MAGNUM SYSTEMS

Small Vibratory Bagging Scale

Model TE10

Operation and Maintenance Manual

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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 Model TE10 Electronic Small Packer utilizes many 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, and maintenance of on new and existing equipment. Contact Magnum Systems at (888) 882-9567.

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Chapter 1
Product Description

1.1 General Description
This chapter will provide a high-level product description of the TE10 Electronic Small Packer.

1.2 Introduction
The Magnum Systems Model TE10 is an electronic small packer. The product feed system is fully adjustable, and the moveable feeder platform minimizes product fall and impact. The TE10 has been designed with a timed discharge to eliminate spillage, as well as controls for single operator convenience.

The TE10 comes in a standard configuration, but also has over 40 available options. The TE10 units come standard equipped with a small vibrator pan feeder. The TE10 can also be ordered with either a mini, or a jumbo vibrator pan feeder, or even a 2-speed belt feeder. However, those models will be covered in separate manuals. Depending on how the TE10 is equipped, the TE10 can handle weighments from 2 oz. to 10 lbs. (57 grams to 4.54 kilograms).

The TE10 comes standard with a T4000 control panel, but is available with a T3000 control set.

The TE10 can be used to package food and non-food materials. In non-food applications, painted components are used. In food applications, any component that comes in contact with the food product must be stainless steel to avoid possible contamination of the food material.

1.3 Manual Scope
This manual will provide information on installation, operation, preventive maintenance, troubleshooting, and repair of the TE10, equipped with a small vibrator pan feeder.

The appendices will include safety information, spare parts list, mechanical drawings, electrical drawings, along with the user guide for the control panel.

1.4 Electrical Requirements
The TE10 is designed to operate using various voltages. The operating range can be from 115 VAC to 240 VAC at 50 or 60 Hz.

1.5 Pneumatic Requirements
The TE10 uses approximately 2-3 CFM (57-85 liters) @ 80-100 PSI (.55-.69 MPa) of compressed air. Magnum Systems recommends that the air supply line be equipped with a refrigerated air dryer, or at the very least a water separator.

1.6 Major Systems and Components

When working with the TE10, it is important to understand the major systems and components of the unit. The breakdown is as follows:

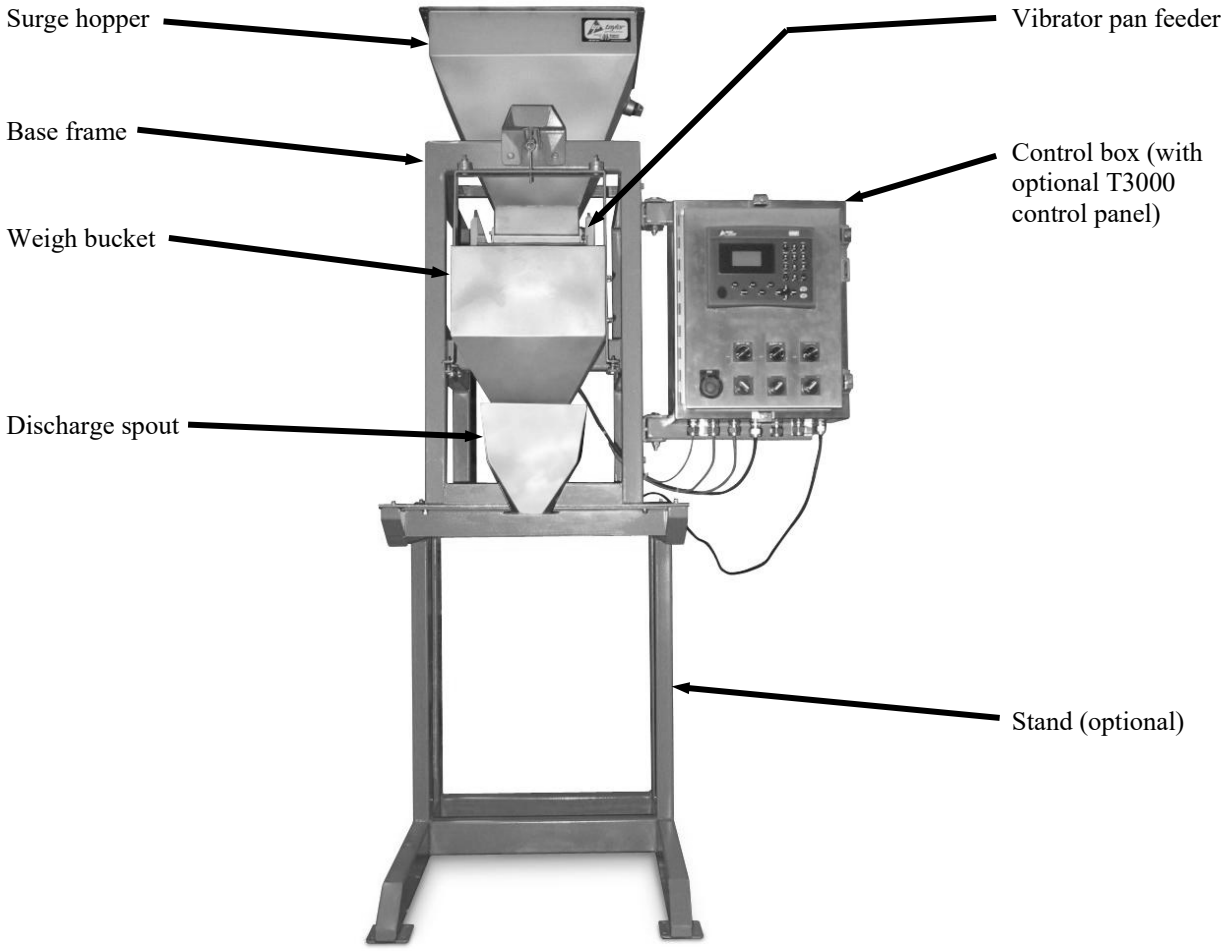


Figure 1-1. TE10 Major Components (Front View)

1.6.1 Base Frame

The base frame is the backbone of the TE10. It provides a support structure for the all of the other components that make up the TE10.

1.6.2 Surge Hopper

The surge hopper is mounted at the top of the TE10. It is used as a reservoir for the material that is to be packaged using the TE10. The surge hopper is loaded from the top using a surge hopper feeder. The material flows out of the bottom of the hopper to the vibrator pan feeder.

The TE10 comes standard with a surge hopper that has a capacity of 2.0 cubic feet. An optional surge hopper is available that has a capacity of 7.0 cubic feet.

1.6.3 Flow Gate

The flow gate is mounted at the bottom of the hopper on the front side. The flow gate allows the operator to adjust the amount of material that is allowed to flow out of the hopper. Raising the flow gate will increase the flow of material, while lowering the flow gate will restrict the flow of the material.

1.6.4 Vibrator Pan Feeder

The vibrator pan feeder uses vibration to move the material from the surge hopper to the weigh bucket. The speed/frequency of the vibrator pan feeder is controlled by the vibrator control box. The TE10 comes standard with a small vibrator pan feeder. The TE10 can also be ordered with the optional mini or jumbo vibrator pan feeders.

1.6.5 Weigh bucket

As the material flows off of the end of the vibrator pan feeder, it falls into the weigh bucket. The weigh bucket is suspended from the load cell.

CAUTION A sudden jerk or shock, such as being struck by a tool or hitting the weigh bucket etc., can cause load cell damage. The load cell is NOT covered by warranty.

The weigh bucket has a weigh bucket gate at the bottom. Once the desired amount of product has been loaded into the weigh bucket, the vibrator feeder will stop. The operator will empty the weigh bucket using the weigh bucket dump switch. The TE10 comes standard with a hand operated dump switch, but can be equipped with the optional foot operated dump switch.

1.6.6 Load Cell

The load cell is used to sense the weight of the material in the weigh bucket. As material is loaded into the weigh bucket, the load cell increases it's voltage output to the main meter control box.

CAUTION A sudden jerk or shock, such as being struck by a tool or hitting the weigh bucket etc., can cause load cell damage. The load cell is NOT covered by warranty.

1.6.7 Discharge Spout

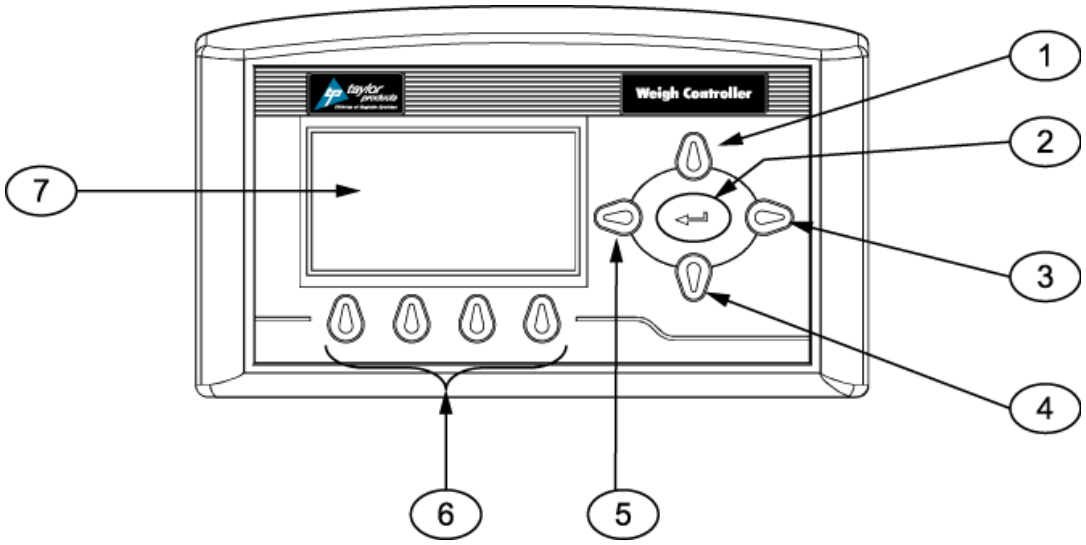
When the weigh bucket dumps the material, the discharge spout is used to control the materials as they fall into the packaging container. The discharge spout is used to eliminate spillage.

1.6.8 Control Boxes

The TE10 comes standard with T4000 controls. However, it is also available with the optional T3000 control panel.

1.6.8.1 Control Box with T4000 Control Panel

The TE10 comes standard with a T4000 control set. The T4000 control set uses different levels of voltage to monitor and control the weighments.



Item #	Description	Item #	Description
1	Up arrow button	5	Left arrow button
2	Enter button	6	Function buttons
3	Right arrow button	7	LCD panel
4	Down arrow button		

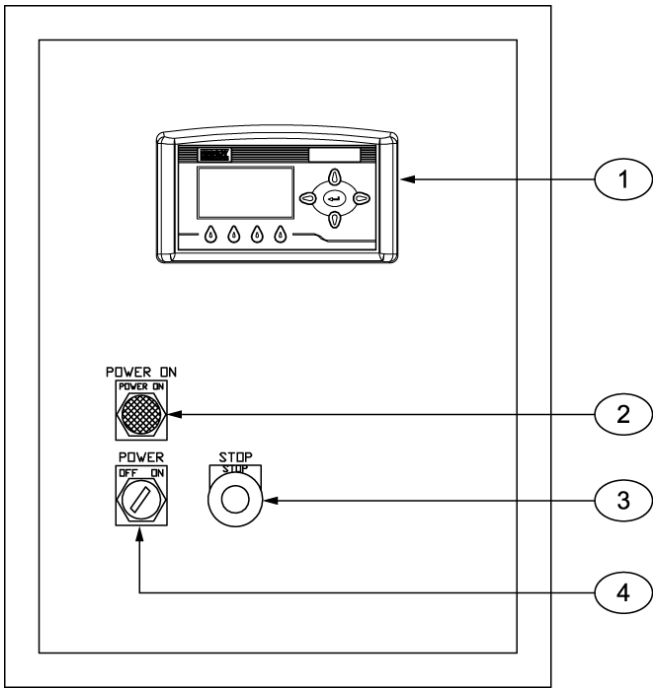
Figure 1-2. T4000 Faceplate

Magnum Systems and Hardy Instruments have jointly designed the T4000. The T4000, control switches, and indicators are mounted in the front side of the control box. The T4000 provides the operator with total monitoring and instrument control. The T4000 features the following functions:

- Weight display
- Function keys
- Enter key
- Arrow keys

Along with the T4000 control panel, the following additional controls are found in the control box:

- STOP button/indicator
- POWER ON indicator
- POWER switch



Item #	Description	Item #	Description
1	T4000 control panel	3	STOP button/indicator
2	POWER ON indicator	4	POWER switch

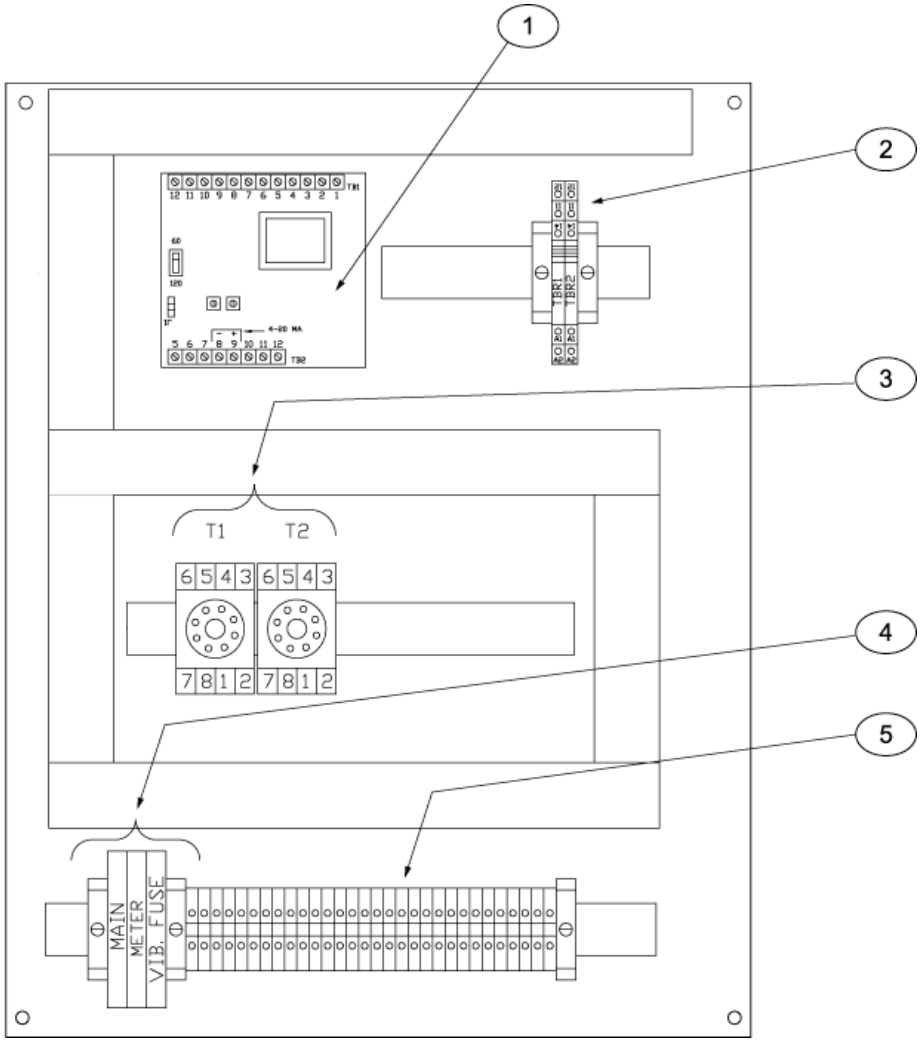
Figure 1-3. Control Panel With T4000 Controls

The POWER switch is located on the lower left corner of the control box and has two positions, OFF and ON. As its name indicates, this switch is used to turn the machine on and off. Located directly above the POWER switch is the POWER ON indicator. When the POWER switch is turned to the ON position, if the machine is connected to its power source, this indicator will illuminate green. The machine will also be equipped with a STOP button/indicator, which is located to the right of the POWER switch. The button itself is made of a translucent red plastic. When the button is pressed, the machine will immediately stop functioning, and the button will be illuminated to indicate that it has been pressed.

1.6.8.2 Control Box With T4000 Control Panel, Electronic Control Components

Inside the control box are additional components that perform control functions for the machine. These components include the following:

- Vibrator control module
- Terminal relay
- Relay bases
- Fuse holders, fuses, and terminals



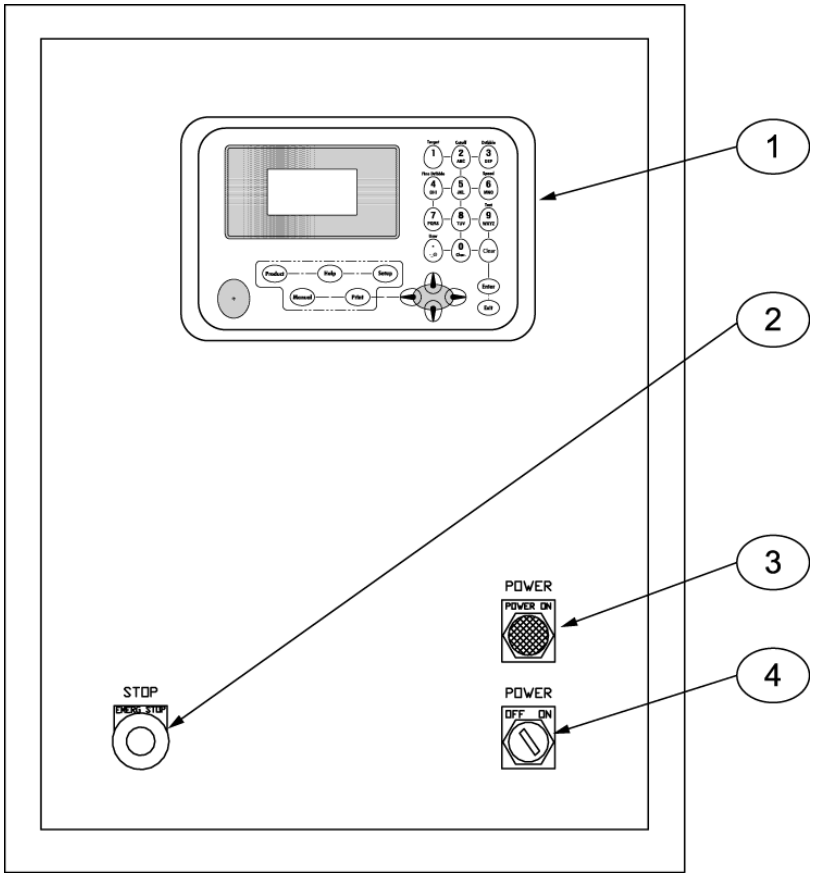
Item #	Description	Item #	Description
1	Syntron vibrator control module	4	Fuse holders and fuses
2	Terminal relay	5	Terminals
3	Relay bases		

Figure 1-4. T4000 Control Box – Internal Components

1.6.8.3 Control Box with T3000 Control Panel

The TE10 is available with an optional T3000 control panel. The control box is typically mounted on the wing on the right side of the machine and is equipped with the following functions:

- T3000 control panel
- POWER ON indicator
- POWER switch
- STOP button/indicator



Item #	Description	Item #	Description
1	T3000 control panel	3	POWER ON indicator
2	STOP button/indicator	4	POWER switch

Figure 1-5. Control Box With T3000 Control Panel

The T3000 control panel is used to monitor and control the TE10. It has been jointly designed by Magnum Systems and Hardy Instruments. The T3000 includes an internal processor and has internal memory, where the operator can store programs for many different products.

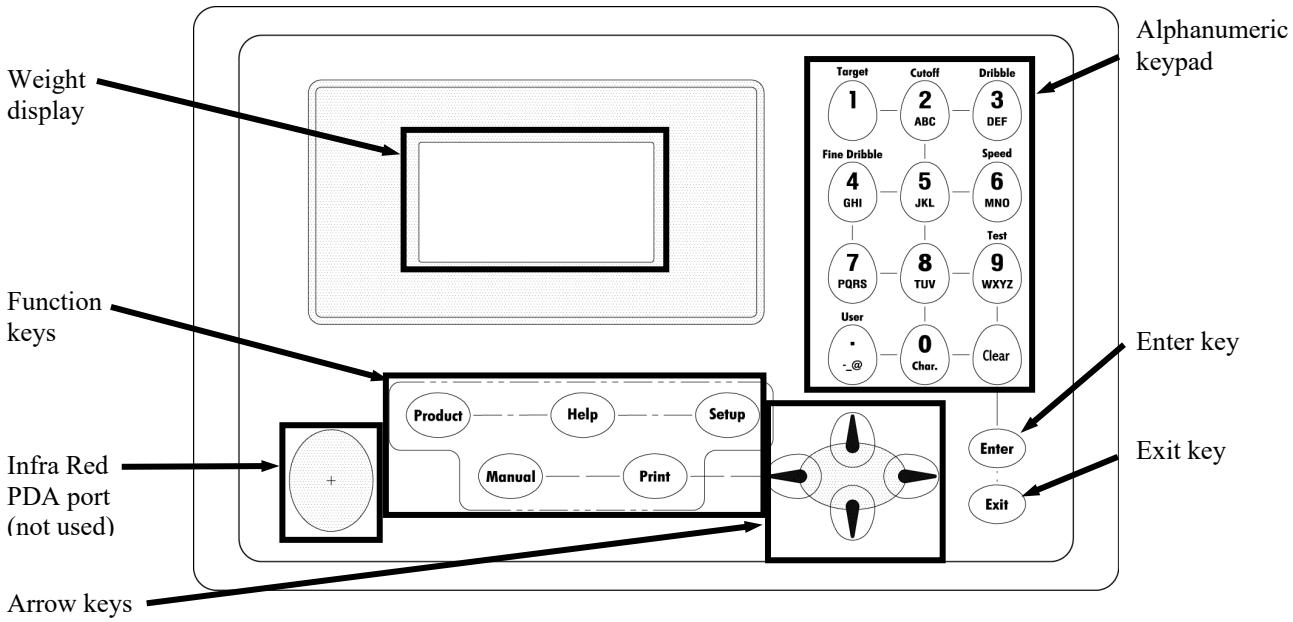


Figure 1-6. Taylor T3000 Control Panel

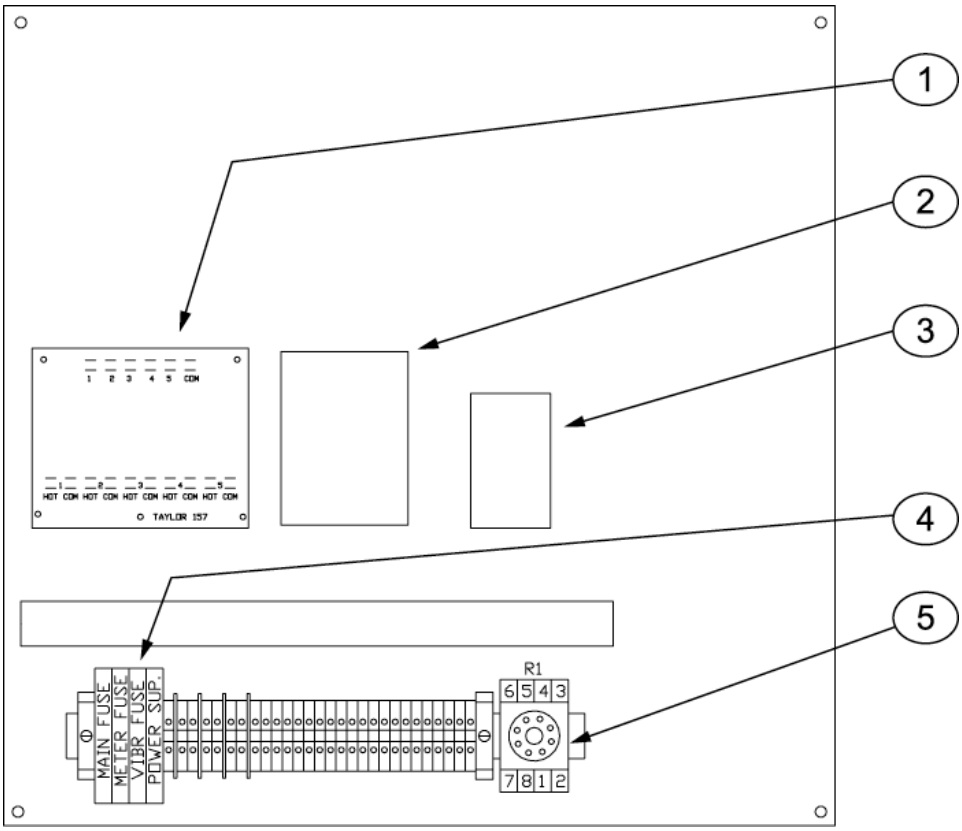
The front of the T3000 is equipped with a weight display, a numeric keypad, directional arrow keys, function keys, an infrared PDA port (not used), an Enter key, and an Exit key.

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 package weight. The remaining four lines are used for monitoring system statuses, historical data, and configuration settings of the TE10.

1.6.8.4 Control Box With T3000 Control Panel, Electronic Control Components

Inside the control box are the components that actually perform the control functions for the machine. These components include the following components:

- T3000 interface board
- Vibrator control module
- Relay boards
- Fuse holders, fuses, and terminals



Item #	Description	Item #	Description
1	T3000 interface board	4	Fuse holders
2	Vibrator control	5	Relay base
3	DC power supply		

Figure 1-7. Control Box With T3000 Control Panel – Internal Components

1.7 Communication Requirements

TE10 units that are equipped with the optional T3000 control panel have the ability for total monitoring and instrument control via the built in communication connectivity of the T3000. For more information on using these capabilities, refer to the T3000 Electronic Weigh Controller Quick Reference Guide. The T3000 has the following capabilities:

- DeviceNet
- Hardy Control-Link
- IR Port
- RS-232 Simplex Serial Port
- Remote I/O (RIO) (optional)
- ControlNet (optional)
- Profibus I/O (optional)
- Modbus over TCP/IP (optional)
- OLE Process Control (OPC) (optional)

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Chapter 2
Receiving Equipment

2.1 General Description

The TE10 and all of its components are thoroughly inspected before shipment. Upon receipt of the equipment, it is important that the machine be carefully inspected for shipping damage. In the event that damage is found, contact the shipping company and follow their process for reporting shipping damage.

2.2 Uncrating the Equipment

Follow the procedure below to unpack the equipment and prepare it for installation.

1. Clear an area 6' x 6'. Make sure floor is level. It is recommended that you locate the TE10 directly under the supply hopper. Complete any nearby construction before installing the TE10.
2. Before removing TE10 from the shipping pallet, inspect TE10 for visible damage. Inspect for damaged or missing parts. If there is damage, notify the shipper immediately. If the unit is not damaged, proceed to the next step.
3. Remove the shell crate. Use care when unpacking the TE10 to avoid damage to any hinged parts and external control knobs.

Figure 2-1. Shell Crate

4. Carefully cut the plastic shrink-wrap that is wrapped around the TE10 away and remove it.

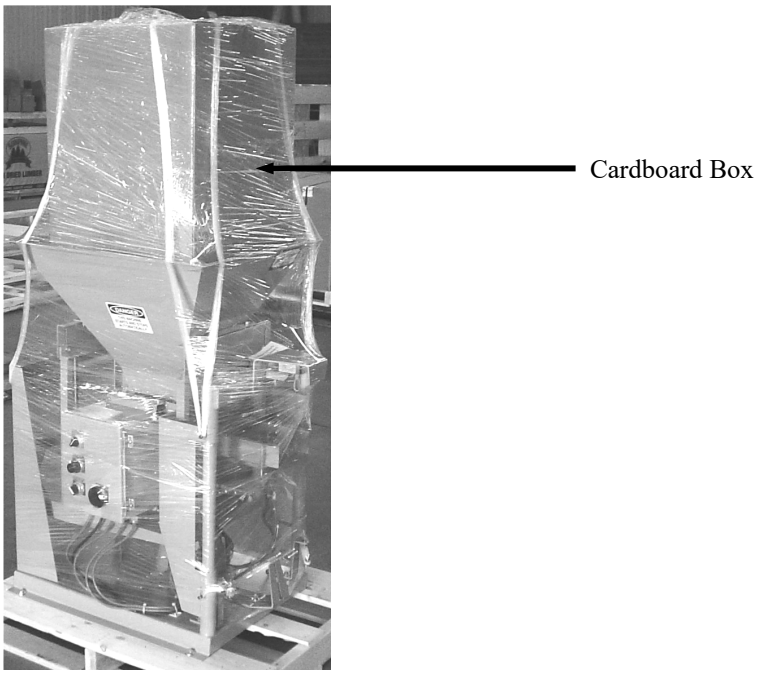

Figure 2-2. Shrink-Wrap and Cardboard Box

5. Cut the straps and remove the cardboard box that is sitting in the surge hopper.
6. Remove lag bolts from mainframe at pallet.

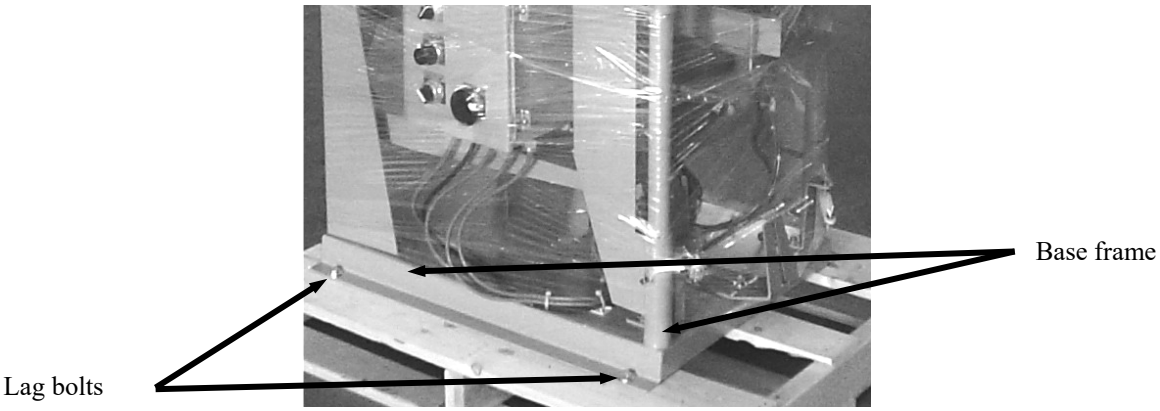

Figure 2-3. Lag Bolts

7. Grasp unit by the base frame to handle.
8. Remove all crating and discard.

9. Remove the shipping bracket bolt and shipping bracket from the TE10 under carriage.

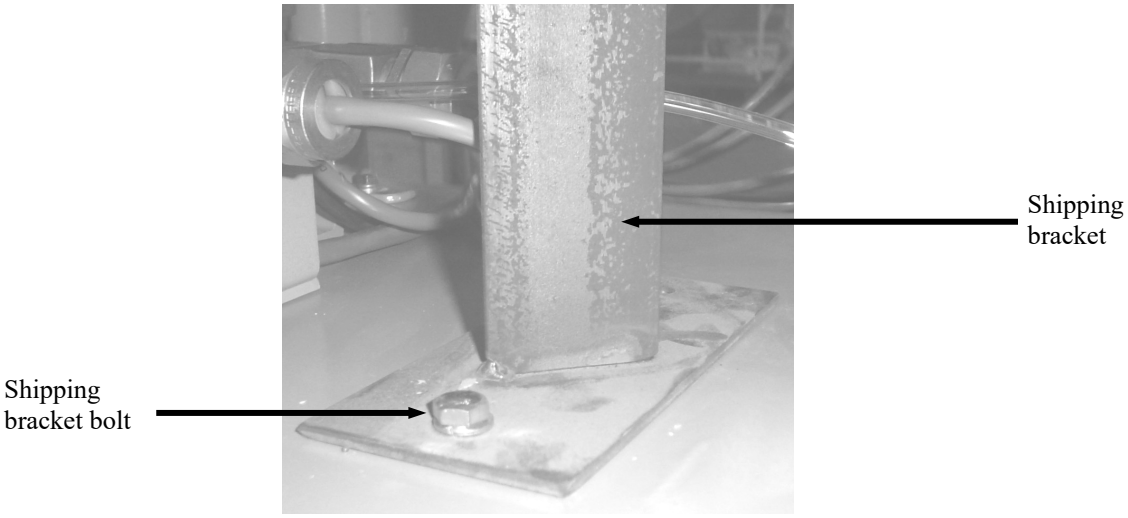

Figure 2-4. Shipping Bracket

10. Place the TE10 in the location where it is to be installed and verify that the TE10 is level.
11. Open the cardboard box and remove the discharge spout and weigh bucket.

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Chapter 3
Setup/Installation

3.1 General Description

Only persons who have been properly trained and hold the appropriate qualifications should attempt to install, operate, or maintain this equipment.

> ***WARNING*** *Before installing, adjusting, or servicing any electrical component, be sure to become familiar with the electrical schematic for the machine.*

> ***WARNING*** *Before installing, adjusting, or servicing any pneumatic component, be sure to become familiar with the pneumatic schematic for the machine.*

3.2 Installing the Weigh Bucket Assembly on the Load Cell

Follow the steps below to install the weigh bucket assembly on the load cell.

1. Carefully hang the weigh bucket assembly on the load cell link using the eyebolt bolted to the weigh bucket bail.

> **CAUTION** A sudden jerk or shock, such as being struck by a tool or hitting the weigh bucket etc., can cause load cell damage. The Load Cell is NOT covered by warranty.

Figure 3-1. Hanging the Weigh Bucket Assembly From the Load Cell

2. At the bottom of the weigh bucket assembly, on both sides, there are two UHMW Polyethylene stabilizer brackets. Install the brackets as shown in the graphic below. Using the supplied bolts, connect the stabilizer brackets to the main frame.

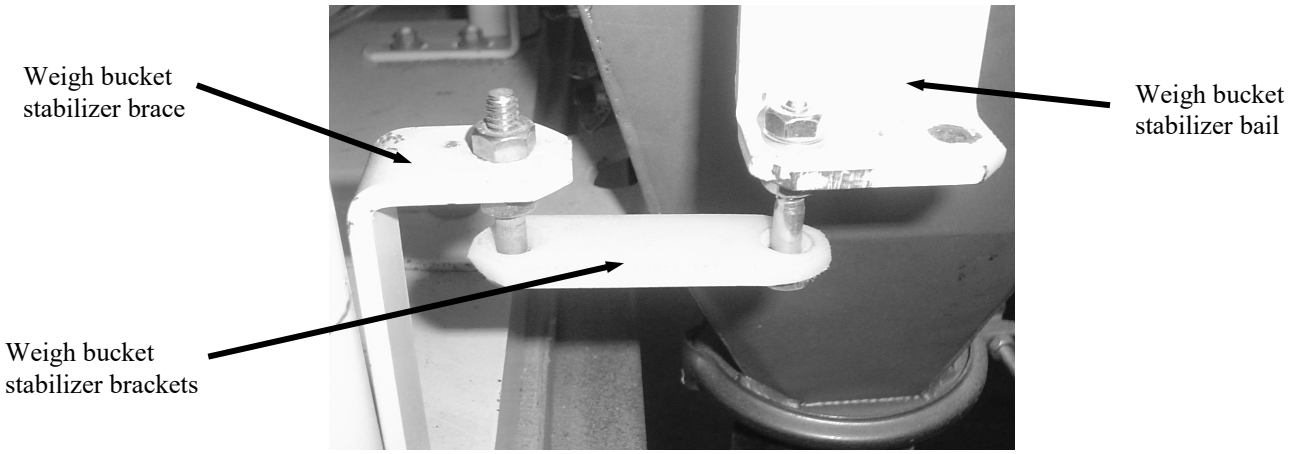

Figure 3-2. Weigh Bucket Stabilizer Brackets

3. The spout connects directly below the weigh bucket and on the bracket located on the main frame. Loosen the wing nuts on the spout and slide it on the bracket. Center the spout as much as possible and tighten the wing nuts, making sure that the discharge spout does not contact the weighed portion of the scale.

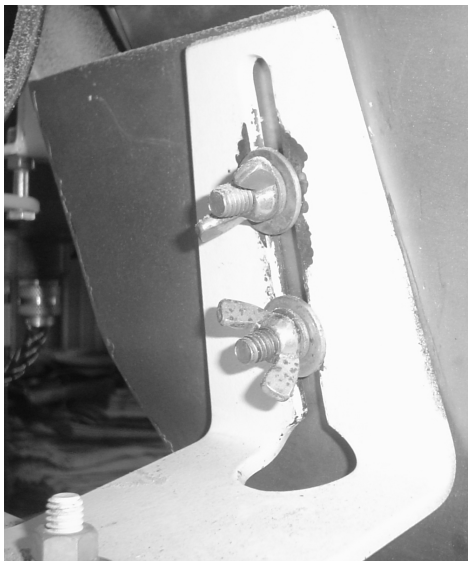

Figure 3-3. Discharge Spout Mounting Bracket

3.3 Making Electrical Connections

Before connecting the TE10 to the electrical supply, it is vital that the unit be properly grounded. The recommended method is to plug the power cord into an earth grounded receptacle.

The TE10 comes equipped to operate on power ranging from 115 VAC to 240 VAC at 50 or 60 Hz. The TE10 unit should be placed within 6 feet of the electrical outlet that it will be connected to.

3.4 Making Pneumatic Connections

The TE10 requires a compressed air supply line that is capable of delivering approximately 2-3 CFM (57-85 liters) @ 80-100 PSI (.55-.69 MPa) of compressed air. Magnum Systems recommends that the air supply line be equipped with a refrigerated air dryer, or at the very least a water separator. After making pneumatic connections, check all connectors for leaks using a soapy water mixture. Bubbles will appear at the site of any leaks. Eliminating or reducing air leaks will reduce wear on the air supply equipment.

3.5 Making Network Connections

TE10 units that are equipped with the optional T3000 control panel have the ability for total monitoring and instrument control via the built in communication connectivity of the T3000. The T3000 has the following network capabilities:

- DeviceNet
- HardyLink Ethernet
- IR Port
- RS-232 Simplex Serial Port
- Remote I/O (RIO) (optional)
- ControlNet (optional)
- Profibus I/O (optional)
- Modbus over TCP/IP (optional)
- OLE Process Control (OPC) (optional)

3.6 Establishing Security Settings

The manager has the ability to control who does and who does not have the ability to change system and calibration settings, regardless of the type of control panel that the machine is equipped with. However, the process for setting the security parameters varies by controller type.

3.6.1 T4000 Security Settings

The Security parameters allow management to place security on the instrument and any menu or sub-menu requiring a password before enabling any changes. The Change Security parameter enables all persons to see the security status for a given menu, and selected persons to change that security status for any menu.

1. From the Standby screen, press the function button below MENUS.
2. The Configuration menu will appear. Press the down arrow until the cursor is in front of Security.

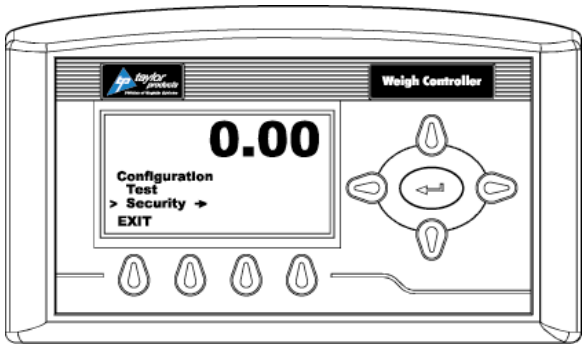

Figure 3-4. Placing The Cursor In Front Of Security

3. Press the enter button. The Security menu appears.
4. Set the Password Parameter. The Set Password parameter enables the operator to create a password for entry to secure menus and sub-menus. If the password is 0 there is no security. If the password is anything other than 0 the security is enabled.

   Note: *It is recommended that the passwords be created before setting security on the various menus.*

5. Press the down arrow button until the cursor is in front of Set Password.

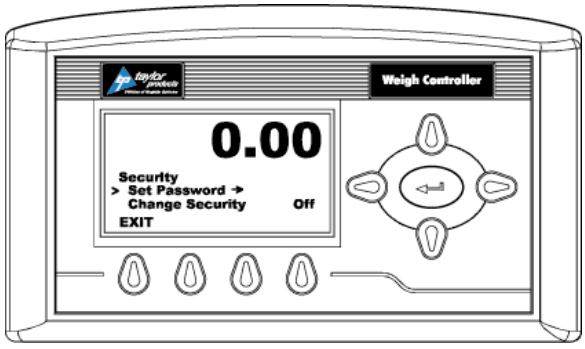

Figure 3-5. Placing The Cursor In Front Of Set Password

6. If the password is being set for the first time or if the factory defaults have been reset in the Test menu, enter the default password "2205". If the password is being reset, and the existing password is known, enter that number. Press the enter button. The Verify Password display appears.
7. Press the enter button. If the password is correct a brief message "Entry Accepted" appears and the Set Password display with the current password appears.

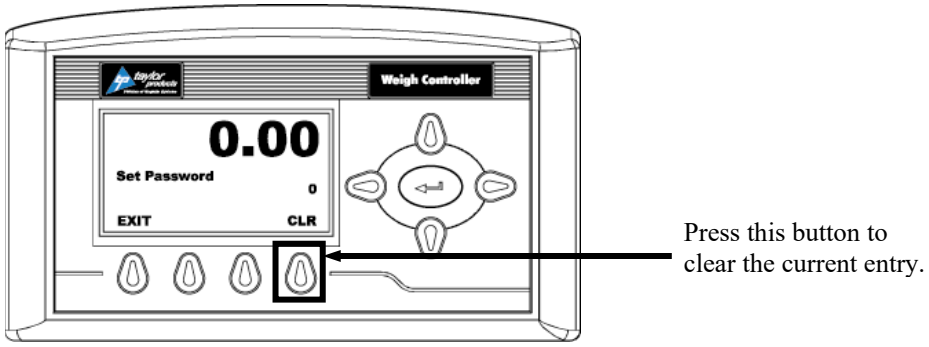

Figure 3-6. Set Password Menu

8. Press the function button located directly below the CLR item on the display to clear the entry. Use the left or right arrow buttons to move the cursor left and right. Use the up or down arrow buttons to enter the password number. To delete a single entry, press the left arrow button. In the example below, "123" was entered.

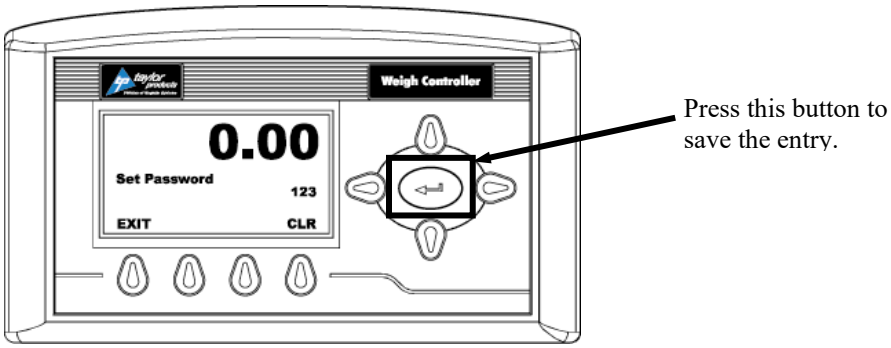

Figure 3-7. Password Set To 123

9. Press the right or left arrow buttons to toggle Change Security On. The Verify Password display appears.

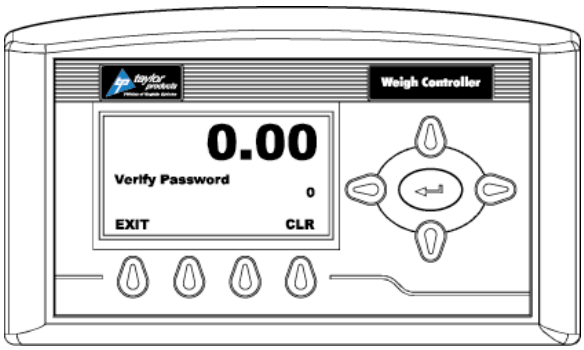

Figure 3-8. Verify Password

10. Use the left or right arrow buttons to move the cursor left and right. Use the up or down arrow buttons to enter the password number.

    Important: *When entering the password, the last digit is entered first, then the next digit to the left and so on. For example, if the password is set to 123, then 3 is entered first, then the 2, and the 1 is entered last.*

11. Press the enter button. The Change Security status changes to On. In this instance we turned Change Security ON because we want to change the security of a sub-menu.
12. Now that the Change Security On feature has been turned on, press the function button below the word EXIT on the display to return to the Configuration menu.
13. Use the up or down arrow buttons to go to the desired sub-menu to is to be secured. In the example below, the Decimal Point sub-menu has been selected. Notice that the display now includes a SECUR menu item above the function buttons.

    Note: *Steps 8-12 will need to be repeated to lock and unlock a parameter.*

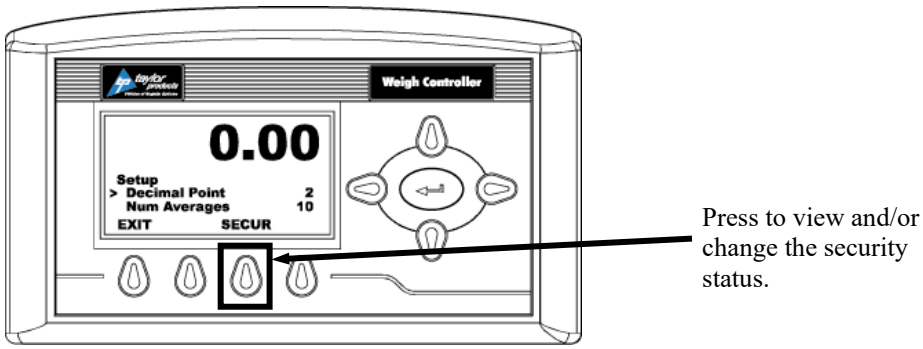

Figure 3-9. SECUR Menu Item Shown Above Function button

14. Press the function button that is positioned below the SECUR item on the display, to view and/or change the security status of this parameter.
15. Press the right arrow button to changed to LOCKED thereby securing this sub-menu.

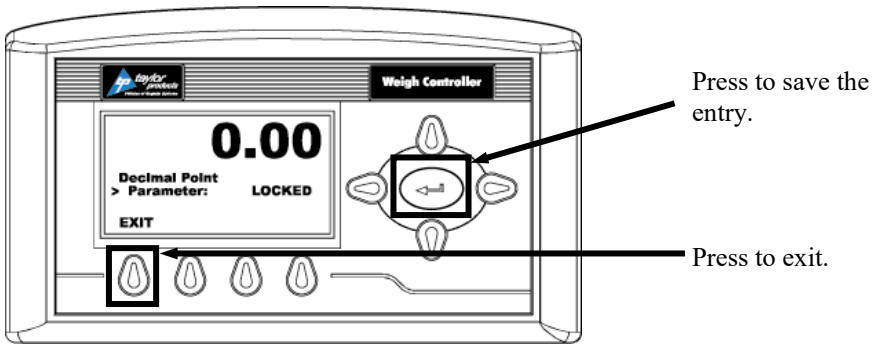

Figure 3-10. Parameter Shown Locked

16. Press the enter button to save the entry.
17. Press the function button below EXIT on the screen until the summary display is shown.

    Note: *To check to see if the security is set on a specific sub-menu, press the EXIT button until the summary display appears. Then re-enter the menus and try to change the secure parameters.*

18. Until security has been changed, changing this parameter will require a password (other than 0) to be entered.
19. To turn the Change Security OFF, go back to the Security menu and repeat steps 1-6.

3.6.2 T3000 Security Settings

On TE10 machines that are equipped with the optional T3000 control set, there are three levels of system security:

- Low – No password required
- Medium – A password is required to access some, but not all of the top level menus
- High – A password is required to access all top-level menus.

Additionally, the manager also has the ability to assign different levels of security to individual menus. The menus where this applies are:

- Adjust Ingredient
- Setup
- Calibration
- Options
- I/O Mapping

If a menu has a security setting of Medium or High, the users' access will be read-only, unless they enter the correct password.

The method for setting security settings on the T3000 is via the control panel. Follow the steps below to set security.

1. Press the User shortcut key. Enter the User ID and high-level password.
2. From the Standby display, press the Setup button. The Configuration Menu will appear.
3. Use the up/down arrows to position the cursor in front of SECURITY. Press the Enter button.
4. The SECURITY MENU will appear. The cursor will be in front of SET SECURITY MENU selection. Press the Enter button.
5. The SET SECURITY MENU will appear. The Top-Level Menus will be listed with the security level set at the default LOW setting.
6. Press the up/down arrow buttons to position the cursor in front of the desired menu selection.
7. Press the left/right arrow buttons to change the security setting for that menu item.
8. Once the desired security level is displayed, press the Enter button to set the entry.
9. If other menus require an adjustment to its security setting, repeat steps 5 through 7.
10. When all security setting adjustments have been completed, press the Exit button to return to the Standby display.

3.7 Dry Cycle

After the installation process for the TE10 has been completed, the operator should run the machine without any product to check each component for proper operation. Use the following procedure:

> ***Note:*** *The pneumatic cylinders may be tested manually by pressing the test buttons on their respective MAC valves.*

1. Press the STOP button in.
2. Turn the power switch on the control panel to the ON position.
3. Make sure that the air pressure on the FRL is set to specification.
4. Pull the STOP button out.
5. The vibrator will turn on.
6. Place an empty package on the spout.
7. When the operator hits the bale on the bag clamp actuator switch the machine will apply the bag clamps.

   Important: *The bag clamps will actuate, however, the bag clamps will retract after two seconds if the bag in place switches are not "made". This means that the bag must be properly positioned and that the bag in place switch must be properly adjusted.*

8. Push the STOP button in. The vibrator will shut off.

3.8 Calibration

Each TE10 is calibrated prior to leaving the factory. However, the unit should be reassessed before first use of the unit. It is recommended that the calibration of the unit should be checked every week. A certified test weight must be used to check the calibration of the TE10.

> ***Note:*** *Make sure that the shipping brackets have been removed before beginning the calibration process.*

3.8.1 Calibrating the T4000 Control Panel

1. Make sure the T4000 has been configured for the intended application. This includes setting the units, decimal point, scale capacity, averages, etc.
2. From the Summary display press the enter button. The Configuration menu appears.
3. Press the down arrow button until the cursor is in front of Calibration.
4. Press the enter button. The Calibration menu appears.
5. Traditional Calibration is the method of calibration that uses test weights. Magnum Systems recommends that the test weights total 80–100% of the desired package weight, and that the weight be distributed uniformly on/in the scale.
6. From the Summary display, press the enter button. The Configuration menu appears.
7. Press the down arrow button until the cursor is in front of the Calibration line.

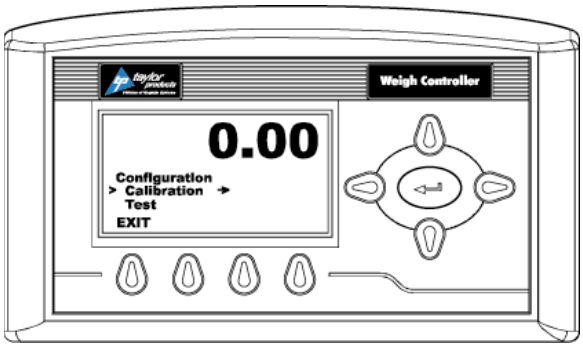

Figure 3-11. Placing the Cursor In Front Of Calibration

8. Press the enter button. The Calibration menu appears.
9. Press the down arrow button until the cursor is in front of "Trad Cal".

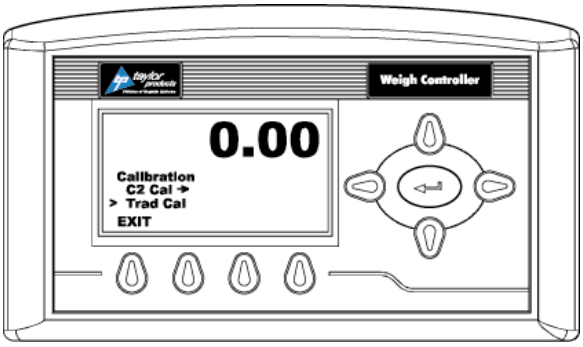

Figure 3-12. Placing The Cursor In Front Of Trad Cal

10. Press the enter button. The Trad Cal menu appears.

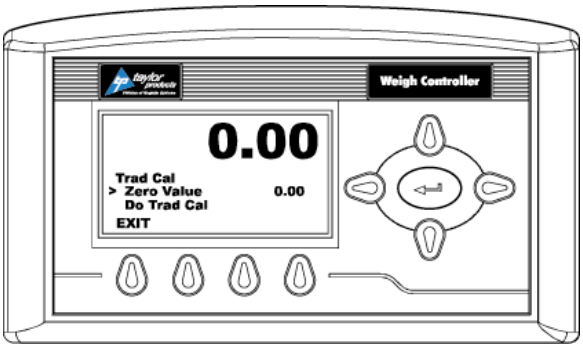

Figure 3-13. Placing The Cursor In Front Of Zero Value

11. Press the enter button. The Zero Value weight menu appears.

12. Traditional Calibration requires a zero point and the physical placement of test weights on the scale. To set the Zero Value Weight:
    a. Remove all weight "live load" from the Scale. The Zero Value should be 0.0.

> **CAUTION** The scale MUST be empty.

    b. Wait 12 seconds or more.
13. Use the left and right arrow buttons to position the cursor. Use the up or down arrow buttons to enter the Zero Value for this instrument.

    Note: *Most applications will set the Zero Value to 0.00.*

14. Press the enter button to save the entry.
15. Press the down arrow button until the cursor is in front of "Do Trad Cal " (Zero)".
16. Press the enter button to Do the Cal Trad Cal (Zero).
    a. A "Cal Completed OK" message appears briefly if the calibration was successful.
    b. An Error number appears if the calibration was not successful. An Error list is provided with the troubleshooting information later in this guide. Refer to this list in order to correct the error.
17. Press the down arrow button until the cursor is in front of Span Value.
18. Press the enter button. The Span Weight menu appears. The last Span Weight is displayed.

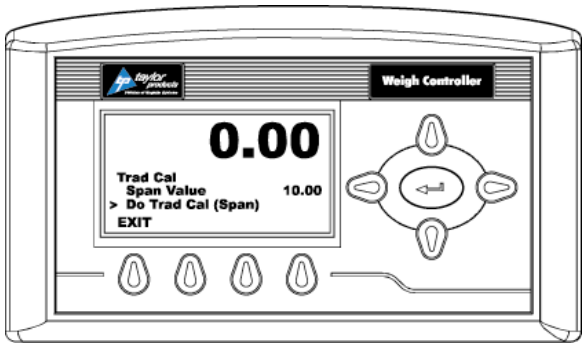

Figure 3-14. Span Value Displayed

19. To set the Span Weight:
    a. Place a certified test weight on the scale.
    b. Use the left and right arrows to position the cursor and the up or down arrows to enter the value of the test weight. If a 10 lb. weight is used, enter 10.00.
    c. Press the enter button to save the entry.
20. Press the down arrow button until the cursor is in front of "Do Trad Cal (Span)".
21. Press the enter button to Do the Trad Cal (Span).
    a. A "Cal Completed OK" message appears briefly if the calibration was successful.
    b. An Error number appears if the calibration was not successful. An Error list is provided with the Troubleshooting information later in this guide. Refer to this list in order to correct the error.
22. The scale is now calibrated.

3.8.2 Calibrating the T3000 Control Panel

The Calibration Menu is used to calibrate the weighing system of the T3000. While there are two menu options for different calibration methods, only one is used on Magnum Systems machines. That method is the TRAD calibration method.

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 will use the left/right keys to toggle the selection to TRAD, then will 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.*

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.

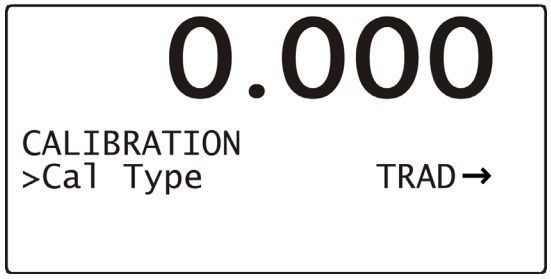

Figure 3-15. Calibration Type Screen (TRAD selected)

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.

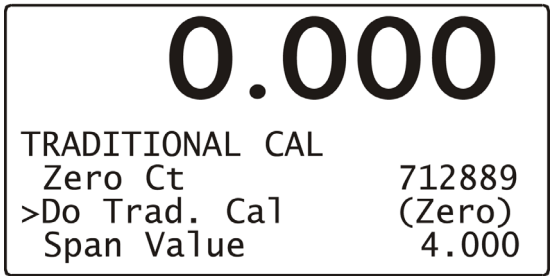

Figure 3-16. Do Trad. Cal (Zero)

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.

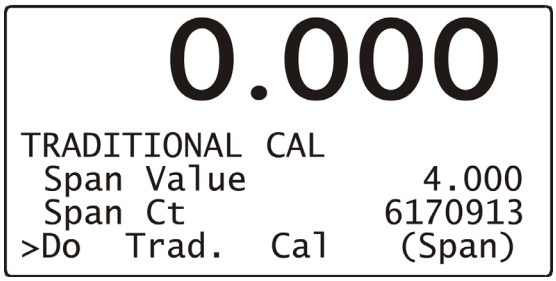

Figure 3-17. Do Trad. Cal (Span)

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

3.9 Timer Programming

All models of the TE10 machines utilize timers to allow them to function correctly. These timers are adjustable. The TE10 utilizes plugin style block timers. These timers are adjusted using a set of switches. The timer mechanism is located inside the control box.

These timers are equipped with 10 dipswitches. The switches are either ON or OFF. To calculate the amount of delay that is currently set, the operator will need to add the value of all of the switches that are in the ON position. Each switch has a specific amount of delay that it controls. The amount of each delay is different. The top dipswitch controls the shortest amount of delay, and the bottom dipswitch controls the largest amount of delay. The amount of delay that is set can be calculated by adding the value of each switch that is turned on.

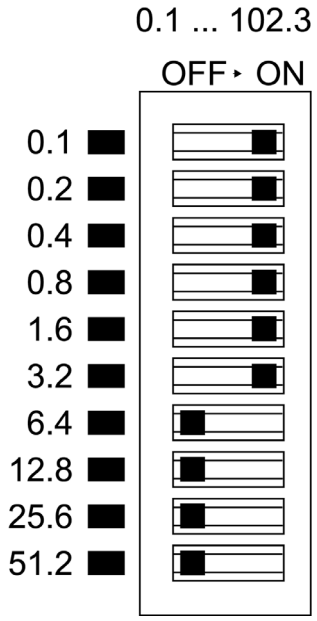

Figure 3-18. Plugin Style Block Timer Switches

In the graphic shown above, the delay is set to 6.3 seconds. If the switch for position 3.2 were switched to the OFF position, the amount of delay would be 3.1 seconds.

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Chapter 4
Operation

4.1 General Description

This chapter will provide detailed descriptions of the operational controls of the TE10.

4.2 General Fill Cycle Information

The TE10 is capable of running as a single set point (SSP) or dual set point (DSP) machine. When filling as a single set point machine, only one fill rate, bulk rate, will be used.

When configured as a dual set point machine, it will use two fill rates, bulk rate and dribble rate. Bulk rate is a faster rate that is used to fill the package quickly. Once the package achieves the SP1 weight, the frequency of the vibrator pan feeder will be reduced to slow the fill rate to the dribble rate. Once the package achieves the SP2 weight, the vibrator pan feeder will shut off to stop the flow of product completely. Once the product that is in free fall settles into the weigh bucket, the product weight should match the target weight.

Even though both SSP and DSP machines will use the bulk feed rate, the SSP machine will typically use a slower bulk feed rate than a DSP machine. This is done to maintain accuracy in the SSP machine. The bulk feed rate on a DSP machine can run at a faster rate, because when the DSP machine has placed enough product to equal about 90% of the desired package weight, the vibrator pan feeder will slow to a much slower rate.

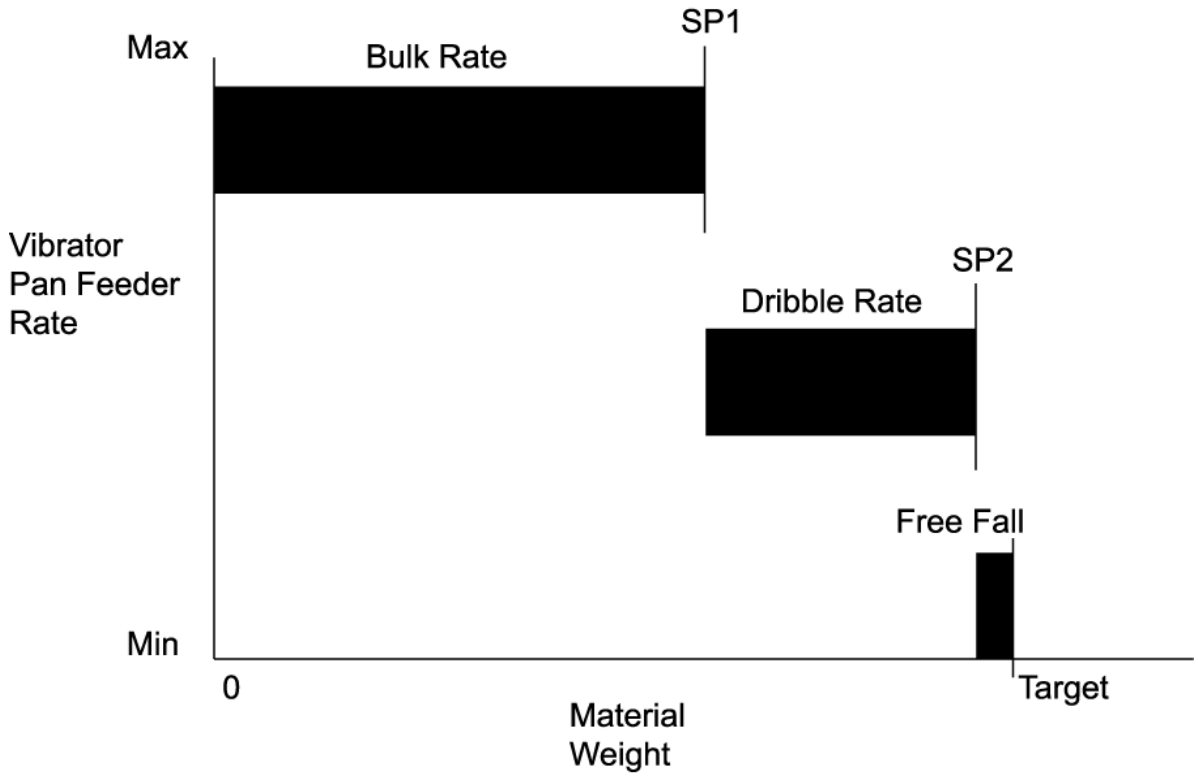


Figure 4-1. Fill Rates (DSP)

4.2.1 Basic Fill Process

Regardless of the type of controls that the TE10 is equipped with, the fill process will be similar. The primary difference is whether the machine is set up to run as a single or dual set point machine.

4.2.1.1 Single Set Point Machines

For single set point machines, regardless of the type of control panel that they are equipped with, the typical fill cycle will run the same. Each fill cycle consists of three basic processes. The processes will overlap one another. The processes are:

- Filling the weigh bucket
- Placing the bag on the spout
- Filling the bag

4.2.1.1.1 Filling The Weigh Bucket

1. The operator will pull the STOP button out to initiate the fill cycle.
2. The weigh bucket dump gate will close, if it is not already closed.
3. The vibrator pan feeder will turn on. Product will flow into the weigh bucket.
4. When the weight of the product in the weigh bucket reaches the cutoff weight setting, the vibrator pan feeder will stop. The flow of product into the weigh bucket will stop.

4.2.1.1.2 Placing The Bag On The Spout

The following steps can be completed while the weigh bucket is being filled. If the operator chooses to perform these steps after the weigh bucket has filled, the efficiency of the machine/fill cycle is reduced.

1. Open the bag and place it on the spout, making sure that it is even. This means that the top of the bag should be level and line up with the top of the bag clamp pads.
2. Actuate the bag clamps. The operator does this by tripping the bale on the bag clamp actuator switch, or by using the optional foot switch.
3. The bag clamps will actuate and clamp the bag to the spout.
4. Once the product has been dropped into the bag. A timer in the controller will run. After the timer expires, the bag clamps will release the bag.

4.2.1.1.3 Filling The Bag

1. After the product in free fall has settled into the weigh bucket, the control panel will take the final weight measurement. If the weight is within the acceptable limits, the dump gate will open, allowing the product to drop into the package. If the weight is not within the acceptable limits, the operator will have to manually intervene to get the machine to release the product to the package. Refer to 4.2.1.3 Over/Under Weight Conditions.
2. Once the dump gate opens to drop the product, the dump gate timer will run. After the timer expires, the dump gate will close.

4.2.1.2 Dual Set Point Machines

For dual set point machines, regardless of the type of control panel that they are equipped with, the typical fill cycle will run the same. Each fill cycle consists of three basic processes. The processes will overlap one another. The processes are:

- Filling the weigh bucket
- Placing the bag on the spout
- Filling the bag

4.2.1.2.1 Filling The Weigh Bucket

1. The operator will pull the STOP button out to initiate the fill cycle.
2. The weigh bucket dump gate will close, if it is not already closed.
3. The vibrator pan feeder will turn on at the bulk feed rate. Product will flow into the weigh bucket.
4. When the weight of the product in the weigh bucket reaches the dribble setting, the vibrator pan feeder will slow to the dribble rate.
5. When the weight of the product in the weigh bucket reaches the cutoff weight setting, the vibrator pan feeder will stop. The flow of product into the weigh bucket will stop.

4.2.1.2.2 Placing The Bag On The Spout

The following steps can be completed while the weigh bucket is being filled. If the operator chooses to perform these steps after the weigh bucket has filled, the efficiency of the machine/fill cycle is reduced.

1. Open the bag and place it on the spout, making sure that it is even. This means that the top of the bag should be level and line up with the top of the bag clamp pads.
2. Actuate the bag clamps. The operator does this by tripping the bale on the bag clamp actuator switch, or by using the optional foot switch.
3. The bag clamps will actuate and clamp the bag to the spout.
4. Once the product has been dropped into the bag. A timer in the controller will run. After the timer expires, the bag clamps will release the bag.

4.2.1.2.3 Filling The Bag

1. After the product in free fall has settled into the weigh bucket, the control panel will take the final weight measurement. If the weight is within the acceptable limits, the dump gate will open, allowing the product to drop into the package. If the weight is not within the acceptable limits, the operator will have to manually intervene to get the machine to release the product to the package. Refer to 4.2.1.3 Over/Under Weight Conditions.
2. Once the dump gate opens to drop the product, the dump gate timer will run. After the timer expires, the dump gate will close.

4.2.1.3 Over/Under Weight Conditions

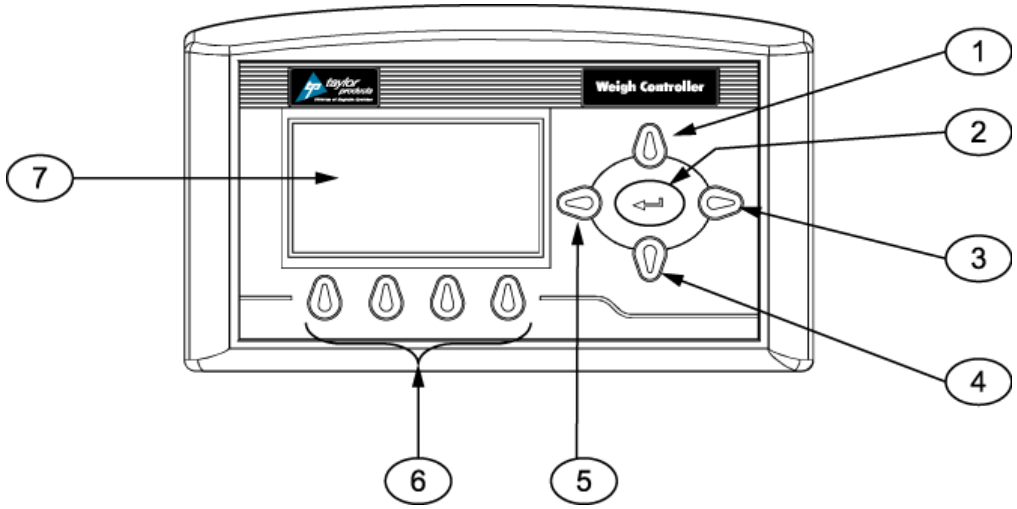
TE10 machines have a unique feature to prevent the operator releasing a package that is either underweight or overweight. On machines with the T4000 control panel, this feature is the Target Min/Max menu option. On machines with the T3000 control panel, this feature is the Over/Under Reject menu option. The operator will manually set the points where the package would be considered overweight and underweight. If the final weight of the product in the weigh bucket is outside of this range, the TE10 will hold the product in the weigh bucket until the operator manually releases the bag by pushing the MANUAL DUMP button. This feature is helpful when there is a sudden change in the bulk density of the material or when the feed bin runs out of material. This guarantees that no bag over or under the allowable weight will be shipped.

4.3 Operational Controls

The standard TE10 is equipped with T4000 controls. Optionally, the TE10 can be ordered with T3000 controls.

4.3.1 Control Box With T4000 Control Panel

The TE10 comes standard with a T4000 control set. The T4000 control set uses different levels of voltage to monitor and control the weighments.



Item #	Description	Item #	Description
1	Up arrow button	5	Left arrow button
2	Enter button	6	Function buttons
3	Right arrow button	7	LCD panel
4	Down arrow button		

Figure 1-2. T4000 Faceplate

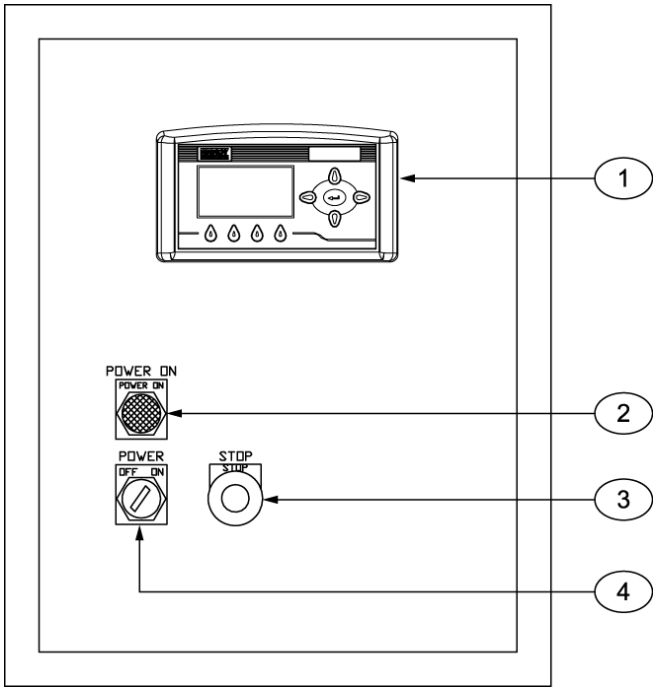
Magnum Systems and Hardy Instruments have jointly designed the T4000. The T4000, control switches, and indicators are mounted in the front side of the control box. The T4000 provides the operator with total monitoring and instrument control.

The T4000 features the following functions:

- Weight display
- Function keys
- Enter key
- Arrow keys

Along with the T4000 control panel, the control box contains the following additional controls are found in the control box:

- STOP button/indicator
- POWER ON indicator
- POWER switch



Item #	Description	Item #	Description
1	T4000 control panel	3	STOP button/indicator
2	POWER ON indicator	4	POWER switch

Figure 4-3. Control Panel With T4000 Controls

The POWER switch is located on the lower left corner of the control box and has two positions, OFF and ON. As its name indicates, this switch is used to turn the machine on and off. Located directly above the POWER switch is the POWER ON indicator. When the POWER switch is turned to the ON position, if the machine is connected to its power source, this indicator will illuminate green. The machine will also be equipped with a STOP button/indicator, which is located to the right of the POWER switch. The button itself is made of a translucent red plastic. When the button is pressed, the machine will immediately stop functioning, and the button will be illuminated to indicate that it has been pressed.

4.2.2 Control Box With T3000 Control Panel

The TE10 is available with a T3000 control panel that was jointly designed by Magnum Systems and Hardy Instruments.

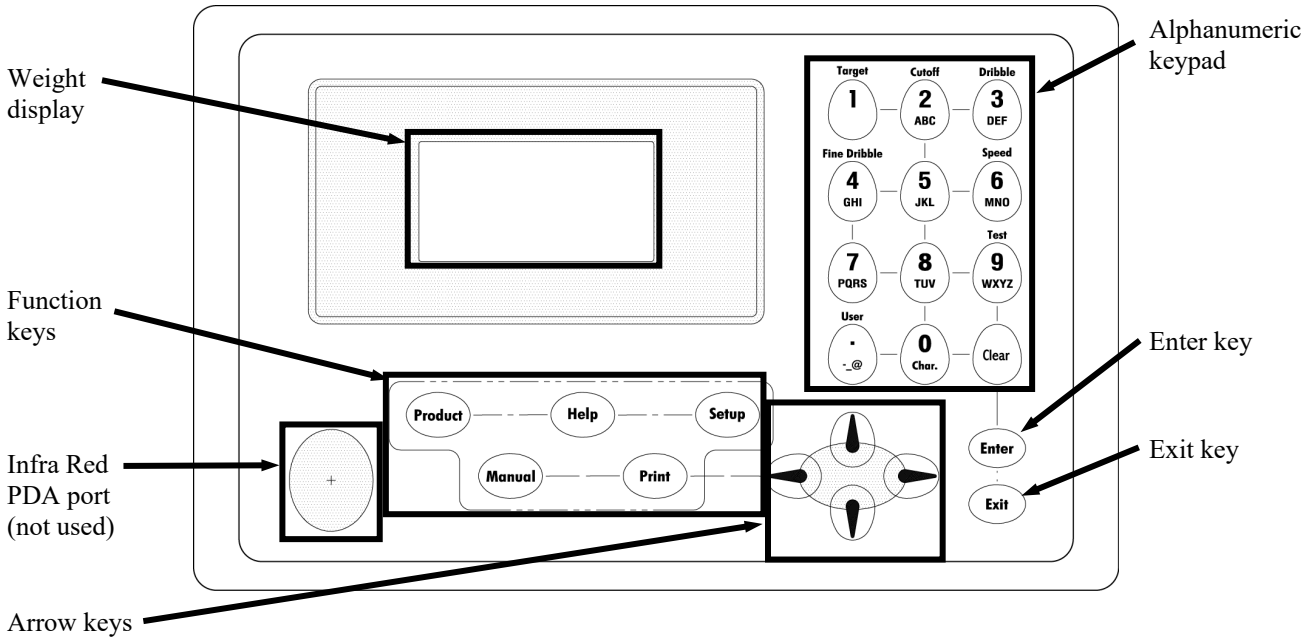


Figure 4-4. Taylor T3000 Control Panel

The front of the T3000 is equipped with a weight display, an alphanumeric keypad, directional arrow keys, function keys, an infrared PDA port (not used), 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 package weight. The remaining four lines are used for monitoring system statuses, historical data, and configuration settings of the TE10.

The T3000 is equipped to provide alarms for the following conditions:

- Fill alarms
- Jog alarms
- Filler discharge alarms

For a full description of these alarms, refer to Chapter 3: Operating Procedures/Filler, of the Magnum Systems Filler/Dispenser/T3000 User Guide, that is included in Appendix E of this manual.

Refer to the *Magnum Systems Filler/Dispenser/IBC T3000 User Guide*, for more information.

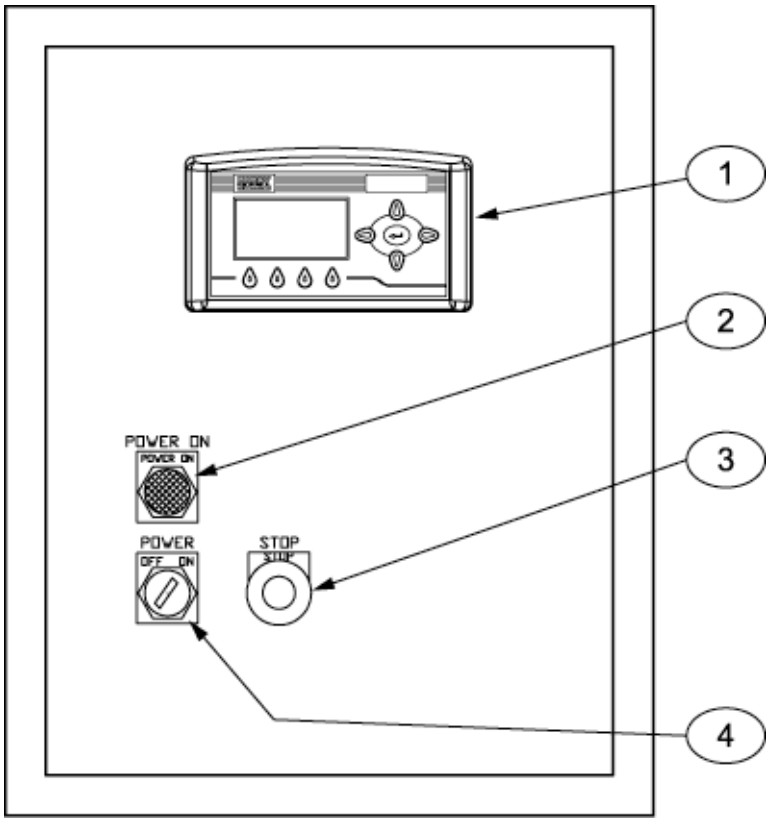
4.3 Starting the Unit

Once the unit has been installed, the unit can now be started. The process for turning on the TE10 will vary based on the type of control set that is used.

4.3.1 Starting The TE10 With T4000 Control Panel

On TE10 units that are equipped with the T4000 control panel, the master power switch is located on the lower left corner of the control panel. The switch has two positions, OFF, and ON. To turn the TE10 on, turn the switch to the ON position. The POWER ON indicator should illuminate Green.

Prior to starting the fill cycle, allow the TE10 to warm up for 15 minutes.



Item #	Description	Item #	Description
1	T4000 control panel	3	STOP button/indicator
2	POWER ON indicator	4	POWER switch

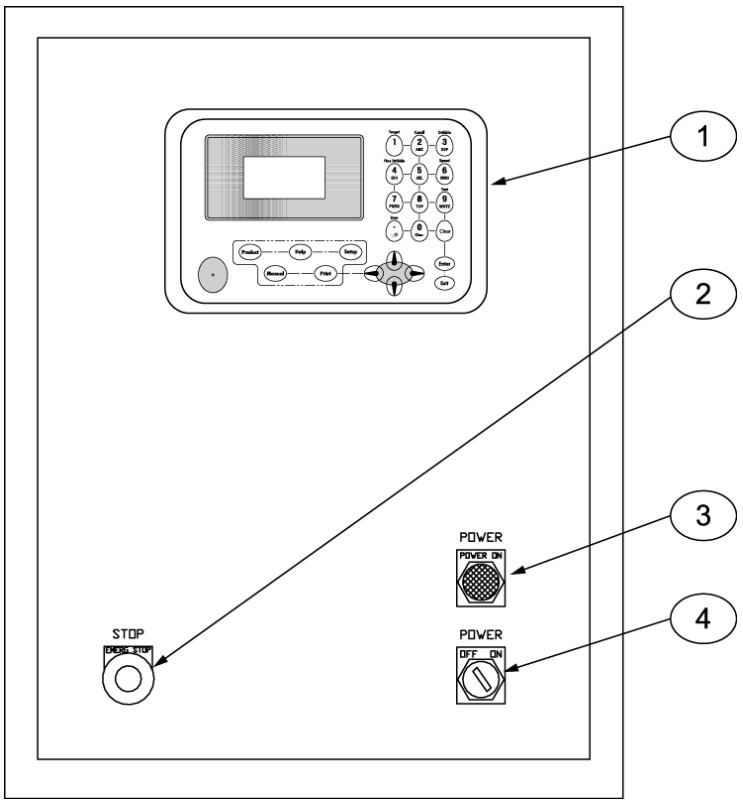
Figure 4-5. Control Box with T4000 Control Panel

CAUTION When the power switch is in the ON position, the machine can start operating automatically, or someone could accidentally start the machine.

4.3.2 Starting The TE10 With T3000 Control Panel

On TE10 units that are equipped with the T3000 control panel, the master power switch is located on the lower right corner of the control panel. The switch has two positions, OFF, and ON. To turn the TE10 on, turn the switch to the ON position. The POWER ON indicator should illuminate Green.

Prior to starting the fill cycle, allow the TE10 to warm up for 15 minutes.



Item #	Description	Item #	Description
1	T3000 control panel	3	POWER ON indicator
2	STOP button/indicator	4	POWER switch

Figure 4-6. Control Box with T3000 Control Panel

CAUTION When the power switch is in the ON position, the machine can start operating automatically, or someone could accidentally start the machine.

4.4 Initial Setup

TE10 units can be categorized based on their control type, as follows:

- T4000 control
  - Single set point
  - Dual set point
- T3000 control
  - Single set point
  - Dual set point
  - Triple set point

The setup procedure is different based on the type of TE10.

4.4.1 Using the T4000 to Configure Set Points and Vibrator Speeds

TE10 units equipped with the T4000 can be configured as a single set point, dual set point, or triple set point units. Regardless of how the T4000 is going to be used, the pre-fill procedures are the same as are covered in the T4000 single set point setup procedures below. Units that use multiple fill speeds have additional steps that need to be taken to program those fill speeds.

4.4.1.1 T4000 Single Set Point

A TE10 with the T4000 that is going to be used as a single set point unit utilizes a single fill speed (bulk rate). The Pre-Fill procedure for a single set point unit is listed below:

1. From the Standby Screen, press the function key under SP2 on the display. The SP2 Menu will appear.
2. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
3. Once the desired SP2 weight is displayed, press the function key under EXIT to save the setting and return to the Standby Screen.
4. From the Standby Screen, press the function key under MENUS on the display. The Configuration Menu will appear.
5. Use the up/down arrows to place the cursor in front of the Setup line.
6. Press the Enter key. The Setup Menu will appear.
7. With the cursor in front of the Analog Out line, press the Enter key. The Analog Out Menu will appear.
8. With the cursor in front of the Fast A setting, press the Enter key. The Fast A menu will appear.
9. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
10. Once the desired Fast A setting is displayed, press the function key under EXIT four times to save the setting and return to the Standby Screen.

4.4.1.2 T4000 Dual Set Point

A TE10 with the T4000 that is going to be used as a single set point unit utilizes a single fill speed (bulk rate). The Pre-Fill procedure for a single set point unit is listed below:

1. From the Standby Screen, press the function key under SP1 on the display. The SP1 Menu will appear.
2. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
3. Once the desired SP1 weight is displayed, press the function key under EXIT to save the setting and return to the Standby Screen.
4. From the Standby Screen, press the function key under SP2 on the display. The SP2 Menu will appear.
5. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
6. Once the desired SP2 weight is displayed, press the function key under EXIT to save the setting and return to the Standby Screen.
7. From the Standby Screen, press the function key under MENUS on the display. The Configuration Menu will appear.
8. Use the up/down arrows to place the cursor in front of the Setup line.
9. Press the Enter key. The Setup Menu will appear.
10. With the cursor in front of the Analog Out line, press the Enter key. The Analog Out Menu will appear.
11. With the cursor in front of the Fast A setting, press the Enter key. The Fast A menu will appear.
12. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
13. Once the desired Fast A setting is displayed, press the function key under EXIT to return to the Analog Out Menu.
14. Use the up/down arrows to place the cursor in front of the Slow A line.
15. Use the left/right arrow keys to move the cursor from position to position, and the up/down arrows to change the number in a specific digit.
16. Once the desired Slow A setting is displayed, press the function key under EXIT four times to save the setting and return to the Standby Screen.

4.4.3 Using the T3000 to Set Points and Vibrator Speeds

Setting up a TE10 that is equipped with the T3000 is a different process. The T3000 is capable of storing the configuration of up to 25 different products. The difference between two products may just be the package size, while the substance that they are packaging is the same. Each product has its own individual settings. The operator can switch from one product selection to another quickly, without having to re-program the controller.

4.4.3.1 Configure A Product From Scratch

When the TE10 is equipped with a T3000 control panel, the operator can program the machine for a specific product (target weight, feed rates, etc.), then save that information so it can easily be accessed when needed. 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.
    3. 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.

4.4.3.2 Selecting A Pre-Programmed Product From The List

Once a product has been programmed into the controller, it will be listed on the available product list. Once more than one product has been saved, the operator can quickly switch back and forth between products, as needed.

1. Position the first container for filling.
2. Check the T3000 to make sure the Filler is configured for the specific product that is being used.
3. Make sure the T3000 is in Standby Mode.
4. Press the User key to pull up the User Menu.
5. Press the Clear key to erase the current entry.
6. Enter the user ID.
7. Press the Enter key.
8. If the product shown on the display is the product that is going to be packaged, the setup is complete. If not, continue to Step 9.
9. If the product shown on the Standby Menu is not the product being packaged, do the following:
    a. 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.
    b. The operator can change the product using 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. The menu for that product will appear, with the cursor adjacent to the Accept Settings line. Press Enter again to accept the settings, or use the up/down arrows to scroll through the available parameters for that product. To change a specific parameter, place the cursor next to that line and key in the new value for that parameter, followed by pressing the Enter key. When finished, scroll back to the Accept Settings line and press the Enter key to accept the changes.

Chapter 5
Preventive Maintenance

5.1 General Description

To minimize downtime, preventive maintenance should be made a priority. Proper preventive maintenance practices will also extend the life of the equipment. Developing a preventive maintenance schedule will ensure that critical maintenance procedures are not missed.

5.2 Daily Maintenance Procedures

At the start of each working day, the following maintenance tasks should be performed before starting the machine:

1. Thoroughly clean the machine.
2. Check all fasteners.
3. Drain any water that may have accumulated in the water separator in the air supply line.

5.2.1 Cleaning

Keeping the TE10 clean is an important part of the daily maintenance tasks. Remove any dust and/or dirt that has accumulated on a daily basis. Keeping the unit clean will keep debris from entering the control mechanisms, which could cause the performance of the TE10 to suffer. Also, by taking the time to clean the TE10 on a daily basis, the operator will be able to give the TE10 a thorough inspection. Take the time to inspect all wiring, air supply lines and connections, and components for possible damage.

5.2.2 Check All Fasteners

The operator should check all fasteners on the TE10 on a daily basis. Loose fasteners can cause unwanted vibration and wear.

5.2.3 Drain Water From the Water Separator

It is very important to remove unwanted moisture from the incoming air to ensure proper operating of the pneumatic components. At the beginning of each day, the operator should empty the water from the water separator. Follow the process below to drain the water.

1. Disconnect the air supply line.
2. Place a container under the drain valve.
3. There are two types of drain valves, follow the appropriate step below to open and close the drain valve:
    a. If the water separator has a pin-type drain valve, press the pin upward and hold it in to drain the water. Release the pin once all water has drained.
    b. If the water separator has a screw-type drain valve, turn the screw cap counter-clockwise to completely loosen the cap. After the water has completely drained, lightly push the cap upward to engage the threads and turn the cap clockwise until snug.
4. Discard the water from the container.
5. Reconnect the air supply line.

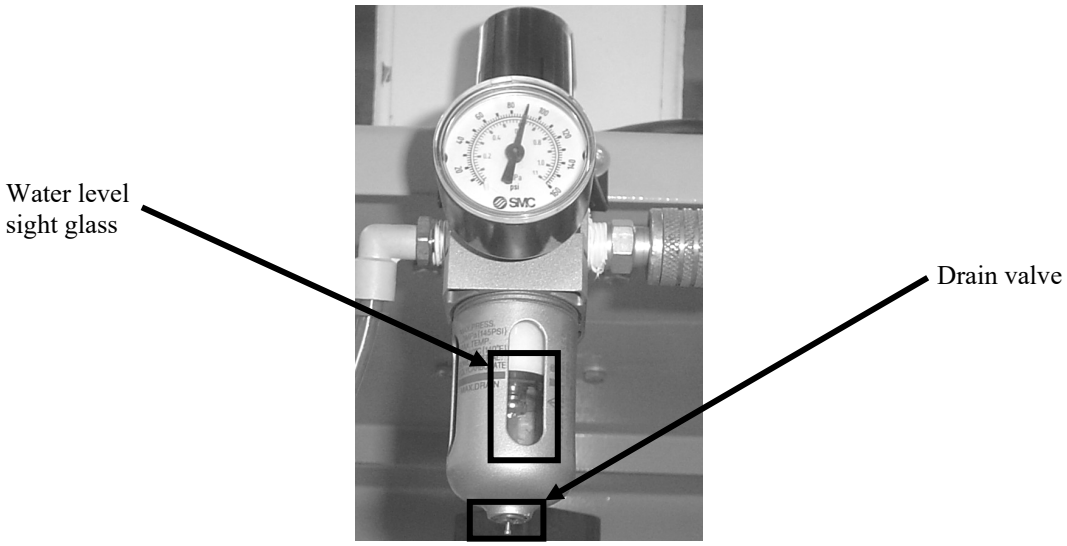


Figure 5-1. Air Supply Line Water Separator

5.3 Monthly Maintenance

On a monthly basis, the TE10 should be recalibrated. Refer to 3.8 Calibration.

Chapter 6
Troubleshooting

6.1 General Description

When a problem occurs, proper troubleshooting techniques will allow maintenance personnel to quickly identify the problem.

6.2 The Troubleshooting Process

The actual troubleshooting process is just as important as the repair process. Use the following troubleshooting keys to assist with the troubleshooting process:

- Identify the trouble symptom
  - What is the problem?
  - What were the circumstances when the problem occurred?
  - Could weather be a factor?
  - Are there any other contributing factors?
- Sectionalize the problem
  - Look at the problem.
  - What area of the machine is the problem occurring in?
  - Has anything changed recently?
- Isolate the problem
  - Try simple things first.
  - Observe indication and trouble codes.
  - Check test points.
  - Avoid complicating the problem.

6.3 Trouble Symptoms

Use the following information to assist in troubleshooting.

6.3.1 Scale is Not Accurate

If the load cell is providing inaccurate readings, check the following:

1. Check for proper calibration. Refer to 3.8 Calibration.
2. Check the surge hopper to make sure an adequate supply of material is available in the product hopper to ensure a consistent head pressure.
3. Check to make sure there is nothing restricting material flow from the surge hopper
4. Lower the vibrator to reduce the amount of material in free-fall. Refer to 7.2.3 Vibrator Pan Feeder Height Adjustment.

6.3.2 Scale Does Not Return to Zero

If the scale reading does not return to zero after weigh bucket has been emptied, check the following items:

1. Is there adequate slack in the air supply lines to the weigh bucket dump cylinder?
2. Are the stabilizer brackets in place? If so, are they in the level/horizontal position, if not they need to be adjusted up or down on either end so the link are level, also the links need to be loose on the support bolts so the weigh bucket can swing freely and return to a zero reading on the weight indicator each time.
3. Check the calibration. Refer to 3.8 Calibration.
4. Check for any outside interference, such as cords, hoses, etc., that would effect the movement of the weigh bucket.

6.3.3 The Weighments are Always Too Light

If the weighments are consistently coming up too light, check the following:

1. Try lowering the dribble value (scale must have time to react, if material is coming in on the bulk rate too fast, the flow can cause a spike that will shut flow off too early.
2. Try lowering the bulk feed rate or try restricting the flow of material to the vibrator feeder tray by adjusting the flow gate

6.3.4 The Weigh Bucket Dump Gate Closing Too Hard

If the dump gate on the weigh bucket is closing too hard, check the following:

1. Check the MAC valve for proper adjustment. Refer to 7.2.1 MAC Valve Adjustment.
2. Check the dump delay. If the dump delay is set too short, adjust the dump delay. Refer to 7.2.4 Dump Gate Delay Adjustment.
3. Check to make sure that the product is not sticking to the hopper.

6.3.5 Weigh Bucket Dump Gate Fails Close Completely

If the weigh bucket gate will not fully close, check the following:

1. Make sure machine air pressure is at proper level. Refer to
2. Check the MAC valve for proper adjustment. Refer to 7.2.1 MAC Valve Adjustment.
3. Check for product getting trapped in the dump gate. If the product is getting trapped, adjust the dump delay to allow the gate to stay open longer. Refer to 7.2.4 Dump Gate Delay Adjustment.
4. The MAC valve may need to be replaced. Refer to 7.3.2 MAC Valve Replacement.

6.3.6 Load Cell Fails Frequently

If the load cells on a TE10 are failing frequently, check the following items:

1. Check the operating conditions to make sure that the load cell is not jarred, jerked, or being loaded with a sudden excessive force.
2. Check the load cell to make sure that the product being weighed does not exceed the rating of the load cell.

6.3.7 Weigh Bucket Overflows

If the weigh bucket overflows, check the following:

1. Check the calibration. Refer to 3.8 Calibration.
2. Check the weigh bucket to make sure that it is hanging freely on the load cell and that it is not bound up.
3. Check the weigh bucket to make sure that it is large enough.
4. Call Magnum Systems to discuss options for a larger bucket.

6.3.8 Fill speeds are too slow

If the fill rate is slow, check the following items:

1. Adjust the vibrator rate to a faster speed
2. Adjust the flow gate to allow for more bed depth in the feeder pan.
3. Use less dribble time (only applies in dual set point units).
4. Check to make sure that the product is not sticking to the weigh bucket.

6.3.9 Accuracy Problems While Doing a Wide Range of Weighments (i.e. 4 oz, 1 lb, and 5 lb)

1. Check the surge hopper to make sure that the product is not bridging.

6.3.10 Vibrator Does Not Run at Full Speed

1. Check the vibrator speed setting.
2. Check the electrical connections for the vibrator.
3. Replace the vibrator control board.

6.4 System Alarms

During the filling process, conditions may occur that result in an alarm from the TE10. Depending on the type of controller used, the alarms will vary.

6.4.1 T4000 Alarms

During the filling process, conditions may occur that result in one of the following T4000 alarms:

- A/D Failure Error! – An internal electronics error has occurred. Retry the operation. If the failure error re-occurs, power the machine down, then restart the machine and try the operation again. If the operation still fails, contact Magnum Systems technical assistance.
- A/D Convert Error! – The input from the load cell is outside of the acceptable range. Check the load cell for damage. If a new load cell has been installed, check the rating of the load cell to make sure that the correct load cell has been installed.
- Motion Error! – The controller has detected that the vessel or product is in motion and the controller cannot finalize the weighment. Check the machine settings and retry.
- Trad Cal Error! – An error occurred during the calibration process. Try to calibrate the machine again. If the error occurs again, contact Magnum Systems technical assistance.
- C2 Cal Error! – This error should not occur, as Magnum Systems does not use C2® type load cells. If this error does occur, contact Magnum Systems technical assistance.
- Too Lo Error! – Verify that the load cell signal level is 0-15 mV. Verify that there is enough weight on the scale. Perform Span then go back and Zero.
- Too Hi Error! – Verify that the load cell signal level is 0-15mV. Verify that there is not too much weight on the scale. Perform Span then go back and Zero.
- No C2 Sensor! – Instrument did not detect a C2® Load Sensor. This error should appear if C2® Cal is selected, as Magnum Systems does not use C2® type load cells. If this error does occur, contact Magnum Systems technical assistance.
- CAL Failed! – There are too few counts between Zero and Span. Reset either of the values, so that the counts are more than 1,000 counts of each other.
- C2 Caps Unequal! – This error should not occur, as Magnum Systems does not use C2® type load cells. If this error does occur, contact Magnum Systems technical assistance.
- HI/LO Too Close! – The Zero and Span values are not more than 1,000 counts from each other or there is no change, or there is a negative change. Reset either of the values, so that the counts are more than 1,000 counts of each other.
- Function Error! – The operator has pressed a function button and the function did not work. Try the function again. If it does not work, cycle the power off and on. If it still doesn't work, contact Magnum Systems technical assistance.
- Not Allowed! – The value entered by the operator is outside of the range that is allowed. The operator should try another value that is within the acceptable range.
- Security Violation! – User signed in with a password that does not allow performance of a certain function or entry to certain menus. Security level of the user identified in the User ID, too low for the menu or function.
- Overrange – The final package weight has exceeded the set point target.
- Gross ADC Error – The controller has detected a load cell error. Check all load cell connections. Repair connections as necessary. Check the load cell for damage. Replace the load cell if necessary. Refer to 7.3.3 Load Cell Replacement.

6.4.2 T3000 Alarms

During the filling process, conditions may occur that result in an alarm from the T3000. There are three different categories of alarms:

- Fill Alarms
- Jog Alarms
- Filler Discharge Alarms

For a full description of these alarms, refer to Chapter 3: Operating Procedures/Filler, of the Magnum Systems Filler/Dispenser/IBC T3000 User Guide. This guide will be included in Appendix E of this manual, if the machine was ordered with the T3000 control panel.

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Chapter 7
Repair and Adjustment

7.1 General Description

When troubleshooting procedures have indicated that a component needs to be repaired, replaced, or adjusted, following the repair procedures contained in this chapter will assist maintenance personnel return the machine to operation in a timely manner.

7.2 Component Adjustment Procedures

Some components on the TE10 may require periodic adjustment. Use the following procedures to adjust those components.

7.2.1 MAC Valve Adjustment

On the top of the MAC valve, there are two adjustment screws that allow the operator to the speed of the opening and closing of the pneumatic valve. The adjustment is made as follows:

1. Use a screwdriver to hold the screw, while using a wrench to loosen the jam nut.
2. To increase the speed of the valve actuation, turn the screw clockwise. To slow the speed of the valve actuation, turn the screw counter-clockwise.
3. Once the desired actuation speed has been achieved, tighten the jam nut.

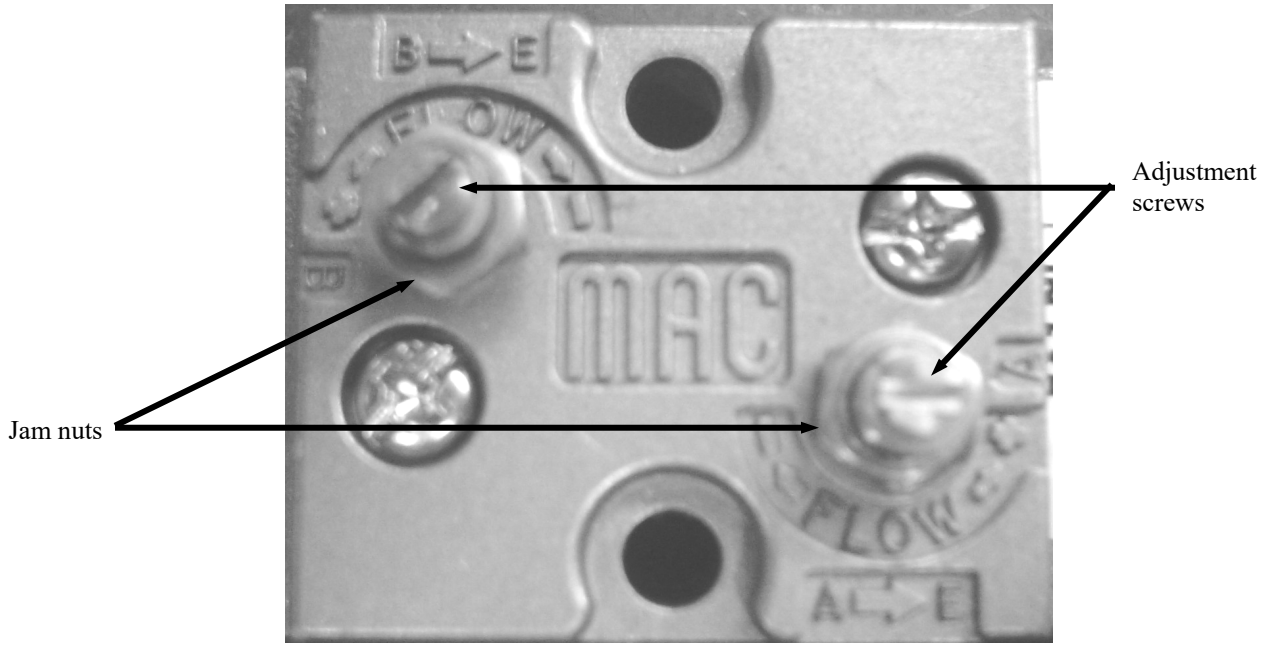

Figure 7-1. MAC Valve Adjustment Screws

7.2.2 Adjusting the Weigh Bucket Balance

The weigh bucket hangs from the load cell by an eyebolt that is centered in the weigh bucket bail. The balance of the weigh bucket may need adjusted to ensure that it hangs straight. Balance is achieved by using washers that are secured on a bolt with a nut.

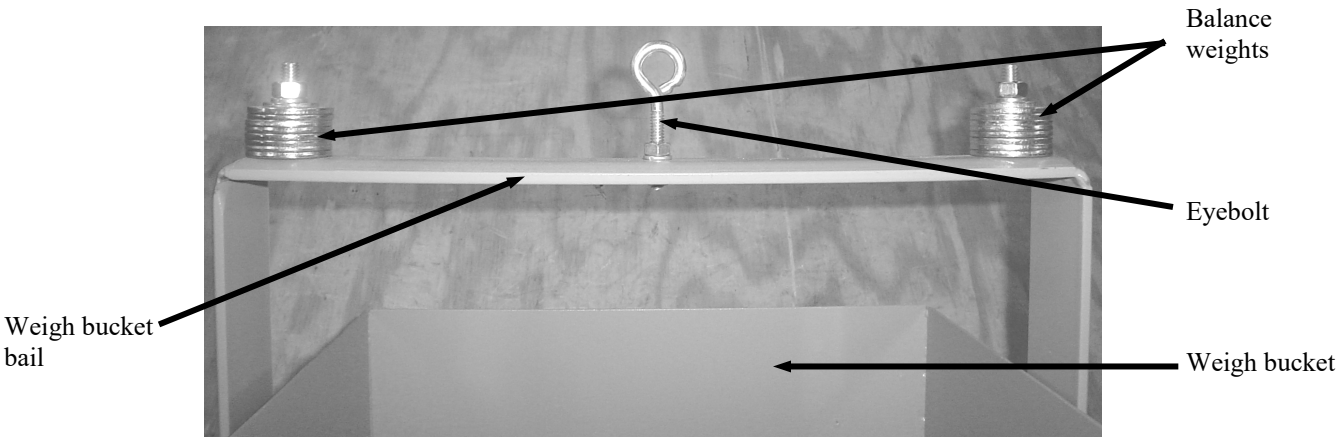

Figure 7-2. Balancing Weights for the Weigh Bucket

7.2.3 Vibrator Pan Feeder Height Adjustment

The vibrator pan feeder height may need to be adjusted, based on the type of material that is being packaged. Adjust the height using the procedure below:

1. Loosen the jam nut on the all-thread at the rear of the machine.
2. Turn the bottom nut to adjust the height of the pan feeder.
3. Once the desired height is achieved, tighten the top nut down to lock the vibrator pan height.

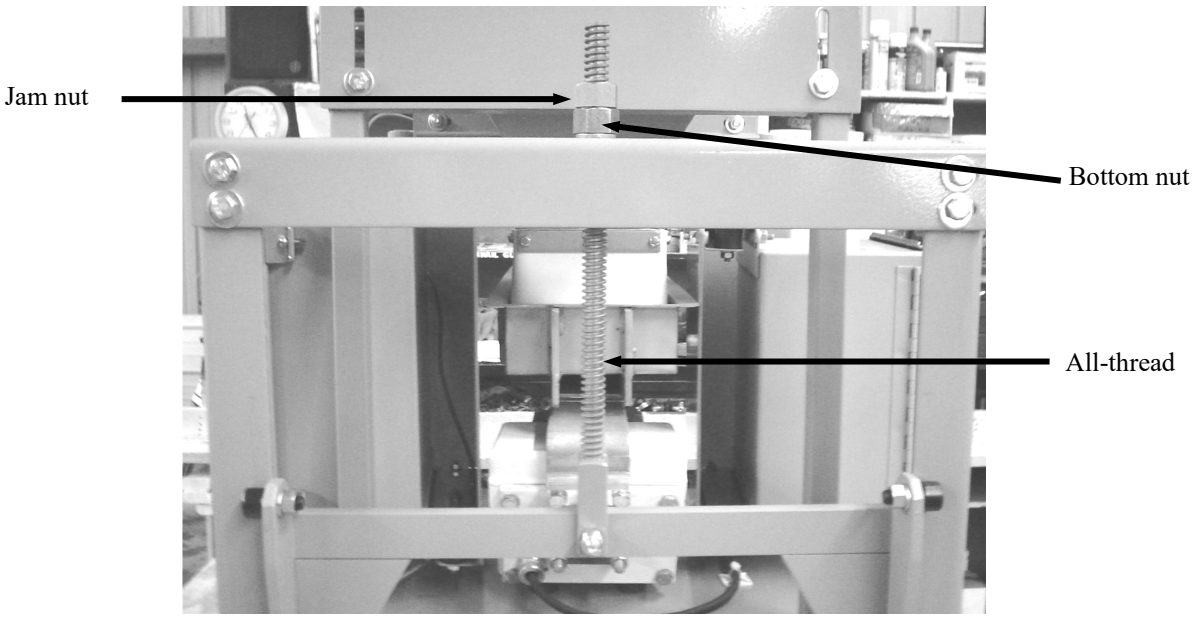

Figure 7-3. Vibrator Pan Feeder Height Adjustment

7.2.4 Dump Gate Delay Adjustment

The weigh bucket dump gate delay adjustment is done using the black timer on the left. The setting of this timer determines the amount of time that the dump gate remains open. The setting should be long enough to ensure that all of the product in the weigh bucket is emptied into the package, yet not so long as to be inefficient. The timer settings are made using dip switches on the timer. To determine the amount of time currently set, add up the times of each switch setting. Refer to 3.9 Timer Programming for more information.

7.2.5 Vibrator Start Delay Adjustment

The vibrator start delay adjustment is set using the black timer on the right. The setting of this timer determines the amount of time that the vibrator waits to begin the next fill cycle after dumping the weigh bucket. The setting should be long enough to ensure that the operator has adequate time to remove the filled package, and install an empty package under the weigh bucket, before the weigh bucket fills. The timer settings are made using dip switches on the timer. To determine the amount of time currently set, add up the times of each switch setting. Refer to 3.9 Timer Programming for more information.

7.2.6 Air Pressure Adjustment

The TE10 requires compressed air to be at approximately 80-100 PSI (.55-.69 MPa) for proper operation. If air pressure is too high or too low, the air pressure regulator can be used to adjust the output air pressure.

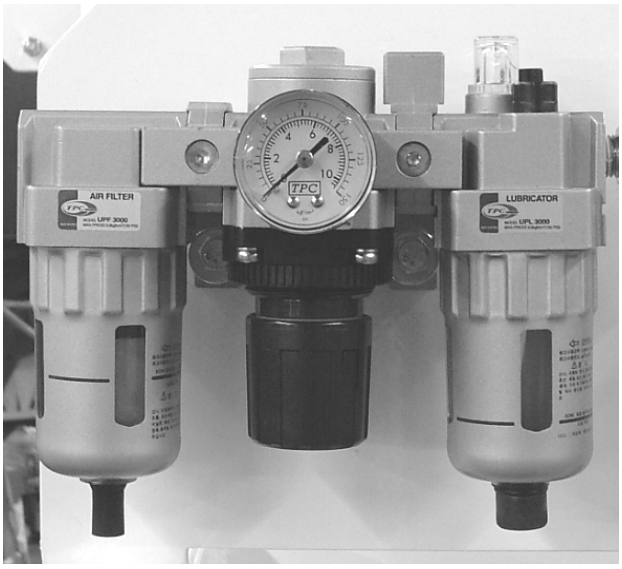

Figure 7-4. Air Pressure Adjustment

7.2.7 Flow Gate Adjustment

The flow gate has a direct affect on the rate at which the product is dispensed. The higher the gate, the deeper the material in the pan will be. This means that more product will flow off of the end of the weigh pan over a set amount of time.

If the flow gate is lowered, the depth of material in the pan will be thinner. This will result in less product flowing off of the weigh pan over a set amount of time.

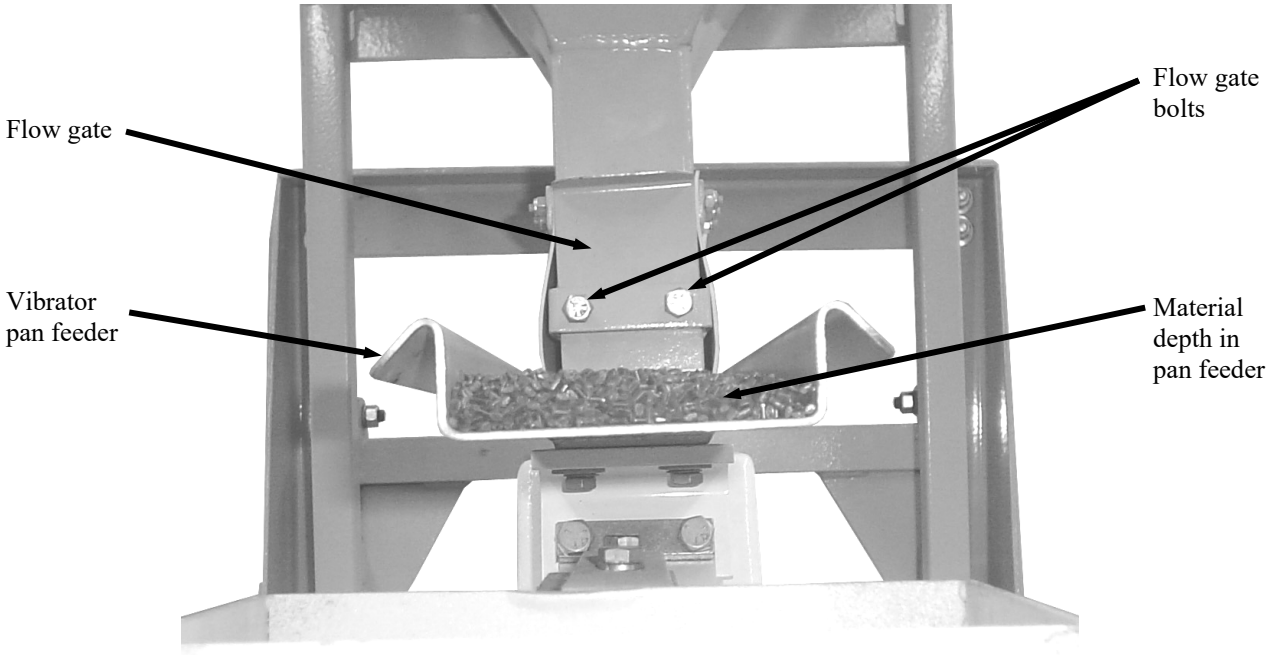

Figure 7-5. Flow Gate Adjustment

To adjust the flow gate, use the following steps:

1. Turn the TE10 off.
2. Loosen the two flow gate mounting bolts.
3. Adjust the flow gate to the desired depth.
4. Tighten the flow gate mounting bolts.
5. Turn the TE10 on and test for proper operation. Readjust as necessary.

7.3 Component Replacement Procedures

In the event that troubleshooting indicates the need to replace a component. Use the following procedures to replace those components.

7.3.1 Weigh Bucket Gate Cylinder Replacement

Follow the procedures below to replace the weigh bucket gate cylinder.

7.3.1.1 Weigh Bucket Gate Cylinder Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Label each of the air supply lines that are connected to the cylinder, so they can be installed correctly on the new cylinder.
4. Disconnect the air supply lines from the quick-connect fitting by pressing in on the collar on the air fitting and holding it in while pulling out on the air supply line.

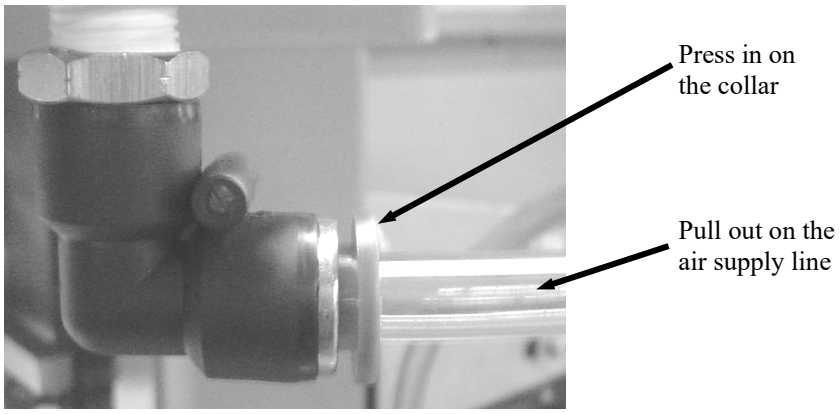

Figure 7-6. Disconnecting Air Supply Line

5. Remove the retaining pin and clevis pin from the lower cylinder mount. Loosen and remove the nut from the upper mounting bolt.

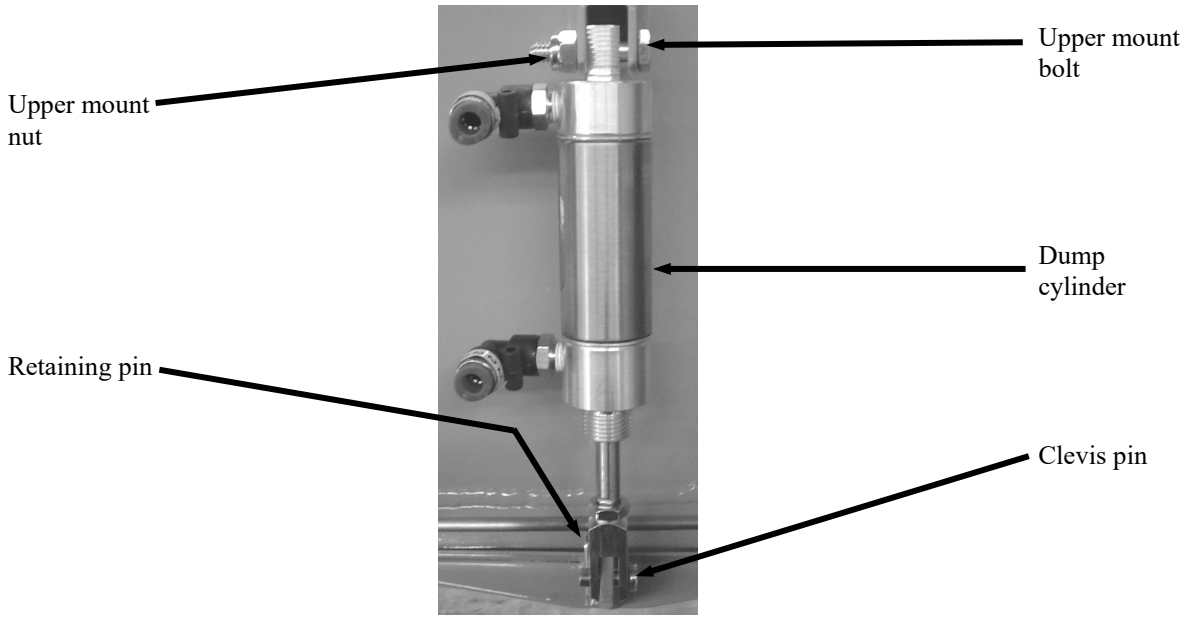

Figure 7-7. Dump Cylinder and Mounting Hardware

6. While holding the cylinder with one hand, remove the upper mounting bolt from the cylinder and mount.
7. Remove the cylinder.

7.3.1.2 Weigh Bucket Gate Cylinder Installation

1. Insert the top of the cylinder into the upper mount.
2. While holding the cylinder with one hand, insert the upper mounting bolt.
3. Install the upper mounting nut on the bolt and tighten.
4. Insert the end of the cylinder rod into the lower mounting bracket
5. Insert the clevis pin.
6. Install the retaining pin into the hole in the clevis pin.
7. Install the air supply lines into the appropriate fittings by pressing the air supply lines straight in.
8. Connect the main electrical and pneumatic connections.
9. Turn the TE10 on and test for proper operation.

Figure 7-8. Inserting the Air Supply Line

7.3.2 MAC Valve Replacement

Follow the procedures below to replace the MAC valve.

7.3.2.1 MAC Valve Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Label each of the air supply lines that are connected to the cylinder, so they can be installed correctly on the new cylinder.
4. Disconnect the air supply lines by pressing in on the collar on the air fitting and holding it in while pulling out on the air supply line.
5. Disconnect the electrical connectors from the MAC Valve.
6. Remove the two mounting screws.

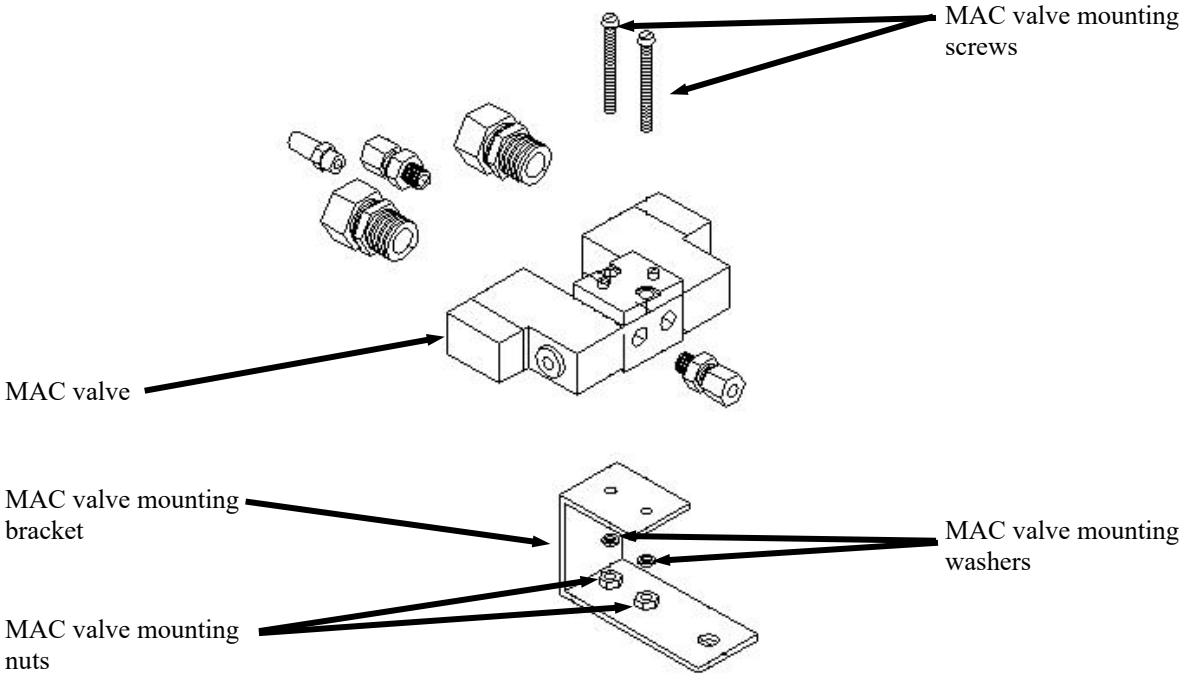

Figure 7-9. MAC Valve

7. Remove the MAC Valve from the TE10.

7.3.2.2 MAC Valve Installation

1. Position the MAC Valve on the mount.
2. Insert the mounting screws and tighten them.
3. Install the electrical connectors.
4. Reconnect the air supply lines.
5. Connect the main electrical and pneumatic connections.
6. Turn the TE10 on and test for proper operation.

7.3.3 Load Cell Replacement

In the event that a load cell becomes damaged, or fails to function, follow the procedure below to replace the load cell.

7.3.3.1 Load Cell Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Label the electrical connections at the load cell.
4. Disconnect the electrical connections from the load cell.
5. Disconnect the weigh bucket stabilizer brackets from the weigh bucket.
6. Lift the weigh bucket off of the load cell link and set it aside.
7. Remove the load cell guard mounting bolts and load cell guard from the TE10.
8. Remove the two load cell mounting bolts.
9. Remove the load cell link mounting bolt and remove the load cell link from the load cell.

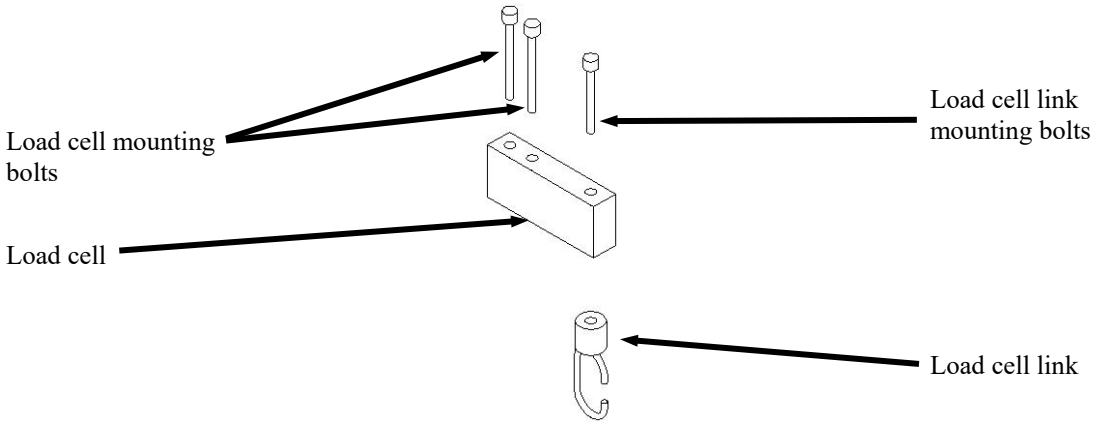

Figure 7-10. Load Cell Mounting

7.3.3.2 Load Cell Installation

1. Bolt the load cell link to the load cell.
2. Attach the load cell to the TE10 using the two mounting bolts.
3. Install the load cell guard using the two mounting screws.
4. Lift the weigh bucket and hang it from the load cell link.
5. Connect the weigh bucket stabilizer brackets to the weigh bucket.
6. Connect the electrical connection to the load cell.
7. Connect the main electrical and pneumatic connections.
8. Turn the TE10 on and calibrate the machine. Refer to 3.8 Calibration. Test for proper operation.

7.3.4 Vibrator Control Module Replacement

In the event that the vibrator control module has failed, follow the steps below to replace the unit.

CAUTION Make sure to wear a ground strap while handling the Vibrator Control Module.

7.3.4.1 Vibrator Control Module Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Open the control box door.
4. Label each wire for easy identification.
5. Disconnect each wire from the module.
6. While holding the module, remove the four mounting screws and the module

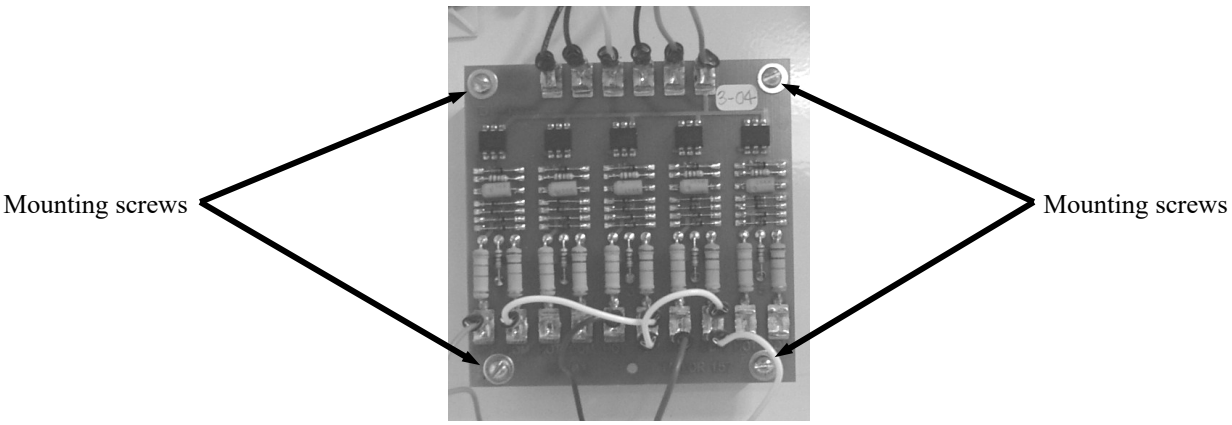

Figure 7-11. Vibrator Control Module

7.3.4.2 Vibrator Control Module Installation

1. Hold the new module in position and install the four mounting screws.

CAUTION Make sure to wear a ground strap while handling the Vibrator Control Module.

CAUTION Do not over tighten the mounting screws. Over tightening could result in damage to the module.

2. Reconnect each wire to the module. Take care to be sure that each wire is connected to the appropriate terminal.
3. Close the control box door.
4. Connect the main electrical and pneumatic connections.
5. Turn the TE10 on and test for proper operation.

7.3.5 Air Supply Line Replacement

In the event that an air supply line becomes damaged and requires replacement, follow the steps below to remove and replace the air supply line.

7.3.5.1 Air Supply Line Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Remove any clips and/or retainers that hold the air supply lines in place.
4. Disconnect the air supply line from the quick-connect fittings.
5. Remove the air supply line, making note of how the line is routed.

7.3.5.2 Air Supply Line Installation

1. Measure the air supply line that was just removed.
2. Cut a new length of air supply line, making sure that the ends of the line are cut square. Cut the new line to the same length of the one that was removed.
3. Route the new air supply line in the same manner as the one that was removed.
4. Insert each end of the new line into their respective quick-connect fittings.
5. Reattach any clips and/or retainers to secure the air supply line.
6. Connect the main electrical and pneumatic connections.
7. Turn the TE10 on and check for proper operation.
8. Check the connections for the new air supply line for any leaks. If a leak is found, disconnect the main air supply line and then disconnect/reconnect the air connections, then reconnect the main air supply line. Repeat as necessary, until no leaks are present.

7.3.6 Pneumatic Quick-Connect Fitting Replacement

In the event that an air fitting becomes damaged and requires replacement, follow the steps below to remove and replace the pneumatic quick-connect fitting:

7.3.6.1 Pneumatic Quick-Connect Fitting Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Disconnect the air supply line from the fitting by pressing in on the collar while pulling out on the air supply line.
4. Using a wrench, unscrew the fitting.
5. Check the threads in the port from where the fitting was removed. Remove any debris in the threads. If the threads are damaged, component replacement may be required.

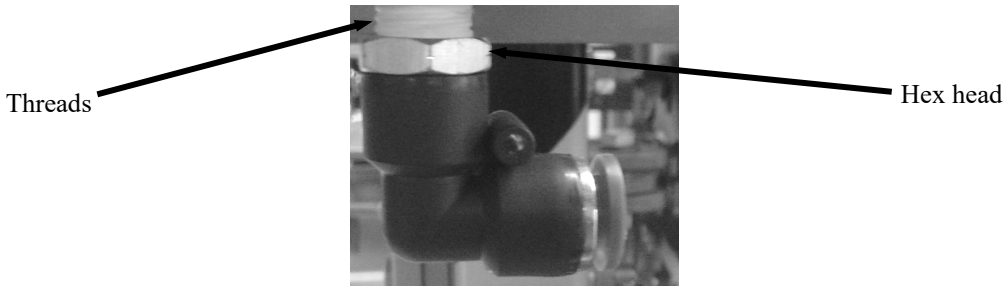

Figure 7-12. Air Supply Fitting

7.3.6.2 Pneumatic Quick-Connect Fitting Installation

1. Using Teflon tape, wrap the threads of the new fitting, starting at the bottom of the thread working toward the hex head in the same direction as the threads.
2. Screw the new fitting into the threads and use a wrench to carefully tighten the fitting.

> **CAUTION** Over tightening the fitting can damage the fitting, or the component that it is being threaded into.

3. Reconnect the air supply line to the fitting.
4. Reconnect the main pneumatic connection and check for any leaks. If a leak is found, disconnect the main pneumatic connection and then disconnect/reconnect the leaking connection, then reconnect the main pneumatic connection. Repeat as necessary, until no leaks are present.
5. Reconnect the main electrical connection.
6. Turn the TE10 on and test for proper operation.

7.3.7 Flow Gate Replacement

Depending on the abrasiveness of the product, the flow gate will wear over time and will require periodic replacement.

7.3.7.1 Flow Gate Removal

1. Turn the TE10 off.
2. Disconnect the main electrical and pneumatic connections.
3. Loosen and remove the two flow gate mounting bolts and washers.
4. Remove the flow gate by pulling it straight up and free of the machine.

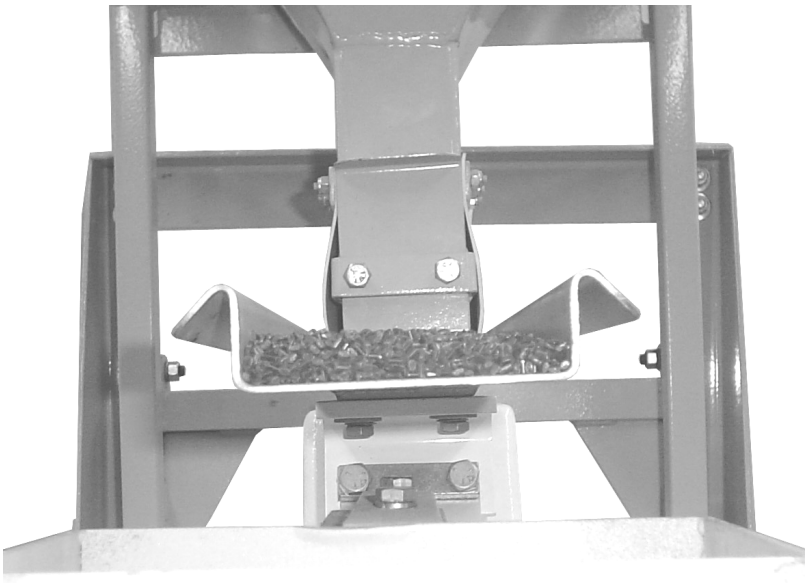

Figure 7-13. Flow Gate

7.3.7.2 Flow Gate Installation

1. Position the flow gate, with the flange facing forward, above the retaining bar on the front of the transition from the surge hopper.
2. Slide the flow gate down through the retaining bar and line up the mounting holes in the retaining bars with the threaded holes in the flow gate.
3. Install and tighten the flow gate mounting bolts.
4. Connect the main electrical and pneumatic connections.
5. Turn the TE10 on.
6. Adjust the flow gate for the proper depth for the product being packaged.

Glossary

TERM	DEFINITION
AC	Alternating Current
Alarm	The method of notifying the operator of a machine condition that will negatively affect the operation of the machine. This may be done by an audible alarm or by a visual indication on the display.
Auger	A screw-type device that is used to feed the packaging material from the supply hopper to the discharge spout.
Bagging cycle	A series of functions that describe the packaging process, from beginning to end, for one package of product.
Base frame	The portion of the machine that provides the support structure for all other components that make up the machine.
Bulk rate	The fill speed used to package the largest portion of the product. It is a fast fill speed. Also referred to as Fast A.
Component	An item of hardware as commonly supplied complete by manufacturers.
Counter	A device that counts the occurrence of some event.
Cubic Feet/Minute (CFM)	A unit of measure that is used to describe the amount of compressed air that is used by a machine.
DC	Direct Current
De-energize	To deprive an electro-receptive device of its operating current.
Discharge spout	A component whose primary function is to guide the product from the feed mechanism into the package.
Display	A device that gives information in visual form.
Dribble rate	The fill speed used to package the smallest portion of the product. It is a slow fill speed, as compared to the bulk rate. Also referred to as Slow A.
Dual set point (DSP)	Refers to a machine that has the capability of delivering the product at two different fill speeds.
Dump cylinder	A pneumatic cylinder that is used to open and close a dump gate.
Dump gate	Located at the bottom of the weigh bucket, when closed it allows the product to fill the weigh bucket. Once the desired amount of product has been loaded into the weigh bucket, the dump gate is manually opened to allow the material to drop into the package.
Equipment	A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used in the performance of a specific function or functions.
ESD	Electrostatic Discharge
Failure	The event, or inoperable state, in which any item or part of an item does not, or would not, perform as specified.
Fault	Violation of an operating system rule. Faults are minor or major; many major faults are not usually recoverable, even with fault routines.
Fill rate	A general term used to describe the speed at which the product is being fed.

TERM	DEFINITION
Fine dribble rate	On some units equipped with a digital control set, a third feed rate is available. This speed is slower than the dribble rate.
Flow gate	Used to control the amount of product that is allowed to flow from the supply hopper into the feeder device.
Ground	A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or some other conducting body at a reference potential.
I/O	Input/Output
Infra Red port	A feature of the digital control set, it is used for transferring program/configuration information from a Personal Data Assistant (PDA) to the digital control panel. Rather than using a cable to transfer the data, this method used infrared light.
Jog	The function of adding a small amount of product to a package that ended up being underweight at the end of the bagging cycle.
kg	kilogram
lb	Pounds
LCD	Liquid Crystal Display
LED	Light Emitting Diode. Used as status indicator for many types of equipment (processors, power supplies, I/O modules, modems, etc).
Load cell	An electronic device that is used to monitor the weight of the product that is being packaged.
Load cell link	A mechanical device that is used to hang the weigh bucket from the load cell.
Locking collar	On machines equipped with analog controls, knobs are used to zero the weigh meter and for adjusting the set points. To prevent the knobs from being accidentally turned, each knob is equipped with a locking collar. Turning the collar clockwise locks the knob, while turning it counter-clockwise frees the knob so adjustments can be made.
MAC valve	A pneumatic valve that is used for controlling various pneumatic cylinders. The valves apply air pressure to the cylinders causing them to either open or close.
Module	Assembly of components, which function as a unit and can be replaced as a unit.
POWER ON indicator	A lamp that will illuminate when power has been turned on.
Power supply	A device that converts available power to a form that a system can use — usually converts AC power to DC power.
Product	A type or a category of manufactured goods, constructions, installations, and natural and processed materials or those associated services whose characterization, classification, or functional performance determination is specified by standards.
Refrigerated air dryer	A device that is uses a refrigeration unit to remove moisture from a compressed air supply. This is done to reduce corrosion and contamination of the pneumatic equipment.
Relay	An electromagnetic device that is operated by a variation in the conditions of one electric circuit, to effect the operation of other devices in the same or another electric circuit.
Set point	A control setting that is used to define a transition point in the fill process. It can be a point when a change in fill rate occurs, or when the machine stops filling all together.
Set point 1 (SP1)	The control setting that defines where the bulk feed rate is to stop.

TERM	DEFINITION
Set point 2 (SP2)	The control setting that defines where the dribble rate stops. Is typically slightly lower than target weight.
Shipping bracket	A piece of metal that is used to secure the weighing apparatus to the base frame during shipping to prevent damage to the weighing apparatus.
Single set point (SSP)	Refers to a machine that has the capability of delivering the product at a single fill speeds.
Stabilizer brace	Metal component that is bolted to the base frame that is used as a connecting point for the stabilizer bracket.
Stabilizer bracket	A UMHW polyethylene component that connects the weigh bucket bail to the stabilizer brace. It is used to keep the weigh bucket assembly from swinging back and forth.
Surge	A sudden rise of current or voltage.
Surge hopper	A reservoir for the product before it reaches the feed device.
T3000	An optional control panel used on the TE10. It is used to configure the machine for operation and to monitor the machine while operating. It was jointly developed by Magnum Systems and Hardy Instruments.
T4000	The standard control panel used on the TE10. It is used to configure the machine for operation and to monitor the machine while operating. It was jointly developed by Magnum Systems and Hardy Instruments.
Target weight	The desired package weight.
VAC	Volt, alternating current
VDC	Volt, direct current
Vibrator pan feeder	A product feed device that uses vibration to move the product from the supply hopper to the discharge spout.
Water separator	A device that is installed in a compressed air supply line to remove excess moisture from the air supply. This is done to reduce corrosion and contamination of the pneumatic equipment.
Weighment	One charge or fill of a packaging machine.
Weigh bucket	A metal device that is used to catch and hold the product for weighing.
Weigh bucket stabilizer bail	A metal device that is used to hold the weigh bucket in position. The weigh bucket bail has connections for stabilizer brackets. It hangs from the load cell link.
Wing	A swing out panel that is used for mounting control boxes on either side of the machine.

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Appendix A
Safety Procedures, Cautions, Warnings, and Notices

- General safety precautions must be observed during all phases of operation, service and repair of the TE10. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the TE10.
- The manufacturer assumes no liability for customer's failure to comply with the following requirements:
- Qualified technicians and maintenance personnel should service the equipment described in this manual.
- Do not attempt internal service or adjustments unless another person, capable of rendering first aid and resuscitation, is available.
- Do not substitute parts or modify equipment. This practice could, in some cases, introduce the danger of additional hazards
- The TE10 contains some electrostatic-sensitive components. Therefore, always ground yourself with a proper wrist strap before handling any modules or printed circuit boards so that static charges are removed from the person. Use static suppressive packaging to protect electronic assemblies removed from the TE10.
- Observe all procedural cautions and warnings located on the equipment and throughout this manual.
- Read and follow all instructions
- Follow all warnings and instructions marked on the units and listed in manuals.

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Appendix B
Spare Parts

Table B-1. TE10 Spare Parts List

	Part Description	Part Number
1	622b* MAC Valve	50-1180
2	Weigh Bucket Gate Cylinder	50-1181
3	65007-25-0120 Load Cell	50-1541
4	Vibrator Control Module ECT 110	53-0951

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Appendix C
Mechanical Drawings

Table C-1. TE10 Mechanical Drawing List

	Drawing Title	Drawing Number
1	TE10 Main Frame	ISO-1
2	Meter Wing Panels	ISO-2
3	TE10 Main Frame	ISO-3
4	Front Section	ISO-4

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Appendix D
Electrical Drawings

Table D-1. TE10 Electrical Drawing List

	Drawing Title	Drawing Number
1		
2		
3		
4		

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Appendix E
T3000 Control Panel User Guide

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This unit was ordered with the base analog control set, thus the T3000 Control Panel User Guide is not needed and not included.

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Appendix F
Custom Features

The documents included in Appendix F will provide information regarding any custom features that were ordered and included in the equipment purchase.

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The equipment that accompanies this manual was not ordered with any custom features, thus no custom documentation is included.

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