Operation Manual

US-4000 Check Weigh Scale, Ver 2

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Item No. TM-T4-MAN-1

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US-4000 Rotary Check-Weigh Scale

Setup, Operation and Parts Manual, Ver 2

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Acknowledgments

Manual written by Stuart Baker

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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 warra nties, 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.

ADVANCED POLY-PACKAGING, INC. (APPI)
1331 Emmitt Road, Akron, Ohio 44306
(800) 754-4403

Terms of Sale, Final Payment Conditions of Warranty, Acceptance of Warranty

ALL ORDERS ACCEPTED BY APPI AND PRODUCTS SHIPPED TO PURCHASER ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

Outstanding Balances

Interest at the rate of 2% per month will be charged on any outstanding balances after 30 days late (60 days after ship date). Furthermore, any warrantee on equipment is considered void when outstanding balances become delinquent. Accounts are considered delinquent if the equipment is not paid in full within 90 days from the delivery 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.

Delivery & Inspection

Customers are encouraged to inspect and test machinery and/or systems at APPI's facility prior to purchasing the equipment. Failure to do so constitutes acceptance of equipment performance to purchaser's specification.

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5.1 Troubleshooting Checklist

Chapter 6, Parts / Drawings

Chapter 1

Introduction

Welcome
Overview
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Specifications
Air & Power Requirements
Available Options
Special Note on Safety

1.1 Welcome

Thank you for selecting the Ultra-Scale 4000 Rotary Check Weigh Scale (US-4000). Designed to accurately weigh packages and sort acceptable product from over or under weight product, the US-4000 will lower your packaging costs with an automatic operation, increased speeds, versatility, reliability, and simplicity.

1.2 Overview

The newest electronics technology has been incorporated into the US-4000 to cut your setup time. Setup changes are downloaded "on the fly" with no lost production time. And now with pop-up windows for number pad and alphanumeric keypads, plus finger or object touch screens, operators are trained within minutes.

1.3 Using This Manual

The following manual conventions are frequently used to assist in understanding important information, alerting the operator of potentially dangerous or damaging practices, and the normal functions of the US-4000.

Text normal text

Italics Used for emphasis

BOLDFACE Used to identify heading names

***CAUTION*:** Warning messages. To avoid physical harm, damage to equipment or damage to the product. Be sure to read these messages carefully.

1.4 Machine Specifications

Machine Dimensions: 32" width x 54" height x 23.5" depth
Load Height: Adjustable, 42" to 60" (depends upon accumulator position)
Rotary Drum Motor: Stepper Driven
Drum Positioning Optical Sensor: Photoelectric with Distance Adjustment
Product Sensor: Photoelectric with Teach Function
Load Cell: 25 lbs. active load
Weight: 150 lbs.
Air: 40 PSI
Electric: 115V/60Hz

Touch Screen Specifications
16 color Liquid-crystal display (LCD)
Dot number: 320 x 240
Display area: 115.17mm x 86.37mm
Number of touch switches: 20 x 12
Display Element life: 50,000 hours at 25° and 60% relative humidity
Backlight life: 10,000 hours (until surface brightness decreases by 50%)

1.5 Air & Power Requirements

The US-4000 is equipped with an external regulator and the air supply should be fed to the US-4000 with ¼ inch O.D. poly tubing. Make the connection at the rear of the unit. Set the air pressure on the US-4000 between 35 and 45 PSI or a lower pressure, sufficient to actuate the opening and closing of the doors.

Note: Air should be dry and oil free to avoid damage to components.

The US-4000 requires 115V/60Hz power source and will draw approximately 3 amps total per unit.

1.6 Available Options

Incline feed conveyors - APPI offers a variety of infeed conveyors including flat to incline, horizontal and incline configurations in lengths up to 100'.

Exit conveyors - To remove product from the scale to further packing stations, APPI offers exit conveyors.

Wind enclosure - In areas with air flow from the environment or fans, scale readings may be affected. APPI offers enclosures to shield the scale from these factors.

1.7 Special Note on Safety

Although many safety features have been included in the mechanical, electronic and pneumatic systems, improper use, improper adjustments or neglect of preventative maintenance may result in serious personal injury.

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Chapter 2

Getting Started

Unpacking
Machine Setup
Hookups and Connections
Operating Procedures
Turning on the Power

2.1 Unpacking & Setup

The US-4000 is shipped with the scale head and other components removed. The load cell will be secured with breather screws closed. The breather screw must be opened (turn screw counterclockwise) before use. See Dwg 4.5.

2.2 Operating Environment

When you choose a location for installation, make sure the area is free of excess dust, dirt and moisture. To ensure the highest production possible, consider product flow from baggers or counters and ensure that finished (packaged) product can easily flow from the system.

Note: For suggested system layouts, please contact an APPI technical sales person for layout drawings.

2.3 Machine Setup

Position the US-4000 in an environment free from vibrations, air flow or other conditions that may affect the stability of the scale or cause incorrect readings from the load cell.

When the scale is in its operating location, level the scale by adjusting the leveling pads. Place a level across the stand and along the stand legs to level the scale.

Before mounting the rotary drum assembly, the load cell breather screw must be turned counterclockwise 3-4 turns. See Dwg. 4.5 Once the breather screw is opened, the scale should not be moved.

Install the rotary drum assembly onto the load cell and tighten the four screws that fasten the rotary drum assembly to the load cell plate. Then, remove the front panel to gain access to the load cell and connect the stepper drive cable. Secure the load cell cable with strain relief ties so that the cable has no stress between the upper “U” channel and the lower “U” channel. Reinstall the front plate to enclose the load cell area.

Note: Ensure that the stepper cable is not wedged between the upper and lower “U” channel.

2.4 Hookups and Connections

The side of the US-4000 electrical panel, located beneath the rotary drum, there is a port that connects to infeed systems to halt the operation of the system if a scale fault condition exists. Connection to this port is optional. If not connected, the scale can operate in a standalone operation mode.

A 12’ power cord is supplied to connect to a standard 115V/60hz grounded outlet (US voltage).

Note: Power outlets should be checked by qualified electricians to ensure the proper voltages are supplied.

Connect a 1/4” airline to the regulator to operate the accumulator gates and set the air pressure between 35 and 45 psi or lower to allow the gates to open and close quickly and freely.

Connect the product sensor photo eye cable to photo eye mounted above the accumulator assembly.

2.5 Turning on the Power

The power switch is located on the side of the electrical panel, beneath the rotary drum assembly. In the "On" or "Up" position, the switch is illuminated indicating that power is supplied to the unit.

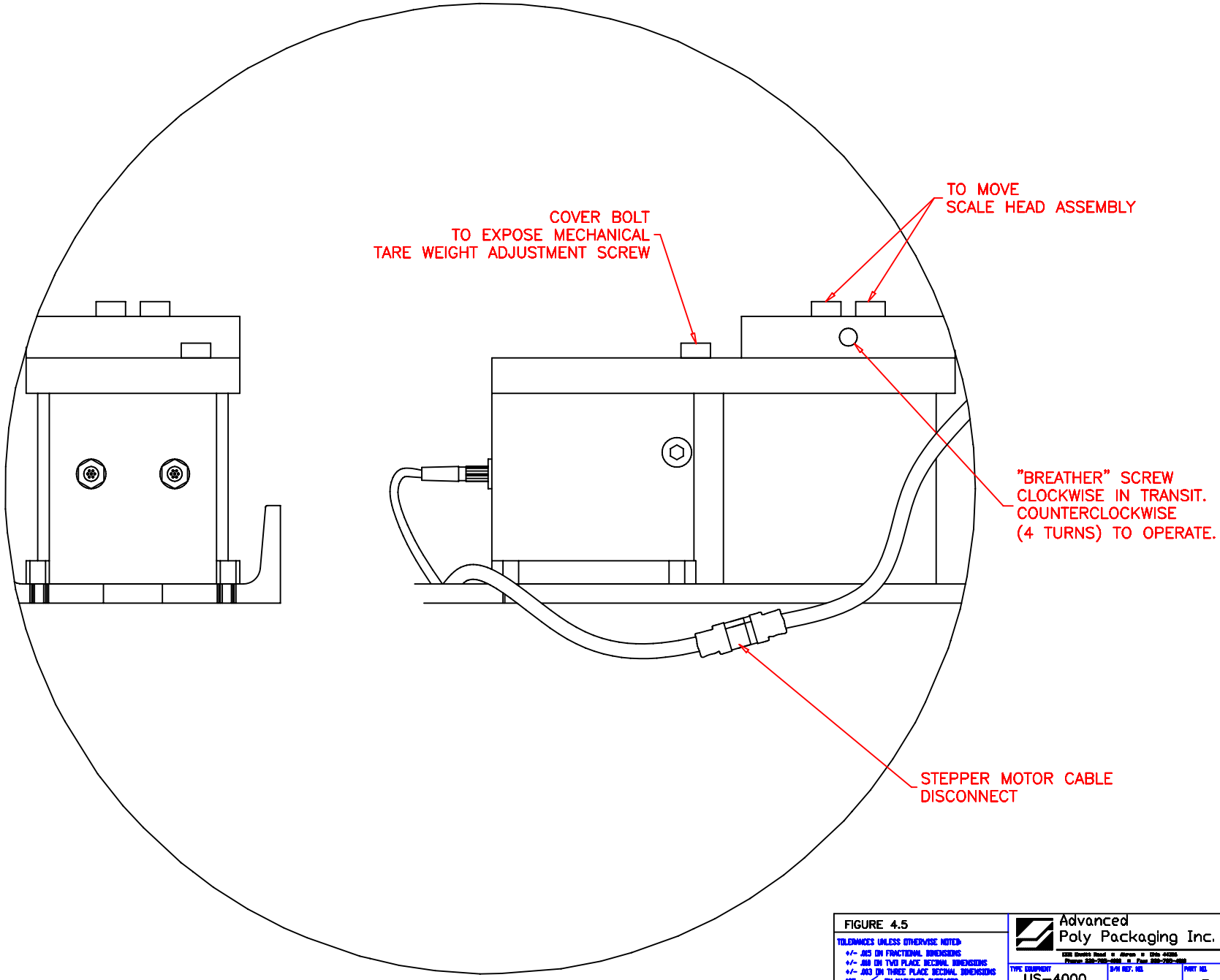

FIGURE 4.5

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced
Poly Packaging Inc.

TYPE EQUIPMENT: US-4000	DWN REF. NO.	PART NO.: -
SCALE: N.T.S	DRAWN BY: MELODY	APPROVED
	DATE: 1/29/03	DATE

TITLE: LOAD CELL ADJUSTMENT
DRAWING NO.: 4.5
REV.: -

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Chapter 3

Operation: Touch Screen

Getting to Know The Touch Screen
Panel LEDs
System Function Keys
Contrast / Back Light Settings
Screen Off/On
Parameter / Communication
Calibrating Screen
Pass Code Function
Main Menu
Operation Screen
Settings Screen
Auto Set Feature
Counters Screen
Accuracy Chart Screen
Weight History
Job Save Screens
Tote Setup Screen
Technical Assistance Screen
Message Screens
Quick Start Procedures

3.1 Getting to Know the Touch Screen

The touch screen is comprised of LEDs, System & Function Buttons and the Screen Operation itself. This section provides the necessary information to navigate through the touch screen to change settings, obtain accuracy information and historic data.

3.2 Panel LEDs / Connectors

Front: Power - Green LED is lit when machine is turned on.
Front: Run - Green LED is lit when touch screen is in run mode and program is operating properly.
Back: CN4 Port - Printer connector (not supported in I.O.P. or P.L.C. Program).
Back: TB1 Screws - I.O.P. power terminal block.
Back: CN1 Port - Bar code reader port (not supported in I.O.P. or P.L.C. Program).
Back: CN2 Port - Program port/data communication port between I.O.P. and P.L.C.

3.3 System & Function Keys

There are three levels of access to the System Settings: 1) Press **Function Keys** (F1 to F5) directly. 2) Press the **System Key first, then press the Function keys** and 3) Press the **System key, then hold down the F1 and F5 keys** for parameter settings.

3.4 System Settings; Function Keys

Function Keys: function keys are programmed as "hot" keys and may be changed dependent upon the program version. However, F1 key will always display a HELP screen.

3.5 System Settings; System Key for Screen Contrast Settings

System Key first, then press the Function keys: Pressing the System key followed by F2 through F5 allows for screen contract adjustments, as follows:
F2 - Function key 2: Reduces the screen contrast.
F3 - Function key 3: Sets the screen contrast to mid-scale.
F4 - Function key 4: Increases the screen contrast.
F5 - Function key 5: Backlight ON/OFF (locked in ON position).

The contrast control for the Us-4000 is accessed through the function keys to the right of the touch screen. To enable the function keys, press the lavender SYSTEM key. Hold down the F2 key or depress it repeatedly to *decrease* the contrast and darken the touch screen display. Hold down the F4 key or depress it repeatedly to *increase* the contrast and brighten the touch screen display. Press the F3 key to set the contrast to the mid-scale position. Press the SYSTEM key again to disable the function keys.

Note: The function keys will only remain active for 5 seconds after the last key is pressed.

3.6 Auto Screen Off / Manual Screen Off

The backlight will automatically turn off after 30 minutes of nonuse of the touch screen for longevity of the screen components. If the backlight is off, simply touch the screen or press the system or function key to illuminate the screen.

To turn off the backlight manually, press the System key, followed by the F5 function key. Again, pressing any key or the touch screen will illuminate the screen.

3.7 System Settings; Parameter & Communication Settings

Note: Parameter setting are set at the factory and should not be altered; any changes may cause the touch screen to become inoperative.

System settings can only be accessed by pressing the SYSTEM key and then holding the F1 and F5 function keys simultaneously.

System settings provide access to the COMM parameters, I/O test and Memory Card information.

COMM parameters are set at the factory as follows:
SIG LEVEL: RS232C
CONNECT: 1:1
PC Stat: No: 1
Baud Rate: 19,200
Data: 8
Stop Bit: 1
Parity: ODD

I/O test provides for TOUCH/CONTACT SWITCH tests. Each button can be tested to ensure proper operation of the screen. Press the *right corner* of screen to return to the main menu.

From the main menu, press System / Mode to return to normal operation.

3.8 Touch Screen Program / Color Scheme

The touch screen displays 16 true colors and 16 shaded colors to provide a vivid display. A particular color scheme is used to assist the operator to locate functions:
Blue is the background color used for text information. No "buttons" or functions are blue.
Green is the color used for "buttons" that change settings. Pop-up windows may be displayed or a function is turned on/off for instance.
Red indicates that a function is off or stopped. Pressing a red button may turn a function on for instance.
Yellow is the color used for menu buttons. A menu button displays another screen and allows for movement throughout the entire program.

With an understanding of this basic color scheme, the operator will quickly setup the system or make minor adjustments during operation.

The touch screen program is a "user-friendly" menu-driven setup and operation program. Moving through the system is accomplished by touching the area of the screen that describes the desired operation.

3.9 Calibrating Screen

When the US-4000 is turned on, a Calibration Screen is displayed on the touch screen for approximately 30 seconds momentarily while the scale program initiates and automatically calibrates the load cell. See Fig. 3-1.

3.10 Pass Code Function

Advanced Poly-Packaging, Inc. (APPI) has included a pass code function in all touch screen equipment to prevent operators from changing settings. (Available on program versions 4.08 and higher). See Fig. 3-21 through 3-23.

There are two pass code levels described as follows:
1. Level 1: This is the highest level pass code which prevents operators from accessing the Technical Assistance functions of the machine. Additionally, the pass codes are maintained in this area.
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.

Pass codes prevent unauthorized individuals from tampering with settings. When equipment is shipped, APPI uses the following codes which can be changed by the customer at any time:

FIG. 3-1

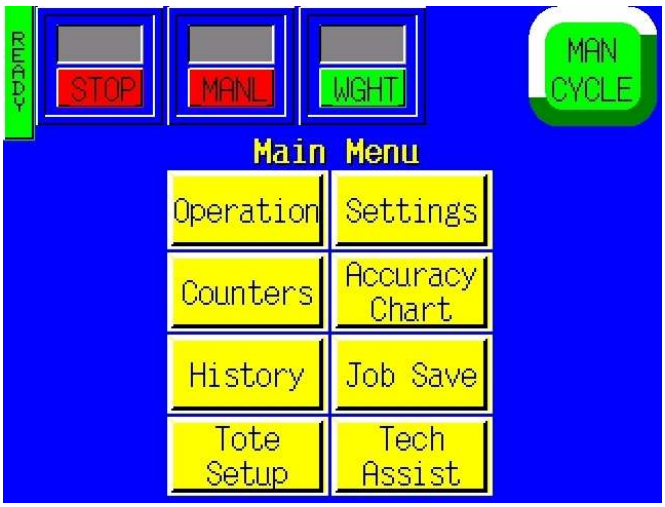

FIG. 3-2

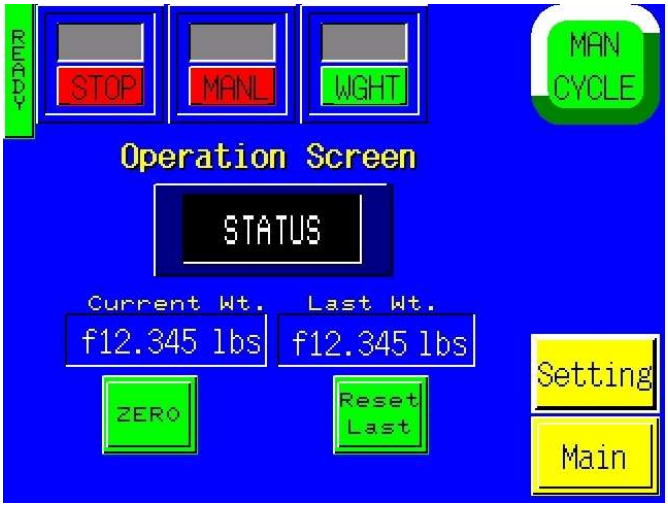

FIG. 3-3

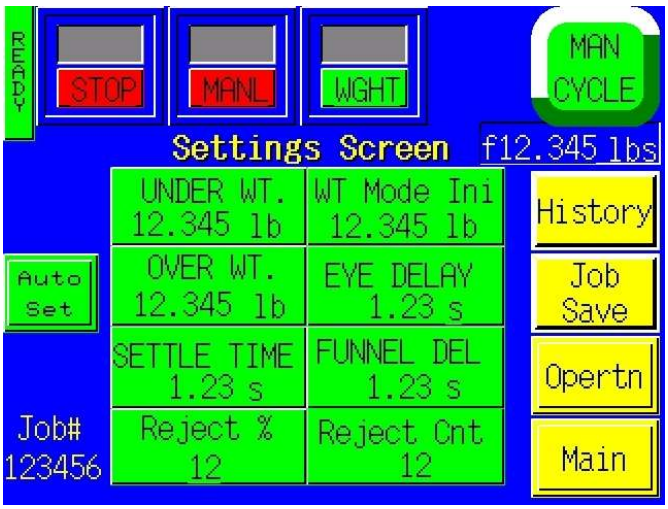

FIG. 3-4

FIG. 3-4A

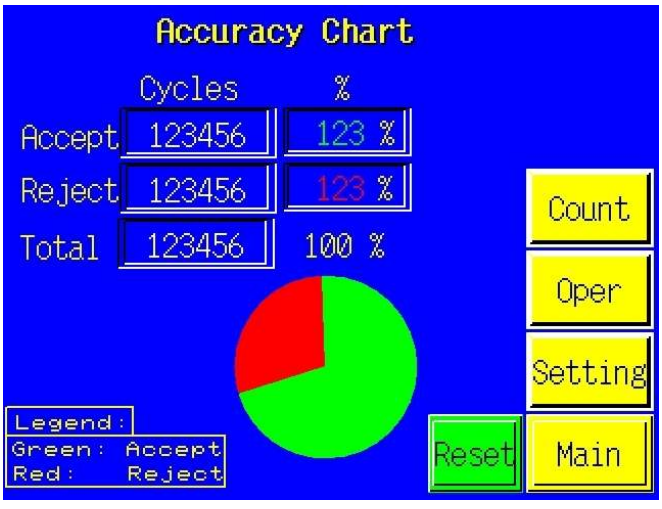

FIG. 3-5

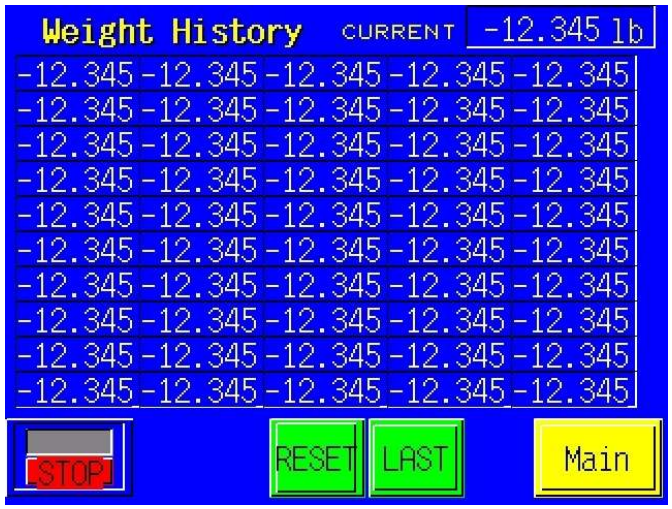

FIG. 3-6

FIG. 3-7

FIG. 3-8

FIG. 3-9

FIG. 3-10

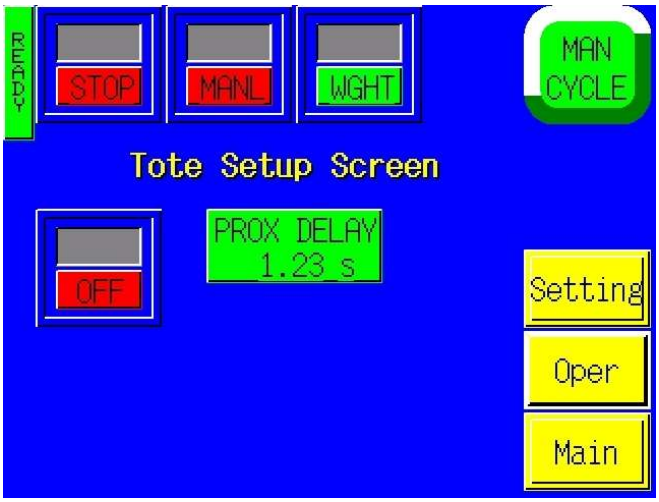

FIG. 3-11

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

To enable the pass code function, press the Tech Assist button from the Main Menu. Type in the Level 1 pass code (1001 by default from APPI). Then press the ON toggle button to toggle the pass code function ON. If you change the pass codes, ensure that these codes are written down.

Once the pass code function is enabled, the operator will have a programmed amount of time (time-out time) to make changes. Once this time has elapsed, the Operation Screen will automatically be displayed. This time can be changed by accessing the Pass Code setup screen. By default, the time is set to 5 minutes.

If you misplace or forget the pass codes, contact APPI Service Dept for assistance. APPI will prove a "factory code" so that the current pass codes can be displayed. Once you receive the factory code, press F5 function key, located to the right of the touch screen, to enter the factory code and display your preset codes.

3.11 Main Menu

The Main Menu screen is provided to navigate quickly through the entire program, linking to other screens on the program. See Figure 3-2.

The menu command buttons are the yellow buttons located in the center side of the Main Menu screen. Pressing one of the menu command buttons will change which screen is currently being displayed by the touch screen. To access another screen, simply press the corresponding menu command button.

Menu buttons appear through the touch screen program to assist in navigating throughout the program, normally located on the right side of the screen.

3.12 Operation Screen

The Operation Screen is where the operator will monitor the operation of the scale, begin operation and stop the system. See Figure 3-3.

Ready / Paused LED: the vertical LED to the left of the RUN/STOP toggle button indicated the operation status of the US-4000. When this LED does not read Ready, the US-4000 rejects all product dropped onto the scale or does not cycle at all dependent upon the condition that caused the Pause condition.

The RUN/STOP button changes the current state of the counter's operation. To start the counter, toggle the button to the RUN mode. To stop the counter, press the RUN/STOP button to toggle it to off. If an error condition exists, the toggle button will automatically toggle to STOP.

The US-4000 has been designed to operate as a stand-alone unit or operate within a system. A system is comprised of several units which may include baggers, counters, and/or conveyors. The auxiliary function of the parts counter is flexible dependent upon the equipment operating in the system. When the Auxiliary cable is connected to the scale, a "pause" signal is provided that can be interpreted by other equipment in the system to pause automatic operations. If not connected, the scale can run automatically. AUTO/MAN toggle button is provided to operate the system in an Automatic operation (product is automatically fed to the scale and the scale automatically cycles when the product is presented) or in a Manual operation (cycle operation begins when the MAN CYCLE button is pressed.

Before running automatically, the scale should be cycled several times as a stand alone unit to test for accuracy.

EYE/WGHT toggle button is provided to switch operations from the photo "eye" mode to a "weight" mode. In the EYE mode, a product must pass through the photo sensor located in the accumulator.

When the product passes through the eye and the scale is empty, the accumulator door will open dropping the product onto the scale and initiate the cycle operation. In the WEIGHT mode, the accumulator door will be open unless the scale is cycling, awaiting a product. A product is detected when the product weighs greater than the UNDER setpoint (described in the Setting section of the this manual).

MAN CYCLE button is provided to manually cycle the scale for testing and setup.

STATUS box indicates and UNDER, OVER or ACCEPT condition.

CURRENT WT. displays the output from the load cell in real time. LAST WT. is the weight at the point the scale cycled during its previous cycle operation.

ZERO button is provided to reset the scale to zero, when the scale is empty. This button is useful to avoid constantly cleaning debris from the scale for instance.

RESET LAST button is provided to hold the CURRENT WT on the scale into memory.

To go to other screens in the program, press the Menu item buttons, located on the right side of the Operation Screen.

3.13 Setting Screen

The Settings Screen contains the weight value settings, timer settings, units or count settings used to control the operation of the scale. See Fig. 3-4.

Note: Before changing any values on this screen, toggle the RUN/STOP button to the STOP mode to prevent personal injury.

To change a value, press the corresponding green button. For some settings such as the UNDER value, a numeric keypad window will be displayed to change the setting value. Enter the value and press Enter to accept the value. If entered incorrectly, press Clear, then reenter the value.

UNDER setting is the weight value that initiates the cycle operation while in the WEIGHT cycle mode.

Note: Values below the minimum value or above the maximum value will not be accepted when the enter key is pressed. Press the clear key and enter a new value that is within the indicated acceptable range.

OVER setting is a value that if exceeded, would cause the product to be rejected. This value is discretionary since some product that is overweight or contains too many parts could be considered acceptable.

NOTE: The difference between the UNDER and ACCEPT values and the OVER and ACCEPT values must be greater than .005 lbs. If the difference is less than or equal to .005 lbs., the scale may accept product that is considered a reject and vice versa.

REJECT % is provided to when historical data is on hand revealing reject rates for infeed systems. That rate can be set to that if exceeded would alert the operator that the infeed equipment may not be setup properly.

SETTLE TIME is provided to allow product or the scale to become motionless before the scale locks the weight and cycles the rotary drum. By increasing the settle time, the accuracy of the scale increases, but the production/output decreases.

EYE DELAY is a time that allows the product to accumulator door opening to be delayed. If the product is falling from a great height, the doors should remain closed until the product hits the accumulator doors, preventing damage to the scale.

FUNNEL DELAY is the amount of time that the accumulator doors will remain open, allowing product to completely pass through the doors before the doors close.

REJECT COUNT is value, if exceeded, will stop the operation of a system and alert the operator to make changes to the infeed system. If the value is set to 5 for instance and 6 consecutive weighments produce 6 consecutive rejects, the operator will be alerted.

3.14 Auto Set Feature

An Auto Set feature has been incorporated into the settings screen to assist in determining the Under weight and Over weight. See Fig. 3-4.

This function uses a Sampling method of determining the values. Before beginning the auto set feature, create two bags of parts as follows:
Bag 1: UNDER kit: This is a kit that is considered a reject because it is missing a component. The component that is missing is typically the lightest component in the kit.
Bag 2: OVER kit: This is a kit, that if it contains these components, will be a reject because it has too many components. In determining this kit, consider that the costs of reworking the kit versus the cost of components. For instance, many decide to "give away" an extra washer instead of taking the time to open the bag, separate the like components, counting them individually and resealing the bags.

The greater the weight range between Bag 1 and Bag 2, the greater the packaging speed.

When the bags are made, press the Auto Set button on the Settings Screen and follow all instructions. Once complete, you will have the opportunity to accept the new settings. Test the new settings carefully to ensure that the system is functioning properly. Setting changes may be required to fine tune the operation.

3.15 Counters Screen

The Counters Screen allows the operator to count ACCEPTED product in preset batch quantities and then stop the automatic infeed of product.

Each time a product is weighed and is within an acceptable weight range, the remaining preset counter value is decremented until it reached zero when it will display a message and pause any infeed equipment. While the message is displayed on the screen, all following product will be rejected until the screen is pressed, resetting the remaining count value to the preset count. Reset button will reset the remaining value to the preset value.

Bag Count counter provides for weight more than one bag at a time. For instance, if the scale is not able to keep up with the infeed systems, two products could be weighed and if our of acceptable weight range from both, both products would be rejected.

3.16 Accuracy Chart Screen

The Accuracy Chart displays a pie graph and data indicating the accuracy of weighments of the product being fed into the system. Reset button can be pressed to reset all values to zero and the pie graph to 0 rejects. See Fig. 3-5.

3.17 Weight History Screen

The weight history screen allows the operator to see the last weighment values. The screen will add weighments on a FIFO (first in-first out) basis. See Fig. 3-12.

RESET button will set all stored weighments to zero.

3.18 Job Save Screen

The programming allows the operator to save up to 96 different settings for later recall, saving the job to a part number. See Fig. 3-7 through 3-10.

To recall a job that has been saved, press the corresponding part number. The operator can view the settings by pressing the VIEW button and then press LOAD to use that job.

3.19 Tote Setup Screen

The system is programmed to allow for a high level flow sensor to shut down the system. For instance, if a tote is full (level sensor turns ON), the scale system will pause waiting for the sensor to turn off. A message will be displayed alerting the operator to empty the tote. See Fig. 3-11.

Note: Additional components / wiring is required to enable operation of this feature.

3.20 Technical Assistance Screen

Technical Assistance screen is used by maintenance personnel to provide contact information for APPI, assist in troubleshooting the machine, cycle the drum and adjust settings that affect the auto zeroing function. See Fig. 3-12.

Cell Comm Screen indicates the ASCII information from the load cell that the PLC interprets. If the scale does not receive information that can be interpreted, the scale will not function properly and indicate weight that is not correct.

PLC I/O Status. Screen indicates the Inputs and Output status of the machine, without the need to look at the PLC which is located in the electronic panel. Outputs and inputs are labeled across the right side of the screen and each LED is labeled according the IO address. See Fig. 3-13 through 3-17.

Timers Screen allows the user to setup a *timer* that is associated with the Auto Zero function and the *range* that is associated with the Auto Zero Function. The Auto Zero function allows the scale to automatically zero if the scale does not indicate ZERO at least one time during this period of time AND the weight indicated is less than the range setting. For instance, if the Auto Zero Time is set to 2 seconds AND the range is set to .010, the scale would reset itself to zero automatically if the scale was not in cycle for at least two seconds and the weight indicated was .004. Once the weight exceeds the range setting, the timer resets. The timer also resets when the scale indicates ZERO. See Fig. 3-18.

Jog Screen is used to manually turn the drum. This is useful to determine if the stepper motor is functioning properly, the photo eye that registers the drum location is functioning and the weight does not fluctuate too much during the operation of the drum. See Fig. 3-19.
PassC Setup Screen is described earlier in the chapter.

3.21 Message / Fault Screens

Message and Fault Screen automatically “popup” on the screen during certain conditions that warrant informing the operator of errors or information. See Fig. 3-20 for an example of message screens.

3.22 Quick Start Up Procedures

The following checklist is provided to setup a new “job” on the scale. This checklist could be incorporated into your work instructions.

FIG. 3-12

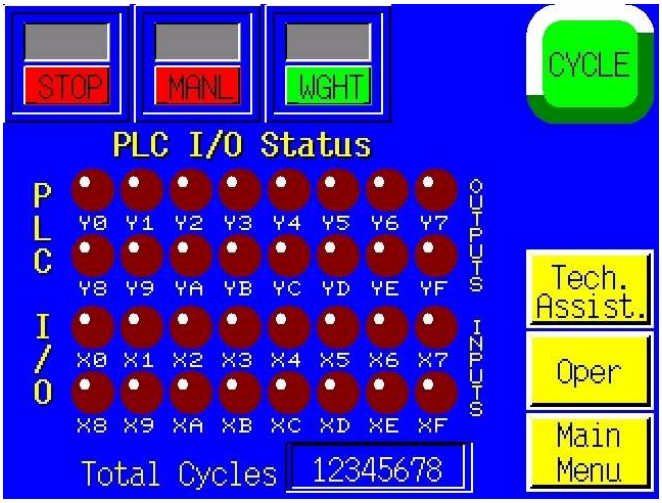

FIG. 3-13

FIG. 3-14

FIG. 3-15

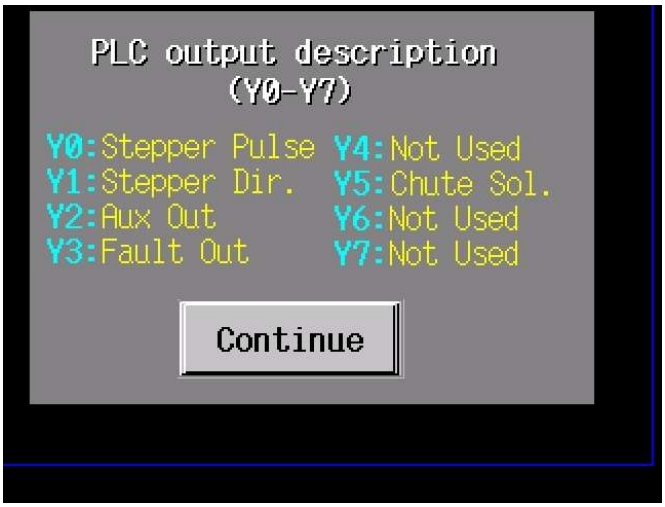

FIG. 3-16

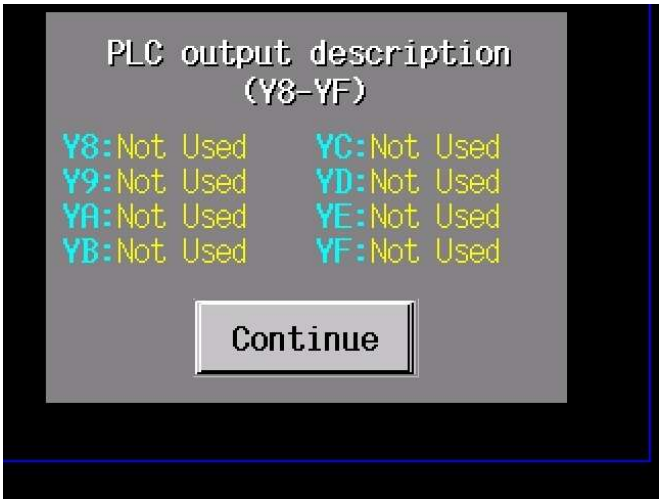

FIG. 3-17

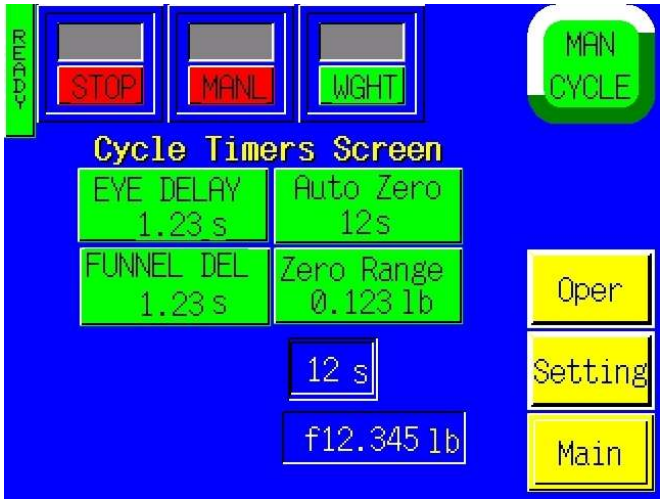

FIG. 3-18

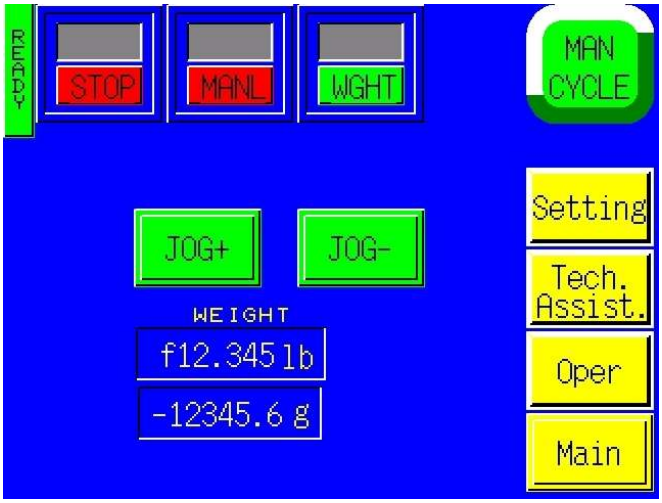

FIG. 3-19

FIG. 3-20

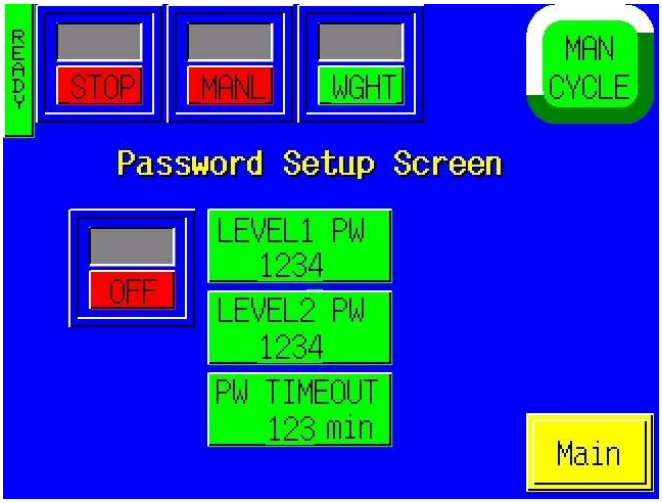

FIG. 3-21

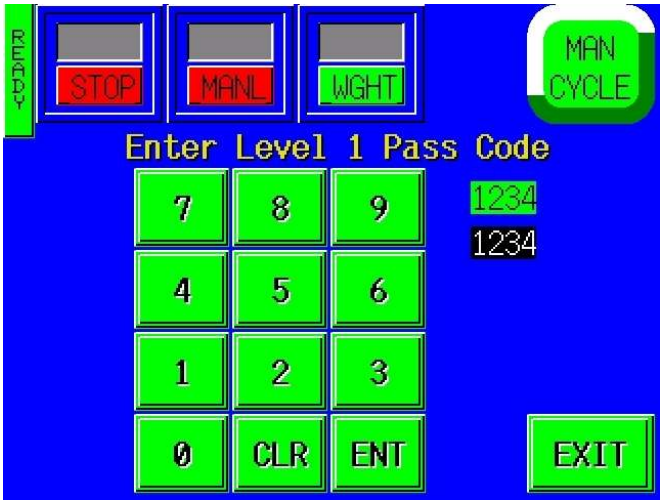

FIG. 3-22

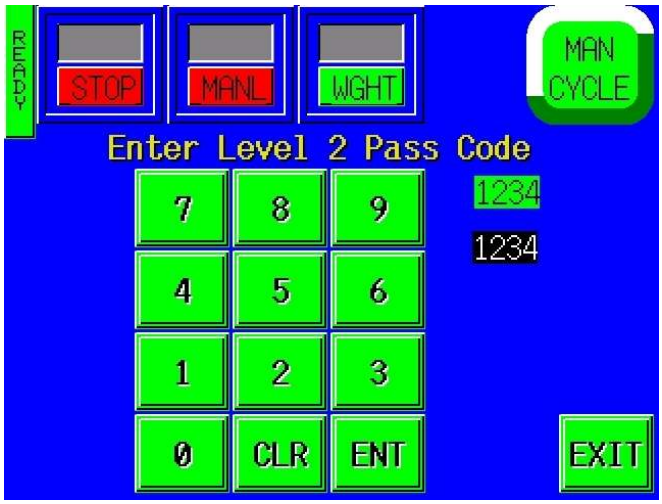

FIG. 3-23

QUICK STARTUP CHECKLIST
US-4000 Check Weigh Scale
For ITEM NO: _____

Perform the following tasks when you have completed a job. These procedures will decrease setup time for product not run or saved in the job save function or for setting up jobs that change in weight due to lot variations. Follow these steps:

1. From the Operation Screen, toggle the RUN/STOP button to the STOP position. Toggle the AUTO/MANL button the MANL position. Toggle the WGHT/EYE button to the WGHT position.

2. Clean scale rotary drum and the plate located below the drum to ensure that no debris is on the scale. Press the ZERO button and the ZERO LAST button.

3. Place an "UNDER" product in the drum of the scale and write the weight in 3a.
Place an "OVER" product in the drum and write the weight in 3b. Use these settings for the UNDER and OVER setpoints on the Settings Screen.
a. Under Product Weight Value: _____
b. Over Product Weight Value: _____

Note: You can also use the Auto Set button to automatically perform the settings function.

4. Remove the product from the scale. Place the scale in the RUN mode and drop the "good" product onto the scale. The scale should rotate, dropping the product in the ACCEPT feed direction. If it rejected the product, repeat steps 3 through 4 or increase the SETTLE TIME. Repeat until the product consistently is Accepted. Follow this same procedure for the UNDER and OVER bags to ensure that the UNDER and OVER bags are being rejected.

5. Scroll to the Operation Screen and toggle to AUTO and EYE and place the product on the infeed conveyor checking that the same acceptable results are obtained as in Step 5. If you don't obtain the same results, change the Setting Screen timers, increasing or decreasing the Settle Time or Eye Delay or Accum. Funnel delay timers.

6. Scroll to the Job Save Screen and save the settings according to the product number.

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Chapter 4

Machine Adjustment Settings

Rotary Drum Positioning/Sensor Settings
Accumulating Funnel Adjustments

4.1 Rotary Drum Positioning/Sensor Settings

A photo sensor maintains the registration of the drum. The drum can be repositioned by either moving the photo eye or the sensor gap plate. Refer to drawings 4.2 to reposition the drum via the sensor gap plate. Refer to drawing 4.1 to reposition the drum via the photo sensor.

4.2 Accumulating Funnel Adjustments

The accumulator funnel holds the product above the drum so that product is not dropping onto the drum while previous product is being weighed or the drum is in motion. The doors of the drum should close at the same time without "banging". Refer to drawings 4.3 for door speed adjustments and door position adjustments. Refer to drawing 4.4 for door position setting.
Air pressure: air pressure and speed controls must be set so that the air is sufficient to close and open the doors and also sufficient to keep the doors closed when product is resting on the doors.

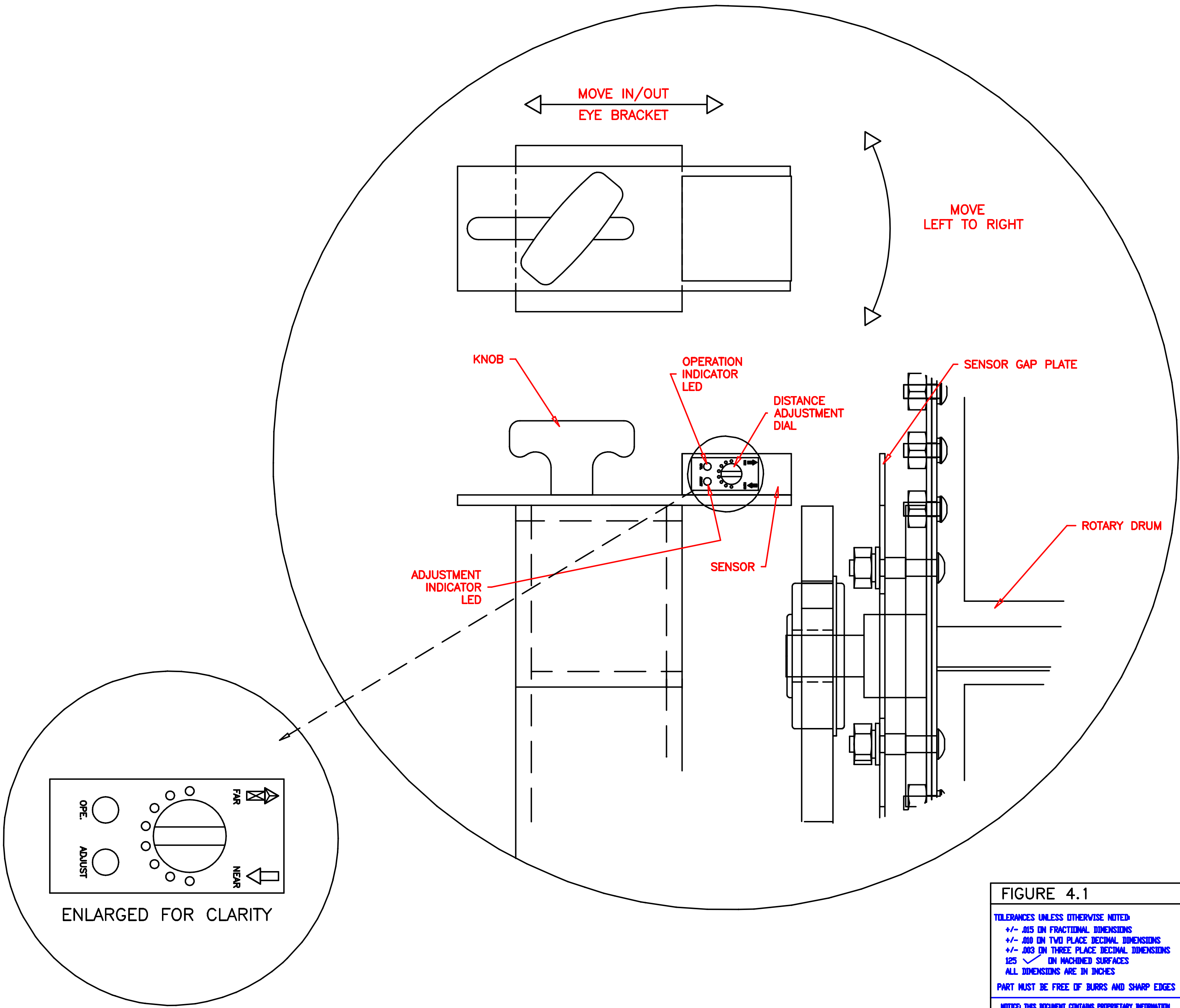


FIGURE 4.1

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced Poly Packaging Inc.
1331 Emmitt Road ▪ Akron ▪ Ohio 44306
Phone: 330-785-4000 ▪ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US-4000		-
SCALE	DRAWN BY	APPROVED
N.T.S	NAME MELODY	NAME
	DATE 1/27/03	DATE

TITLE	DRAWING NO.	REV.
SENSOR SETTING/ALIGNMENT ADJUSTMENT	4.1	-

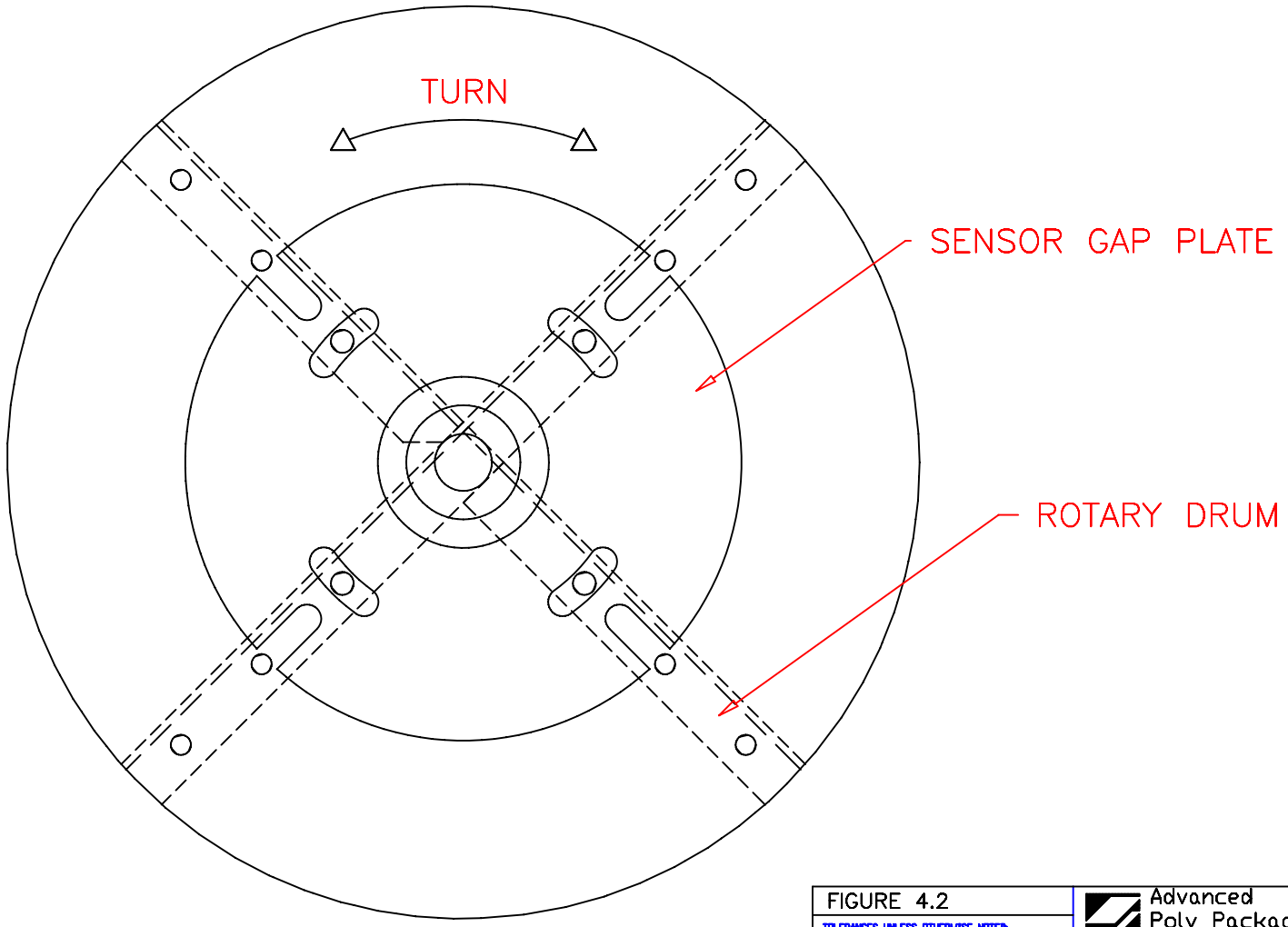


FIGURE 4.2

TOLERANCES UNLESS OTHERVISE NOTED
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced
Poly Packaging Inc.
1331 Devitt Road ■ Akron ■ Ohio 44306
Phone: 330-785-4000 ■ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US-4000		-
SCALE	DRAWN BY	APPROVED
N.T.S	NAME: MELODY	NAME
	DATE: 1/27/03	DATE

TITLE	DRAWING NO.	REV.
ROTARY DRUM POSITIONING	4.2	-

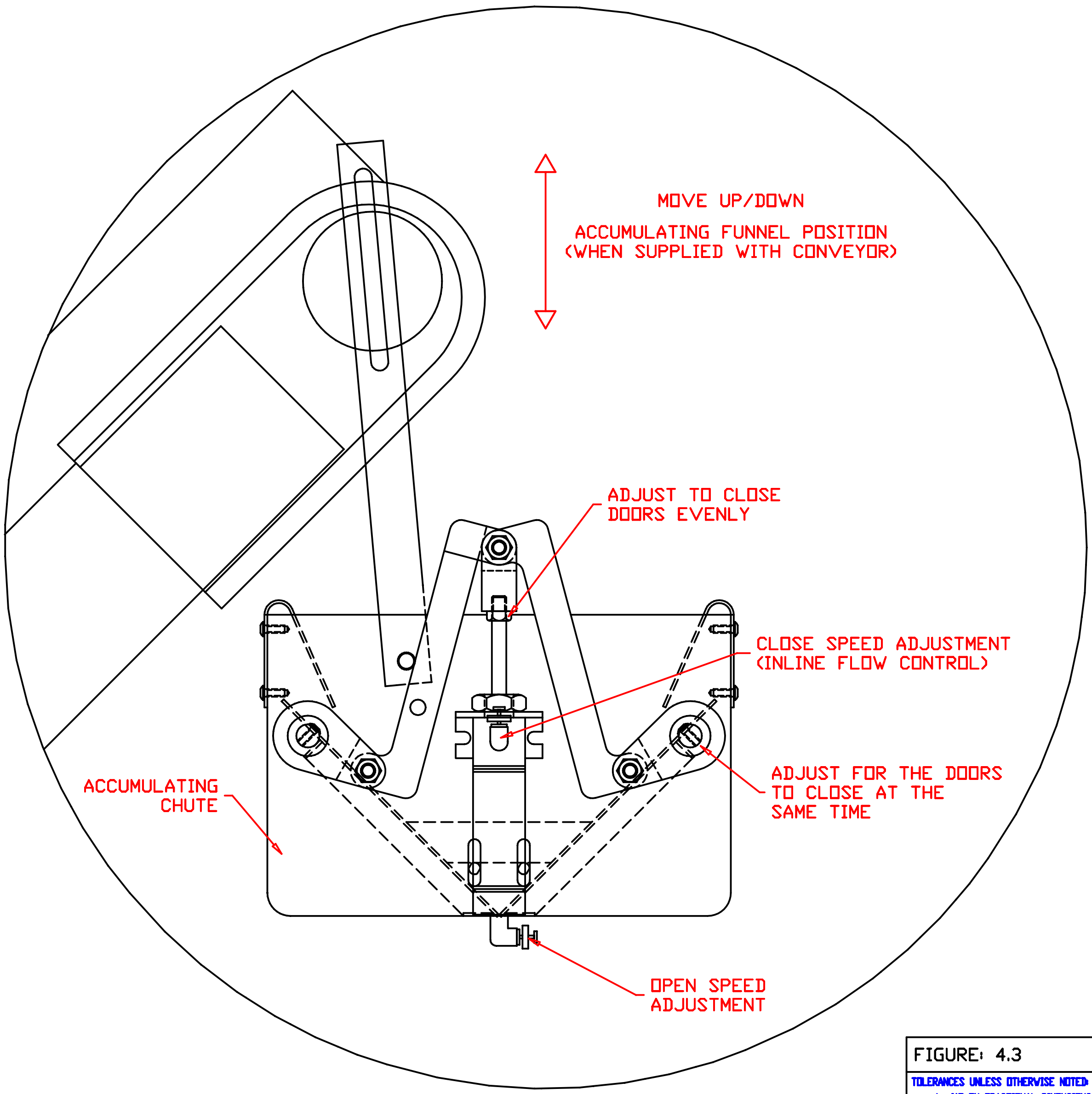


FIGURE: 4.3

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced Poly Packaging Inc.
1331 Emmitt Road ■ Akron ■ Ohio 44306
Phone: 330-785-4000 ■ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US-4000		

SCALE	DRAWN BY	APPROVED
N.T.S	NAME MELODY	NAME
	DATE 1/28/03	DATE

TITLE	DRAWING NO.	REV.
ACCUMULATING FUNNEL ADJUSTMENTS	4.3	–

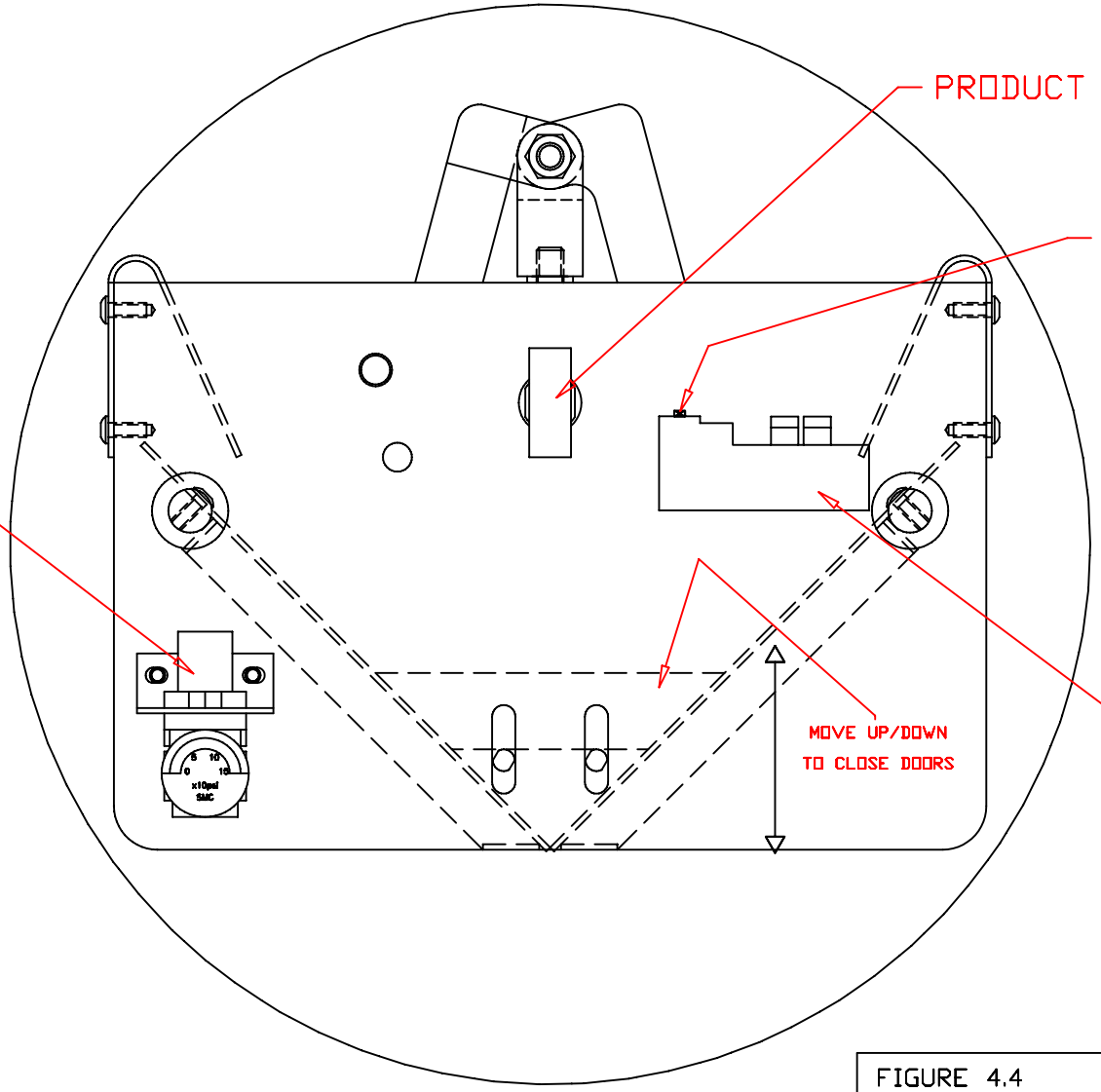


FIGURE 4.4

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES
PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced
Poly Packaging Inc.
1331 Evritt Road ▪ Akron ▪ Ohio 44306
Phone: 330-785-4000 ▪ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US-4000		
SCALE	DRAWN BY	APPROVED
N.T.S	NAME MELODY	NAME
	DATE 1/28/03	DATE

TITLE	DRAWING NO.	REV.
PRODUCT SENSOR SETTINGS/TEACH	4.4	–

Chapter 5

Trouble-shooting

Troubleshooting Checklist

Trouble Shooting Checklist (Us-4000)

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Touch screen does not display	1. Power off 2. Main fuse blown 3. Breaker tripped 4. I.O.P. 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 I.O.P. cover 5. Adjust screen contrast
No main power LED	1. Power off 2. Main fuse blown 3. Breaker tripped 4. I.O.P. 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 I.O.P. cover 5. Replacement not possible
Accumulating funnel not functioning correctly or not at all	1. No/low air pressure 2. Leaking hoses or air cylinders 3. Product Sensor not sensing product 4. Incorrect mode of operation	1. Check main and individual regulators Check for kinked air hoses 2. Check all air hoses and cylinders 3. Check output from photo sensor, check setting (use teach option) 4. Check mode on “Operation Screen” and set to MANL mode. In this mode, accum. funnel should be open.
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

Chapter 6

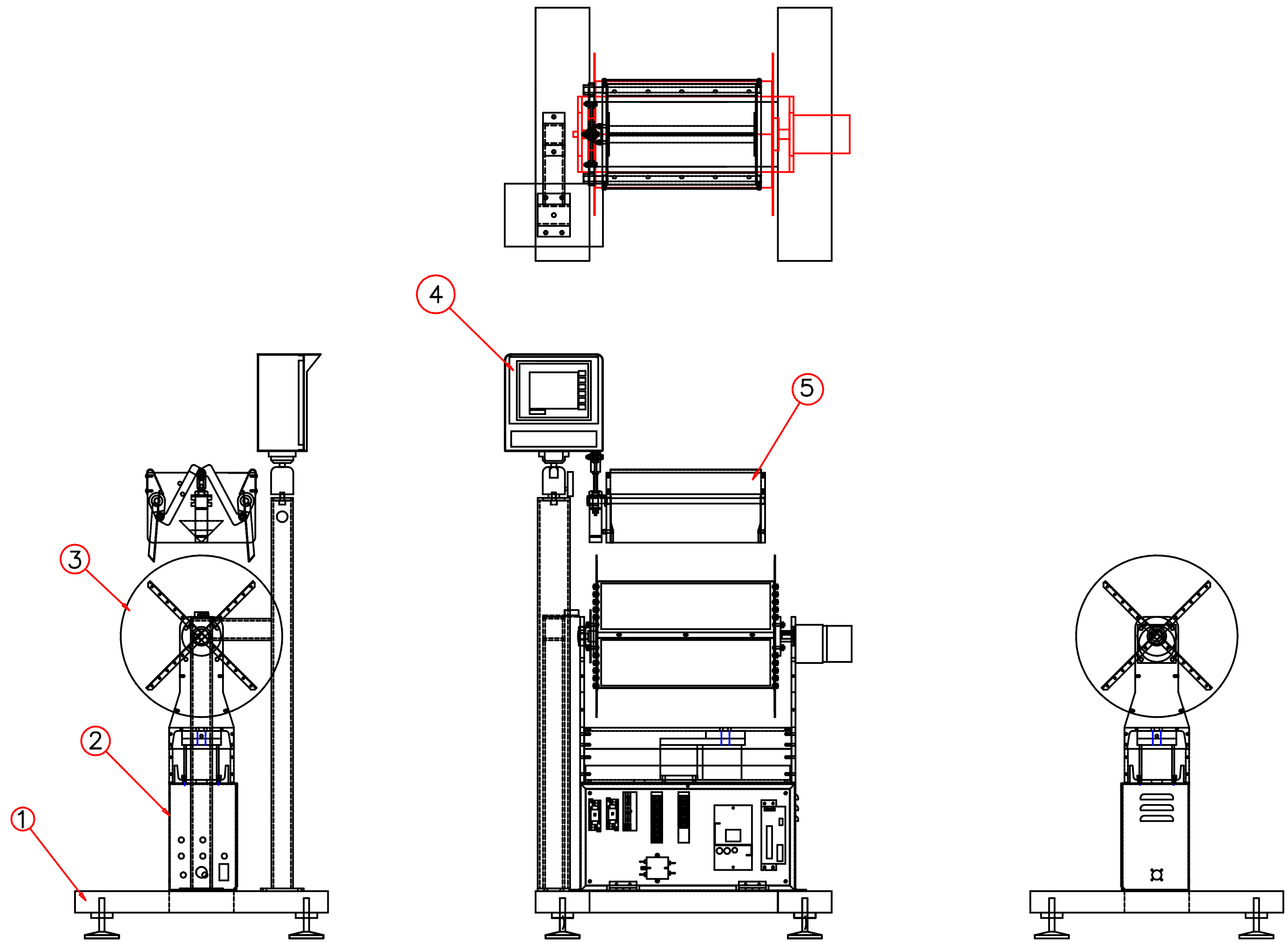
Replacement Parts

Components Lists with Drawings

T-FLIPR8

Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => T-FLIPR810		US-4000 Rotary Check Weigh Scale	
1	TA-CWR1000	Stand Assembly,US-4000	1
2	TA-CWR2000	Electronic Box Assy	1
3	TA-CWR3000	Scale Head Assy	1
4	TA-CWR4000	IOP Assy	1
5	TA-CWR8000	Accumulator Chute,US-4000	1



REV	DATE	BY	DESCRIPTION

QUANTITY	–
MATERIAL	–
FINISH	–

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES
PART MUST BE FREE OF BURRS AND SHARP EDGES

Advanced
Poly Packaging Inc.
1331 Emmitt Road ■ Akron ■ Ohio 44306
Phone: 330-785-4000 ■ Fax: 330-785-4010

TYPE EQUIPMENT	D/N REF. NO.	PART NO.
US–4000	PARTS MANUAL	–
SCALE	DRAWN BY	APPROVED
1:5	NAME MELODY DATE 1/8/03	NAME DATE

TITLE	DRAWING NO.	REV.
CW ROTARY SCALE FULL ASSEMBLY DESIGN #5	US–4000	–

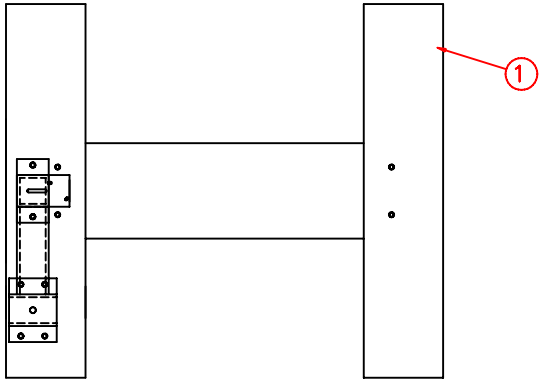
TA-CWR10

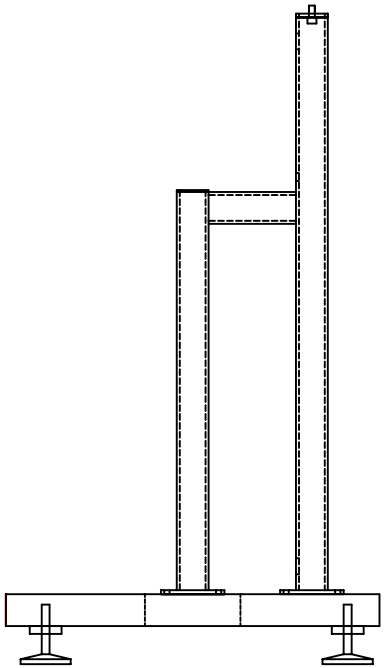
Date 07/29/03 ADVANCED POLY PACKING, INC. Page 1

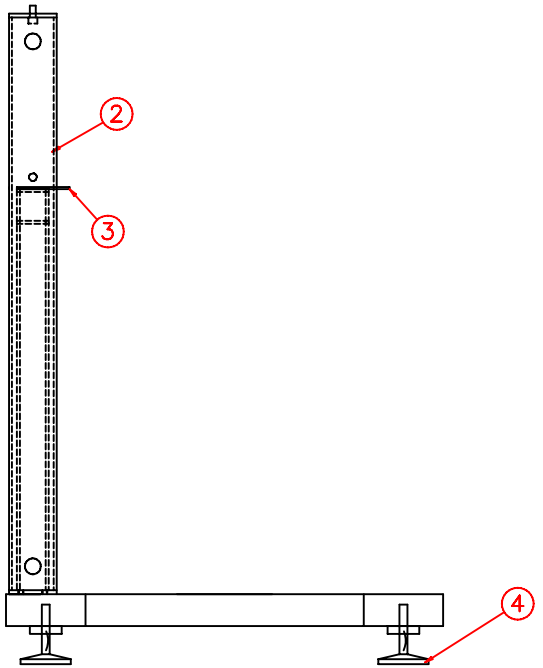
Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR1000		Stand Assembly,US-4000	
1	TP-CWR1001	Base Assy,US-4000	1
2	TP-CWR1004	IOP Bracket #2-4000	1
3	TP-CWR1005	EYE Bracket	1
4	TP-110764	Leveling Glide	4
5	TP-216134	Sensor,Photoelectric	1

MATERIAL LIST				
ITEM	APPI NO	NO REQ	DRAWING	DESCRIPTION
1		1	CWR-1001	BASE ASSEMBLY
2		1	CWR-1004	IDP BRACKET #2
3		1	CWR-1005	EYE BRACKET
4		4	-	LEVELING GLIDE







QUANTITY	-
MATERIAL	-
FINISH	-

TOLERANCES UNLESS OTHERWISE NOTED
+/- .XXX ON FRACTIONAL DIMENSIONS
+/- .XX ON TWO PLACE DECIMAL DIMENSIONS
+/- .XXX ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES
PART MUST BE FREE OF BURRS AND SHARP EDGES

REV	DATE	BY	DESCRIPTION
A	1/9/02	MELODY	CHANGED DWG. NO. REFERENCE TO -000 VAC -000

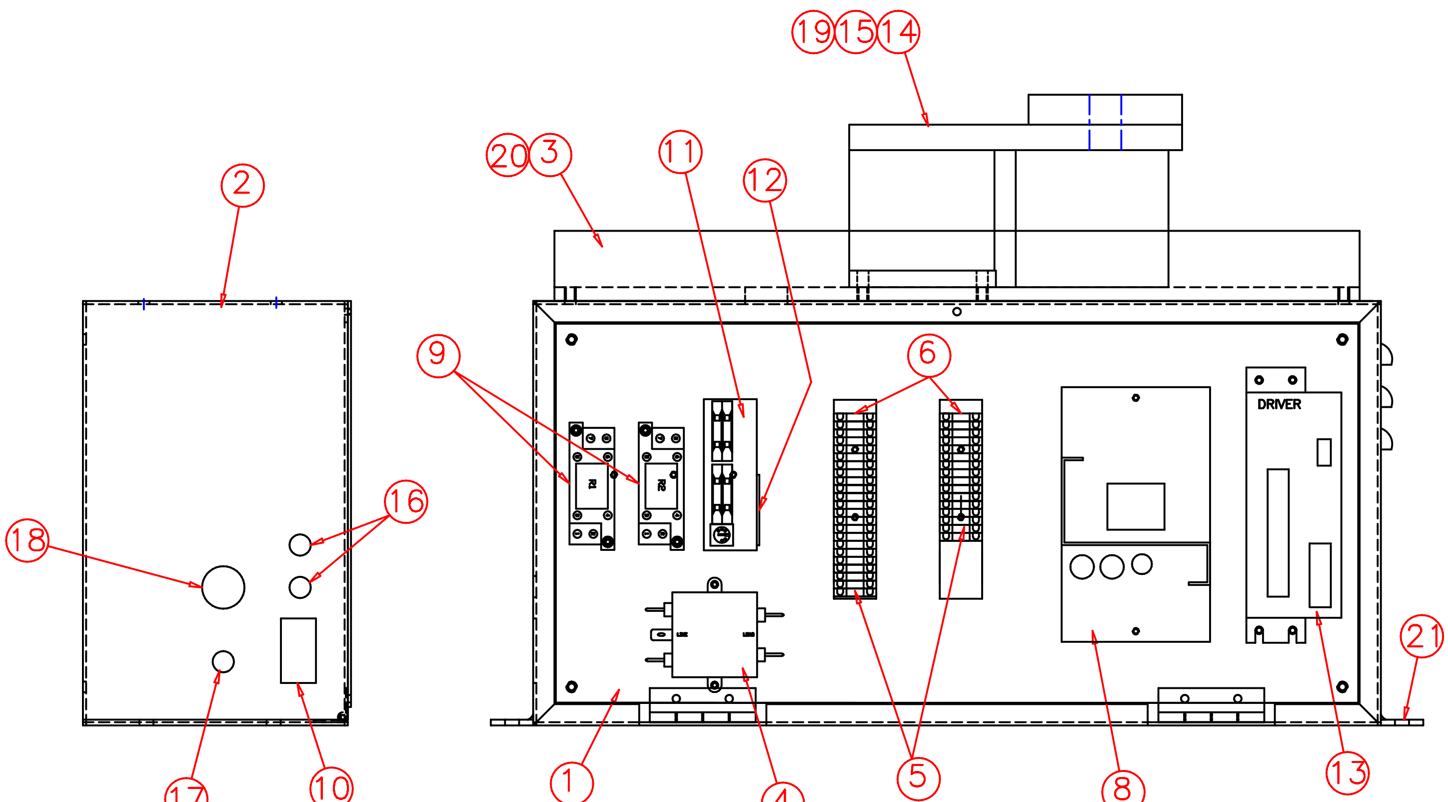
Advanced Poly Packaging Inc.

TYPE EQUIPMENT: US-4000	DWG NO.: ASSY DWG # US-4000 #5	PART NO.: -
SCALE: 1:4	DRAWN BY: MELODY DATE: 7/17/03	APPROVED DATE
TITLE: STAND ASSEMBLY	DRAWING NO.: CWR-1000	REV.: A

TA-CWR20

Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR2000		Electronic Box Assy	
1	TP-CWR2001	Electronic Component Plate	1
2	TP-CWR2002	Electronic Enclosure & Cov	1
3	TP-CWR2003	Base Plate	1
4	TP-205108	Filter,120/250VAC 50/60 HZ	1
5	TP-208141	Term.Block,Screw Clamp,15m	39
6	TP-208410	Terminal Blocks, Direct Mo	4
7	TP-212229	7 pin circular male conn (	1
8	TP-213359	Power supply,55W+5V+24V+12	1
9	TP-215341	Track MountRelaySocket/Bas	2
10	TP-215384	Switch, Rocker SPST 250V @	1
11	TP-220511	PLC, FPG-C32T	1
12	TP-220513	PLC,Communication Cassette	1
13	TP-501169-1	5 Phase Driver	1
14	TP-750015	Load Cell, Digital Damped	1
15	TP-750015-1	Cable, Load Cell, TP-75001	1
16	TP-207216	Fuse Holder(110v/220v)	2
17	TP-213266	Cable,PowerSupplyCord,12'	1
18	TP-214103	Grommet, 3/4"ID, 1 5/8"OD(	1

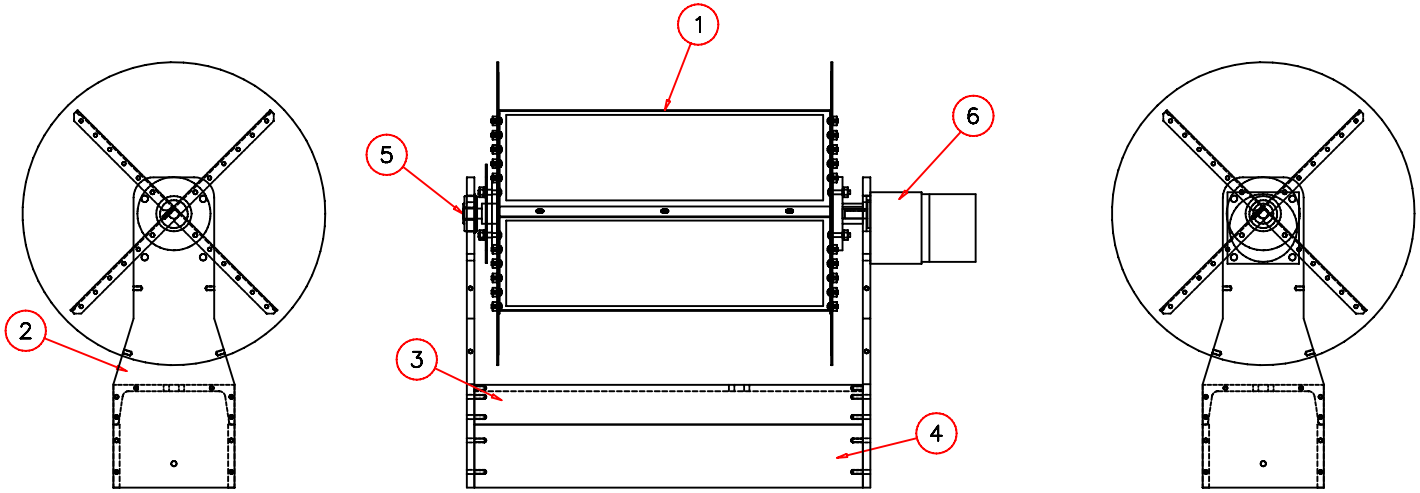


QUANTITY	–	REV	DATE	BY	DESCRIPTION
MATERIAL	–	Advanced Poly Packaging Inc.			
FINISH	–	[illegible]			
TOLERANCES UNLESS OTHERWISE NOTED: +/- .015 ON FRACTIONAL DIMENSIONS +/- .010 ON TWO PLACE DECIMAL DIMENSIONS +/- .003 ON THREE PLACE DECIMAL DIMENSIONS 125 ✓ ON MACHINED SURFACES ALL DIMENSIONS ARE IN INCHES PART MUST BE FREE OF BURRS AND SHARP EDGES		TYPE EQUIPMENT: US-4000	B/M REF. NO.: ASS'Y DWG.# US-4000 #5	PART NO.: –	
		SCALE: 1:1	DRAWN BY: NAME MELODY, DATE 1/9/03	APPROVED: NAME, DATE	
NOTICE: THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IT SHALL NOT BE USED OR REPRODUCED OR IT'S CONTENT DISCLOSED, IN WHOLE OR PART, WITHOUT THE PRIOR WRITTEN CONSENT OF ADVANCED POLY-PACKAGING INC.		TITLE: ELECTRONIC BOX ASSEMBLY	DRAWING NO.: CWR-2000	REV.: –	

Date 07/29/03 ADVANCED POLY PACKING, INC. Page 1

Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR3000		Scale Head Assy	
1	TA-CWR3001	Rotary Drum Assy	1
2	TP-CWR3008	Side Plate	2
3	TP-CWR3009	Top Plate	1
4	TP-CWR3010	Filler Plate	2
5	TP-CWR3012	Guard Plate	1
6	TP-501169-2	5-Phase Stepper Motor	1
7	TP-504114	Bearing,7608 DLG	1



QUANTITY	–
MATERIAL	–
FINISH	–

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

REV	DATE	BY	DESCRIPTION

Advanced
Poly Packaging Inc.
1331 Ewritt Road ■ Akron ■ Ohio 44306
Phone: 330-785-4000 ■ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US–4000	PARTS MANUAL	–

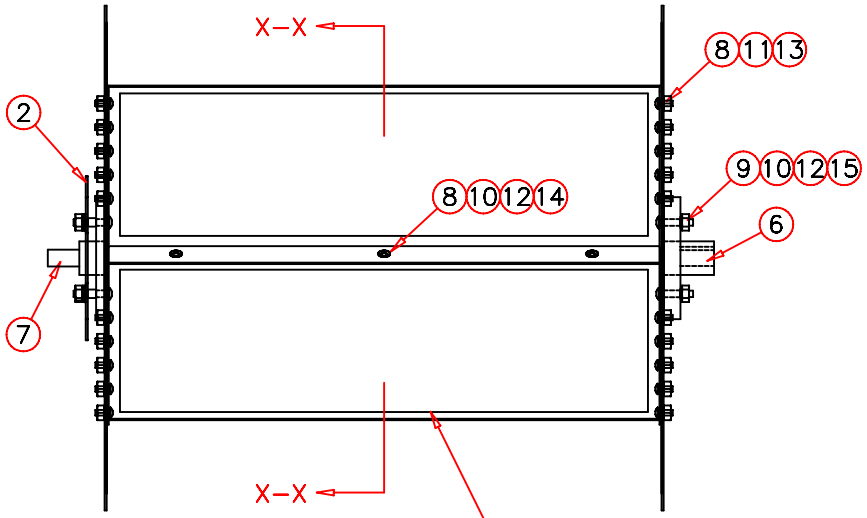
SCALE	DRAWN BY	APPROVED
1:5	NAME MELODY	NAME
	DATE 1/23/03	DATE

TITLE	DRAWING NO.	REV.
SCALE HEAD ASSEMBLY DESIGN #5	CWR–3000	–

Date 07/29/03 ADVANCED POLY PACKING, INC. Page 1

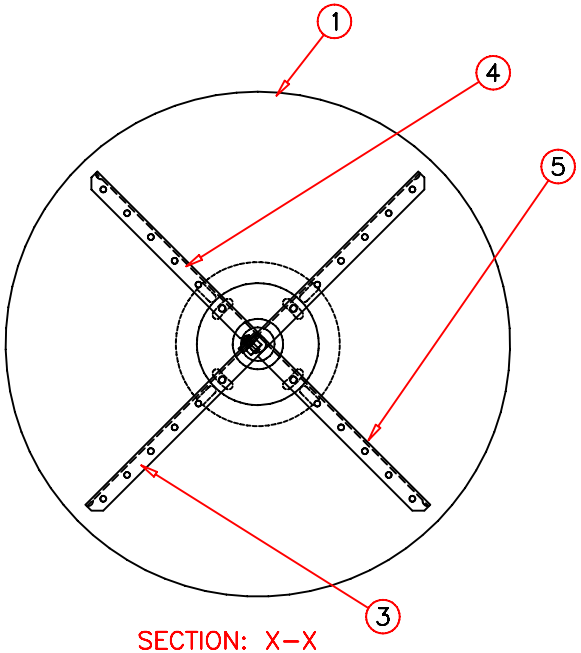
Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR3001		Rotary Drum Assy	
1	TP-CWR3002	Rotary Side Plate	2
2	TP-CWR3003	Sensor Reflector	1
3	TP-CWR3004	Rotary Long Shelf	1
4	TP-CWR3005-1	Rotary Short Shelf	1
5	TP-CWR3005-2	Rotary Short Shelf	1
6	TP-CWR3006	Motor Drum Plate	1
7	TP-CWR3007	Support Drum Plate	1
8	TP-101103	Nut,8-32 Hex Mach Screw Pl	43
9	TP-101105	Nut,10-32 Hex Mach Screw	8
10	TP-102134	Washer,#10 SAE Flat Zinc	8
11	TP-102153	Washer,#8 Med Split Lock Z	43
12	TP-102154	Washer,#10 Med Split Lock	8
13	TP-103195	Screw, BHCS 8-32 x 5/16	40
14	TP-103217	Screw, BHCS 8-32 x 3/8 SS	3
15	TP-103222	Screw, BHCS 10-32 x 1	8
16	TP-107163	Bushing,Sleeve 1/4 ID x 3/	4



FRONT VIEW

OPTIONAL:
UHMW



SECTION: X–X

QUANTITY	–
MATERIAL	–
FINISH	–

TOLERANCES UNLESS OTHERWISE NOTED
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES
PART MUST BE FREE OF BURRS AND SHARP EDGES

REV	DATE	BY	DESCRIPTION

Advanced
Poly Packaging Inc.
1331 Evritt Road ▪ Akron ▪ Ohio 44306
Phone: 330-785-4000 ▪ Fax: 330-785-4010

TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US–4000	ASS'Y DWG.# CWR–3000	–

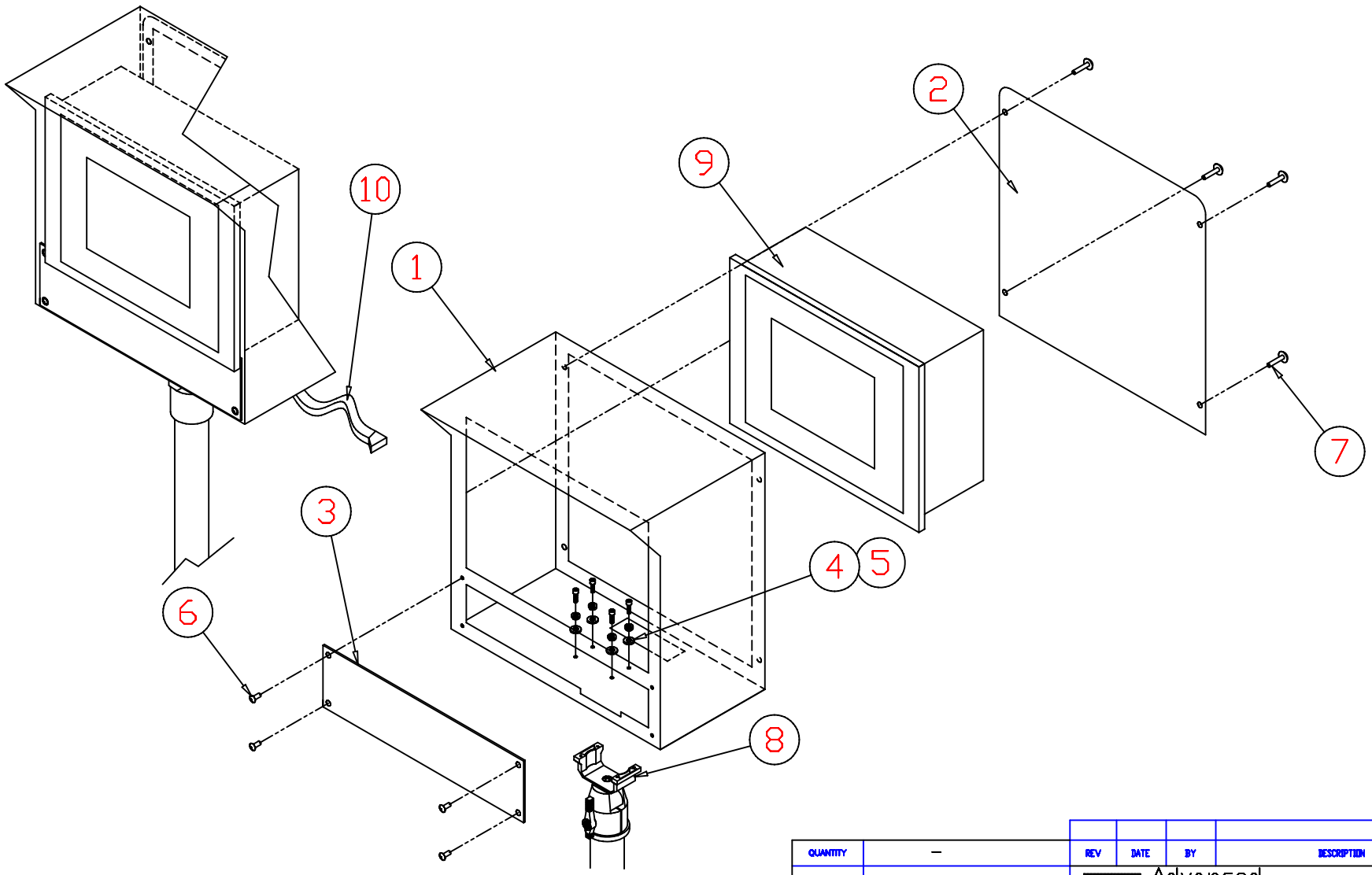
SCALE	DRAWN BY	APPROVED
1:3	NAME: MELODY	NAME:
	DATE: 4 APRIL '02	DATE:

TITLE	DRAWING NO.	REV.
ROTARY DRUM ASSEMBLY	CWR–3001	–

Date 07/29/03 ADVANCED POLY PACKING, INC. Page 1

Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR4000		IOP Assy	
1	TP-T1MD00039	Control Case I.O.P.W/-3 Fr	1
2	TP-T1MD00039-1	Control Case IOP Back Plat	1
3	TP-T1MD00039-3	IOP Front Plate,Plain	1
4	TP-102134	Washer,#10 SAE Flat Zinc	4
5	TP-102154	Washer,#10 Med Split Lock	4
6	TP-103207	Screw, BHCS 6-32 x 3/8	4
7	TP-103211	Screw, BHCS 8-32 x 3/8	4
8	TP-111118	Bracket, Swivel Ball Socke	1
9	TP-220350	Touch Screen, 5.7" Display	1
10	TP-220350-1	Cable,Touchscreen	1



QUANTITY	–
MATERIAL	–
FINISH	–

TOLERANCES UNLESS OTHERWISE NOTED:
+/- .015 ON FRACTIONAL DIMENSIONS
+/- .010 ON TWO PLACE DECIMAL DIMENSIONS
+/- .003 ON THREE PLACE DECIMAL DIMENSIONS
125 ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES

PART MUST BE FREE OF BURRS AND SHARP EDGES

REV	DATE	BY	DESCRIPTION

Advanced
Poly Packaging Inc.
1331 Evalt Road ▪ Akron ▪ Ohio 44306
Phone: 330-785-4000 ▪ Fax: 330-785-4010

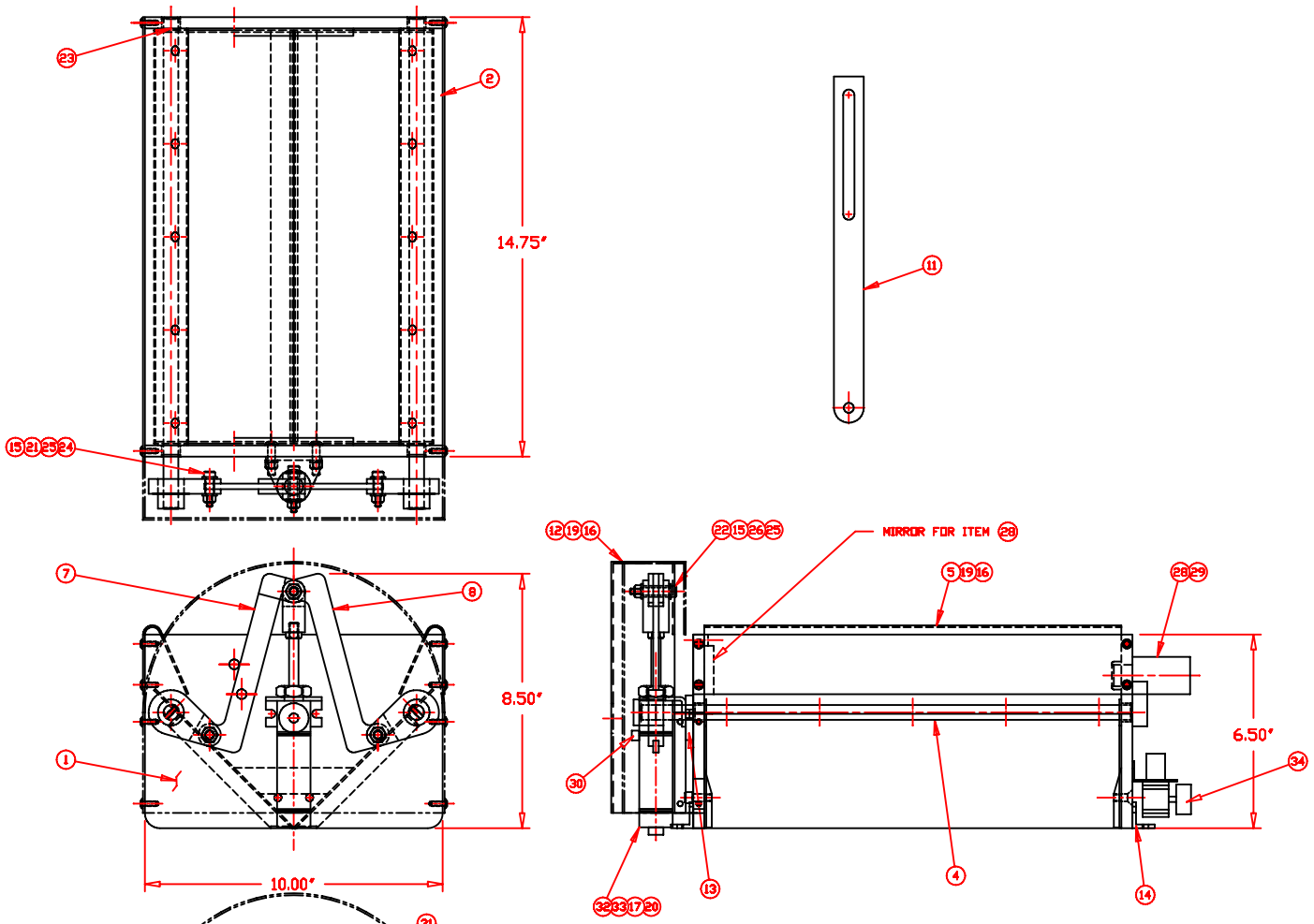
TYPE EQUIPMENT	B/M REF. NO.	PART NO.
US–4000		–
SCALE	DRAWN BY	APPROVED
1:3	NAME MELODY	NAME
	DATE 1/16/03	DATE

TITLE	DRAWING NO.	REV.
IOP ASSEMBLY	TA–CWR4000	–

Date 07/29/03 ADVANCED POLY PACKING, INC. Page 1

Bill of Materials Top Level Report for 07/29/03

Seq No	Item	Description	Quantity
Assembly => TA-CWR8000		Accumulator Chute,US-4000	
1	TP-CWR8000-2-1	End Plate	1
2	TP-CWR8000-2-2	End Plate	1
3	TP-CWR8000-3	Gate	2
4	TP-CWR8000-4	Gate Shaft	2
5	TP-CWR8000-5	Support Guide	2
6	TP-CWR8000-6	Gate Stop	2
7	TP-CWR8000-7	Cylinder Arm-L.H.	1
8	TP-CWR8000-8	Cylinder Arm-R.H.	1
9	TP-CWR8000-9	Cylinder Clevis	1
10	TP-CWR8000-10	Gate Lever	2
11	TP-CWR8000-11	Mounting Bar	2
12	TP-CWR8000-12	End Guard	1
13	TP-CWR5007	Spacer	1
14	TP-CWR5008	Chute Mounting Brkt	2
15	TP-101141	Locknut, Hex Nylon Insert	3
16	TP-102153	Washer,#8 Med Split Lock Z	18
17	TP-102155	Washer,1/4 Med Split Lock	2
18	TP-103138	Screw, SHCS 1/4-20 x 5/8 S	4
19	TP-103212	Screw, BHCS 8-32 x 1/2	18
20	TP-103226	Screw, BHCS 1/4-20 x 1	2
21	TP-103304-1	Screw, Sock Shldr 1/4x5/8x	2
22	TP-103331	Screw, Sock Shoulder 1/4"x	1
23	TP-107115	Bushing, Flange 1/2ID x 5/	4
24	TP-107321	Sleeve Bearing,1/4IDx5/16O	2
25	TP-107323	Bearing, 1/4IDx1/2ODx1/16T	6
26	TP-107348	Bearing,Symmco 1/4IDx3/8OD	1
27	TP-107401	Trantorque Keyless Bushing	2
28	TP-216116	Banner Photo Eye,Minibeam	1
29	TP-216124	Cord,Photo Eye Minibeam Ex	1
30	TP-402184	Flow ctr. main seal/tear o	1
31	TP-402255	Valve, SY3120	1
32	TP-403490	Cylinder,Front Nose Mounti	1
33	TP-403491	Foot Bracket	1
34	TP-406259	MiniReg/Bracket/Gauge/10-3	1



NOTE: ITEM #12 SPACER & #32 MOUNTING BRACKET ARE ONLY USED WITH ENCLOSURE

REV	DATE	BY	DESCRIPTION
C	9/23/03	NELSEN	ADDED ITEM 32 & 33, REVISION
B	2/3/03	CAM.	ADDED END CAPS, ITEM 34
A	11/14/02	NELSEN	ADDED ITEM 30 & 31

Advanced Poly Packaging Inc.

TYPE EQUIPMENT: US-4000		DWG NO.	PART NO. -
SCALE: 1:2	DRAWN BY: CAM. 4/1/02		APPROVED: DATE:

TITLE: ACCUMULATOR CHUTE ASSEMBLY

DRAWING NO.: CWR-8000-1e

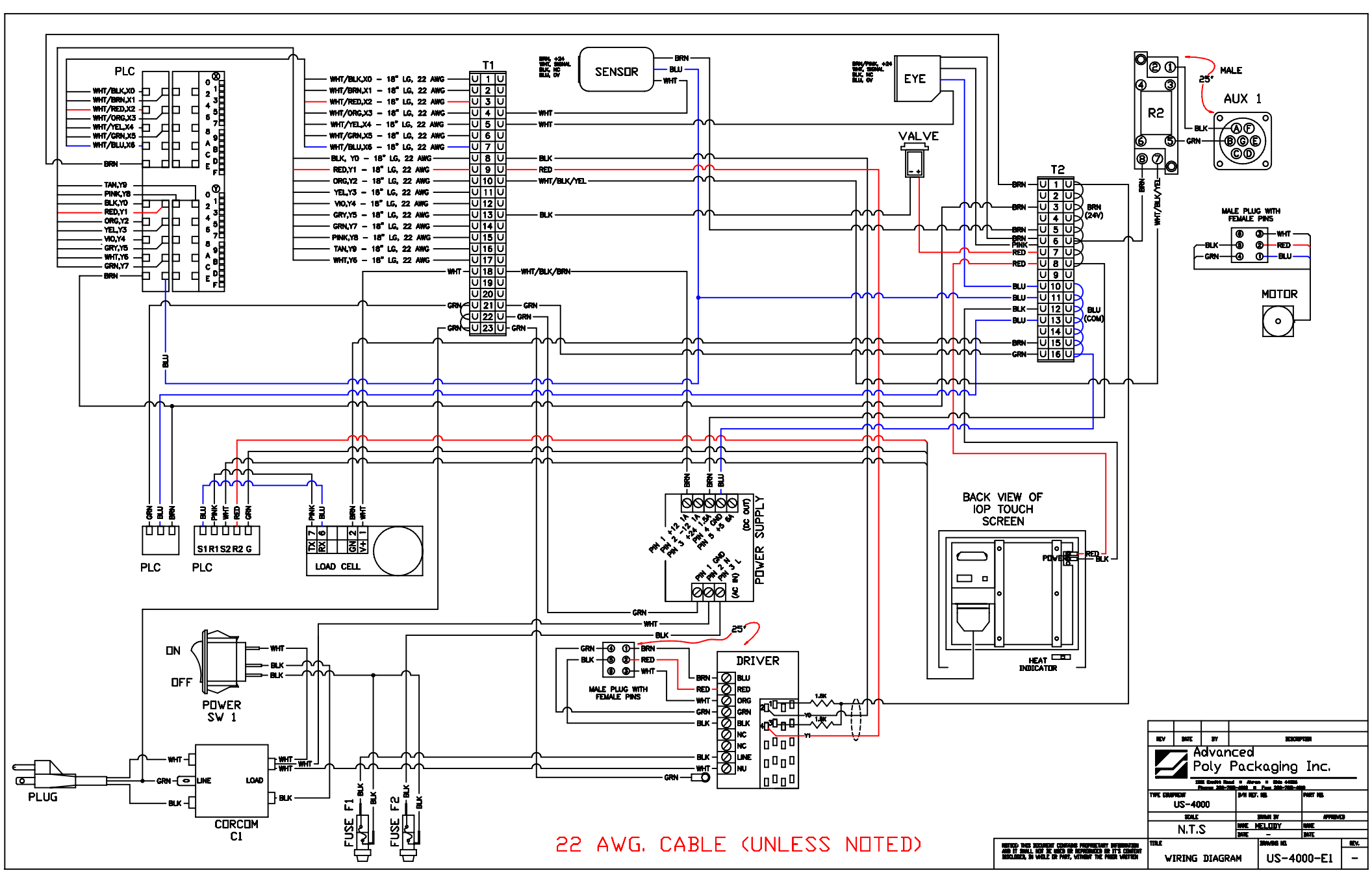
REV.: C

MATERIAL:

FINISH:

TOLERANCES UNLESS OTHERWISE NOTED
+/- .XXX ON FRACTIONAL DIMENSIONS
+/- .XX ON TWO PLACE DECIMAL DIMENSIONS
+/- .XXX ON THREE PLACE DECIMAL DIMENSIONS
XXX ✓ ON MACHINED SURFACES
ALL DIMENSIONS ARE IN INCHES
PART MUST BE FREE OF BURRS AND SHARP EDGES

NOTICE: THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND IT SHALL NOT BE USED OR REPRODUCED IN IT'S ORIGINAL DISCLOSED, IN WHOLE OR PART, WITHOUT THE PRIOR WRITTEN CONSENT OF ADVANCED POLY-PACKAGING INC.


PLC
T1
SENSOR
EYE
VALVE
T2
R2
MALE
25'
AUX 1
MALE PLUG WITH FEMALE PINS
MOTOR
BACK VIEW OF IOP TOUCH SCREEN
HEAT INDICATOR
POWER SUPPLY
DRIVER
MALE PLUG WITH FEMALE PINS
ON
OFF
POWER SW 1
PLUG
CORCOM C1
FUSE F1
FUSE F2
LOAD CELL
22 AWG. CABLE (UNLESS NOTED)
Advanced Poly Packaging Inc.
US-4000
N.T.S
MELODY
WIRING DIAGRAM
US-4000-E1