has been properly configured.

## Changing Products

The software program in the T3000 provides for a maximum of 25 different products to be configured by the filler/dispenser. Each product will have a unique identification and its own fill parameters. The parameters include:

- Fill rates
- Target weight
- Cutoff weight

To change from one product selection to another, follow the steps below:

1. Press the Product key once. A list of products that have been programmed into the control panel will appear. The currently selected product will be displayed.
2. Use the up or down arrow keys to scroll through the available list of products. When the desired product is found, position the cursor next to it and press the Enter key. Press the Enter key again to accept the selection.

## Configuring a Product from Scratch

To configure one of the 25 available product selections for a specific product, follow the steps below:

1. Press the Setup key once. The Configuration Menu will appear and will have the cursor on the ADJUST PRODUCT line. Press the Enter key.
2. The cursor will be positioned next to the currently selected product ID. Use the arrow keys to scroll down until the cursor is next to the first product number that has not been previously programmed.
3. Press the Enter key to select that product.
4. Position the cursor next to the line for the product name. Use the alphanumeric keypad to enter the name that has been selected for this product configuration. The default name can be used, but it is not recommended. Magnum Systems recommends using a name that provides some indication of what the product configuration is for. Press the Enter key to save the change.

5. Scroll down to the Unit of Measure line. Use the left/right arrow keys to select the appropriate unit of measure (Lb, Oz, Kg, G). Press the Enter key to save the change.
6. Scroll down to the WAVERSAVER line. Use the alphanumeric keypad to enter the desired setting. Magnum Systems recommends setting the WAVERSAVER to 3.50 Hz. Press the Enter key to save the change.
7. Scroll down to the Averages line. Use the alphanumeric keypad to enter the desired setting. Press the Enter key to save the change.
8. Scroll down to the Jog line. Press the Enter key to access the Jog Menu.
9. Set Jog On Time to 0.000s, to disable the jog function. Press the Enter key to save the setting.
10. Press the Exit key.
11. Scroll down to the Fill Timer Line. Use the alphanumeric keypad to enter a new value, if desired. Press the Enter key to save the setting.
12. Scroll down to the Wait Timer line. Use the alphanumeric keypad to enter a new value, if desired. Press the Enter key to save the setting.
13. Scroll down to the Speeds line. Use the left/right arrow keys to select between Single, Dual, or Triple speed setting. Press the Enter key to access the settings for that fill speed.
    a. If the Single speed is selected, the Fill Proof Menu will appear. Leave the Proof Switch at the factory setting. The Switch Time should be 5s. Press Enter to save the settings.
    b. If the Dual speed is selected, the Dual Speed Filler Menu will appear. The cursor will be positioned on the Auto Fast Adj line.
        i. Use the left/right arrow keys to toggle between OFF and ON. When this option is ON, the controller will auto adjust the dribble point.
        ii. Leave the Mode setting at the factory preset setting.
        iii. Scroll down to the Fill Proof Menu and press the Enter key.
            1. The Fast Switch and Slow Switch settings MUST be off for the machine to run.
            2. The recommended setting for the Fast Switch Tmr and the Slow Switch Tmr is 5s.
    c. If the Triple speed is desired, contact Magnum Systems technical assistance for instructions on setting up the controller.
14. Press the Exit key three times to return to the Standby Display.

## Shortcut Keys

The T3000 is also equipped with seven shortcut keys. The shortcut keys alphanumeric keys that perform a specific function when pressed from the Standby Display. The shortcut keys provide the user with quick access to specific menu functions.

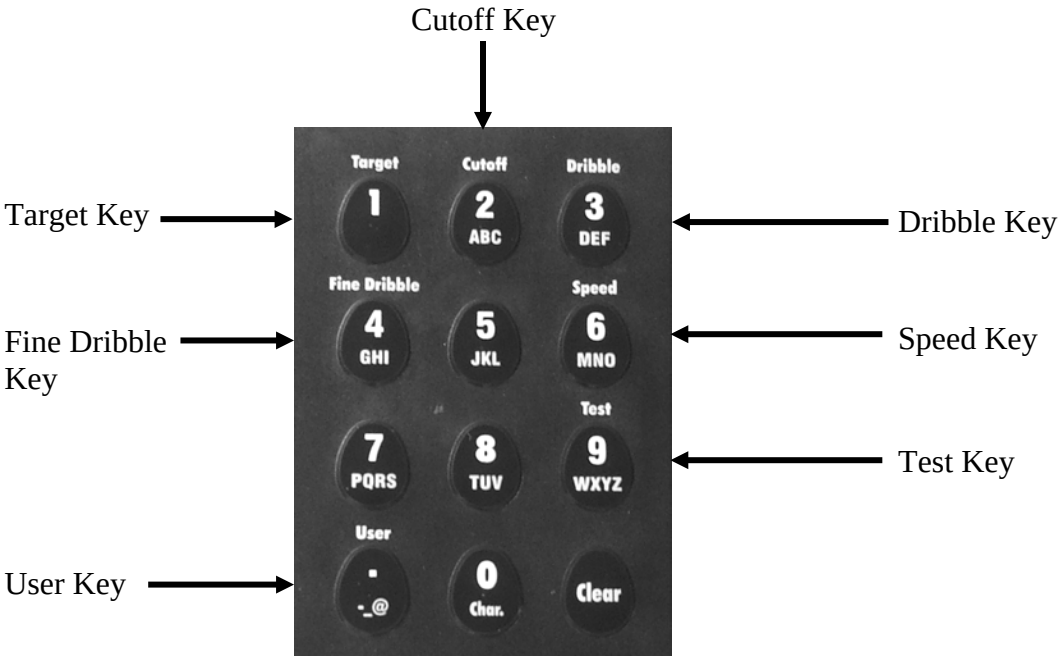


**Figure 10.** Shortcut Keys

- Target key – Pressing this button from the Standby Display will access the Target Wt setting. The user can then use the numeric keys to enter a new desired final package weight.
- Cutoff key – Pressing this button from the Standby Display will access the Cutoff Wt setting. The user can then use the numeric keys to enter a new weight for shutting the filler off.
- Dribble key – Pressing this button from the Standby Display will access the Dribble Wt setting. The user can then use the numeric keys to enter a new weight where the filler will switch from the bulk feed rate to the dribble feed rate.
- Fine Dribble key – Pressing this button from the Standby Display will access the Fine Dribble setting. When setup as a Triple Set Point machine, the user can use this screen to set the transition weight for switching from the dribble feed rate to the fine dribble feed rate.
- Speed key – Pressing this button from the Standby Display will access the fill rate settings. The user can then use the up/down arrow keys to navigate to a specific speed parameter and use the numeric keys to enter a new feed rate setting for that parameter. Speed rates are expressed as a percentage.
- User key – Pressing this button from the Standby Display will access the ENTER USERNAME screen. The user will use the alphanumeric keypad to enter their 3-digit user ID. After pressing the Enter key, controller will request that the user enter their password. Depending on which password is entered, or if a password is entered at all, the controller will display the level of security access that the user has. The display will then return to the Standby Display.

- Test key – Pressing this button from the Standby Display will access the TEST AND DATA MENU. From here, the user can access the following menus:
    - Device Data List
        - TEST DATA
            - ID: – Displays the ID of the machine.
            - Model: – Displays the model of the controller. This should always be T-3000
            - Serial Num: – Displays the serial number of the controller.
            - PP#: – Displays the part number that is assigned to the program.
            - Version: – Displays the version number for the software that is loaded on the controller.
            - Last Cal Type: – Displays the last calibration method. Will be either TRAD or C2.
            - Calib'd at: (in hours) – Displays the hour portion of the exact time of the last calibration.
            - Calib'd at: (in minutes) – Displays the minutes portion of the exact time of the last calibration.
            - Calib'd at: (in seconds) – Displays the seconds portion of the exact time of the last calibration.
            - Calib'd on day: – Displays the day of the month when the last calibration took place.
            - Calib'd in month: – Displays the month when the last calibration took place.
            - Calib'd in yr: – Displays the year when the last calibration took place.
            - Calibrator: (user ID listed) – Displays the operator ID of the person who was logged in when the last calibration took place.
            - *WAVERSAVER: – Displays the current WAVERSAVER setting.
            - Zero Value – Displays the current acceptable zero value.
            - Span Value – Displays the current span value.
            - *Zero Ct: – Displays the current zero count.
            - *Span Ct: – Displays the current span count.
            - *C2 Sens – Displays the number of C2 load cells, if used.
            - *Scale Cap. – Used in loss in weight applications, if the refill mode is on.
            - *Zero Toler – Displays the current zero tolerance setting.
            - *Azero Toler – Displays the current azero tolerance setting.
            - *Azero Time – Displays the current azero time setting.
            - *Tare Limit – Displays the current tare limit setting.
            - *Motion Tol – Displays the current motion tolerance setting.
            - *Averages – Displays the current averages setting.
            - *Ingredient – Displays the current product that is selected.
            - *Fill Cycles – Displays the current fill cycles setting.
            - *Target Wt – Displays the current target weight setting.
            - Tgt Preact – Displays the current target preact setting.
            - Smart Preact – Displays the current status of smart preact (ON or OFF).

- Tgt Win Wt (Upper Limit) – Displays the maximum acceptable weight that will be accepted as the final weight. If the final weight exceeds this setting, an alarm will be generated.
- Tgt Win Wt (Lower Limit) – Displays the minimum acceptable weight that will be accepted as the final weight. If the final weight is below this setting, an alarm will be generated.
- Tgt Win + – Displays the current fill cycles setting.
- Tgt Win – – Displays the current fill cycles setting.
- Jog On Time – Displays the jog on time in seconds.
- Jog Count – Displays the current jog count.
- Jog Off Time – Displays the jog off time in seconds.
- Fill Timer – Displays the current fill timer setting.
- Wait Timer – Displays the current wait timer setting.
- Speed – Displays the current speed selection.
- FastFill Prf Sw – Displays the current status of the Fast Fill Proof Switch.
- FastFill Prf Tmr – Displays the current Fast Fill Prf Timer reading in seconds.
- FastFillWt – Displays the current fast fill weight setting.
- Auto Fast Adj. – Displays the current status of the auto fast adjustment (ON or OFF).
- Mode – Displays the current mode of operation.
- SlowFill Prf Sw – Displays the current status of the Slow Fill Proof Switch.
- SlowFill Prf Tmr – Displays the current Slow Fill Prf Timer reading in seconds.
- Prt Baud Rate – Displays the current baud rate setting for the printer port.
- Prt Parity – Displays the current parity setting for the printer port.
- Prt Data Bits – Displays the current data bits setting for the printer port.
- Num of Sensors – Displays the number of load cells actually connected to the controller.
- Load Sensor – Displays the number of load cells that the controller is configured for.
- IP: – Displays the current IP address for the controller.
- DeviceNet Adr: – Displays the current DeviceNet address for the controller.
- ControlNet Adr: – Displays the current ControlNet address for the controller.
- Profibus Adr: – Displays the current Profibus address for the controller.
- Profibus Output – Displays the current output voltage for the profibus port.
- Profibus Input: – Displays the current input voltage for the profibus port.

- Diagnostics
  - Diagnostics
    - Voltage and Wt
      - VOLTAGE & WEIGHT
    - Stability Test
      - SYSTEM STABILITY
        - Test Result:
        - Mean Sq. Var
        - Mean ADC Count
    - Factory Defaults – Selecting this option will restore the factory defaults.
    - Return to Zero
      - RETURN TO ZERO TEST
        - Load Sensors
          - Sensors Found
        - Test Values
          - System
          - Gr. Wt.
    - View Input States
      - INPUT STATES – This displays the five available inputs. It shows the states as either a 0 (input is off) or 1 (input is on).
    - Force Outputs (not functional)
    - State Logging – Pressing the Enter key here will toggle the function ON/OFF.
    - Peak Force – Pressing the Enter key here will toggle the function ON/OFF.
    - Status Log
      - Status Log – Pressing the Enter key here will display the status log.
    - Demo Mode – Pressing the Enter key here will toggle the function ON/OFF.

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