US-6000 Conveyor Check Weigh Scale

Operation Guide, Version 1
Setup, Operation and Parts Manual

Advanced Poly-Packaging, Inc.

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Acknowledgments

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Reviewed By: Stuart Baker

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Limited Warranty and Disclaimer

Warranty period is 12 months or 1,000,000 cycles whichever comes first. The warranty commences on the date of delivery of the equipment to the Purchaser. APPI warrants to the Purchaser that the equipment is free from defects in workmanship or material under normal use and service. During the warranty period, APPI agrees to repair or replace, at its sole option, without charge to Purchaser, any defective component part of the equipment. To obtain service, Purchaser must return the equipment or component to APPI or an authorized APPI distributor or service representative in an adequate container for shipping. Any shipping charges, insurance, or other fees must be paid by Purchaser and all risk for the equipment shall remain with Purchaser until such time as APPI takes receipt of the equipment. Upon receipt, APPI, the authorized distributor or service representative will promptly repair or replace the defective component and then return the equipment or component to Purchaser, shipping charges, insurance and additional fees prepaid. APPI may use reconditioned or like new parts or units, at its sole option, when repairing any component or equipment. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include a dated proof of delivery. In any event, APPI's liability for defective components or equipment is limited to repairing or replacing the components. This warranty is contingent upon proper use of the equipment by Purchaser and does not cover: expendable component part such as thermocouple wire, heater cartridge, rollers, bushings, and the like; or if damage is due to accident, unusual physical, electrical or electromechanical stress, neglect, misuse, failure of electric power, water damage (from airlines), improper environmental conditions, transportation, tampering with or altering of the equipment, packaging of corrosive or contaminating products or other products damaging to components, and equipment or components not owned or in the possession of original Purchaser. APPI will not be liable for loss of production, profits, lost savings, special, incidental, consequential, indirect or other similar damages arising from breach of warranty, breach of contract, negligence, or their legal action even if APPI or its agent has been advised of the possibility of such damages or for any claim brought against the Purchaser by another party. This warranty allocates risks of equipment failure between Purchaser and APPI. APPI's pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors and dealers of APPI are not authorized to make modifications to this warranty, or additional warranties binding on APPI. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by APPI and should not be relied upon. Warranty on equipment is considered void when outstanding balances become delinquent (over 30 days late - 60 days after ship date). Equipment Integration to other Equipment: APPI assumes no responsibility for the integration of its products to other products or within a system unless APPI performs the integration, testing and provides the results of the tests to the purchaser in writing. Furthermore, APPI assumes no responsibility for bag sizing whether suggested or recommended.

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Chapter 1: Introduction

Welcome
Special Features
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1.1 Welcome

Now that you have decided to upgrade your packaging facilities with the Ultra-Scale 6000 Conveyor Check Weigh Scale from Advanced Poly-Packaging, Inc., we thank you for selecting our equipment, materials and service. Designed to accurately count and weigh product, the US-6000 will lower your packaging costs with increased speeds, versatility, reliability and simplicity.

1.2 Standard Features

This machine comes standard with the following features:

Preset Counter: Preset your scale to stop after a predetermined number of cycles.

Totalizing Counter: Reset this counter at the beginning of each shift or day to record production over a period of time.

Maintenance Counter / Chart: Periodically check this counter (total machine cycles) to determine preventative maintenance and component inspection intervals.

Pass Code Protection: Setting screens can be protected from alteration by unauthorized individuals. Once turned on, this function acts as a "screen save" feature. After the machine is inactive for a preset amount of time, the pass code screen will be displayed, preventing access to settings screen. Factory settings are protected by a Level 1 pass code and should only be accessed by authorized maintenance personnel.

Recipe Management System: The US-6000 contains a recipe management system that allows the operator to create, manage and store "recipes" of past jobs settings. These recipes can be saved and applied to future jobs to make operation faster and easier.

1.3 Using This Manual

The following manual conventions are frequently used to assist in understanding important information, to alert the operator of potentially dangerous or damaging practices and to describe the normal functions of the machines:

- Text — Normal text
- *Italics* — Used for emphasis
- **Boldface** — Used to identify heading names and touch screen buttons.
- **CAUTION:** — Warning messages. To avoid physical harm, damage to equipment or damage to the product, be sure to read these messages carefully.
- *NOTE:* — Identifies important information.

1.4 Warranty Registration

This section must be completed and returned to Advanced Poly-Packaging, Inc. to register the printer for Warranty Protection.

Serial Number:

_____

(Serial Number located on the back panel)

Company Name and Address	Contact Name(s) / Title(s) / Phone Number
_____	_____
_____	_____
_____	_____

Please fax or mail this page to:

Service Manager
Advanced Poly-Packaging, Inc.
1331 Emmitt Road
Akron, OH 44306
USA

Fax # (USA) 330-785-4010
Or email the information above to: sales@advancedpoly.com

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Chapter 2: Getting Started

Summary
Safety, Risks
Installation Procedures
Air and Power Requirements
Main Power

2.1 Chapter Summary

This chapter describes procedures to turn on, receive and set up the machine, uncrating instructions, environmental requirements, air and power requirements, assembly adjustments and height adjustments.

2.2 Safety, Risks

Many safety features have been included in the mechanical, electronic and pneumatic systems of this machine. Despite these safety precautions, operators may receive lacerations or crushed or broken bone injuries if they come in contact with any moving components. Improper use, improper adjustments and neglect of preventative maintenance may result in serious personal injury. No special personal protective equipment is required to operate the equipment, but eye protection, gloves or other protection should be worn, depending on the characteristics of the product being packaged and the method of loading the product.

Please carefully read the following precautions to operate the equipment properly and avoid injury:

- Initial setup of the machine must be performed by specialized personnel. Qualified service engineers should uncrate the equipment, assemble the equipment (if required), test and connect power sources, test the equipment for proper operation and otherwise set up the equipment for use.

- Do not attempt to adjust the height without assistance and without supporting the weight of the machine. Attempting to make a height adjustment without assistance could cause the machine to drop suddenly, causing severe injury. APPI offers several optional accessories that can reduce the risk of injury during height adjustments. These accessories include carts, motorized height adjustment components and stabilizing bars.

- Ensure that any height adjustments allow for sufficient movement of the operator. Improper height adjustments could negatively affect operator movement, causing strain, added stress, discomfort and fatigue.

- To avoid injury, do not operate the equipment if funnels, guards, covers or other access panels have been removed. If any of these safety measures have been removed or modified or if any openings have been increased, the operator will have access to moving components and extreme temperatures that can cause crush or cut injuries to hands or fingers.

- To avoid injury, do not reach under the equipment, guards or elsewhere under the machine.

- Do not remove or loosen fasteners on the frame. If loosened, the equipment may drop suddenly, causing injury or damage to the machine.

- To avoid injury, avoid coming in contact with pinch points including rollers, automatic funnel doors or other moving components.

- Do not attempt to feed parts that are not suited to the machinery. Doing so could cause jams, damage to machinery and ejection of parts.

- To avoid injury, do not relocate the touch screen. Movement of the touch screen could cause unexpected movement of the machine and injury to the operator.

- If control or air pressure settings are set too high, higher noise levels may result from increased part on part contact or part on machinery contact. Limit these settings and add guards or covers to reduce airborne noise.

- Exercise extreme care when clearing jams, replacing materials, changing controls or mechanical settings, and cleaning internal parts. Be sure to de-energize energy sources prior to removing guarding. Failure to do so may result in unexpected movement or flying objects, which could cause crush, cut or eye injuries.

- If air pressure settings are set too high, the increased pressure could result in flying objects that injure the operator. Limit these settings to prevent injury.

- Do not rest hands on the photo eye supports or the scale. Do not use the scale as a table or lean on the scale.

- Maintenance must be performed by specialized personnel. Qualified service engineers must remove guards or covers to gain access to electrical or mechanical areas.

- Maintenance must be performed regularly to ensure that the machine is operating properly and to protect against injury. Routine maintenance includes: periodic inspections, the replacement of worn or damaged components, the tightening of loose bolts or components, and regular cleaning and adjustments. Contact APPI and/or service centers for service support if there is not sufficient maintenance staff at your facility to perform regular maintenance.

2.3 Installation Procedures

The scale is transported completed assembled in a container designed to protect the machine during shipment. After removing the stretch wrapping, remove the carton from the skid, open the top and cut all four corners using a safety knife. Then, transport the machine to the operating location.

CAUTION: Do not attempt to lift the machine from the carton without first cutting all sides open. To prevent injury, do not attempt to lift the machine without assistance.

The scale should be placed in an area free of excessive heat, moisture, dirt and dust. The operating room temperature should range from 50-100° Fahrenheit.

2.4 Air and Power Requirements

The US-6000 requires a 110 VAC, 60 Hz power source. Set the air pressure on the US-6000 to 50 PSI. Air should be dry and oil-free.

NOTE: A qualified electrician should ensure that voltages are as required, amperage is sufficient, power outlets are the required 110 VAC and power outlets are properly grounded before hooking up the power.

NOTE: Running the US-6000 at a higher PSI setting than 50 PSI will cause excessive wear and may cause damage to components on the machine or parts being packaged.

2.5 Main Power

The main power switch is located on the control module at the base of the machine. To turn the machine on, turn the switch clockwise from its horizontal OFF position to its vertical ON position. The green Power light on the touch screen will illuminate and the Introduction screen will be displayed. The program version will also be identified. The Introduction screen will only appear for a few seconds until automatically changing to the Operation screen or Main Menu.

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Chapter 3: Operation

Summary
Identification
Specifications
Touch Screen Program

3.1 Chapter Summary

This chapter describes the identification, operation and settings of the touch screen program for the US-6000 Conveyor Check Weigh Scale.

3.2 Touch Screen Identification

FRONT PANEL:

1. **System** button
2. **F1** Displays the Help screen
3. **F2** Increases brightness when **System** button is pressed
4. **F3** Resets screen to midpoint brightness when **System** button is pressed
5. **F4** Decreases brightness when **System** button is pressed
6. **F5** Displays Job Save / Recall screen
7. **Green LED** (Power): Lights up when touch screen is turned on

BACK PANEL:

1. RS-232 Communication port to PLC
2. Programming (For APPI use only)
3. Power Supply: Power terminal for touch screen operation.

CAUTION: Do not attempt to reprogram the PLC or touch screen. Doing so may cause an unsafe operating condition and void the warranty. Additionally, do not change the DIP switch settings.

3.3 Touch Screen Specifications / Features

Power	24 VDC (+/- 10%)
Operating Environment	0-50°C, 85% RH or less
Display	Color LCD
Resolution (W x H)	320 x 240 dots
Display Area	174 x 131mm (5.7")
Backlight	CCFL
Backlight Hours	Approx. 75,000
PLC Connection	RS232

3.4 Touch Screen Program

The touch screen program is a user-friendly, menu-driven setup and operation program. Pop-up windows are incorporated for quick and easy setting adjustments. Each time a setting is changed, the settings are saved so that if power is lost, the "job" will be recalled automatically without the need for reprogramming. A general color scheme is used for operation consistency and to identify functions:

- **Blue**: Background color used for text information. No "buttons" or functions are blue.
- **Green**: Used for buttons that change settings. For example, pressing a green button may display a pop-up window or turn a function on / off.
- **Red**: Indicates that a function is off or stopped. For example, pressing a red button may turn a function on.
- **Yellow**: Used for menu buttons. Pressing a menu button displays another screen and allows for movement throughout the entire program.

3.5 Introduction Screen

When the US-6000 is turned on, the Calibrating screen is displayed on the touch screen for approximately 30 seconds while the program initiates and automatically calibrates the load cell. See Figure 3-1.

Figure 3-1

3.6 Main Menu

The Main Menu is initially accessed from the Operation screen. The Main Menu screen allows the operator to quickly navigate to other areas in the program. See Figure 3-2.

Mode toggle buttons are located at the top of many screens:

START / STOP: This button initiates and halts the operation of the scale. Toggle this button to START to begin operation. Toggle this button to STOP to stop operation.

MANL / AUTO: This button can be toggled to Automatic mode or Manual mode. Automatic mode allows the scale to cycle automatically when the weight is within the acceptable range. Manual mode requires the operator to press the **Manual Cycle** button to cycle the scale.

The **READY / HOLD** display indicates the status of the scale. When this icon displays READY, the scale is ready to receive another box. When this icon displays HOLD, the scale is still cycling.

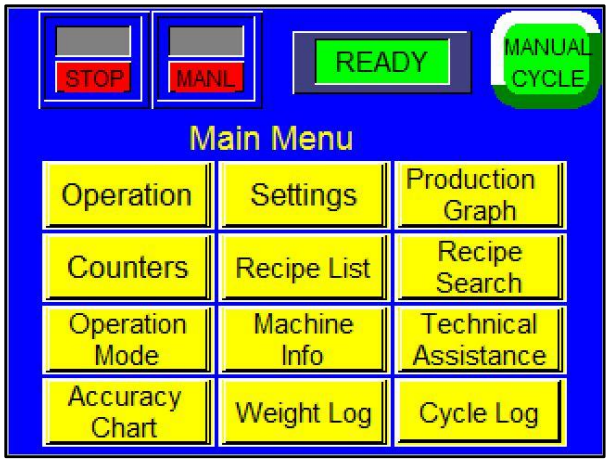

Figure 3-2

The yellow buttons located in the center of the Main Menu screen are menu command buttons. Pressing a menu command button changes the screen currently displayed on the touch screen. To access another screen, press the corresponding menu command button. Menu buttons appear throughout the touch screen program and are normally located on the right side of the screen.

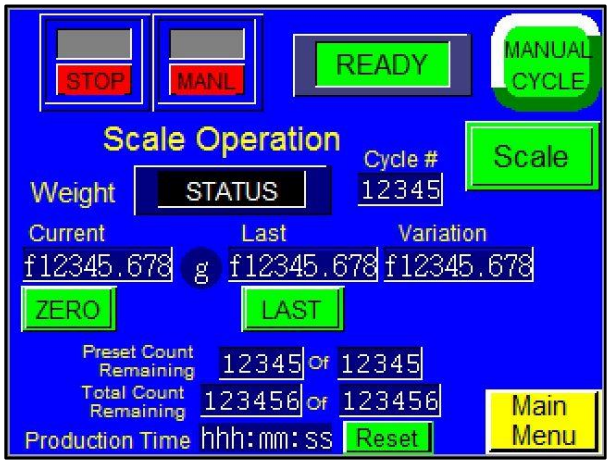

Figure 3-3

3.7 Scale Operation Screen

The Operation screen allows the operator to run the scale, view the current and last weight of the product and observe the status of the scale. See Figure 3-3.

If the Level 2 Pass Code has been enabled in the Technical Assistance / Password Setup screen, the touch screen will default to the Operation screen after a preset amount of time has elapsed. This prevents unauthorized operators from making settings adjustments that could affect the performance or operation of the machine. If this function is enabled, the operator will not be able to access other screens or adjust settings without entering a pass code.

Status Display: When the scale is within the zero range, the status display will display "STATUS," which indicates that the scale is idle. If the scale is over the zero range but under the target weight range, "UNDER" will be displayed. If the scale is in the target weight range, then "ACCEPT" will be displayed. If the scale is over the target weight range, then "OVER" will be displayed.

NOTE: Zero Range can be adjusted on the Factory Settings screen.

Current Weight: Displays the weight of the box on the scale. If there is no product on the scale and the weight is not at zero, press the **Zero** button to zero the scale.

Last Weight: Displays the weight of the previously weighed box.

Variation: Displays the difference between the current weight and the target weight.

Last Button: Press the **Last** button to manually move the current weight into the Last Weight display.

Scale / Bypass toggle button: This toggle button allows the operator to toggle between two different operation modes. In Scale mode, the US-6000 weighs product, ensures the product falls within the range of acceptance, rejects product that does not fall within the range of acceptance and distributes product to the roller conveyor. In Bypass mode, the scale conveyor and roller conveyor run continuously. Product is still weighed and counted in Bypass mode, but no product is rejected.

Preset Count Remaining: Displays the number of cycle operations left before the scale will stop automatically. The Preset Count counts down from a preset number and stops the scale when the preset number of cycles is reached. To adjust the Preset Count, press the right box and enter a number using the numeric keypad. The left box will then count down from that preset number.

Total Count Remaining: Displays the total number of cycle operations. To adjust the Total Count, press the right box and set it to zero. The left box will then count up and the scale will operate continuously. If the operator enters a number other than zero into the right box, the Total Count will function just like the Preset Count and the left box will count down from that preset number.

Production Time: Displays the total amount of time the machine has been turned on and operating. Press **Reset** to set this number to zero.

3.8 Scale Settings Screen

The Scale Settings screen contains the weight value settings used to control the operation of the scale. The current and total weights are also displayed on this screen. See Figure 3-4.

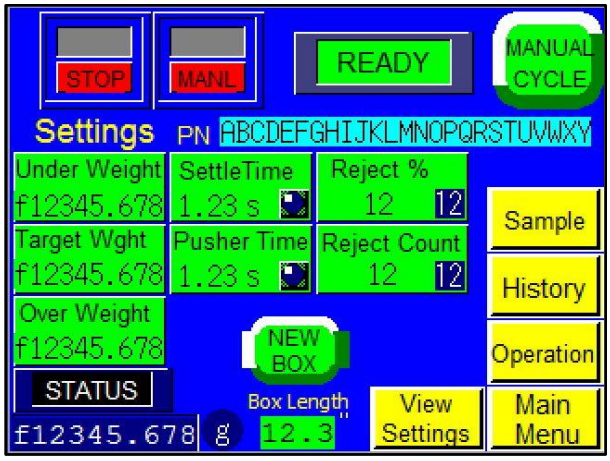

Figure 3-4

Under Weight: The weight of boxed product that is considered under the target weight and will be rejected. Boxes with a weight equal to or less than this value will be rejected. To adjust this setting, press the **Under Weight** button, enter a value in the numeric keypad and press the **ENT** button.

Target Weight: The desired weight of boxed product. To adjust this setting, press the **Target Weight** button, enter a value into the numeric keypad and press the **ENT** button.

Over Weight: The weight of boxed product that is considered over the target weight and will be rejected. Boxes with a weight equal to or greater than this value will be rejected. To adjust this setting, press the **Over Weight** button, enter a value into the numeric keypad and press the **ENT** button.

Settle Time: The length of time, in seconds, the scale must be in the Target Weight mode before the scale transfers product to the roller conveyor. To adjust this setting, press the **Settle Time** button, enter a value into the numeric keypad and press the **ENT** button.

NOTE: A Settle Time value that is too low will cause inaccurate weights/counts. A Settle Time value too high will cause decreased production.

Pusher Time*:* The amount of time, in seconds, the arm of the reject cylinder (pusher) is extended before it retracts. The reject cylinder extends to push rejected product to the reject conveyor. To adjust this setting, press the **Pusher Time** button, enter a value into the numeric keypad and press the **ENT** button.

CAUTION: Do not touch, lift or lean on the reject cylinder. Doing so could damage the cylinder or move it out of alignment.

Reject %: The percentage of product that, if rejected, will stop operation and cause an error message to be displayed. For example, if the Reject % is set to 25 and 25 out of 100 products are rejected, operation will stop. To adjust this setting, press the **Reject %** button, enter a value into the numeric keypad and press the **ENT** button.

NOTE: For the Reject % setting to take effect, the scale must have cycled a minimum of 100 products.

Reject Count: The consecutive number of rejected products that will cause operation to stop and an error message is displayed. For example, if the Reject Count is set to 5 and 5 consecutive cycles produce 5 consecutive rejects, operation will stop. If a product is accepted, the Reject Count resets back to zero. For example, if the Reject Count is set to 10 and 9 consecutive boxes are rejected but the tenth box is accepted, the Reject Count will reset to zero. To adjust this setting, press the **Reject Count** button, enter a value into the numeric keypad and press the **ENT** button.

Press the **New Box** button to start a program that calculates the average box length and automatically sets the target box length. Two boxes must be cycled through the scale in order to calculate the average length.

3.9 Box Sample Screen

Press the **Sample** button from the Settings screen to access the Box Sample screen. See Figure 3-5.

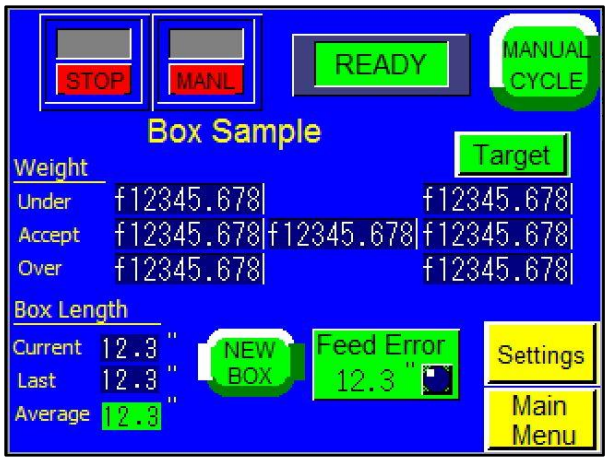

Figure 3-5

The Box Sample screen displays the Under, Accept and Over Weights and the current, last and average bag lengths.

Target button: After weighing a new box on the scale, press the **Target** button to change the current Under, Accept and Over Weights to reflect the new box weight. For example, if the current box weighs 16 grams and the operator wants to run a new box with a weight of 18 grams, pressing the **Target** button will change the Under, Accept and Over Weights by 2 grams and would prevent the new box size from getting rejected. This feature simplifies operation by preventing the operator from returning to the Settings screen and manually entering new Under, Target and Over Weight values every time a new box is introduced.

Feed Error: The amount of acceptable variation, in inches, from the box length. For example, if the target box length is 15" and the Feed Error is set to 3", boxes with 12-18" lengths would be accepted, but boxes with a length of 19" would cause operation to stop and an error message would be displayed. Box length is automatically calculated by the software.

NOTE: If zero is entered as the Feed Error value, the software will ignore box length differences and an error message will never be displayed. All box lengths will be accepted.

3.10 Weight History

The US-6000 maintains a history of the last 50 weights. See Figure 3-6. Press the **Reset All** button to access the Reset All screen. Press the **Last** button to move the current weight to history.

Figure 3-6

3.11 Save / Load Recipes

To save scale settings for future use, press the **View Settings** button on the Settings screen. This will display the Save Recipe screen. See Figure 3-7.

The Save Recipe screen displays the current settings. To save these settings for future use, press the blue **Part** box to access a keyboard and enter a part number for the job. To make a note about the job, press the blue **Note** box to access a keyboard and enter specific instructions for the job or a description of the product. Press the blue **Quantity (Qty)** box to access a keypad and enter the product quantity. Once this information has been entered, press the **Save** button to save the job.

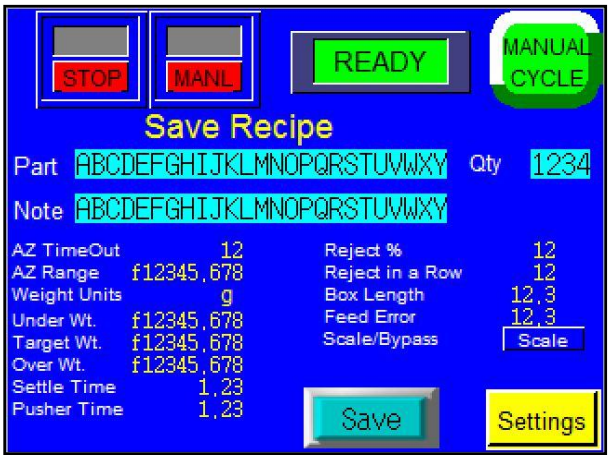

Figure 3-7

To search for and load a specific recipe, press the **Recipe Search** button on the Main Menu. This will display the Recipe Search screen. See Figure 3-8. Enter the recipe's part number in the blue **Part No** box and press the **Search** button.

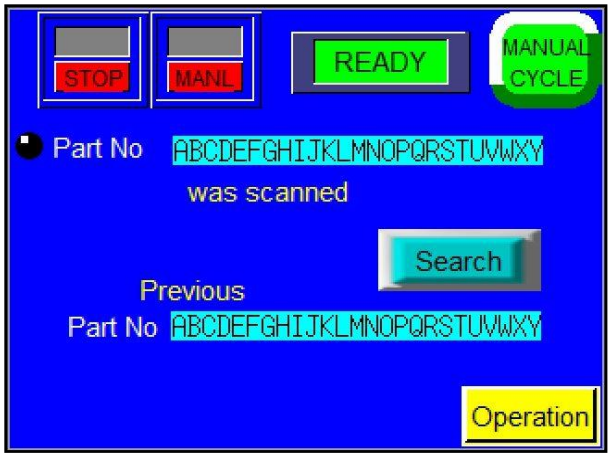

Figure 3-8

On the following screen, press the desired part number with the correct quantity. See Figure 3-9. This will display the Job Recall screen. See Figure 3-10.

The Job Recall screen allows the operator to view the job settings and any notes that were made about the job. To load the displayed settings, press the L**oad** button. The Scale Settings screen will be displayed after the **Load** button is pressed.

3.12 Recipe List

This screen displays a listing of all created recipes. See Figure 3-11. To access the Recipe List screen, press the **Recipe List** button from the Main Menu.

Recipe settings can be viewed on the Recipe List screen, but recipes cannot be loaded on this screen. To scroll through the recipe listing, press the red up arrow or the blue down arrow. To view the settings for each recipe, press the green left and right arrows.

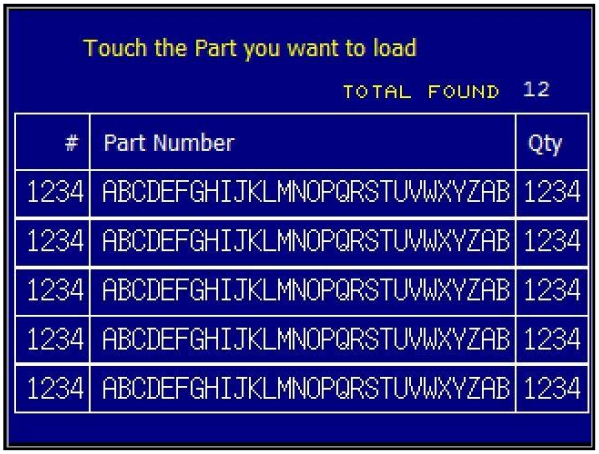

Figure 3-9

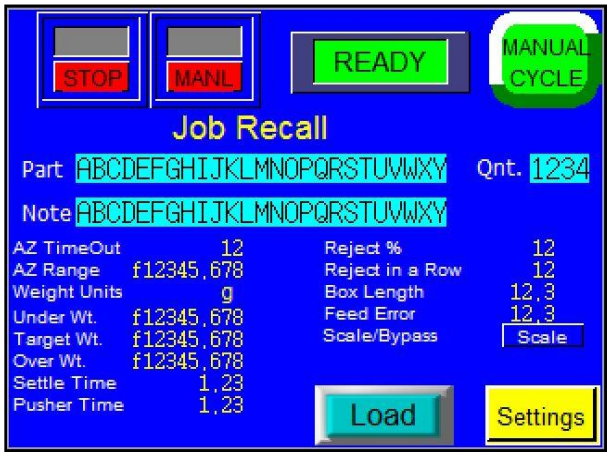

Figure 3-10

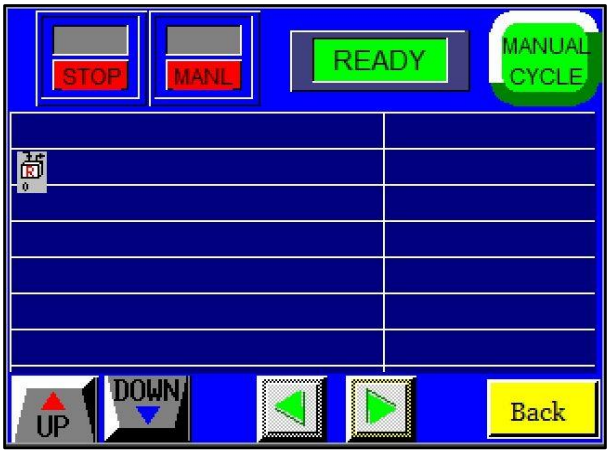

Figure 3-11

3.13 Production Graph

APPI provides a simple graph to chart production throughout the day. See Figure 3-12.

Press the left arrow key to scroll back one hour at a time and review past production. Press the right arrow key to check more recent production information.

Press the **Reset** button once to reset the production time and twice to reset the graph. Press the **Return** button to return to the previous screen.

The Production Chart screen also displays the boxes per minute produced and the production time.

Figure 3-12

3.14 Counters Screen

The US-6000 is equipped with two internal counters. To access the Scale Counters screen, press the **Counters** button on the Main Menu. See Figure 3-13.

Preset Count: This counter counts down from a preset number and stops production after the preset number of cycle operations is reached. When this preset count has been reached, a message screen will be displayed and operation will stop. To enter a value for this counter, press the green **Set** button under Preset Count and enter a value using the numeric keypad. Then press the **ENT** button. To reset this counter, press the **Reset** button. To disable the option, set the value to zero.

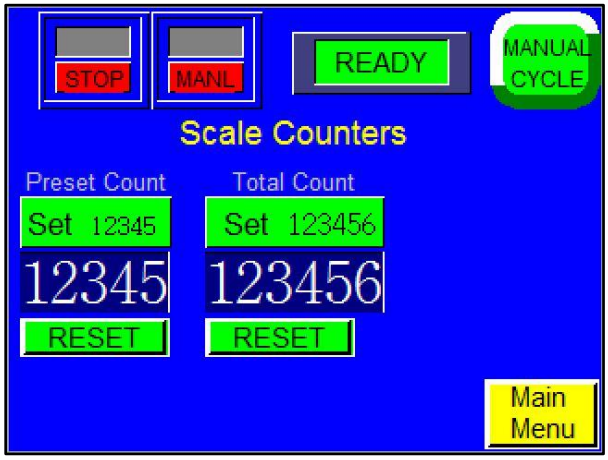

Figure 3-13

Total Count: This counter is used to track production and count the total cycle operations of the machine. To reset this counter, press the **Reset** button. To enter a value for this counter, press the green **Set** button and enter a value using the numeric keypad. Then press the **ENT** button. To reset this counter, press the **Reset** button. To disable the option, set the value to zero.

3.15 Scale Operation Mode

The Scale Operation Mode screen displays the time and frequency of a particular operation. See Figure 3-14. The Alarm Status screen will give the status of a particular warning signal. The Alarm Data screens keep track of how long and how often a particular warning message has been signaled.

The colored bar at the bottom of the screen is color-coded to reflect the percentage of time the machine has been in the following modes: Bypass, Operation/Auto, Operation/Manual and Stop.

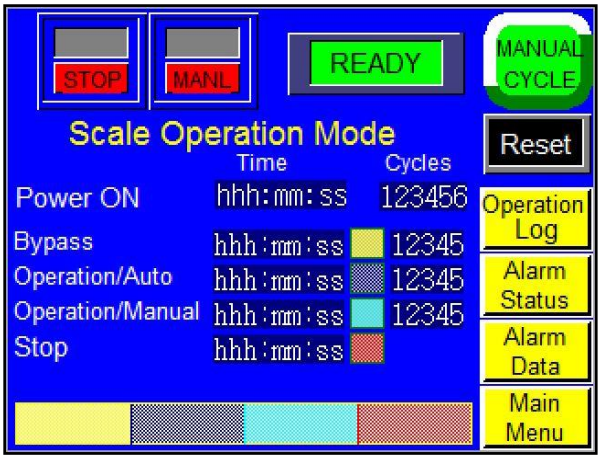

Figure 3-14

3.16 Accuracy Chart

The Accuracy Chart screen provides the operator with information regarding accepted and rejected product. A pie chart displays the percentage of rejected and accepted product as the machine operates. Accepted product is displayed in green. Rejected product is displayed in red. See Figure 3-15.

The amount and percentage of accepted product, the amount and percentage of rejected product and the total amount of product cycled through the system are also listed on this screen.

Press the **Reset** button to reset all values to zero. Press the **Reset All** button to access the Reset All screen. The Reset All screen allows the operator to reset the Preset Count, Total Count, Production Graph, History and Accuracy Chart.

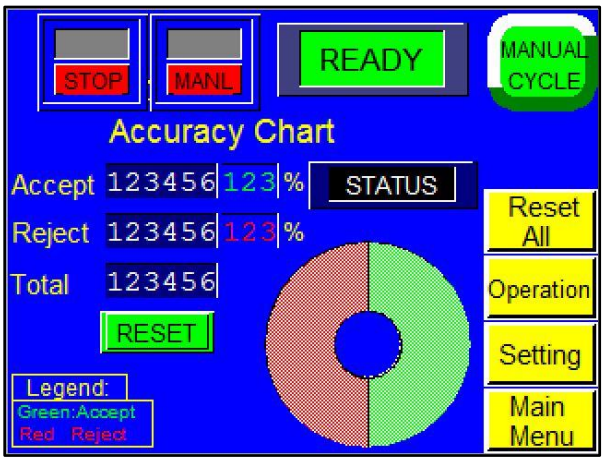

Figure 3-15

3.17 Machine Info

This screen will provide information about the machine, such as the model number, serial number, part number and line number. See Figure 3-16.

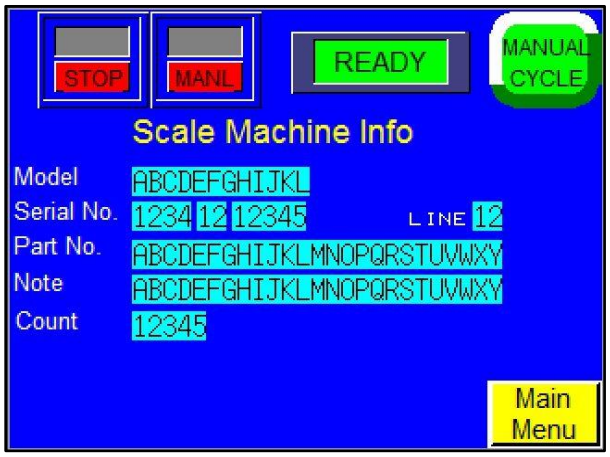

Figure 3-16

3.18 Cycle Log

The Cycle Log displays the weight from each cycle of the machine. See Figure 3-17. The operator can use this screen to view past cycle weights, accept values and over values. Press the **Reset** button twice to reset all values on the screen to zero. Press the up and down arrows to scroll through the log. The Cycle Log is automatically saved to a flash drive and reset every night at midnight.

Press the **Overwrite** button to manually save the log and overwrite the previous log file on the flash drive.

Press the **Backup** button to manually save the log to a new, separate file on the flash drive.

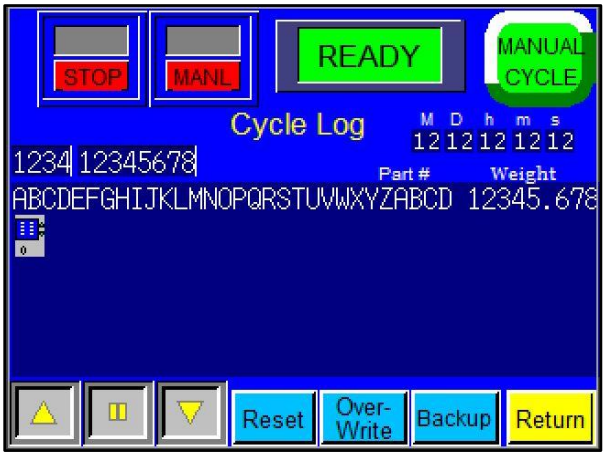

Figure 3-17

3.19 Technical Assistance

The Technical Assistance screen provides manufacturer information, factory settings adjustments, functions testing and troubleshooting. It also displays the program version for the PLC controller and touch screen. This information may be required when requesting phone technical support. See Figure 3-18.

Figure 3-18

The screen is protected from access with a Level 1 pass code. The pass code is set by default (from the factory) to 1001. This code can and should be changed when the system is put into operation. Several menu options are available from the Technical Assistance screen that will assist with troubleshooting the US-6000 and change settings that affect the operation of the equipment.

Technical assistance sections of the touch screen program should be accessed by specialized personnel only. These sections are provided for troubleshooting and advanced setup by qualified service engineers.

3.20 Password Setup Screen

APPI has included a pass code function in all touch screen equipment to prevent operators from changing settings. See Figure 3-19. There are two pass code levels, described as follows:

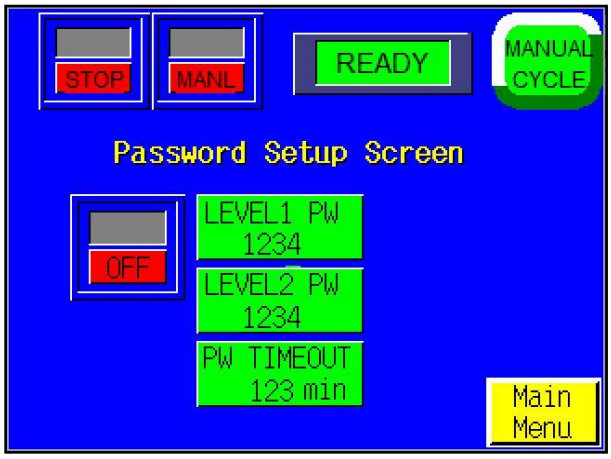

Figure 3-19

1. **Level 1**: This is the highest level pass code. The operator cannot access any of the Technical Assistance screens without first entering this code. The default pass code, when shipped from the factory, is 1001. To change this code, press the **Level1 PW** button on the Password Setup Screen, enter a new code on the numeric keypad, and press the **ENT** button. See Figure 3-20.

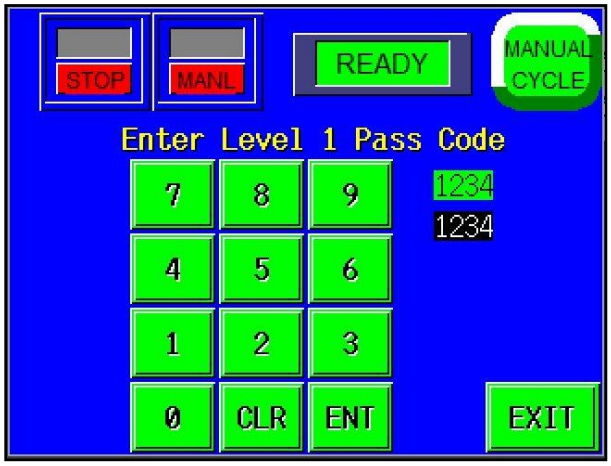

Figure 3-20

2. **Level 2**: This level pass code, when the pass code function is enabled, prevents the operator from accessing settings screens that affect the operation of the equipment. If the touch screen defaults back to the Operation screen after a preset amount of time elapses, the operator must enter this code to access settings screens. To change this code, press the **Level2 PW** button on the Password Setup Screen, enter a new code on the numeric keypad, and press the **ENT** button. See Figure 3-21.

Pass codes prevent unauthorized individuals from tampering with settings. When equipment is shipped, APPI uses the following factory set pass codes that should be changed prior to putting the T-1000 into operation:

1. **Level 1 pass code**: 1001
2. **Level 2 pass code**: 1002

To enable the pass code function, press the **Technical Assistance** button from the Main Menu. Type in the Level 1 pass code (1001 by default from APPI). Press the **Security Codes** button to display the Password Setup Screen. Then press the **ON / OFF** toggle button to turn the pass code function ON. If the pass codes are changed, ensure that these codes are written down.

Once the pass code function is enabled, the operator will have a programmed amount of time (Password Timeout time) to make settings changes.

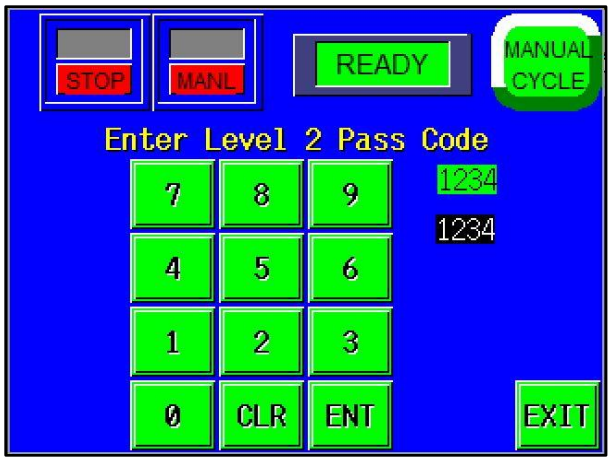

Figure 3-21

Password Timeout: The amount of time, in minutes, the touch screen can remain inactive before the touch screen will automatically default back to the Operation screen. Password Timeout time can be changed on the Password Setup Screen by pressing the **PW Timeout** button, entering a value on the numeric keypad and pressing the **ENT** button.

If the codes are misplaced or forgotten, contact the APPI Service Department for assistance.

3.21 Scale Factory Settings

This screen contains additional scale settings that should only be set by qualified technicians or by the factory. See Figure 3-22.

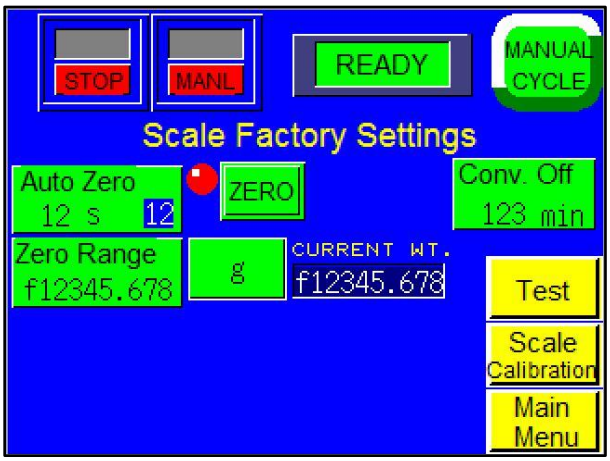

Figure 3-22

Auto Zero: The amount of time, in seconds, before the scale automatically zeros. This function allows for more infrequent cleaning of the tray and for environmental conditions that may affect the load cell. However, this function may not eliminate the need to periodically manually zero the scale. To adjust this setting, press the **Auto Zero** button, enter a value on the numeric keypad and press the **ENT** button.

Zero Range: The range of weight that is considered zero. This function allows for small amounts of dirt that may fall on the scale due to environmental conditions. For example, if the Zero Range is set to 0.04 grams, the scale will be at zero even if there is 0.04 grams on the scale. However, once the Zero Range value is exceeded (i.e. there are 0.05 grams of dirt on the scale), the scale will not automatically zero. To adjust this setting, press the **Zero Range** button, enter a value on the numeric keypad and press the **ENT** button.

Conveyor Off: The amount of time, in minutes, the roller conveyor must be inactive (not receiving product) before it automatically turns off. To adjust this setting, press the **Conv Off** button, enter a value on the numeric keypad and press the **ENT** button.

Press the **Units** button to toggle between different units of measurement, including grams, pounds and ounces. This button will change the unit of measurement throughout the entire touch screen program.

Press the **Test** button to display the Test screen and test the speed of the scale conveyor. See Figure 3-23. On the Test screen, press the **Scale Conv Speed** button and enter a speed for the scale conveyor in the numeric keypad. Press the **ENT** button on the keypad, and then press the **Test** button. Observe the scale to determine if the new speed setting is adequate. Adjust if necessary.

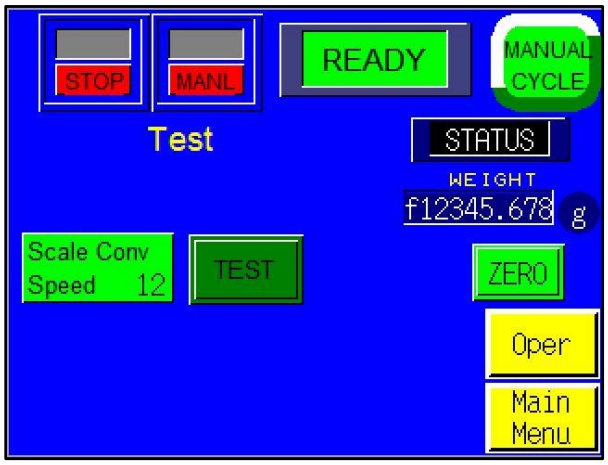

Figure 3-23

3.22 Load Cell Calibration

To calibrate the scale, a Calibration screen is provided. See Figure 3-24. The following step-by-step procedure must be followed closely to properly calibrate the scale. A known metric calibration weight (in grams) must be used to properly calibrate the scale. The calibration weight should be 1000 grams. Contact APPI Tech Support to discuss the calibration weight used during this procedure. This weight may also be purchased from APPI.

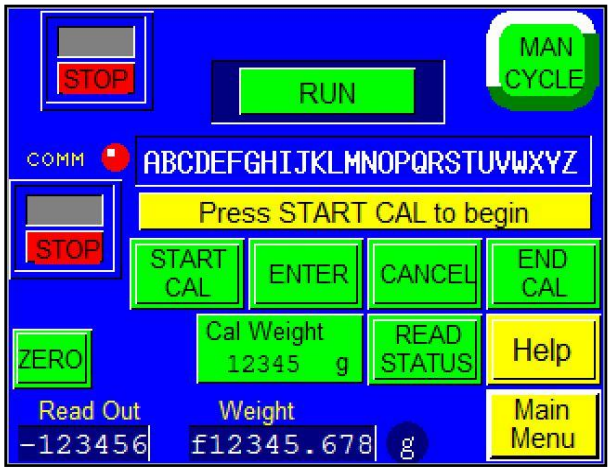

Figure 3-24

1. From the Main Menu, press the **Technical Assistance** button.
2. On the Technical Assistance screen, press the **Factory Settings** button.
3. On the Factory Settings screen, press the **Scale Calibration** button.
4. Follow the instructions displayed in the yellow prompt bar.
5. Press the **START CAL** button.
6. Wait for the prompt message **New Zero**. When the New Zero message appears, press the **ENTER** button.
7. Wait for the **Cal Weight** prompt.
8. Place the sample weight on the scale. The weight must be 1000 grams and must weigh exactly what will be entered in the next step.
9. Press the **CAL WEIGHT** button located under the **ENTER** button.
10. Enter the exact Cal Weight that was placed on the scale in the previous step and press the **ENTER** button.
11. When the prompt message **Cal OK** appears, press the **ENTER** button.
12. When the prompt message **Save?** Appears, press the **ENTER** button.
13. When prompt message **Exit Setup?** Appears, press the **ENTER** button.
14. Once the weight displays the same as the sample weight, press the **END CAL** button located on the right center of the screen.

This ends the calibration procedure. **RUN** should now be displayed in the top center of the screen. The scale can now be run with a known weight for testing in operation mode.

NOTE: COMM / STOP is only located on the Calibration Screen. The COMM / STOP button must be toggle to COMM for the Operation Screen to change weights. In STOP mode, the Operation Screen will display only ZEROS. LOW BATTERY will display as a full screen warning.

3.23 PLC Info

The PLC I/O screens are provided for maintenance personnel to determine the status of the PLC and to review the mode of outputs and inputs. PLC I/O screens are also used to assist APPI service technicians as they work with your maintenance personnel to troubleshoot the US-6000 in the field. See Figure 3-25.

To determine the function of each input and output, press the row of LEDs to display a brief description. The PLC I/O screen also provides the run Hours and Cycles counters. These counters cannot be reset by the operator.

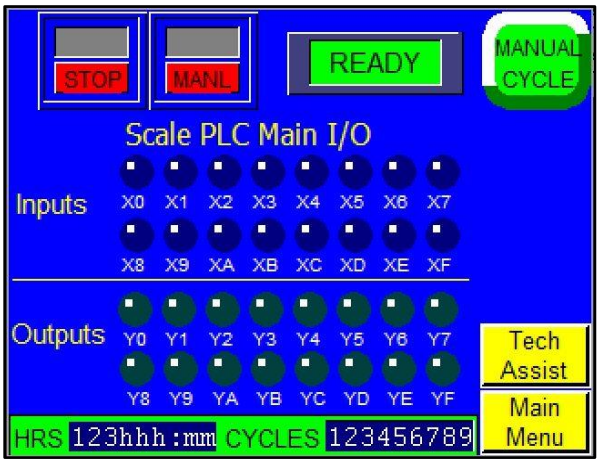

Figure 3-25

3.24 APPI Factory

This screen displays additional settings that should only be set by qualified technicians or by the factory. See Figure 3-26. To access this screen, a pass code must be entered.

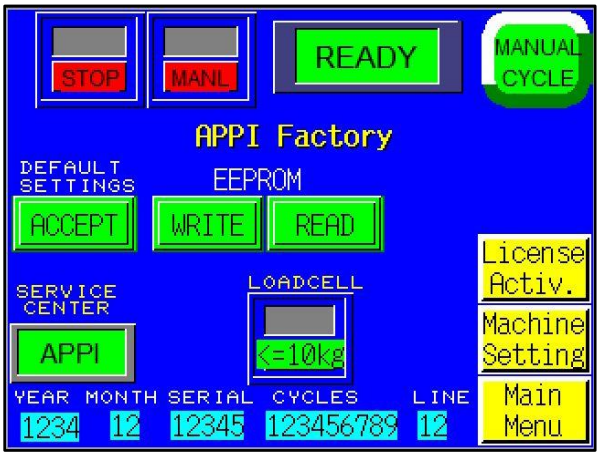

Figure 3-26

3.25 Warning and Information Screens

The US-6000 touch screen program features many informational screens that are displayed automatically to alert the operator of situations on the machine. Some screens provide functional messages that describe the status of equipment or errors, and some provide instructions for operators to follow to bring the scale back online. See Figures 3-27 through 3-30 for examples of messages that indicate the status of the scale.

The message screens describe the problem and a possible solution. Contact APPI Technical Support for assistance if the problem continues.

Figure 3-27

Figure 3-28

Figure 3-29

Figure 3-30

Chapter 4: Troubleshooting

Troubleshooting Checklist
PLC IO Listing

4.1 Troubleshooting Checklist

This section covers the common problems an operator may encounter during operation of the US-6000. If an operating difficulty occurs, observe the situation, look for the cause and make a correction. Make only one adjustment at a time and check the results of each adjustment. If an adjustment does not help or escalates the problem, return the settings back to their former position.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Touch screen does not display	3. Power off 2. Main fuse blown 3. Breaker tripped 4. IOP cables loose / damaged 5. Contrast out of adjustment	1. Check main / individual power switch. Plug in power cord. 2. Replace fuse #1 on the module 3. Check breaker in main power box. 4. Check cables behind IOP cover 5. Adjust screen contrast
No Main Power LED	4. Power off 2. Main fuse blown 3. Breaker tripped 4. IOP cables loose / damaged 5. LED burned out	1. Check main / individual power switch. Plug in power cord. 2. Replace fuse #1 on the module 3. Check breaker in main power box. 4. Check cables behind IOP cover 5. Replacement not possible
Part sensor (eye) not functioning	1. Dust / dirt in eye 2. Eye cables loose / damaged 3. Product not being detected	1. Wipe inside of eye 2. Check eye cables 3. Check setting: teach button available on some models.
Weight not displayed properly	1. Cell communication problem 2. Overloaded cell 3. Damaged cell	1. Check communication cables 2. Remove weight. Look for parts jammed between cell and covers. 3. Replace cell.

4.2 PLC IO Listing

The Main PLC Listing is provided to assist in troubleshooting the US-6000 Scale.

MAIN PLC				
	Input	Description	Output	Description
	X0	Spare	Y0	Spare
	X1	Spare	Y1	Spare
	X2	Scale Exit Photo Eye	Y2	Infeed Conveyor Run
	X3	Scale Enter Photo Eye	Y3	Scale Conveyor Run
	X4	Reject Home Sensor	Y4	Spare
	X5	Spare	Y5	Reject Pusher Solenoid
	X6	Spare	Y6	Spare
	X7	Spare	Y7	Spare
	X8	Spare	Y8	Roller Conveyor Run
	X9	Spare	Y9	Spare
	XA	Spare	YA	Spare
	XB	Spare	YB	Spare
	XC	Spare	YC	Spare
	XD	Spare	YD	Spare
	XE	Spare	YE	Spare
	XF	Footswitch	YF	Spare

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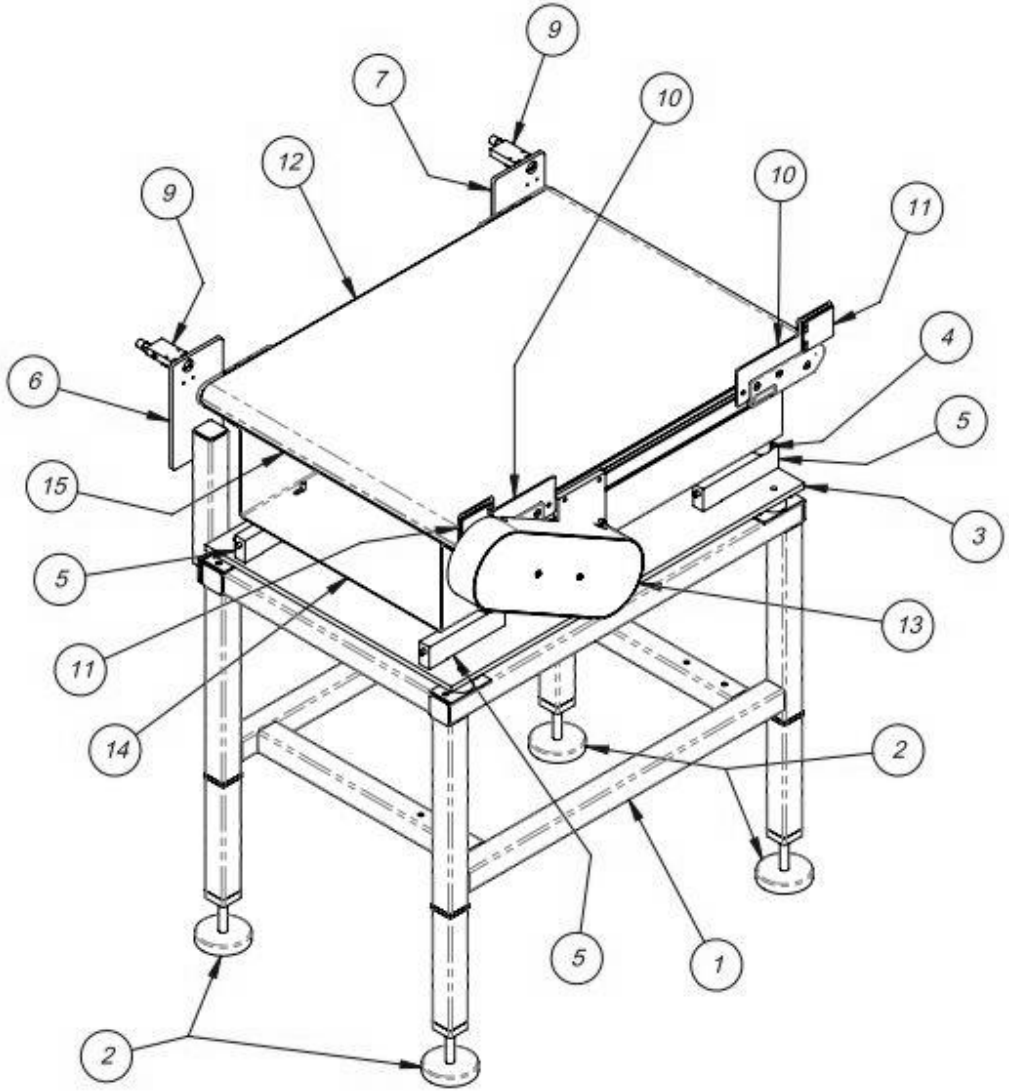
Chapter 5: Parts and Drawings

US-6000 Conveyor Check Weigh Scale

Conveyor Check Weigh Scale

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	D9-154986-103	MAIN FRAME WELDMENT MODIFICATION
2	4	TP-110764	ADJUSTABLE PAD
3	1	D9-75495-02	LOAD CELL PLATE
4	4	TP-110761	VIBRATION-DAMPING SANDWICH MOUND, ¼ DOUBLE MALE
5	4	TP-750052	US-5000 LOAD CELL
6	1	D9-154986-106	RIGHT EYE SUPPORT
7	1	D9-1564986-107	LEFT EYE SUPPORT
8	2	D9-110730-139	MOUNTING BRACKET
9	2	TP-216116	BANNER MINI BEAM
10	2	TP-T3MA6002	REFLECTOR MOUNT
11	2	TP-216101-1	REFLECTOR
12	1	V-DOR-2200	CONVEYOR
13	1	TA-T3-2000	2200 SERIES DRIVE ASSEMBLY
14	1	D9-154986-101	CONVEYOR BASE
15	2	D9-154986-102	CONVEYOR BAR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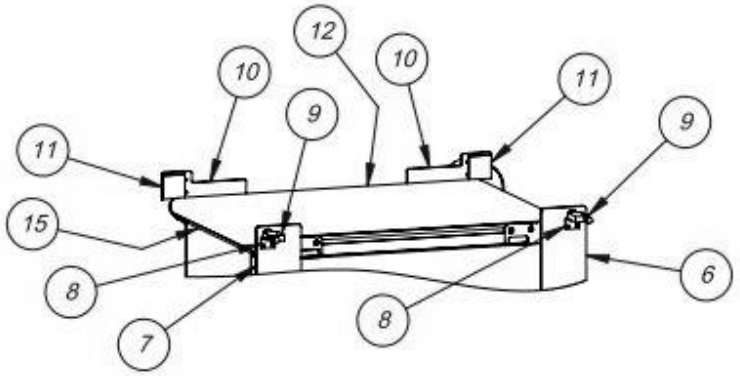
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