







# **Platinum E-Series**

# **Operator's Manual**

**E-Secondary Wipe II** 

6300-010 Revision A Illinois Tool Works Marking & Coding Division continually improves its products, and reserves the right to change or discontinue specifications and designs shown in this manual without notice and without incurring obligation. Illinois Tool Works has made every effort to verify the information contained in this manual, but reserves the right to correct any error at the time of the manual's next revision.

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### **1.0 Introduction**

#### 1.1 The E-Secondary Wipedown II

The E-Secondary Wipedown II is an evolution of the E-Secondary Wipedown system. It has been improved to be more accurate and features more control options. The E-Secondary Wipedown II is designed to corner wrap labels around the side to rear (trailing) panels of the product, in conjunction with an upstream labeling system or systems. Modularity of design provides ease of installation, setup, and maintenance. The electronics system employs a hardware-specific design, thus increasing reliability and throughput. The hardware was developed to simplify construction, and increase longevity by using durable materials. This unit will perform 24/7 operation in harsh environments and operate trouble-free, given that the appropriate preventative maintenance is performed on regular service intervals.

This system is designed to operate as a stand-alone system, complete with its own product trigger. It does not electrically interface with the labeling system.

#### **1.2 Product Safety**

Safety awareness is critical when working with equipment that contains moving parts and extending electric actuators. Please read all warnings and cautions thoroughly before operating this device.

This product meets the requirements of CAN/CSA-22.2 NO.60950-00 \* UL 60950 using Illinois Tool Works (Diagraph/Foxjet) approved items. Units are only tested and qualified with Illinois Tool Works (Diagraph/Foxjet) approved parts and accessories. Use of other parts or accessories may introduce potential risks that Illinois Tool Workscan assume no liability for.

#### WARNINGS

- WARNING Moving parts of this machine can present hazards. Components that cannot be guarded because of loss of functionality are marked with a warning symbol.
- Be aware of the actuator extension distance, and avoid accidental triggering of the photosensor.
- When servicing the unit's electronic assemblies, always remove the power cord from the unit to prevent accidental shock.
- When running for extended periods of time, use caution when accessing the drive module circuitry. The motor drive power transistors, motor case, and motor heatsink can become hot under constant use.
- Wear personal protective equipment, as instructed by your supervisor, when operating or working near this device.

#### COMPLIANCE

• CAUTION: Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/ Data Processing Equipment, ANSI/NFPA 75.

- ATTENTION: Ne peut être utilissé dans une salle d'ordinateurs telle que définie dans las norme. ANSI/NFPA 75 Standard for the Protection of Electronic Computer/ Data Processing Equipment
- This unit has been tested and found to comply with the limits for a Class A device, pursuant to part 15 of the FCC Rules.
- This unit has been tested to comply with CE Standards.

#### **1.3 Warranty Information**

The E-Secondary Wipedown II system, including all components unless otherwise specified, carry a limited warranty. For all warranty terms and conditions, contact Illinois Tool Works for a complete copy of the Limited Warranty Statement, or download from our website <u>www.diagraph.com</u>

### 1.4 Specifications

**General Specifications** 

Category	Parameter			
Dimensions	7.8 in. (19.8 cm) I x 24.4 in. (62 cm) H x 25.2 (64 cm) D			
Weight	18 lbs (8.16 kg)			
Certifications	Œ, CSA, FCC approved, Listed (UL 60950)			
Label Width	0.5 in. (12.7 mm) Min. to 4 in. (101.6 mm) Max. Larger widths available upon request			
Stroke Distance	2 in. (50.8 mm) Min. to 20 in. (508 mm) Max.			
Throughput PPM Linespeed	*** Side to Trailing edge applications only *** 167 PPM Maximum (4 inch edge wipe) 200 FPM Maximum			
Temperature	41°F - 104°F (5°C - 40°C)			
Humidity	10 to 85% RH, Non-Condensing			

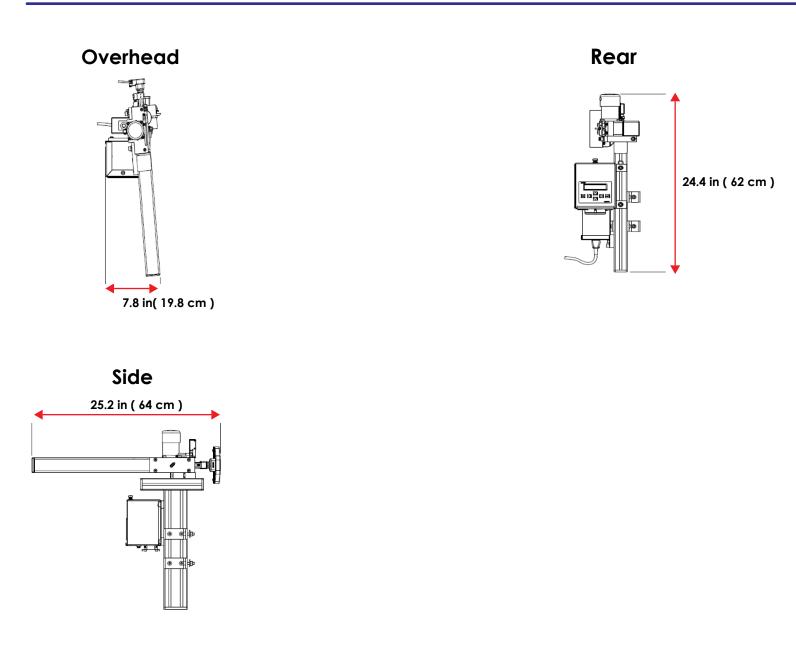
#### **Electrical Specifications**

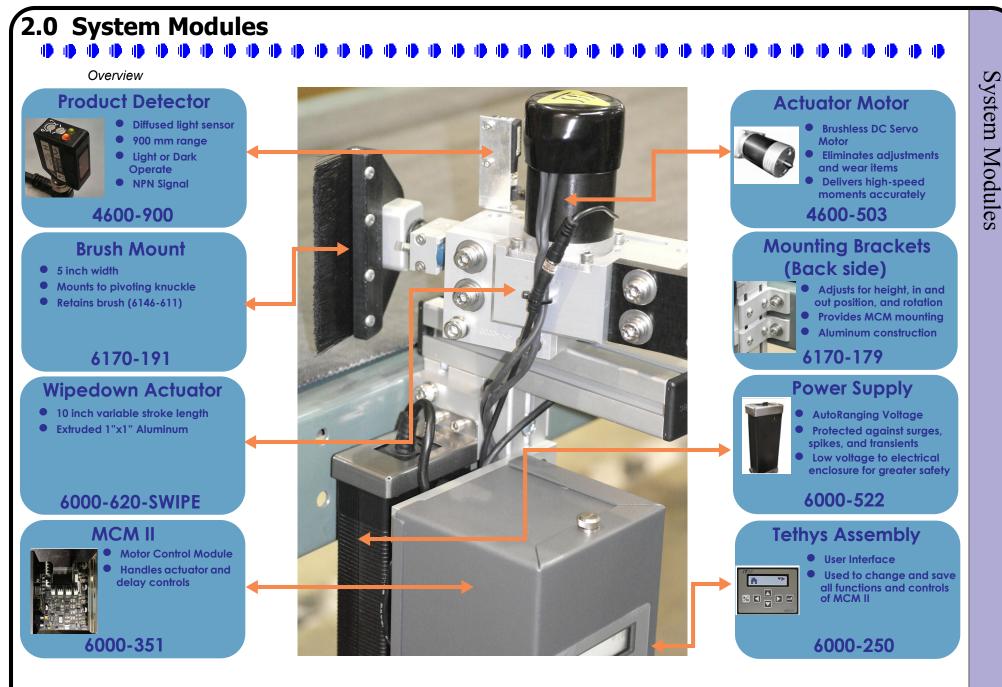
Category	Nominal	Minimum	Maximum
AC Voltage Supply	100 - 240 VAC, 0.5A 50/60 Hz	90 VAC 47 Hz	264 VAC 63 Hz
Product Detector	Low: 0 to 3 VDC High: 3 to 5 VDC Supplies 24VDC	0 VDC	24 VDC
Product Detector Pulse Width	10 mS	1 mS	Infinite

#### **Performance Specifications**

Application	Label Size	Stroke Distance (Home position to 1/2 the label length)	PPM Maximum
Rear Corner Wrap	13 inch	8 inches, "A5" Actuator Profile	126 PPM
Rear Corner Wrap	13 inch	8 inches, "A1" Actuator Profile	72 PPM
Rear Corner Wrap	8 inch	5 inches, "A5" Actuator Profile	167 PPM
Rear Corner Wrap	8 inch	5 inches, "A1" Actuator Profile	100 PPM

#### **1.5** System Dimensions

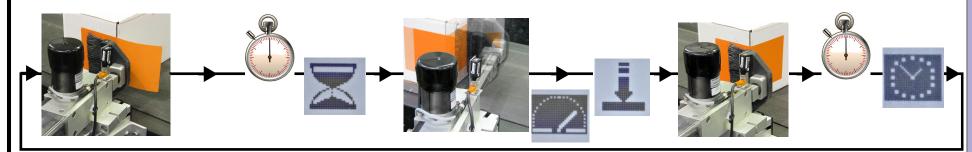




## 3.0 Theory of Operation

The E-Secondary Wipedown II performs a very basic timing routine, based on a start trigger from the product detector. To wrap the label from the side to the rear, or trailing panel, the photosensor should be set to light operate. This will trigger the wipedown on the trailing edge of the product, and begin the product delay timer ("Product Delay Time" on page 13."). Once the product delay timer expires, the wipedown will extend the actuator with a brush end effector to the product at the speed determined by the actuator speed ("Actuator Speed" on page 14."). The actuator will continue to extend to reach the length set at "Actuator Distance Limit" on page 13. Then hold delay ("Hold Delay Time" on page 14.) begins and the actuator holds the extended position until hold delay expires. At this point, the actuator will return to the home position.

Theory of Operation Overview.



Product's trailing edge triggers the product detector The wipedown waits a time period value determined by the user setting of Product Delay time ("Product Delay Time" on page 13.) Once the delay time expires, the actuator is extended and wipes down the label at the speed set by the actuator profile ("A1, A2, A3, A4, or <u>A5</u>")

The Actuator continues to extended until it reaches the length set by the Actuator Distance Limit ("Actuator Distance Limit" on page 13.). The Actuator holds extended position for a period of time equal to Hold Delay time set in "Hold Delay Time" on page 14. Once the Hold Delay time expires, the Actuator returns home

### 4.0 Setup

## **Determine Wipedown Orientation**

#### **Tools Required:**

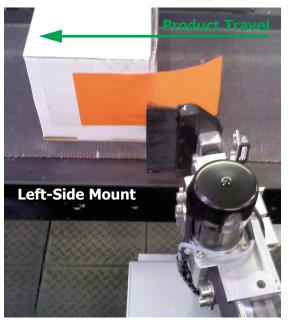
**STEP 1** 

• 4 mm Allen Wrench (required for right-side mounting only)

#### <u>Left Side</u>

Facing in the direction of product travel, the secondary wipedown II is located on the left-hand side of the conveyor.

This is the factory standard construction, and no changes are required.

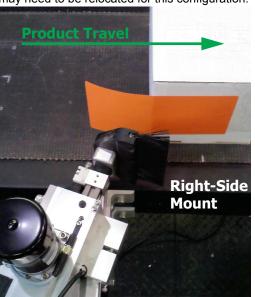


#### **<u>Right Side</u>**

Facing in the direction of product travel, the secondary wipedown II is located on the right-hand side of the conveyor.

This requires the brush mount to be rotated 180 degrees. Remove the two (2) 4 mm. screws from the brush mount and rotate the brush 180 degrees. Insert the screws and tighten. The product detector may need to be relocated for this configuration.





#### <u>Top</u>

Although the secondary wipedown II can be used in a top-down orientation, it will require custom brackets to handle the wide variety of product height and conveyor width combinations and Top-down orientation should be set in the UI, In order to use secondary wipedown II in this orientation.

Please consult the information provided with the custom brackets for details on how to mount the secondary wipedown II in a top-down orientation.

### Alignment of the E-Secondary Wipedown II

#### **Tools Required:**

- 5 mm Allen Wrench
- 6 mm Allen Wrench

#### Lineal (X) Position Adjustment

**STEP 2** 

There are two X-position adjustments that can be performed independently. The first adjustment determines position of the bracket arm and the second sets the position for the actuator puck position.

- Loosen the two (2) 5 mm screws "Sx" on the upright bracket. They are located opposite of each other. (outside screw is pictured, inside screw is not pictured)
- Slide the cross bracket in or out to desired reach on conveyor
- Tighten both screws when complete
- Loosen the one (1) 6mm screw "Sz" on the ear connecting the actuator to the bracket
- Remove the actuator assembly to access and loosen the two (2) 6 mm puck screws "Sxx"
- Move the puck to the desired position and re-tighten the puck screws. Place the actuator back on the puck mount and tighten the ear screw "Sz" loosely for now

#### Height (Y) Position Adjustment

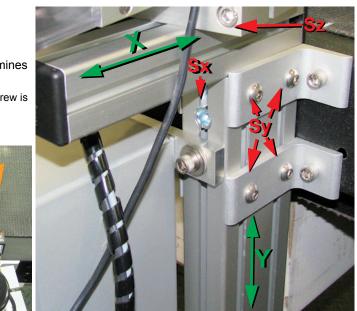
- Loosen the eight (8) 5mm screws "Sy" on the upright bracket, being careful to support the weight of the wipedown when adjusting the height
- Position the height of the actuator to be level on the product where the label will be applied and then wrapped
- Tighten the eight (8) "Sy" upright screws

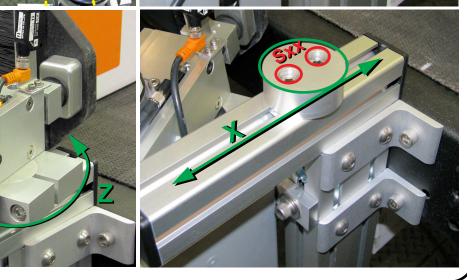
#### Rotational (Z) Position Adjustment

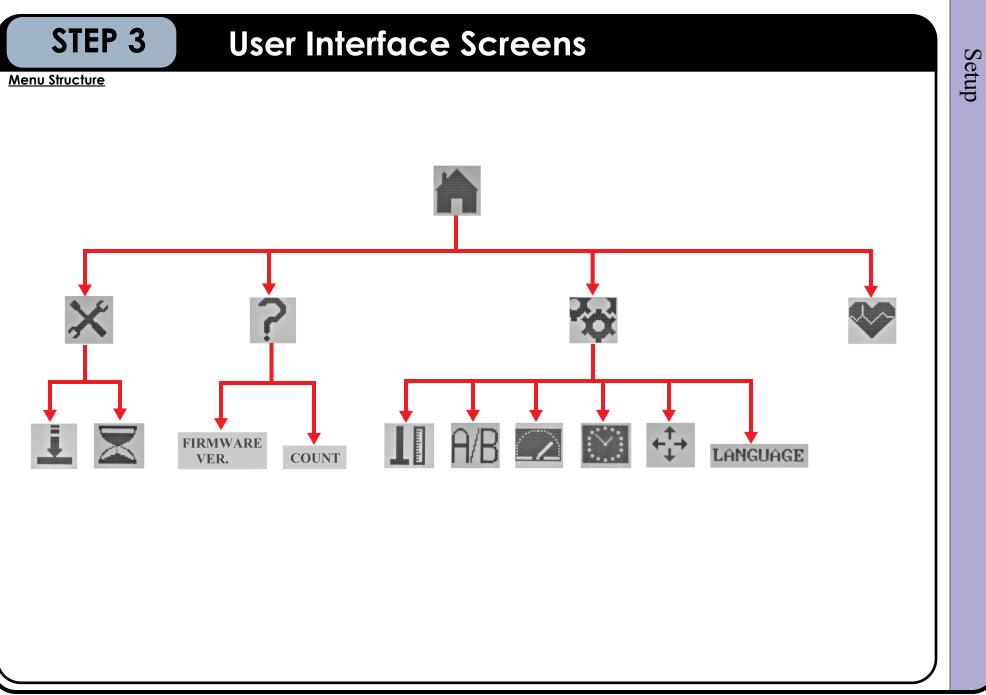
- Loosen the one (1) 6 mm screw "Sz" on the ear
- Rotate the actuator body so that the brush is aimed toward the trailing panel at approximately 10 degrees
- If the product detector is mounted to the actuator body, be sure to re-adjust the triggering position to match the delay timing
- Tighten the **"Sz"** screw once complete

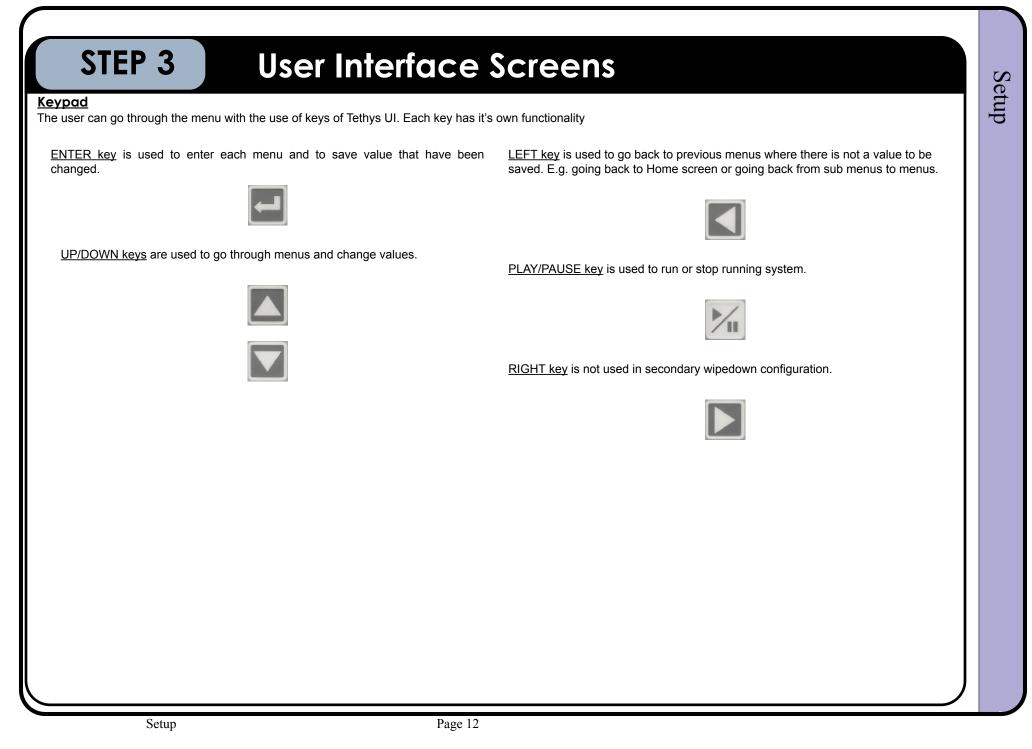
#### NOTE:

• Allow for room on both sides of the actuator body in product contacts the actuator when extended. The puck and ear are designed to allow a slip pivot motion in the event of a collision to avoid breaking the wipedown system









### STEP 3

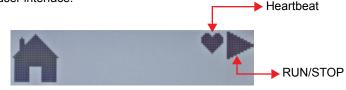
### **User Interface Screens**

#### <u>Overview</u>

The E-Secondary Wipedown II Module is comprised of these subsystems:

- Linear belt-driven actuator rod with motor housing, bearings, and end travel stop
- Brushless DC Servo motor (this motor is common to all Platinum (E) Series Systems)
- MCM II Assembly
- Tethys UI assembly

The control settings for the E-Secondary Wipedown II are located in the user interface assembly. All functions are controlled and stored in non-volatile memory through Tethys user interface.



There are four menu choices that subdivide all of the system controls and users can get access to them by pressing ENTER key from Home screen and then using UP/ DOWN keys.

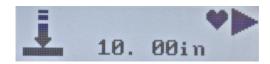
#### <u>Set Up Menu</u>

set up menu allows the user to change values for stroke length and product delay time. There two sub menus in set up.



#### Actuator Distance Limit

With this sub menu the user can change maximum distance the actuator strokes from 2 inches to 30.75 inches. In this menu the user can change the distance in 1 inch steps and then for fine adjustments in 0.25 inches. This way the accuracy of distance adjustment will be 0.25 inches.



#### Product Delay Time

The time delay begins when the trailing edge of the product is detected. When the timer expires, the actuator is extended. Delay time can be set from 5 ms to 9999 ms.



#### Info Menu

In this menu shows the information about the system. The Info Menu contains UI firmware version, MCM II firmware version and system cycle counts.



#### **Configuration Menu**

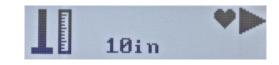
This menu consists of five sub menus that are less frequently changed. The user can get access to these sub menus by using UP/DOWN keys.



### STEP 3 User Interface Screens

#### Actuator Length

In this sub menu the user can change actuator length. This value must match the size of the actuator that is installed on the unit and should not be changed unless the size off the actuator changes.



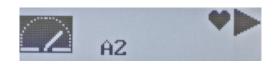
#### A/B Select

Secondary wipedown II is set to A configuration in factory and does not need to change to B configuration at all. This menu is used in other configurations of the system other than secondary wipedown II.



#### Actuator Speed

There are five actuator speed settings to match the application requirement.



See following chart for recommended

Ax Profile	Application				
	Products Per Minute (PPM) Feet Per Minute (FPM)				
A1	1 - 40 PPM	15 - 50 FPM			
A2	20 - 60 PPM	50 - 100 FPM			
A3	20 - 60 PPM	100 - 150 FPM			
A4	60 - 80 PPM	150 - 200 FPM			
A5	80+ PPM	150 - 200 FPM			

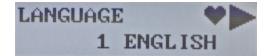
#### Hold Delay Time

Hold Delay Time starts when actuator reaches the maximum distance setting. it can be set to values from 0 to 9999 ms.



#### <u>Language</u>

There four choices for language in this menu. User can choose between English, Spanish, Portuguese and French.



#### **Orientation**

Secondary wipedown II is set at side apply orientation at factory. The user only needs to change orientation if they are using secondary wipedown II in top-down orientation.



#### **Diagnostic Menu**

This is a trouble shooting menu that usually shows Product Detector 1 and 2 (PD1 and PD2), Home and Hall Effect Sensors (HS and HALL) states and allows for activation of output signals when system is off line.



Setup

### STEP 4

### **Product Detector**

#### Product Detector for the Application

The standard product detector offered is the Diffuse Light 4600-900 sensor. There are two optional sensor types, one is a break-beam sensor, and the other is a laser with background suppression. The proper product detector can make the difference in label placement and operation.

Application Detail	Diffuse Light (4600-900)	Break-Beam (4600-901)	Laser (4600-902)
Corrugated brown case, no pre-print	√ √	$\checkmark$	$\checkmark$
Corrugated brown case, pre-print	×	✓	$\checkmark$
Tray packs with product gaps in pack	×	$\checkmark$	$\checkmark$
Pallets	$\checkmark$	$\checkmark$	×
Shrink wrapped products	×	$\checkmark$	$\checkmark$
Primary product	$\checkmark$	$\checkmark$	$\checkmark$
Primary product, high speed, high accuracy	×	×	$\checkmark$

#### Product Detector Mounting Location

The standard product detector is included with mounting brackets from the factory. It should be set to Light Operate mode (S1 turned toward L in picture below). The sensor and bracket can be optionally mounted to the actuator body, as shown to the right.

#### Product Detector Adjustments

All three of the sensors have the same controls for adjustment. Setting S2 (as shown to the right) controls the sensitivity of the detector. With a sample target product in front of the sensor, adjust this setting. The output LED, L2 in the image, will illuminate with the sensitivity adjustment is correct. The power LED, L1 in the image, will show the signal return strength when the output LED is on. Make sure the sensitivity is set so the green LED is on solid so that slightly less reflective products will still cause a trigger. Once the product is removed from the field of view of the sensor, the green LED will return to indicating power, and will be strongly illuminated.

For break-beam applications using the 4600-902 sensor, the Light/Dark setting S1 should be changed. This inverts the output signal mode to the applicator. Since a break-beam application will normally have an active output for no product detected, the change of S1 will allow the triggering to react to the presence of the product.

#### Sensor Notes

The break-beam sensor has a polarized retro-reflective lens. This means that it requires a suitable reflector that can provide the correct light phase shift to satisfy the sensor. This prevents reflective products (shrink-wrap, glass, etc.) from falsely triggering the sensor.

The laser sensor incorporates a triangulation method to receive the reflected beam. Using this method, the sensor detects true distance rather than product reflectivity. The setting made on S1 will determine distance to the target product. If products will range in distance, the furthest distance product should be used for adjustment. Ensure that objects beyond the target product range are not detected to avoid false triggers.

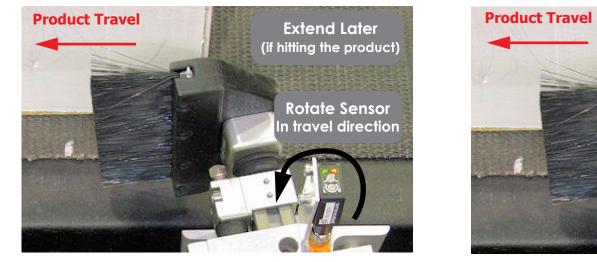




## **STEP 5** Runtime Adjustments

A) Set the value for the actuator speed, based on the application rate table found in the "Actuator Speed" on page 11.

- B) Next, determine the distance limit required to synchronize with the back edge of the product. To do this, set the Actuator Distance Limit to 2 inches to keep the actuator from contacting the product (see "The control settings for the E-Secondary Wipedown II are located in the user interface assembly. All functions are controlled and stored in non-volatile memory through Tethys user interface." on page 13.).
- C) Adjust the Product Detector to provide a solid, robust trigger off of the product's surface. Now adjust the Delay Time (see "Product Delay Time" on page 13.) so that the actuator is extending soon enough to reach the rear corner at the top of the brush (closest to the brush holder). In this manner, the brush will remain in contact with the label as the product is moving away from the wipedown.
- D) With the product <u>stationary</u>, determine the distance required to wipe the rear panel of the product. Use the "Actuator Distance Limit" adjustment, "The control settings for the E-Secondary Wipedown II are located in the user interface assembly. All functions are controlled and stored in non-volatile memory through Tethys user interface." on page 13., to stroke the actuator out far enough to wrap the label, but not more than what is needed. Trigger the product detector to fire the actuator and view the extend distance.
- E) Now that the Actuator Speed, Delay Time, and Actuator Distance Limit are set, test the system timing with the products moving. To make small adjustments to delay position, try slightly rotating the Product Detector. Rotate it towards the incoming product to extend the actuator sooner, if the wipedown is firing late. Rotate it away from the incoming product to extend the actuator later, if the brush is hitting into the side of the product.
- F) Once the system has been adjusted to wipedown the labels, observe the operation for a while to ensure the product sensing is consistent. Watch for possibilities of inconsistent product spacing that could hit an extended wipedown actuator. Verify that there is adequate space around the wipedown actuator, in the event that a product collides with the extended arm, and the arm rotates as it is contacted



Product Travel (if missing the product) Rotate Sensor Against travel direction

Troubleshooting

#### 5.0 Troubleshooting **How to Correct** Observed Reason Actuator will not extend when product detector is triggered Actuator Home Sensor not positioned correctly • Loosen the home sensor mounting screw with a flat blade screwdriver • With the actuator in the home position, slide the home sensor up and down the slot until the sensor LED illuminates • Tighten the home sensor mounting screw • Actuator is extending multiple times across the same • Product Detector type is incorrect for the application · Ensure that the correct sensor is being used for the Product Detector is not adjusted properly application, based on the table on page 15 product Actuator is extending prior to the rear edge of the product Adjust the Product Detector's sensitivity to achieve a good steady green light when the product is in front of the sensor, and the yellow sense LED is on • Label wrinkles as it is wrapped onto product • Angle actuator at the ear to puck pivot to increase the Actuator to product angle is too perpendicular angle of contact on the product's rear panel

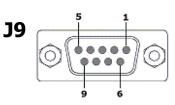
### 6.0 Electrical Interfacing

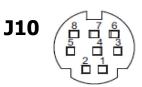
J9 - Product Detector (DB9F)				
PIN	Pin Description			
Pin 1, 2	N/C			
Pin 3	Ground			
Pin 4,5	N/C			
Pin 6	+24 VDC Supply			
Pin 7,9	N/C			
Pin 8	Product Detect Input (NPN)			

J10-I2C BUS (MINI DIN 8)			
PIN	Pin Description		
Pin 1,2	+24 VDC Supply		
Pin 3	Device_SCL		
Pin 4	Device_SDA		
Pin 5	MCM Interrupt		
Pin 6	Label Present Sensor		
Pin 7	Auto Retract Sensor		
Pin 8	Actuator Home Sensor		

#### J11-24VDC POWER

J11-24VDC POWER					
PIN	Pin Description				
Pin 2,4	+24 VDC Supply				
Pin 1,3	Ground				





J11

This system is designed to operate as a stand-alone system, complete with its own product trigger. It does not electrically interface with the labeling system.

## 7.0 Maintenance Schedule

Area	Daily	Monthly	Two Years	Description
Clean Product Detector Sensor(s)		$\checkmark$		Use a soft lint-free cloth to wipe all dust and contaminants free. Be careful not to damage the plastic lens with alcohol-based solvents.
Clean Actuator Rod		$\checkmark$		Clean the actuator rod with a cleaning cloth. Use a light amount of isopropyl alcohol on cloth to remove build-ups. DO NOT USE OIL OR GREASE ON ACTUATOR ROD!
Inspect Actuator Drive Belt		$\checkmark$		Check for frayed edges and exposed reinforcement fibers.
Replace Actuator Drive Belt and Bearing Pads			$\checkmark$	Follow replacement procedures contained with new components.
Replace Brush			$\checkmark$	Replace with p/n: 6146-611 for 5 inch brush or custom brush size equivalent.

### 8.0 Diagnostics

#### <u>Overview</u>

The Illinois Tool Works E-Secondary Wipedown II employs a built-in diagnostic testing system to allow most problems to be identified and corrected without need for more sophisticated test equipment. The sections below list the capabilities and how to access them.

#### <u>Heartbeat</u>

As simple as this indicator is, it can help identify a problem with the circuit board. All boards that contain firmware have a flashing heart on the top right hand side of the display that indicates a normal, working module.



#### Electric Actuator Test

The E-Secondary Wipedown II actuator can be tested in a diagnostic mode. This is done by following the steps in "Keypad" on page 12.

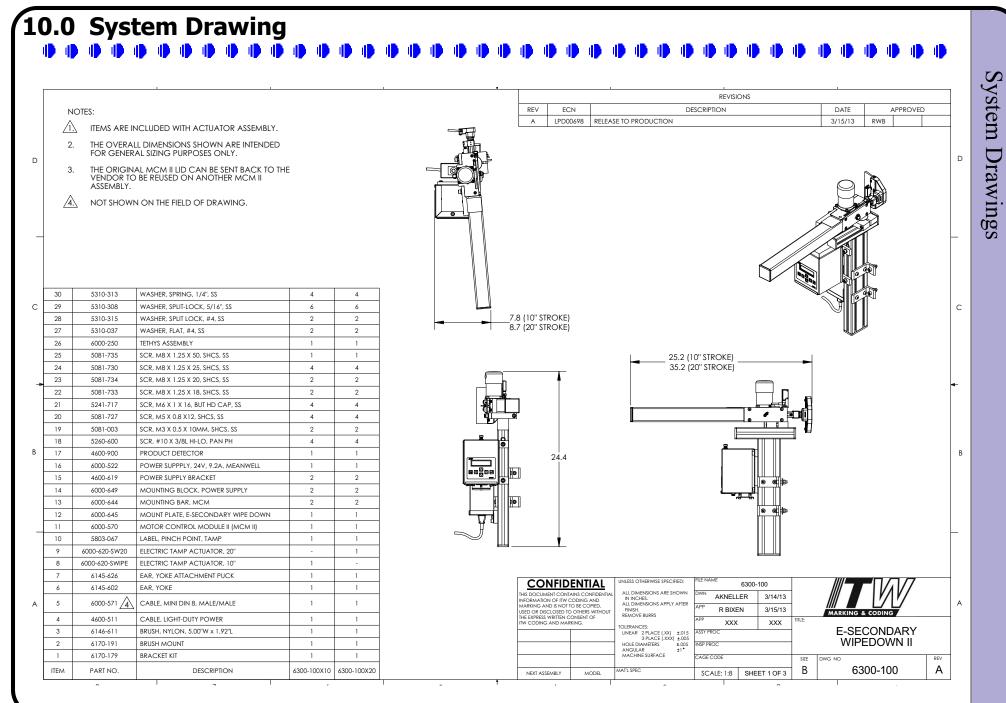
In this menu when ENTER is pressed and system is off line the actuator strokes once to test the actuator. Next screen shows the status of Product Detector 1 and 2 (PD1 and PD2) and Actuator Home (AH) sensors. This screen also show the status of Hall Effect sensors of the BLDC Motor. The sequence of the Hall Effect sensors shows 1,5,4,6,2,3 in one direction and 3,2,6,4,5,1 in the other direction in a motor that works correctly as actuator strokes and return home.

Spare Parts

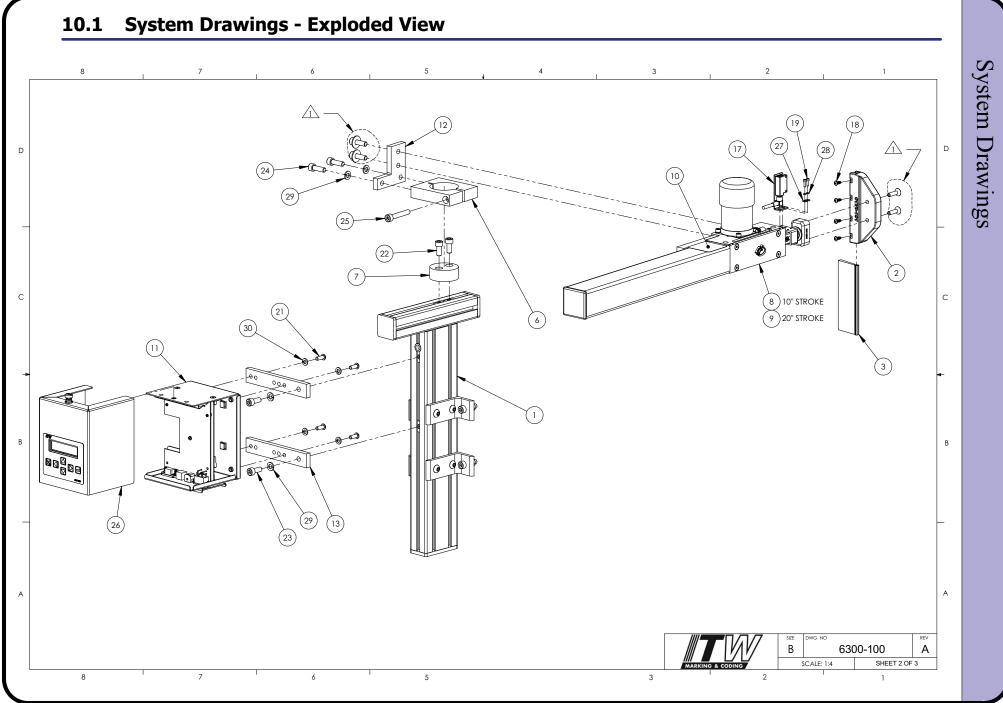
List

### 9.0 Spare Parts List - System

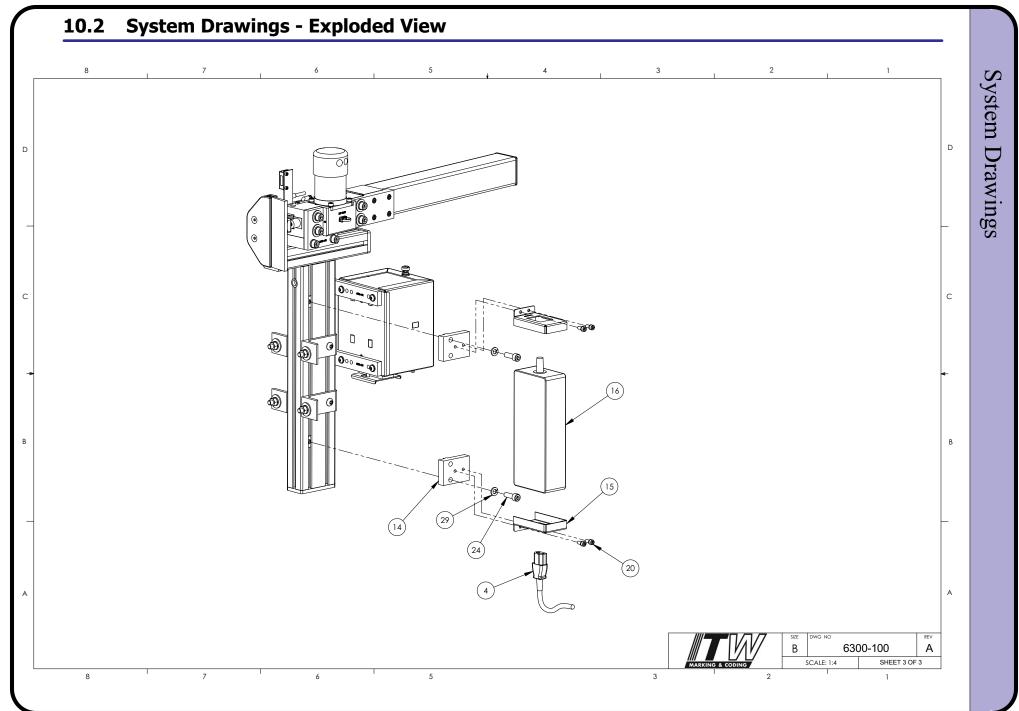
Part Number	Recm'd. Spare Part	Description	Part Number	Recm'd. Spare Part	Description
OCUMENTATION			4600-503		Actuator BLDC Motor
5300-010		E-Secondary Wipedown II User Manual			
E-Secondary Wipe	down I	I			
5000-522		Desktop Power Supply			
6146-611		Brush, Nylon, 5"W x 1.92"L	6000-950		E-TAMP MAINTENANCE KIT: Wear Items Set Includes: Actuator Belts, Bearing Pads, Id Rollers, Belt Clamp, Bumper, Springs, Mot Dust Cap
5170-191		Brush Mount			PART NO.         DESCRIPTION         OTV.         IMAGE           5316-105         PIN, DOWEL, 250 X 1.75 L, SS         2         Image: Comparison of the compar
6000-570		MCM II Includes: MCM II PCB, Enclosure			6000-624         BEARING PAD         16           6000-627         TOP PLATE, ACTUATOR         1           6000-628         CLAMP         1           6000-629         CLAMP PLATE         1           6000-623         TIMING BELT, XL, 240 GRVS X. 575' W         1           6000-634         CAP, VINPL ROUND         1
000-351		MCM II PCB	6000-620-SWIPE		E-Tamp Actuator Module, 10 inch stroke
6000-250		Tethys Assembly			
		4000-255	4600-900		Product Detector - Diffused Light

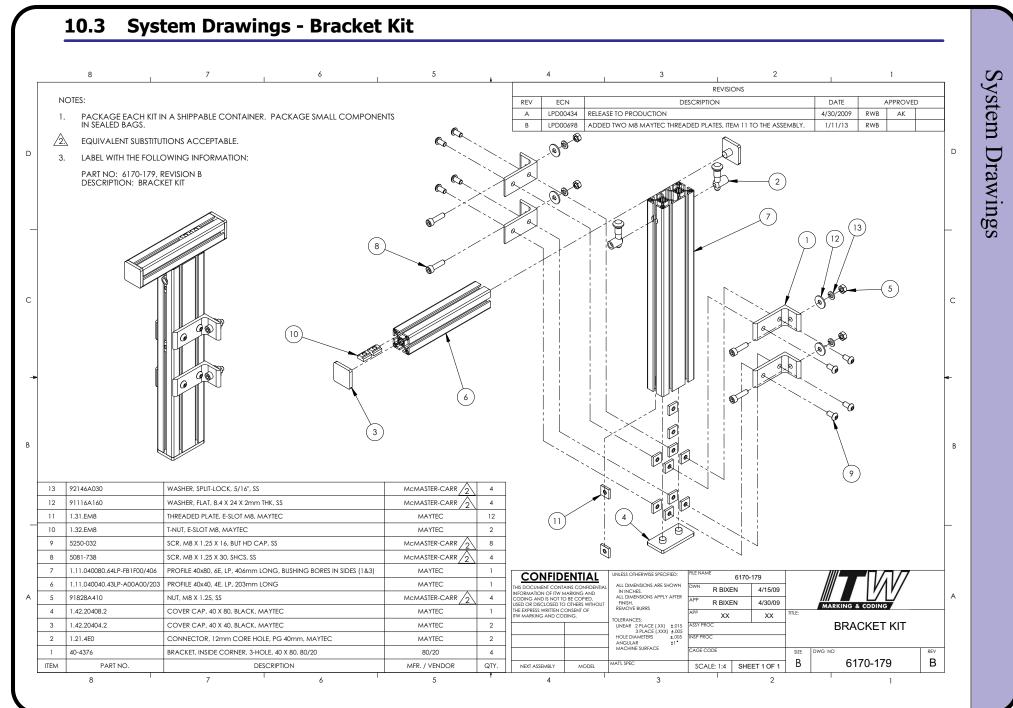












### 11.0 Declaration of Conformation

#### **DECLARATION OF CONFORMITY**

Illinois Tool Works hereby declares that the equipment specified below has been tested and found compliant to the following directives and standards-

#### **Directives:**

- EMC 89/336/ECC
- Low Voltage 73/23/EEC

#### **Equipment Type:**

Label Applicator

#### Model Number:

E-Secondary Wipedown II



Bruce Castro Director, Service Parts & Inks Diagraph, an ITW Company 1 Missouri Research Park Dr. St. Charles, MO 63304 USA

### Standards:

- Conducted Emissions (EN55 011)
- Harmonics (EN 61000-3-2)
- Flicker (EN 61000-3-3)
- Radiated Emissions (ÉN55 011)
- Electrostatic Discharge (ESD) (EN 61000-4-2)
  Radiated Immunity (EN 61000-4-3)
  Fast Transient Burst (EN 61000-4-4)

- Surges (EN 61000-4-5)
- Conducted Immunity (EN 61000-4-6)
- Power Frequency Magnetic Field (EN 61000-4-8)
- Voltage Dips and Interrupts (EN 61000-4-11)
  Information Technology (EN60950-1:2001)

Declaration of Conformation

(F