

### AUTOMATIC CABLE TIE INSTALLATION SYSTEM OPERATION MANUAL

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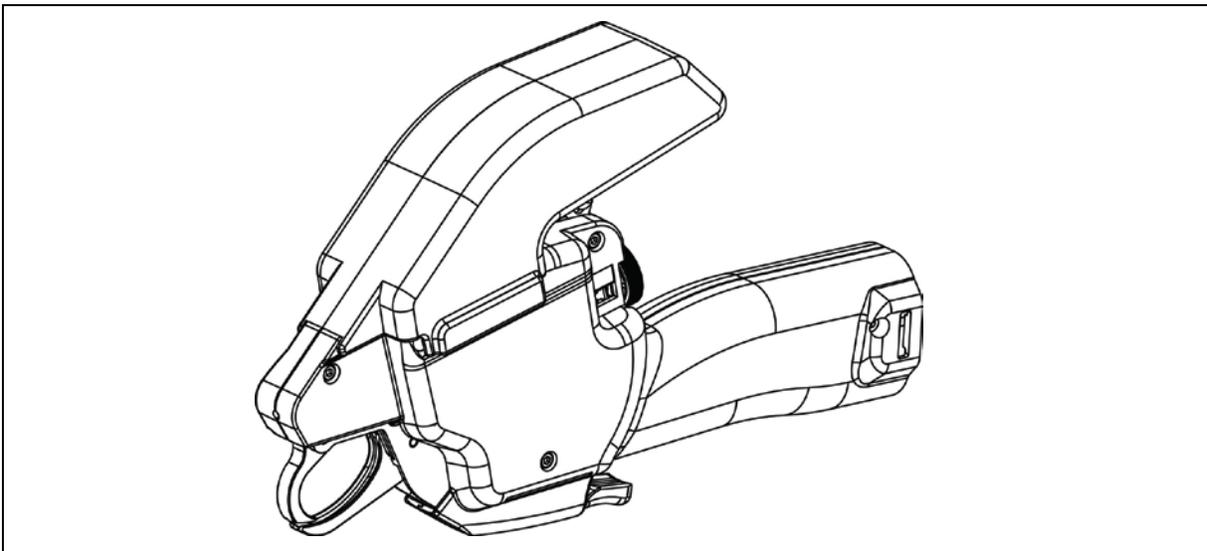
Original Instructions

**This manual contains instructions for the following:  
PAT1M4.0, PAT1M4.0-BT; PAT1.5M4.0 and PAT1.5M4.0-BT:**

#### **Automatic Cable Tie Installation Tools**

**PDM4.0: Dispenser**

**PHM: Feeder Hoses**



#### **WARNING**

- TO REDUCE THE RISK OF INJURY, USER MUST READ INSTRUCTION MANUAL

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## TABLE OF CONTENTS

<b>TABLE OF CONTENTS</b> .....	<b>i</b>
<b>1: INTRODUCTION</b> .....	<b>3</b>
<b>2: SYSTEM SPECIFICATIONS</b> .....	<b>3</b>
2A: PAT Installation Tools.....	4
2B: PDM4.0 Dispenser.....	5
2C: PHM1 / PHM2 / PHM3 Feeder Hoses.....	6
2D: Additional Components.....	7
<b>3: GENERAL POWER TOOL SAFETY WARNINGS</b> .....	<b>8</b>
 3A: Work Area Safety.....	8
 3B: Electrical Safety.....	8
 3C: Personal Safety.....	9
 3D: Power Tool Use and Care.....	9
 3E: Service.....	9
<b>4: SAFETY PRACTICES ADDENDUM</b> .....	<b>10</b>
 4A: General Safety Practices.....	10
 4B: Electrical Safety Practices.....	10
 4C: Operational Safety Practices.....	10
<b>5: FCC EMISSION CLASSIFICATIONS</b> .....	<b>11</b>
<b>6: TECHNICAL SPECIFICATIONS</b> .....	<b>12</b>
6A: Air Supply.....	12
6B: Electrical Specifications.....	12
6C: Noise Emission.....	13
6D: Vibration.....	13
6E: Environmental.....	13
<b>7: INSTALLATION / SETUP</b> .....	<b>13</b>
7A: Dispenser Assembly.....	13
7B: Pneumatic System Connection.....	14
7C: Hose and Installation Tool Assembly.....	15
7D: System Power Up and Setup.....	16
7E: Loading XMR Cable Ties.....	17
7F: Reloading Procedure.....	19
<b>8: OPERATION</b> .....	<b>20</b>
8A: Start Up Checklist.....	20
8B: Cable Tie Installation.....	20
8C: Cable Tie Installation Techniques.....	21
8D: Tip Collector.....	22
8E: Cable Tie Tension.....	22
<b>9: OPERATING SYSTEM NAVIGATION</b> .....	<b>23</b>
9A: Menu Navigation.....	23
9B: Error Messages.....	28
9C: Functional Messages.....	48
9D: Status Messages.....	50

<b>10: MAINTENANCE</b> .....	<b>51</b>
10A: Daily Preventive Maintenance .....	51
10B: Extended Maintenance .....	51
10C: Cleaning the Dispenser Tie and Exit Sensor Lens .....	53
10D: Touch Screen Calibration .....	53
<b>11: MAINTENANCE LOG</b> .....	<b>54</b>
<b>12: TROUBLESHOOTING</b> .....	<b>55</b>
12A: Error Message Troubleshooting.....	55
12B: Functional Message Troubleshooting.....	57
12C: Cable Tie Installation Troubleshooting .....	58
<b>13: CABLE TIE CONDITION FACTORS</b> .....	<b>59</b>
13A: Cable Tie Condition Factors .....	59
<b>14: WEB Browser Interface</b> .....	<b>59</b>
14A: REQUIREMENTS .....	59
14B: STATUS VIA PC .....	59
14C: CONNECTING TO THE PAT SYSTEM .....	59
14D: MODULE STATUS .....	60
<b>15: NETWORK</b> .....	<b>60</b>
15A: USERNAME AND PASSWORD .....	60
15B: NETWORK STATUS .....	61
15C: DEVICE NAME .....	62
15D: NETWORK SETTINGS .....	62
<b>16: SETTINGS</b> .....	<b>62</b>
16A: MODEL .....	62
16B: RESET .....	63
16C: SERIAL NUMBER .....	63
16D: FIRMWARE VERSION .....	63
16E: UPDATE.....	63
16F: MAC ID.....	64
16G: RESTORE .....	64
16H: LANGUAGE .....	64

# 1: INTRODUCTION

The PAT Fully Automatic Cable Tie Installation System was designed by Panduit Corporation to install Panduit continuously molded cable ties for high volume wire harnessing applications. The following Panduit Automatic Cable Tie Installation Tool Systems: PAT1M4.0, PAT1.5M4.0, PAT1M4.0-BT or PAT1.5M4.0-BT; shall be referred to as “PAT” Systems.



**NOTE:** *In the interest of higher quality and value, Panduit products are continually being improved and updated. Consequently, pictures may vary from the enclosed product.*

# 2: SYSTEM SPECIFICATIONS

The Panduit Corporation PAT Cable Tie Installation System consists of four compatible units: the PAT Installation Tool, the PDM4.0 Dispenser, the PHM Feeder Hose, and Panduit Pan-Ty XMR Cable Ties. Cable ties are available in reels of 5000 pcs.

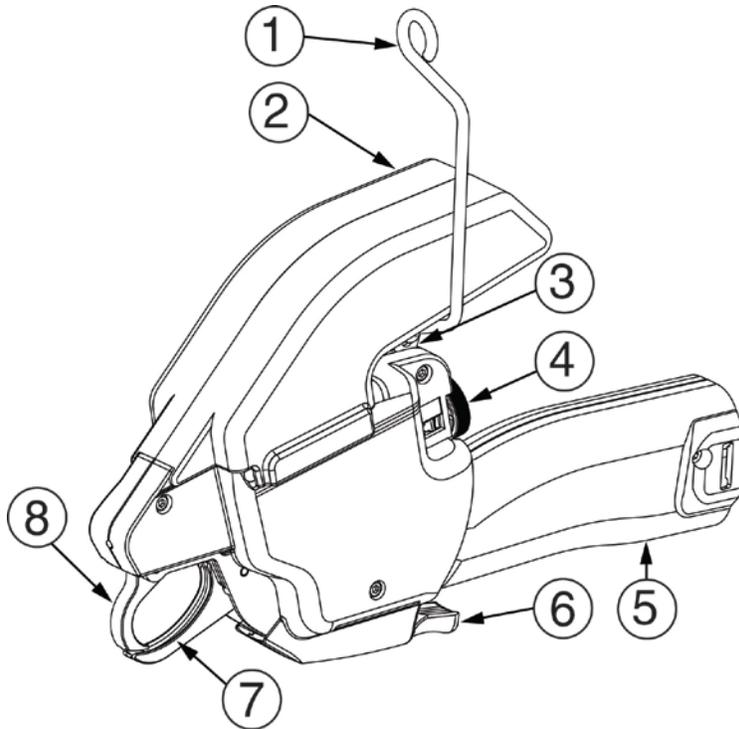
**NOTE:** Any substitution may cause serious damage to the system and/or injury to the operator.

SYMBOL	EXPLANATION
	<b>Warning: Hazardous Voltage</b> Disconnect power before servicing
	<b>Warning: Head Obstruction</b>
	<b>Warning: Sever Hand</b>
	<b>Warning: Wear Safety Glasses</b>
	<b>Caution: Air Inlet</b>
	<b>WEEE Compliance</b>
	<b>Read the Manual</b>
	<b>VAC</b>
	<b>FUSE</b>

**2A: PAT Installation Tools**

The PAT Cable Tie Installation Tools are electrically powered and controlled by the PDM4.0 Dispenser. Designed for easy operation; hand held, lightweight; for right or left-hand use. The tool jaws are normally open for easy positioning around wire harnesses and the jaws are closed by pulling up on the trigger before application of the cable tie and maintaining the jaw closed until the cycle is complete. After the cable tie has been applied, the jaws are re-opened upon release of the trigger for positioning of the tool at the next cable tie location.

**Fig 1**



**PAT1M4.0 / PAT1.5M4.0 TOOL  
COMPONENT LIST**

- 1. Hanger Wire
- 2. Tip Collector
- 3. Tool Hanger
- 4. Tension Adjustment Knob
- 5. Tool Handle
- 6. Tool Trigger
- 7. Rear Jaw Assembly
- 8. Front Jaw

<b>LENGTH:</b>	10.12" (257 mm)	<b>HANDLE SIZE:</b>	1.34" (34mm) x 1.99" (50,5 mm)
<b>WIDTH:</b>	1.89" (48 mm)	<b>JAW WIDTH:</b>	.247" (6,3 mm) thick
<b>HEIGHT:</b>	4.09" (104mm)	<b>TRIGGER FORCE:</b>	0.9 lbs. (0,41 kg)

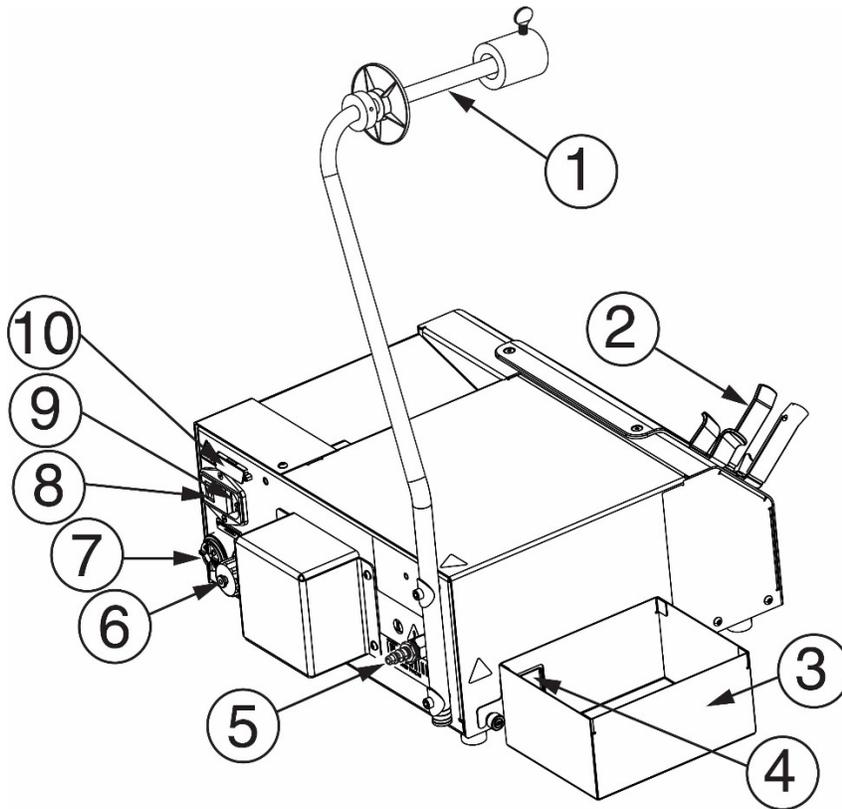
Tool Type	Pan-Ty Cable Ties	Cable Tie Size	Max. Bundle Dia.	Reel Quantity
PAT1M4.0	PLT1M-XMR	3/32" (2,4 mm) wide x 4.1" (104 mm) long	0.82" (21 mm)	5000 Cable Ties
PAT1M4.0-BT	BT1M-XMR	3/32" (2,4 mm) wide x 4.1" (104 mm) long	0.82" (21 mm)	5000 Cable Ties
PAT1.5M4.0	PLT1.5M-XMR	3/32" (2,4 mm) wide x 5.5" (140 mm) long	1.31" (33 mm)	5000 Cable Ties
PAT1.5M4.0-BT	BT1.5M-XMR	3/32" (2,4 mm) wide x 5.5" (140 mm) long	1.31" (33 mm)	5000 Cable Ties

## 2B: PDM4.0 Dispenser

The PDM4.0 Dispenser controls the PAT Installation Tool operation. The dispenser has an electronic display that provides a step-by-step menu for feature selections and helps to identify errors to reduce downtime. The display also functions in conjunction with the audible alarm, providing the operator with the specific status of certain malfunctions, such as: Dispenser jam, Tie in hose, Tie in tool, etc. Each message is explained in the *Error Messages*, *Functional Messages*, or *Functional Troubleshooting Checklist* sections. The dispenser includes a resettable counter that can record tie counts for production runs and maintenance intervals. A carrier strip scrap bin is also included to collect the carrier strip (remaining scrap as the cable ties are detached from the continuous strand).

Fig. 2

### PDM4.0 Dispenser Component List

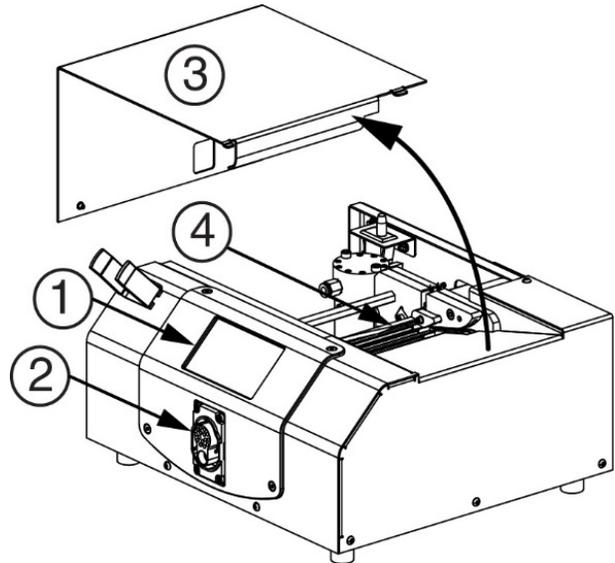


1. XMR Reel Mount Assembly
2. Tool Holder Bracket
3. Carrier Scrap Bin
4. Carrier Strip Exit Chute
5. Male Air Inlet
6. Ethernet Connection
7. Buzzer/Volume Adjustment
8. Power Switch/Fuse Holder
9. Power Cord Receptacle
10. Electrical Interface

**PDM4.0 Dispenser Component List (continued)**

- 1. LCD Color Touchscreen Display
- 2. Feeder Hose Connection Block
- 3. Dispenser Door
- 4. Rotary Receiver

**Fig. 3**

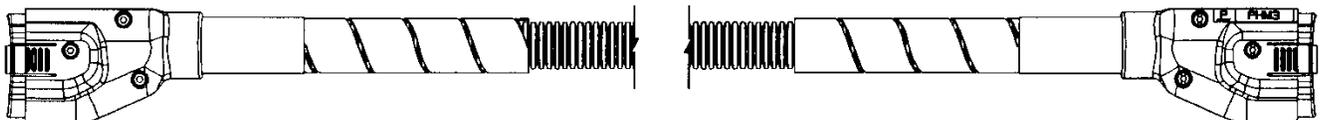


Overall System (Dispenser w/Scrap Bin, Reel Mount Assembly, and Cable Tie Reel):		Dispenser Alone:	
<b>WIDTH:</b>	21.1" (536 mm)	<b>WIDTH:</b>	14.1" (358 mm)
<b>DEPTH:</b>	14.8" (376 mm)	<b>DEPTH:</b>	13.2" (335 mm)
<b>HEIGHT:</b>	31.6" (802 mm)	<b>HEIGHT:</b>	8.75" (222 mm)
<b>WEIGHT:</b>	39 lbs. (18 kg)	<b>WEIGHT:</b>	34 lbs. (16 kg)

**2C: PHM1 / PHM2 / PHM3 Feeder Hoses**

The PHM Feeder Hose connects the tool to the dispenser with quick connect couplings on both hose ends. The ends are interchangeable, allowing either end to be connected to the tool or the dispenser. The feeder hose allows a single cable tie to be conveyed (blown) from the dispenser, through the hose, to the tool, each cycle.

**Fig. 4**

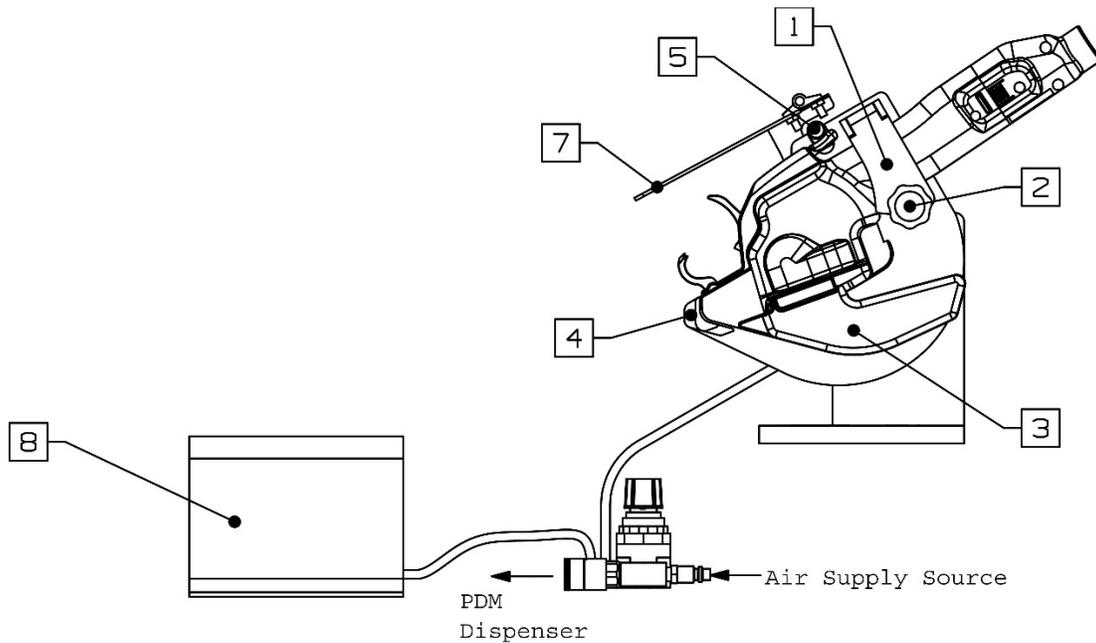


PHM HOSE	LENGTH	WIDTH	HEIGHT	WEIGHT
<b>PHM1</b>	1 m (3.3 ft)	1.58" (40 mm)	1.99" (51 mm)	0.8 lbs. (0,35 kg)
<b>PHM2</b>	2 m (6.6 ft)			1.2 lbs. (0,54 kg)
<b>PHM3</b>	3 m (9.8 ft)			1.6 lbs. (0,73 kg)
<b>PHM4</b>	4 m (13.1 ft)			2.0 lbs. (0,91 kg)

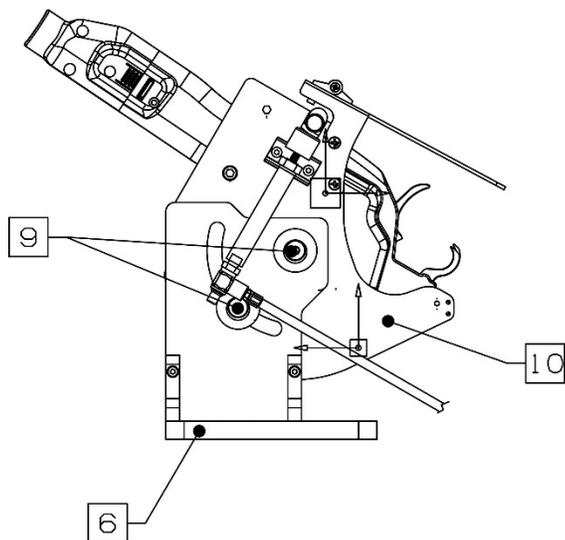
**2D: Additional Components**

**PATMBM4.0 Bench Mount**

The PATMBM4.0 Bench Mount allows hands-free operation, actuation and 90° pitch adjustment of the installed tool. The tool is mounted in the PATMBM4.0 so the work can be brought to the tool. Depressing the foot pedal then actuates the tool.



**Fig. 5A**



**Fig. 5B**

**Fig. 5A and Fig. 5B PATMBM4.0 Bench Mount**

- |    |                     |     |                     |
|----|---------------------|-----|---------------------|
| 1. | Clamping Plate      | 6.  | Bench Mount Base    |
| 2. | Clamping Plate Knob | 7.  | Shield              |
| 3. | Tip Collector       | 8.  | Foot Valve Assembly |
| 4. | Nose Support        | 9.  | Bolts (2)           |
| 5. | Lever               | 10. | Pitch Plate         |

**PL283N1 Filter/Regulator**

A filter/regulator with a 40 micron maximum element rating must be used to supply the PDM4.0 Dispenser with clean air and to ensure proper air pressure regulation. The Panduit PL283N1 Filter/Regulator meets the requirements of the PDM4.0 Dispenser, and it is recommended for best results. The PL283N1 includes a 1/4" male quick connect plug and provides 16 cfm at 85 PSIG (7,5 l/sec. at 5,8 bar). (Shown with PDH10-37 Air Supply Hose)

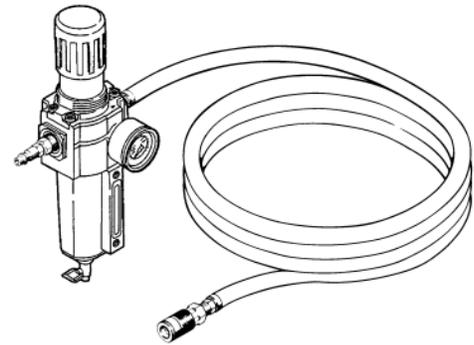


Fig. 6

**PDH10-37 Air Supply Hose**

The Panduit PDH10-37 Air Supply hose is approximately 10 ft. (3 m) long. The hose includes a 3/8 NPT male pipe thread fitting for attaching the hose to the PL283N1 Filter/Regulator. A 1/4" female quick disconnect fitting is included on the opposite end of the hose for connection to the dispenser.

**3: GENERAL POWER TOOL SAFETY WARNINGS**

The PAT1M4.0 / PAT1.5M4.0 System is pneumatically and electrically operated and electronically controlled. Therefore, certain safety practices must be followed.

	<b>WARNING</b>
	<ul style="list-style-type: none"> <li>• Read all safety warning and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.</li> <li>• Save all warnings and instructions for future reference.</li> <li>• The term "power tool" in the warnings refers to your main-operated (corded) power tool or battery-operated (cordless) power tool.</li> </ul>

**3A: Work Area Safety**

- 1 Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- 2 **DO NOT OPERATE POWER TOOLS IN EXPLOSIVE ATMOSPHERES, SUCH AS IN THE PRESENCE OF FLAMMABLE LIQUIDS, GASES OR DUST.** *Power tools create sparks which may ignite the dust or fumes. Provide adequate ventilation around the product.*
- 3 **KEEP CHILDREN AND BYSTANDERS AWAY WHILE OPERATING A POWER TOOL.** *Distractions can cause you to lose control.*

**3B: Electrical Safety**

1. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** *Unmodified plugs and matching outlets will reduce risk of electric shock.*
2. **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** *There is an increased risk of electric shock if your body is earthed or grounded.*
3. **DO NOT EXPOSE POWER TOOLS TO RAIN OR WET CONDITIONS.** *Water entering a power tool will increase the risk of electric shock.*
4. **DO NOT abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** *Damaged or entangled cords increase the risk of electric shock.*
5. **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** *Use of a cord suitable for outdoor use reduces the risk of electric shock.*

6. **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** *Use of an RCD reduces the risk of electric shock.* NOTE: The term “residual current device (RCD)” may be replaced by the term “ground fault circuit interrupter (GFCI)” or “earth leakage circuit breaker (ELCB)”.
7. **Only operate the PAT system in a clean, dry, indoor environment**



### 3C: Personal Safety

1. **STAY ALERT, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** *A moment of inattention while operating power tools may result in serious personal injury.*
2. **Use personal protective equipment. Always wear eye protection.** *Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.*
3. **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** *Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.*
4. **Remove any adjusting key or wrench before turning the power tool on.** *A wrench or a key left attached to a rotating part of the power tool may result in personal injury.*
5. **Do not overreach. Keep proper footing and balance at all times.** *This enables better control of the power tool in unexpected situations.*
6. **Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts.** *Loose clothes, jewelry or long hair can be caught in moving parts.*
7. **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** *Use of dust collection can reduce dust-related hazards.*
8. **Hearing protection is recommended to be worn during operation of tool.**



### 3D: Power Tool Use and Care

1. **Do not force the power tool. Use the correct power tool for your application.** *The correct power tool will do the job better and safer at the rate for which it was designed.*
2. **Do not use the power tool if the switch does not turn it on and off.** *Any power tool that cannot be controlled with the switch is dangerous and must be repaired.*
3. **Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools.** *Such preventive safety measures reduce the risk of starting the power tool accidentally.*
4. **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** *Power tools are dangerous in the hands of untrained users.*
5. **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** *Many accidents are caused by poorly maintained power tools.*
6. **Keep cutting tools sharp and clean.** *Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.*
7. **Use the power tool, accessories and tool bits, etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** *Use of the power tool for operations different from those intended could result in a hazardous situation.*



### 3E: Service

1. **Have your power tool serviced by a qualified repair person using only identical replacement parts.** *This will ensure that the safety of the power tool is maintained.*

Contact Panduit Electrical Products Division at the following locations:

<b>Panduit Electrical Products Division (USA)</b> 16530 W. 163 <sup>rd</sup> Street Lockport, IL 60441  <b>1-800-777-3300</b>	<b>Panduit EMEA Service Center (EUR)</b> EMEA Tool Service Center Bedrijvenpark Twente 360 7602 KL Almelo  <b>tel + 31 546 580 451</b>
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## 4: SAFETY PRACTICES ADDENDUM



### 4A: General Safety Practices

1. Panduit Corp. recommends the tool be used with all installed safety features. Customer assumes all liability for injury that could result from improper use of this tool and responsibility for all necessary training to ensure safe operation of this tool.
2. To prevent unintentional injury, DO NOT place the PDM4.0 where a ladder is required for access.
  - For installation and use by trained personnel only
  - If any damage to the product is apparent or suspected, do not use the product. refer product to qualified service personnel
  - FCC Warning: changes or modifications to the product could void the user's authority to operate the product



### 4B: Electrical Safety Practices

#### KEEP AWAY FROM LIVE CIRCUITS

1. Operating personnel must use caution when opening cover
2. Replacement of components and internal adjustments must be made by qualified maintenance personnel
3. Disconnect power cable when replacing components
4. Dangerous voltages may exist even with the power cable removed
5. To avoid injuries, always disconnect power and discharge circuits by grounding before touching circuitry
6. Input connection to the product must remain accessible as a disconnect device
7. DO NOT work on the product; connect or disconnect cables during periods of lightning
8. Provide wiring per national and local electrical codes



### 4C: Operational Safety Practices

1. DO NOT insert fingers in between the jaws of the tool or the rotary receiver area of the dispenser.
2. DO NOT attempt to operate the tool with cover open and the safety mechanism disabled.
3. DO NOT attempt to operate the tool with the cover open; the system will not cycle.
  
4. DO NOT operate the tool with the rear jaw held open. Cable ties may be ejected from the tool at high velocities.
5. DO NOT operate the tool near anyone's face.
6. DO NOT operate the tool without a wire bundle in the jaws.
7. DO NOT operate the tool with any object blocking the path of the cable tie around the jaws.
8. ONLY OPERATE THE PAT SYSTEM IN A CLEAN, DRY, INDOOR ENVIRONMENT

## **5: FCC EMISSION CLASSIFICATIONS**

### **USA FCC Emissions for Class A**

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

### **Canadian Emissions for Class A**

This Class "A" digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

*Cet appareil numérique de la classe "A" respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.*

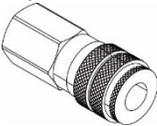
### **European Emissions Warning for Class A**

Product is not intended for use in a residential environment. Use of this product in residential areas may cause electromagnetic interference.

The information contained in this manual is based on our experience to date and is believed to be reliable. It is intended as a guide for use by persons having technical skill at their own discretion and risk. We do not guarantee favorable results or assume any liability in connection with its use. Dimensions contained herein are for reference purposes only. For specific dimensional requirements consult the factory. This publication is not to be taken as a license to operate under, or a recommendation to infringe any existing patents.

## 6: TECHNICAL SPECIFICATIONS

### 6A: Air Supply

ITEM	DESCRIPTION
Recommended regulated air pressure <u>to dispenser</u> (pressures other than recommended may result in unsatisfactory operation):	MIN.: 65 PSIG (4,5 bar) MAX: DO NOT EXCEED 85 PSI (5,8 bar). Max. recommended pressure drop:10 PSI (0,7 bar)
Air consumption at 25 cycles per minute	7 cfm @ 65 PSIG (3,3 l/sec @ 4,5 bar)
Line pressure <u>to regulator</u> :	Minimum 70 PSIG (4,8 bar), Maximum 125 PSIG (8,5 bar)
Filter/regulator requirements:	<ul style="list-style-type: none"> <li>• 40 micron maximum element rating</li> <li>• 5 PSI (0,3 bar) maximum pressure drop @ 70 PSIG (4,8 bar) inlet pressure</li> <li>• 12 cfm (5,7 l/sec) flow minimum.</li> </ul>
Lubrication for air supply:	Air line lubricators are NOT to be used. Lubricators will damage internal system components and seals.
Recommended filter/regulator unit (supplied by user) 3/8" NPT ports:	Recommended source: Panduit Part Number PL283N1 (See Page 8)
Recommended main air supply hose from filter/regulator to dispenser (supplied by user):	Recommended source: Panduit Part Number PDH10-37 (See Page 8)
Recommended female quick disconnect for main air supply (supplied by user): The dispenser is furnished with a male quick connect plug that will fit female interchangeable couplers.	1/4" female industrial quick disconnect coupling 

### 6B: Electrical Specifications

ITEM	MODEL	DESCRIPTION
Line Voltage (PDM4.0 Dispenser)	All	100 / 115 / 230 V (50/60 Hz)
Power	All	300 W
Phase	All	Single Phase
Line Fuse(s)	All	F1 4 A, 250 VAC (1) – Main Power F2 4 A, 250VAC (1) – Backup Power • Panduit Part Number (for both fuses): CA21138A01
Power to Tool	All	Logic -- 5 V $\approx$ . 250 mA  Motor – 25 Watt

This unit includes EMI/RFI filters, however it is possible that infrequent electrical phenomena may cause tool function to be temporarily interrupted. This interruption can be corrected by turning the tool "off" (removing the cable tie if necessary), and then back "on" again.

**6C: Noise Emission**

The noise emission, measured in accordance with EN620745-1: 2009	
Surface sound pressure level [dB(A) re. 20µPa]	73.3
K1 (correction for background noise)	0
K2 (correction for test environment)	0
10 log S / So (r=1m)	11
Measured sound power level LwA [db(A) re 1pW]	84.3

**6D: Vibration**

The vibration total value and its uncertainty measured in accordance with EN60745: 2009	
Vibration Peak Value Avg. ahv:	0.411 m/s <sup>2</sup>
<p>The following information:</p> <ul style="list-style-type: none"> <li>• That the declared vibration total value has been measured in accordance with a standard test method and may be used for comparing one tool with another;</li> <li>• That the declared vibration total value may also be used in a preliminary assessment of exposure.</li> </ul>	
<p>A warning:</p> <ul style="list-style-type: none"> <li>• That the vibration emission during actual use of the power tool can differ from the declared total value depending on the ways in which the tool is used; and</li> <li>• Of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).</li> </ul>	

**6E: Environmental**

When storing and transporting an unused unit, please take care to use the original packaging.

Storage / Transportation Temperature and Humidity	-40C(-40F) to +70C (+158F) Max 90% RH Non Condensing
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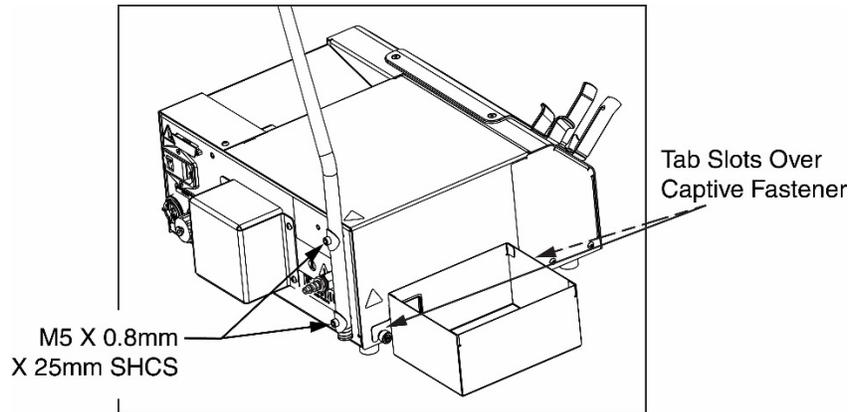
**7: INSTALLATION / SETUP****7A: Dispenser Assembly**

Unpack the dispenser and accessories and verify that you have the following:

- 1 qty. x Dispenser
- 1 qty x Power Cord
- 1 qty. x Carrier Strip Scrap Bin
- 1 qty. x XMR Reel Mount Assembly
- 2 qty. x #6-32 x ½ Pan Head screws

Mount the carrier strip scrap bin (See on the left side of the dispenser by positioning the tab slots concentric over the captive fastener on the dispenser. Next, attach the Reel Mount Assembly to the back of the dispenser (with reel axle facing the front of the dispenser) by mounting the reel mount assembly on the dispenser using (2) M5 X 0.8mm X 25mm SHCS (provided), see Fig. 7 below. Tighten the cap screws to fasten the reel mount in position.

Fig. 7

**NOTE:**

The XMR Reel Mount Assembly can be mounted to the left or right side of dispenser, as shown.

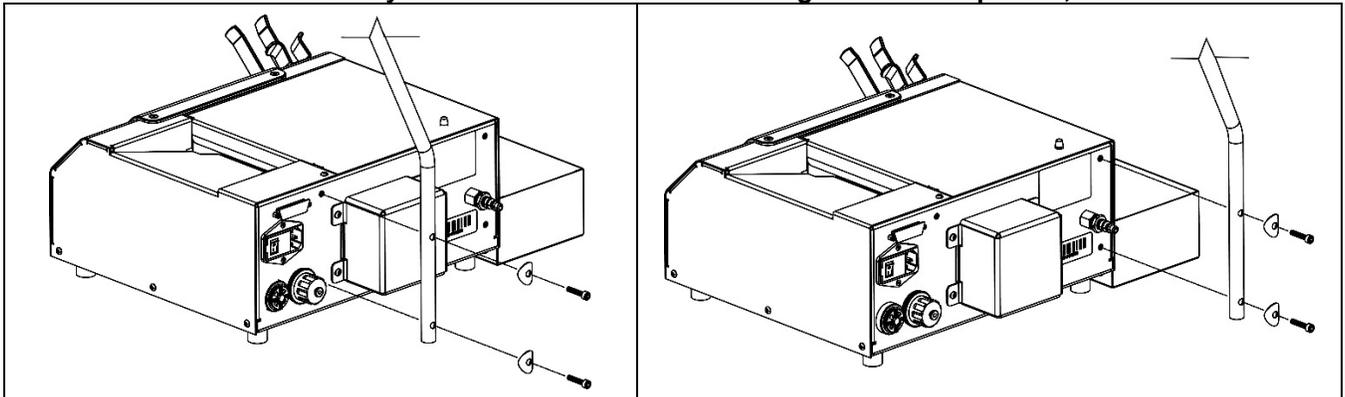


Fig. 7A

Fig. 7B

**7B: Pneumatic System Connection**

For Panduit recommended air hose and filter/regulator parts, see Section 2D: *Additional Components* on Page 7.

1. Connect the female quick disconnect end of the air hose and filter/regulator assembly to the male air inlet on the back of the dispenser (See Fig. 2 on Page 5).
2. Connect the filter/regulator to the main (NON-LUBRICATED) air supply and set the filter regulator at 65-85 PSIG for optimum performance (Refer to the *Air Supply* section on Page 12).
3. Verify installation by reviewing the *Installation Checklist* section below.

**Installation Checklist**

1. Have you made sure that the air supply is NON-LUBRICATED (from any source)?
2. Is the main air supply hose to the dispenser clean and sized properly? (3/8" inside diameter minimum, 10'-0" (3 m) length maximum from filter/regulator to dispenser)

3. Is the filter element rating correct? (40 micron maximum)
4. Is the filter/regulator equivalent to recommended? (See Page 12.)
5. Are the quick-connect fittings equivalent to recommend? (See Page 12.)
6. Is the filter/regulator located as close to the dispenser as possible? (10' - 0" (3 m) maximum)
7. Is the dispenser placed or mounted in a convenient location? (Refer to the *Hose and Installation Tool Assembly* Section on Page 15.)
8. Is the regulated airline pressure and flow to dispenser sufficient? (Refer to the *Air Supply* section on Page 12.)

### 7C: Hose and Installation Tool Assembly

1. Connect either end of the PHM Feeder Hose to the PDM4.0 Dispenser connection block (See Figs. 8 & 9). Align the connectors and push the hose end onto the dispenser connection block until the latches engage. Always position the dispenser in the work area so there are no severe bends or twists in the PHM Feeder Hose, thus ensuring a minimum bend radius of 12" (0,3m).

Fig. 8

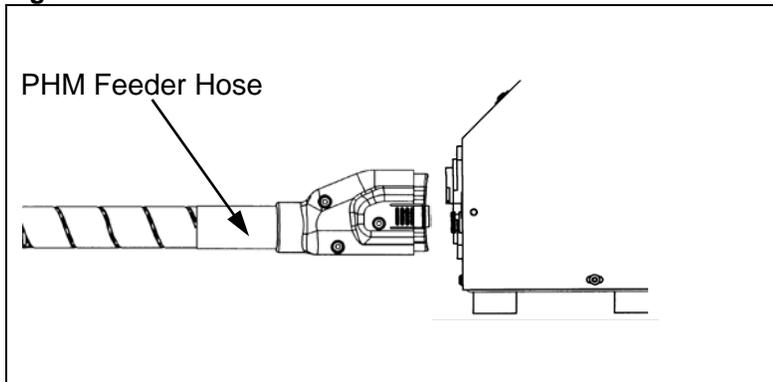
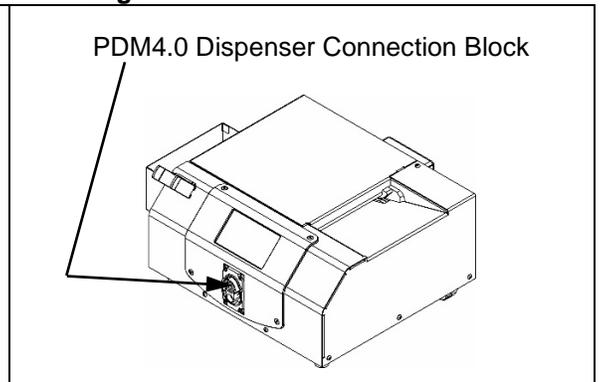
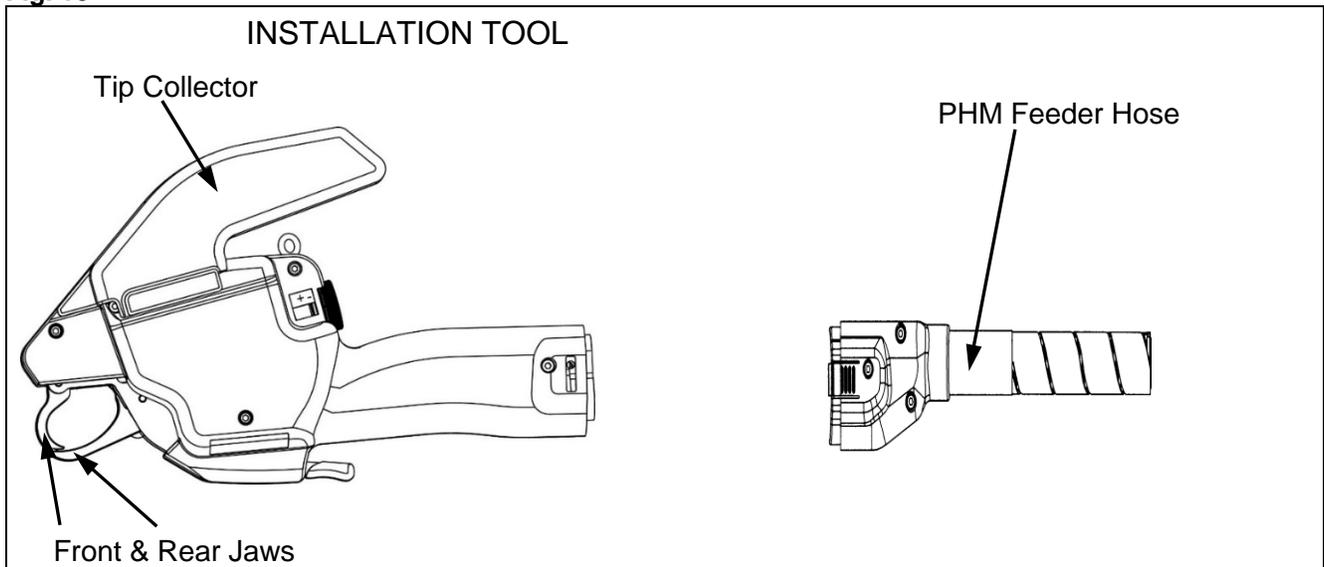


Fig. 9



2. Connect the other end of the feeder hose to the PAT installation tool in the same manner, see Fig. 10

Fig. 10



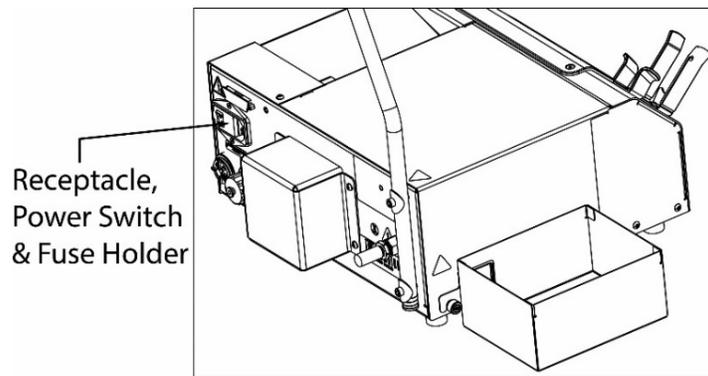
### 7D: System Power Up and Setup

1. Plug the supplied electric cord into the receptacle on the back of the dispenser (See Fig. 11 below). Plug the other end into a grounded electrical outlet that matches the dispenser power requirements (Refer to the *Electrical Specifications* section on Page 12). Set the power switch on the back of the dispenser (See Fig. 11 below) to the "on" position.



**IMPORTANT:** Only turn the power to the unit "on" or "off" using the power switch on the back of the dispenser. Using any other method to turn the unit "on" or "off" may damage the unit.

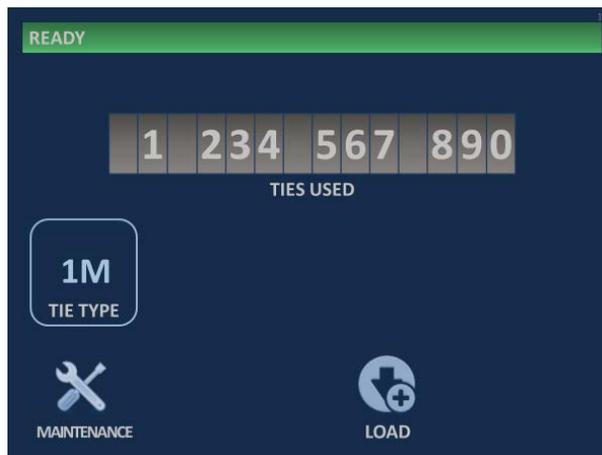
Fig. 11



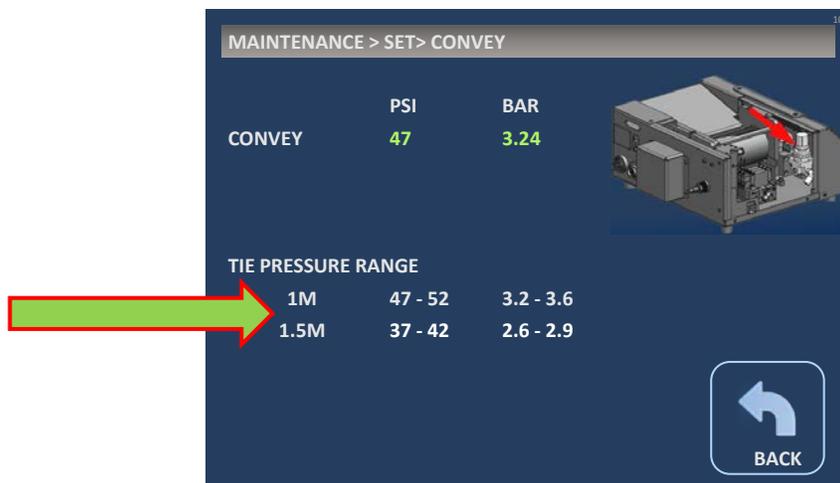
The following power up display will appear for 5 seconds:



Followed by the **Load Ties Menu**



- Press the "Tie Type" icon <sup>1M</sup> and the system will advance to the convey pressure screen to help the user set the correct internal regulator pressure per the tie type (1M or 1.5M).



The dispenser comes preset for 1M ties from the factory. Verify that the convey pressure is indeed within range for the tie being used. If it is not, open the side door as shown in Fig. 12 and locate the internal regulator as shown in Fig. 13. Adjust the convey pressure up or down by manually pulling up on the regulator cap and turning the regulator either clockwise or counterclockwise respectively. Press the "Back" icon to return to the ready screen followed by pressing the "Tie Type" icon again. The system will perform a backpressure test before displaying the newly set convey pressure. Repeat if further adjustment is needed. Once the desire convey pressure is met, push down on the regulator cap to lock it from further adjustment. Close the dispenser door. Press the back button three times to return to the Ready Menu. The system is ready to load XMR cable ties.

Fig. 12

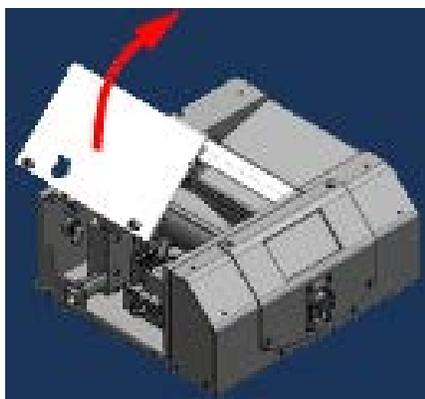
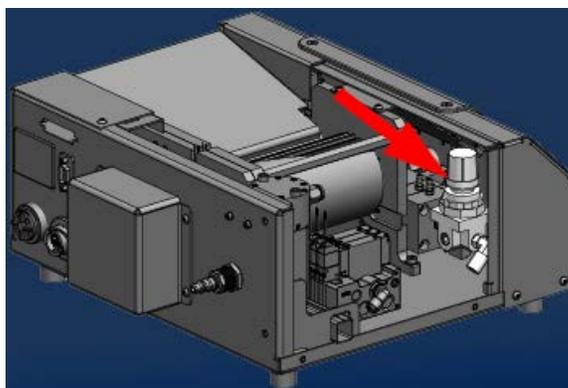


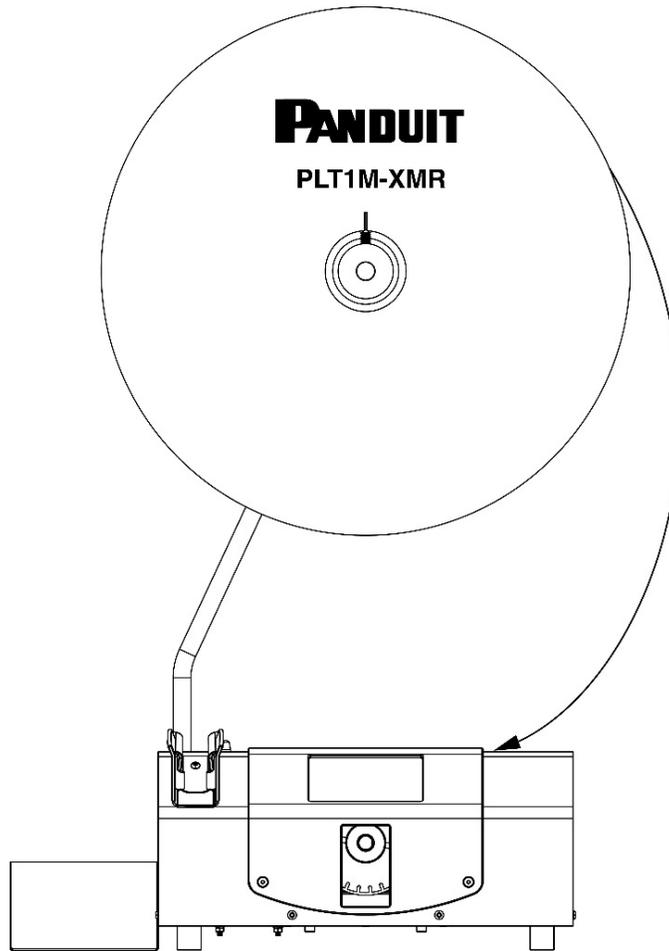
Fig. 13



## 7E: Loading XMR Cable Ties

- Remove the cable tie reel from the protective re-sealable plastic bag. Note: Save the bag for tie storage.** Remove the corrugated cardboard wrap from around the cable ties. Inspect the tie reel for distorted or damaged ties and remove as needed but cutting cable ties from carrier strip. Carefully slide the cable tie reel onto the reel axle so that the reel turns clockwise as the cable ties are dispensed. Slide collar onto the reel mount assembly with the thumb screw toward the installer. Push collar in compressing the spring on the reel mount a minimum of 1/4". Tighten the thumb screw by hand only – Do Not use tools. Remove the cellophane tape from the end of the cable tie strip and discard.

Fig. 14



Cut off excess cable tie carrier strip as shown. It is important to cut along the edge of the leading side of a locator pad. Dotted lines represent potential cut locations.

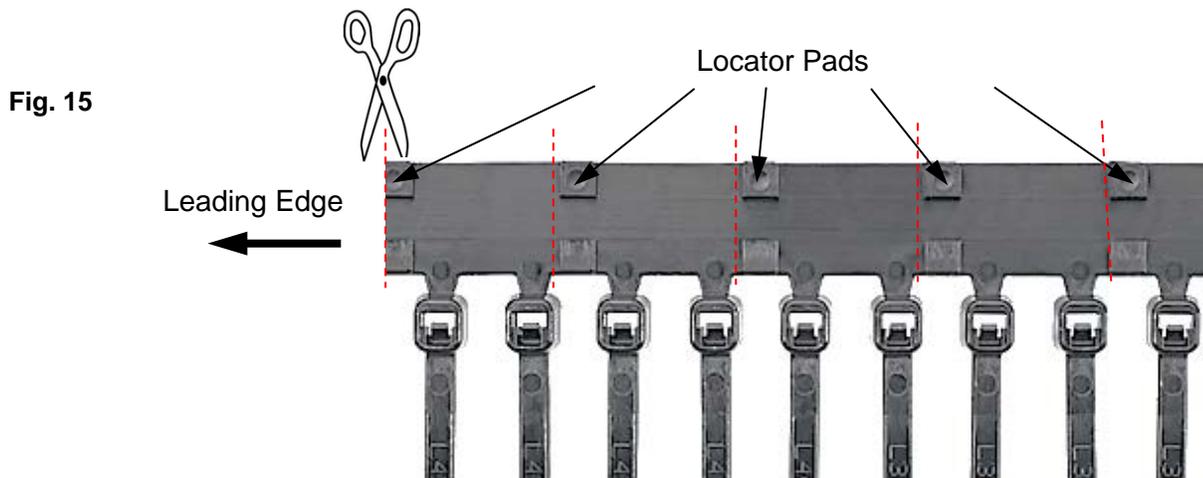
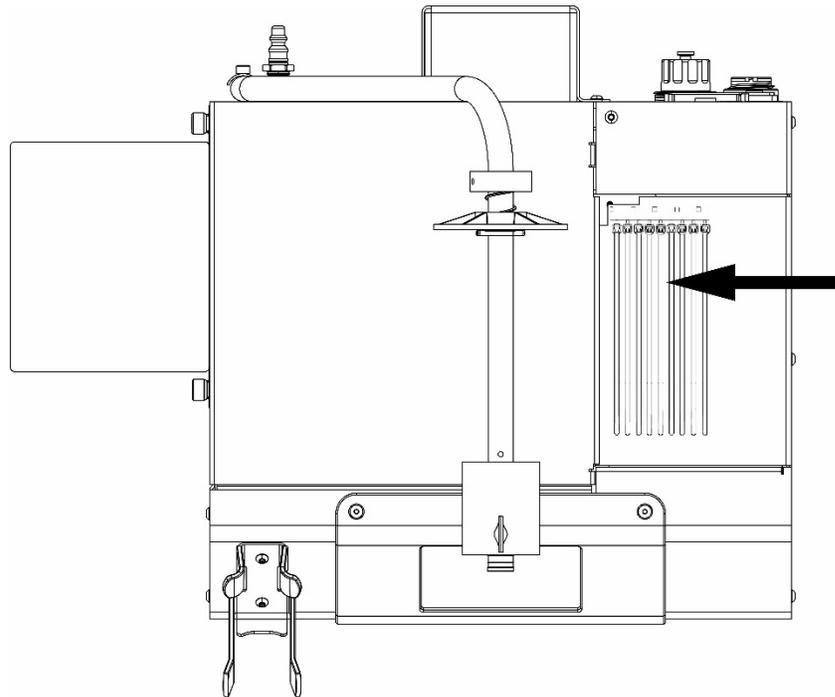


Fig. 15

2. Pull the end of the cable tie strip and guide the cable tie carrier strip against the back edge of the ramp as the cable ties enter the cover opening. Slide the carrier strip into the opening until it stops.

Fig. 16



At this point, the first cable tie is positioned in the rotary receiver slot. The dispenser will display "LOAD 14" in the header of the main screen. While maintaining a slight inward pressure on the cable ties, press the "Load" icon once to successfully load and align the first cable tie. The dispenser will load 1 cable tie and display "LOAD 13" in the header. Press and hold the load button to load the remaining cable ties. Once the unit is loaded it will display "Ready". The dispenser door must be closed to load or cycle the system. The rotary receiver will not advance if the door is open. Once the ties are loaded the system is ready for use.

**NOTE:** Should the ties need to be removed from the dispenser, this is done by pressing the "Unload" icon on the display screen while applying slight force to pull the ties back out of the dispenser after depressing 3 times. The unload function reverses the rotary receiver's rotation which backs the cable ties out of the dispenser. NEVER pry the rotary receiver, or turn it, or touch it with your hand. Only use the "Load" or "Unload" icons to rotate the rotary receiver. The "Unload" icon is accessed by selecting the maintenance icon on the operator menu and then the settings icon.

**NOTE:** Periodically clear out extra ties from under the dispenser to prevent jams.

## 7F: Reloading Procedure

1. The carrier strip scrap bin will hold one half reel of scrap ( $\frac{1}{2}$  reel = full collection bin). To maintain an exit for carrier strip scrap, the scrap bin should be emptied after 2500 cable ties have been installed. The carrier strip scrap bin should be lifted off the dispenser, emptied and replaced.
2. Press the Maintenance and Settings icons to take you to the unload feature. Before loading a full reel, press the "Unload" icon to verify that any remaining ties on the carrier strip are pulled out of the dispenser. Once the dispenser stops its reverse motion to empty the remaining cable ties, gently pull the cable ties by the carrier strip till the remaining carrier strip is fully removed from the dispenser. Remove all cut cable ties under the dispenser before loading the new cable tie reel.
3. Once the full cable tie reel is positioned correctly, to reload, follow the *Loading XMR Cable Ties* section on Page 17.

## 8: OPERATION

Follow this operation procedure to correctly apply cable ties. To begin, follow the Start Up Checklist below to assure safety and optimum system operation.

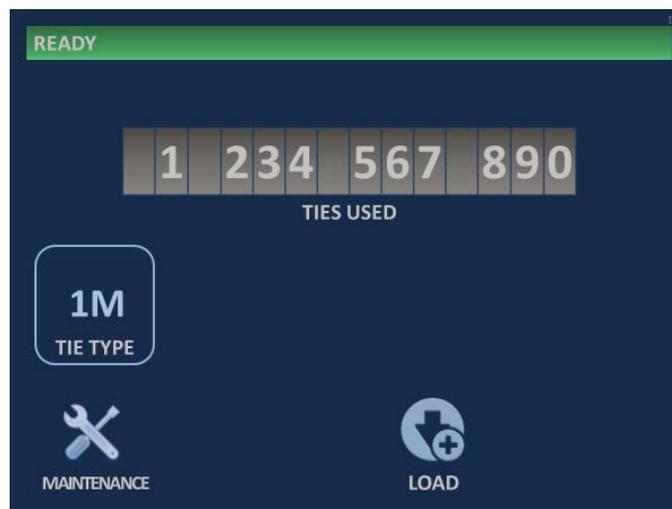
### 8A: Start Up Checklist

1. Is the PDM4.0 Dispenser connected to the air supply? (Refer to the *System Connection* section on Page 14.)
2. Is the air pressure set properly? 65 PSIG with a maximum 10 PSI drop is recommended. (Refer to the *Air Supply* section on Page 12.)
3. Is the PDM4.0 Dispenser loaded properly? (Refer to the *Loading Procedure* section on Page 17.)
4. Is the PHM Feeder Hose securely connected to the PAT1M4.0 or PAT1.5M4.0 Tool, and PDM4.0 Dispenser? (Refer to the *Hose and Tool Assembly* section on Page 15.)
5. Is the Menu on the PDM4.0 Dispenser displaying “ready” in the green bar on top of the screen? The Operator Menu must be displaying the ready state for the tool to dispense cable ties. *Refer to the Cable Tie Installation* section (next) for proper menu display.

### 8B: Cable Tie Installation

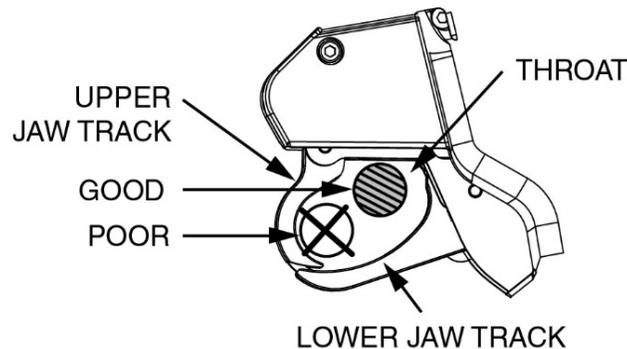
1. Review and follow all of the *Safety Practices* on Pages 8, being certain to wear adequate eye protection.
2. Verify that the Menu is displaying “Ready” in green bar on the PDM4.0 Dispenser screen as shown below. The PAT1M4.0 and PAT1.5M4.0 Tools can only dispense cable ties if the Menu is in the ready state.

**The Level 1 Menu in the “Ready” state:**



3. Grasp the tool with either hand, and slip the open jaws around the bundle or item to be cable tied. It is recommended to have the bundle as close to the throat of the tool as possible without contacting the jaw track when triggering. When bundles are away from the throat, the tool may not tension properly. The image below shows best case and worst case bundle positions for successful tensioning.

Fig. 17



**NOTE:** Bundles should be routed at least 2" (51 mm) off the harness board for easy tool jaw access. However, DO NOT allow the wire bundles to be forced into the jaw track. This will hinder the travel of the cable tie around the jaws and could increase the possibility of a mis-feed (cable tie tail will be blocked by wire bundle when attempting to feed into cable tie head).

- When the jaws are positioned at the preferred location for a cable tie, close the rear jaw by lifting the trigger. When the trigger is lifted to the highest point, the tool cycle will start. Hold the trigger momentarily for proper cycling of the tool. The cable tie will be applied, tensioned and cut off.
- At the completion of the cycle, release the trigger to open the rear jaw. Relocate the tool at the next desired cable tie location and repeat as required.

**NOTE:** If a malfunction occurs, or a cable tie is not applied properly, then a buzzer will sound and an error message will be displayed. Follow the "Help" instructions on display or refer to the *Error Messages* section on Pages 28-48 for more specific instructions.

**HINT:** When applying several cable ties on a long bundle, the tool can be moved along the bundle to each location, and cycled, without opening the jaws. This can be done by slightly relaxing pressure on the tool trigger (but not enough to open the jaws), and then lifting the trigger to the highest point to cycle the tool. With practice, this technique can be accomplished with minimal effort.

## 8C: Cable Tie Installation Techniques

Always use the following cable tie installation techniques to promote continuous trouble-free usage of the PAT1M4.0/PAT1.5M4.0 System. These techniques will prevent incomplete cable tie installations and system interruption.

- Prevent severe bends or twists in the PHM Feeder Hose. This will prevent interference with the cable tie travel to the tool and, in turn, reduce incomplete cycles.
- Dress the wires to result in a compact bundle; .82" (21 mm) in diameter or less for the PAT1M4.0 Tool, and 1.31" (33 mm) in diameter or less for the PAT1.5M4.0 Tool. This will prevent loose cable ties or cable ties that do not stay on the bundle.
- Hold the tool perpendicular, in both directions, to the bundle or item to be cable tied. Left to right, and top to bottom. This will prevent loose cable ties and cable ties that are not cut off flush to the head.
- Although the tool does not require any specific positioning on the bundle within the jaws, always allow the tool to seek its own position as the cable tie is being tensioned. DO NOT pull on the tool or restrict its movement toward the bundle, or loose cable ties or non-flush cable tie tail cutoffs will result.
- DO NOT place the bundle or item against the back of the jaw area. Mis-feeds may result.

- Each harness or item to be cable tied should be supported off the harness board at least 2" (51 mm). Panduit Harness Board Accessories provide the ideal harness height for automatic cable tie application.
- DO NOT install cable ties too close to a previously installed cable tie or a harness support, or any other object on the bundle. Loose cable ties or long cutoffs may result. Always allow enough space between cable ties and other objects, so that the tool can move freely toward the bundle as the cable tie is pulled tight.
- Store the cable ties properly, according to the storage specifications, and use them before the expiration date to prevent dryness and brittleness. Dry or brittle cable ties may break during installation.

## 8D: Tip Collector

The PAT1M4.0 and PAT1.5M4.0 Tools are provided with a tip collector to collect a maximum of 300 cable tie cutoff tips (see FIG 5A on Page 7). **Error! Bookmark not defined.** The tip collector must be emptied before it reaches its capacity.

**NOTE:** Failure to empty the tip collector may cause the tool to malfunction.

To empty the tip collector, push the tip collector forward on the tool and remove. Shake out the cutoff tips. Remount the tip collector on the tool by pushing it on until the latch snaps into place.

## 8E: Cable Tie Tension



The tension at which cable ties are installed can be adjusted on the PAT1M4.0 and PAT1.5M4.0 Tools. The cable tie tension setting can be viewed thru a window on the top left side of the tool (See Fig. 18). The right edge of the bar (inside the window) indicates the current tension setting. Adjust the tension setting by turning the tension adjustment knob (to the rear of the tension setting window). If cable ties are too loose on the bundle, turn the tension adjustment knob clockwise to increase the tension. If cable ties are too tight on the bundle, turn the tension adjustment knob counterclockwise to decrease the tension. After desired setting is reached, check tension by installing a few cable ties. In very high humidity areas, the maximum tension setting should be reduced.

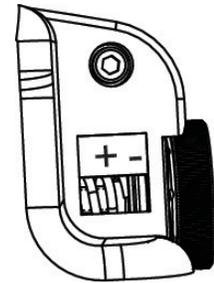


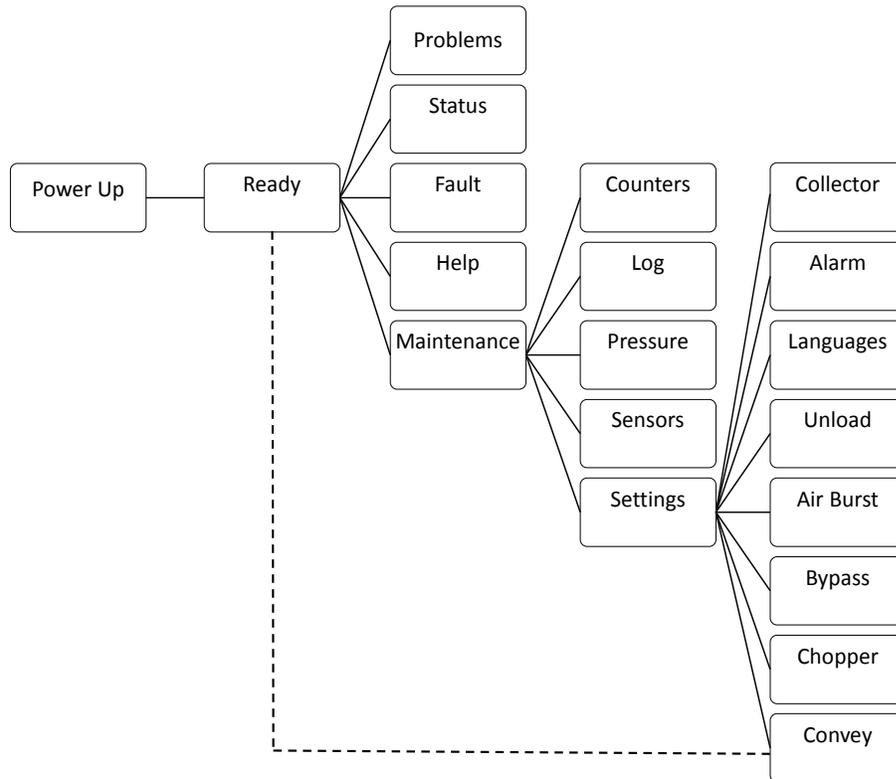
Fig. 18

**NOTE:** DO NOT force the tension adjustment knob with pliers or other tools. Greater or lesser tensions will not result, and tool may be damaged.

## 9: OPERATING SYSTEM NAVIGATION

### 9A: Menu Navigation

The PDM4.0 Dispenser is menu driven from the color touchscreen display.  
System Navigation



The menu has different levels that can be advanced or exited, by pressing the designated icons. When an icon is selected the user will be provided with an audible beep and highlight to show that the icon has been selected.

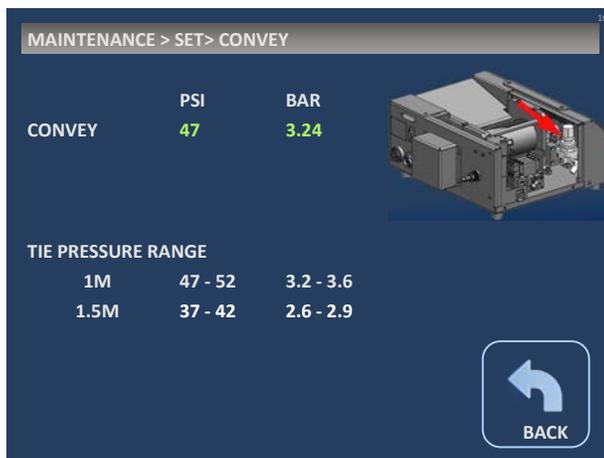
The instructions below are for the lead person or setup person only. For quick startup instructions and to begin cable tie installation, refer to the *Operation* section on Page 20

1. The following power up display will appear for 5 seconds once the unit is turned on.



The Ready menu will display the following icons: Maintenance, Tie Type, & Load. The ready menu is identified by the green tile at the top of the display. This menu also provides the user resettable counter that keeps track of the number of cable ties successfully applied.

By pressing the "Tie Type " icon **1M** , the user will advance to the convey pressure screen to help the user set the correct internal regulator pressure per the tie type (1M or 1.5M). How to adjust the regulator pressure is explained in *System Power Up & Setup*, on Page 16.



Press the "BACK" icon  three times to return back to the Ready Menu. Note: the convey menu can also be accessed by going through the maintenance and setting menus as well.

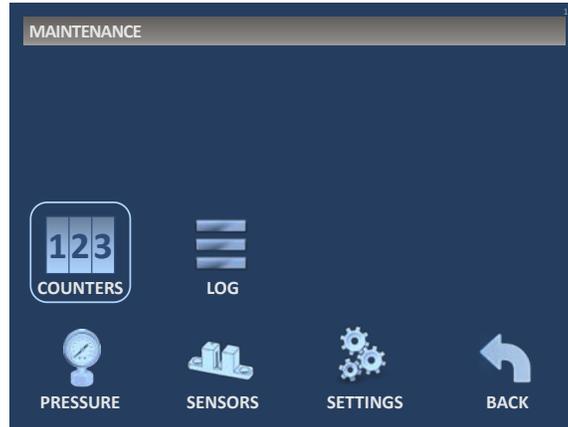
By pressing the "Load" icon, the unit will begin loading the cable ties. This procedure is explained in *Loading XMR Cable Ties*, on Page 17. Once the ties are fully loaded, the dispenser will display the "Ready" state in the green bar.



The "Maintenance" icon  will advance to the next menu level to activate the other dispenser functions. The functions are displayed as icons and have cascading functions. Press the icon to go up (forward) one level, or press the "BACK" icon  to go down (back) one level.

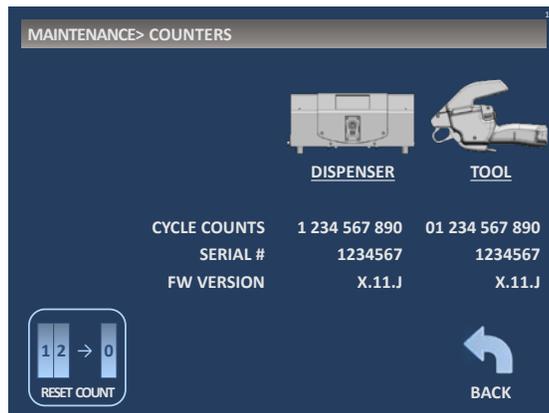
2. Press the **"Maintenance"** icon  to bring up the Level 2 menu:

**LEVEL 2 – Maintenance Menu**



The **"Maintenance"** menu provides users with the ability to setup the system, review data and update counters. **"Back"** icon  will return to the last menu level (Level 1: Ready Menu).

- a) Press the **"Counters"** icon  to view the total count to date for the PDM4.0 Dispenser and the PAT1M4.0 or PAT1.5M4.0 Tool. Pressing this icon will bring up the following display for Tool and Dispenser cycle counts, serial numbers and firmware version.



- i. Selecting the **"Reset Count"** icon will zero the "resettable counter" on the Level 1 Ready menu. Pressing the **"Back"** icon after resetting the counter will return to the previous menu level.

ID	CYCLES	SERIAL	DESCRIPTION
1	600 000 000	1234567	ERROR 1 > EMPTY TIE
2	500 000 000	1234567	ERROR 3 > LOW PRESSURE
3	400 000 000	1234567	ERROR 3 > LOW PRESSURE
4	300 000 000	1234567	ERROR 5> DISPENSER JAM
5	200 000 000	1234567	ERROR 5> DISPENSER JAM

- b) Press the **"Log"** icon  to view total tie count, serial number and a description of errors. The Dispenser stores up to 125 errors. Navigation thru the error log is made simple with the option to move by using previous or next to jump by 5 errors. If an expanded performance record is required for planned maintenance and system performance, actuation of the dispenser's Data Interface option is required. Contact your local Panduit Sales Representative for details on actuation.

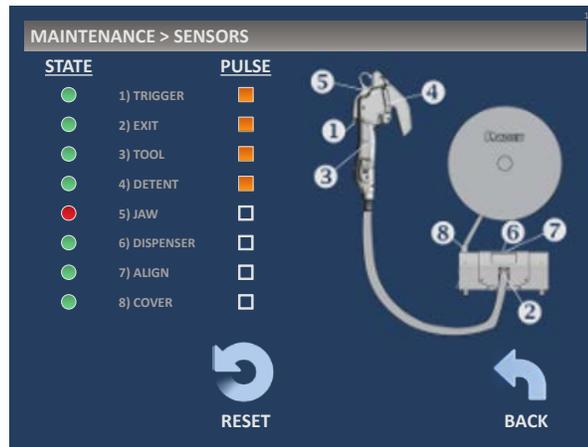
Pressing the **"Back"** icon after reviewing the errors will return to the previous menu level.

- c) Press the **"Pressure"** icon  to view the line pressure before and during a cycle. Pressing this icon will bring up the following display:

	PSI	BAR
BEFORE CYCLE		
DURING CYCLE		

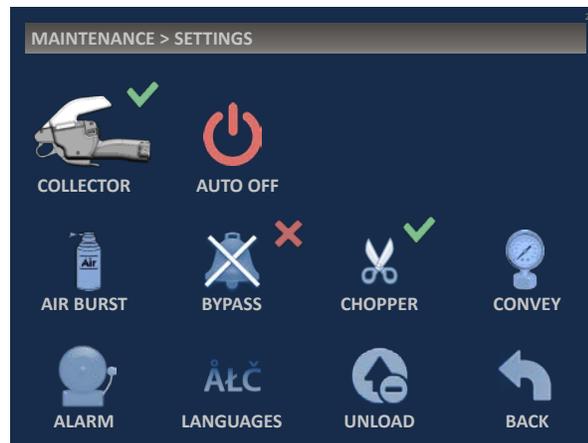
The pressure measurement is in both BAR and PSI. Refer to *Air Supply* section on Page 12 for the recommended operating pressure for optimum performance. Pressing the **"Back"** icon after reviewing the pressures will return to the previous menu level.

- d) Press the **"Sensor"** icon  to find out the state of each sensor in the system. Pressing this icon will bring up the following display:



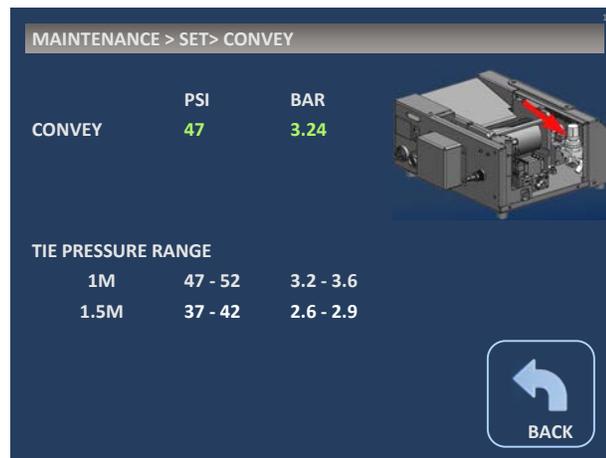
The Pulse represents the sensor events that have been triggered successfully during the last cycle. The Level represents the status of the sensors at any given time. Reset clears all triggered events of the last cycle. Pressing the "Back" icon after reviewing this display will return to the previous menu level.

- e) Pressing the "Settings" icon will provide access to the following functions displayed:



- i. The AUTO OFF / AUTO ON feature enables the PAT 4.0 to start new cycles by continuing to hold down the trigger at the end of a cycle. There are three (3) AUTO modes:
  1. AUTO OFF
  2. AUTO1 (Fastest)
  3. AUTO2 (Fast)
 When you power off the PAT4.0, the AUTO mode will revert back to "AUTO OFF"; and you will need to turn the AUTO mode back on after a power cycle.
- ii. Pressing the "Air Burst" icon provides a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The "Air Burst" button can be pressed again if the cable tie does not advance to the jaw area. NOTE: Care should be taken to not activate the air burst when the hose and or tool is not attached to avoid injury. Pressing the "Back" will return to the previous menu level.
- iii. Pressing the "ByPass" icon allows the user to use the trigger to clear the tie in tool error without using the service panel. When the "ByPass" is enabled a green check will appear next to the icon. When the "ByPass" is disabled a red check will appear next to the icon. Pressing the "Back" will return to the previous menu level.

- iv. Press the “**Cutter**” icon to change the current status of the Cutter. When the “**Cutter**” is enabled it will cut the carrier strip every 7 cable ties and the icon displays a green check mark. When the “**Cutter**” is disabled it will not cut the carrier strip, and one continuous carrier strip will exit the dispenser. The icon displays a red check mark when disabled. Pressing the “**Back**” will return to the previous menu level.
- v. Press the “**Convey**” icon to set the internal regulatory pressure for cable tie choice. This procedure is covered in *System Power Up and Setup*, on Page 16. . Pressing the “**Back**” will return to the previous menu level.



- vi. Press the “**Alarm**” icon to set the cadence for audible alarming. There are 3 different cadences to choose. The default setting is Single. Each setting has a continuous previewed prior to selection. Navigating to the next option using previous and next. The Buzzer can also be de-activated within this menu. Once the option is selected, press the back icon to accept. Pressing the “**Back**” will return to the previous menu level.
- vii. Press the “**Language**” button to select the language at the next menu. Pressing this button will bring up the following display: ***The menu can be displayed in the following languages: English (US), Deutsch (German), Française (French), Italiana (Italian), Español (Spanish), Czech (Ěeský), Chinese (Mandarin) and Japanese.*** The current language chosen is shown in the middle of the display. Pressing the “**Back**” will return to the previous menu level.
- viii. The “**Unload**” icon reverses the rotary receiver in order to unload or clear jams. The gearing of the dispenser will allow turning the rotary receiver by hand. It is recommended to only use the “Load” and “Unload” functions to rotate the rotary receiver. The rotary receiver must not be pried. Pressing the “**Back**” will return to the previous menu level.
- ix. The “**Collector**” icon toggles the automatic tip collector counter off. The user will not need to acknowledge the tip collector full after 300 successful cycles. This option is best used in automated applications.

## 9B: Error Messages

The operator is constantly informed of the PAT1M4.0/PAT1.5M4.0 System's status by the PDM4.0 Dispenser's display. If the system fails due to operator error or dispenser malfunction, the operator is alerted that an error has occurred by two (2) types of signals: an alarm signal (audible) and the dispenser display (visual). The alarm signal volume can be adjusted by turning the faceplate of the buzzer. The alarm pattern can be adjusted at the display within the settings menu. The buzzer is located on the back of the PDM4.0 Dispenser next to the power switch.

For each error message that appears, there will be at least four (4) icons to choose from (on the error message display):

- "Help" icon**                      Press to receive general instructions to remedy the current problem;
- "Back" icon**                      Press to return to the last menu level;
- "Silence" icon**                      Press to turn the alarm signal "off";
- "Maintenance" icon**                      The "Maintenance" icon will advance to the next menu level to activate the other dispenser functions. The functions are displayed as icons and have cascading functions. The "Maintenance" menu provides users with the ability to setup the system, review data and update counters.

The following error messages may be displayed at some time during operation of the PAT1M4.0/PAT1.5M4.0 Systems. By following the instructions on the display, the system will provide "Help" information to remedy the problem so that operation can resume. These messages and instructions will actually teach and assist the operator when a problem occurs. The nature of the problem, solution to the problem, and prevention of the problem are listed to reduce and possibly eliminate the error from occurring again. Specific instructions for the error messages and remedies to the problems are included below.

**ERROR 1 - Out of ties or tie in dispenser**



**Error Screen**



**Help Screen Step 1**



**Help Screen Step 2**

**POSSIBLE CAUSE:** This usually occurs if the dispenser has run out of cable ties, or if a cable tie is prevented from leaving the dispenser.

**CORRECTIVE ACTION:** Press the **"Silence"** icon to turn the alarm signal "off". If the reel is empty, refer to the *Reloading Procedure* section on Page 19. If help is required, press the **"Help"** icon and perform the standard reloading procedure (Refer to the *Reloading Procedure* section on Page 19).

Pressing the **"Back"** will return to the previous menu level.

If **"Out of ties or tie in dispenser"** message appears, and it is apparent that the reel is not empty, then the tool was cycled without enough cable ties loaded, or a cable tie was prevented from leaving the dispenser. A cable tie will remain in the dispenser due to little or no air pressure, or an obstruction. In all cases, disconnect the air hose and feeder hose from the dispenser. If a cable tie is in the connector block, and it can be removed; do so. If a cable tie is not seen, contact your maintenance department to prevent further complications. After the cable tie is removed, reconnect the air hose and the feeder hose to the dispenser. Press the **"Back"** icon to bring up the "Ready" display. Press the **"Load"** icon to load next cable tie into position in the dispenser. Continue system operation.

**PREVENTION:** To prevent this problem from recurring, verify that the line air pressure is between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.

**ERROR 2 - Door is open, no tie loaded**



**Error Screen**

**POSSIBLE CAUSE:** This message will be displayed if the cover was open and the "Load" icon was pressed or the tool was cycled.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Close the cover. The rotary receiver will not advance unless the cover is closed. Press the "**Load**" icon to load next cable tie into position in the dispenser. Pressing the "**Back**" will return to the previous menu level.

**PREVENTION:** Keep the cover closed.

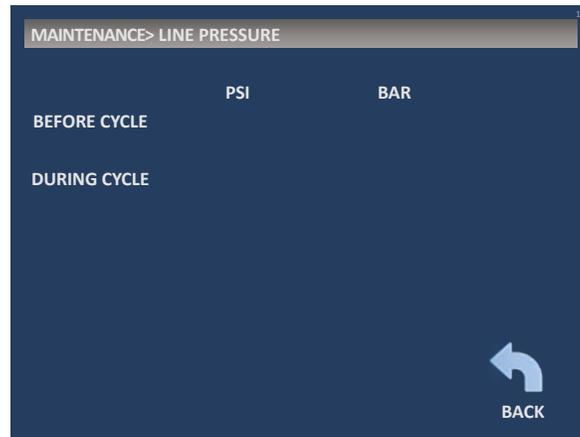
**ERROR 3 - Check for low air pressure**



**Error Screen**

**POSSIBLE CAUSE:** This message will be displayed if the incoming air pressure is too low, or not connected.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off".



Increase the air pressure to 65 PSIG (4,5 bar). As you adjust the line pressure the value will be indicated in this table as the before cycle pressure. The pressure during cycle is a snap shot of the line pressure when the secondary airburst is active when the tool is applying a tie. Pressing the "**Back**" will return to the previous menu level.

**PREVENTION:** To prevent this problem from recurring, verify that the airline is connected, and the air pressure is between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.

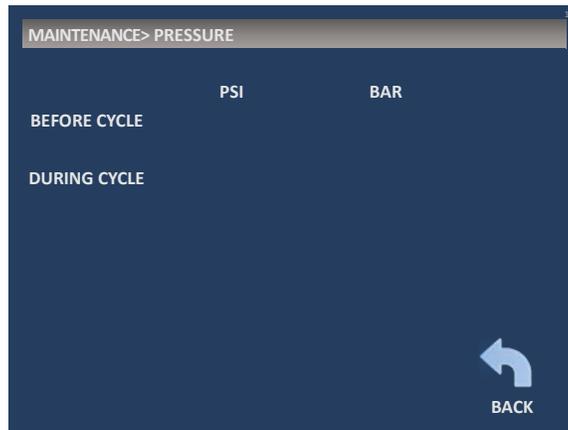
### ERROR 4 - Check for high air pressure



**Error Screen**

**POSSIBLE CAUSE:** This message will be displayed if the incoming air pressure is too high.

**CORRECTIVE ACTION:** Press the “Silence” icon to turn the alarm signal "off".



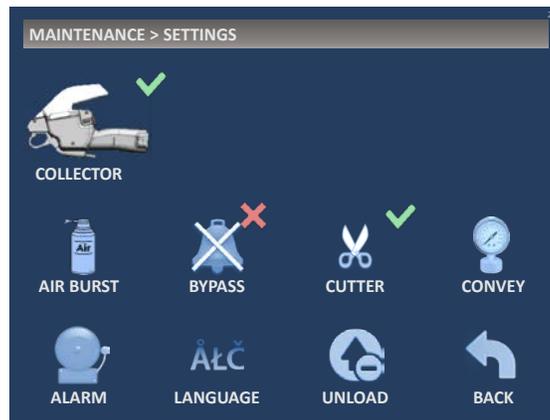
Decrease the air pressure to below 85 PSIG (5,8 bar). Pressing the "Back" will return to the previous menu level.

**PREVENTION:** To prevent this problem from recurring, verify that the air pressure is between 65 and 85 PSIG (4,5 and 5,8 bar)-

### ERROR 5 - Dispenser jam - check tie loading



**Error Screen**



**POSSIBLE CAUSE:** This occurs if the dispenser rotary receiver is prevented from advancing (rotating) to the next position. This may be caused by a jam due to bowed or misaligned cable ties feeding into the rotary receiver, or a jam due to a backed-up cable tie carrier strip in the carrier strip exit chute.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Check the rotary receiver alignment by pressing Maintenance > Sensors to verify that both the “Dispenser” and “Align” states are “green”. If the states are “red”, check the following areas for issues that may have caused the Dispenser Jam

**NOTE: Protective eyewear must be used at all times.**

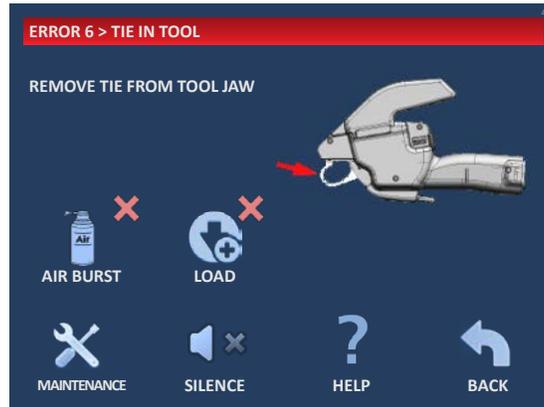
1. Check and clear the scrap chute of all carrier strip debris. Using a light, look down the chute and verify that the chopper blade is up. If the blade is down, press Maintenance> Settings and press Chopper icon twice.
2. Disconnect the hose from the front of the dispenser and check the dispenser launch tube for loose cable ties. Open the cover to the dispenser, use a flash light above the rotary receiver to illuminate the launch tube. Verify that there are no cable ties stuck in the tube. If there are cable ties stuck in the launch tube, send the dispenser to maintenance for repair.
3. Check the loading area of the rotary receiver for any obstructions or pinched cable ties. Clear the parts that are interfering.
4. If there are no obstructions in these areas, go to Settings > Maintenance and press the “Unload” icon four times. Gently pull on the remaining carrier strip to remove the reel going into the dispenser. Continue to press the “Unload” button until all cable ties have fallen out the bottom of the dispenser. If the jam persists when trying to remove the cable ties, remove the rear motor cover and use the wrench flats on the extended shaft to help remove the ties.

Cut the excess carrier strip and any distorted or damaged cable ties from the cable tie strip. Perform the normal loading procedure.

Press the “**Unload**” icon to reverse cable ties out until the jam and all remaining loose cable ties and the carrier strip are cleared from the rotary receiver. Cut the excess carrier strip and any distorted or damaged cable ties from the cable tie strip. Perform the normal loading procedure.

**PREVENTION:** To prevent this problem from recurring, load the dispenser with care to prevent misaligned cable ties in the rotary receiver, and empty the carrier strip scrap bin every 1/2 reel of cable ties.

**ERROR 6 - Tie in tool**



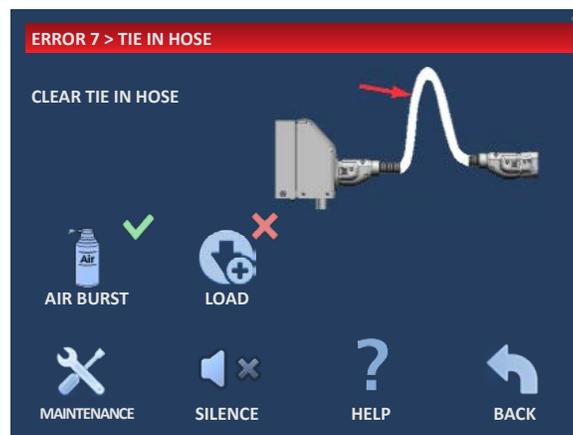
**Error Screen**

**POSSIBLE CAUSE:** This occurs if the cable tie reaches the tool but is prevented from completing the cycle. This may be due to a large air pressure drop, too large of a bundle, improper feeder hose connections, an obstruction blocking the cable tie path, pushing the front jaw in at the start of the cycle, a severe bend or twist in the feeder hose, or the tool jaws are opened during the cycle.

**CORRECTIVE ACTION:** Remove the cable tie and any obstruction from the jaw area. Pressing the "Back" will return to the previous menu level. Resume operation.

**PREVENTION:** To prevent this problem from recurring, verify that the feeder hose connections are secure and that there are no severe bends or twists in the feeder hose. Verify that the maximum bundle diameter does not exceed .82" (21 mm) for the PAT1M4.0 Tool, and 1.31" (33 mm) for the PAT1.5M4.0 Tool. Also, verify that the air pressure is between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.

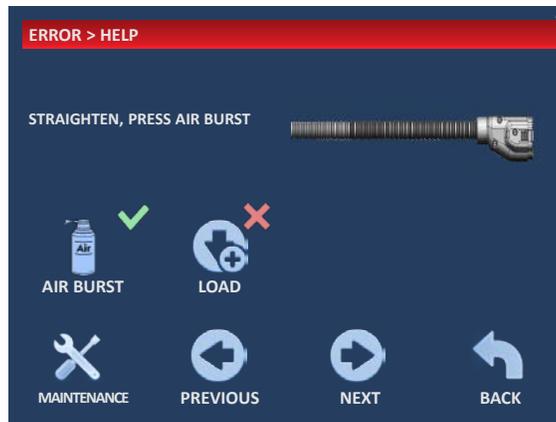
**ERROR 7 - Tie in hose**



**Error Screen**



Help Screen Step 1



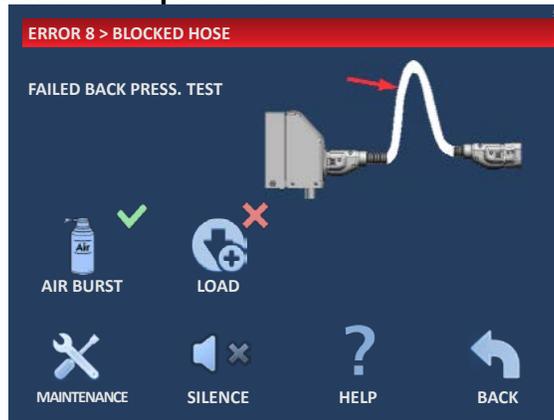
Help Screen Step 2

**POSSIBLE CAUSE:** This occurs if a cable tie is caught or remains in the feeder hose upon actuation. This may be caused by a severe bend or twist in the feeder hose, low air pressure, or an interrupted cycle. When this occurs, the tool cannot be cycled until the cable tie is cleared from the hose.

**CORRECTIVE ACTION:** At the error screen press the “**Silence**” icon to turn the alarm signal "off". If the “Help” icon is pressed steps 1 thru 3 will illustrate the following to clear the cable tie from the feeder hose, straighten the hose to eliminate any bends or twists and point the tool away from yourself and others. Press the “**Air burst**” icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The “**Air Burst**” icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw area, the “Tie in tool” message will appear and the buzzer will sound. Press the “**Silence**” icon to turn the alarm signal "off". Remove the cable tie from the jaw area and then press the “**Back**” icon. Press the “**Load**” icon to load one cable tie into the dispenser and continue operation. If the cable tie does not advance to the tool jaw area after depressing the “**Air Burst**” icon several times, replace the feeder hose with another and notify your maintenance department. Pressing the “**Back**” will return to the previous menu level.

**PREVENTION:** To prevent this problem from recurring, always prevent any severe bends or twists in the feeder hose, and verify that the air pressure is between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.

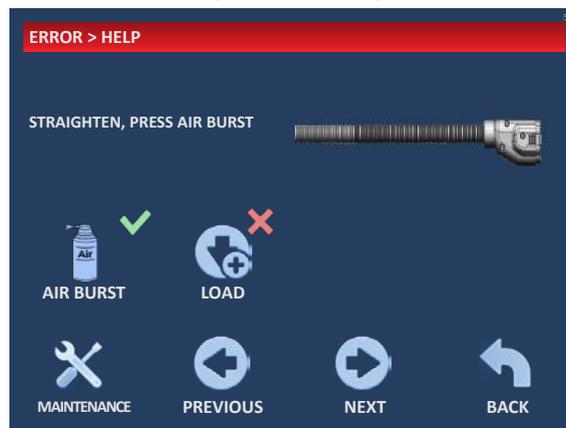
**ERROR 8 - Blocked hose - failed back pressure test**



**Error Screen**



**Help Screen Step 1**



**Help Screen Step 2**

**POSSIBLE CAUSE:** The tool was actuated while there was still a cable tie or ties in the PHM Feeder Hose.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal “off”. To clear the cable ties from the feeder hose, straighten the hose to eliminate any bends or twists and point the tool away from yourself and others. Press the “**Air burst**” icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The “**Air Burst**” icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw area, the “Tie in tool” message will appear and the buzzer will sound. Press the “**Silence**” icon to turn the alarm signal “off”. Press the “**Load**” icon to load cable ties into the dispenser and continue operation. If the cable tie does not advance to the tool jaw area after depressing the “**Air Burst**” icon several times, replace the feeder hose with another and notify your maintenance department.

**PREVENTION:** If the “Tie in hose” error appears, ALWAYS make sure the cable tie is found (when pressing air burst) before resuming operation. Stay within recommended line pressures and remove any sharp bends in the feeder hose. DO NOT drop additional ties in hose to verify that the hose is clear. The additional tie will only make the problem worse.

**ERROR 9 - Blocked or dirty exit sensor**



**Error Screen**

**POSSIBLE CAUSE:** This will occur if the exit (optical) sensor in the PDM4.0 Dispenser becomes obstructed due to a cable tie or excess debris (dirt, grime, etc.) on the lens. The cable tie will remain in the dispenser or the end of the PHM Feeder Hose that is attached to the dispenser. When this occurs, the tool cannot be actuated until the cable tie is cleared from the system or hose.



**Help Screen Step 1**



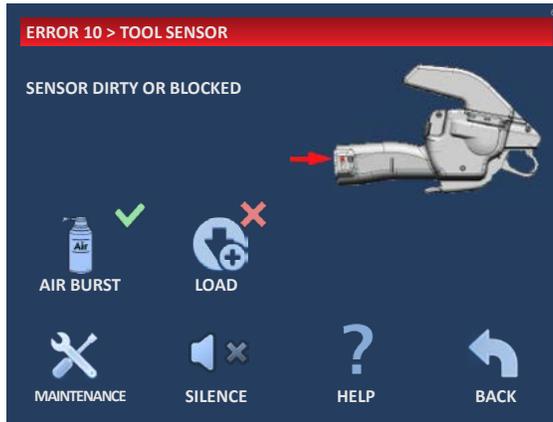
**Help Screen Step 2**

**Help Screen Step 3**

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Disconnect feeder hose from dispenser. Look for cable tie in dispenser connector block and remove cable tie, if present. Reconnect feeder hose, and resume operation. If the cable tie is not found, reconnect the feeder hose. Straighten the feeder hose to eliminate any bends or twists and point the tool away from yourself and others. Press the "**Air burst**" icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The "**Air Burst**" icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw area, the "Tie in tool" message will appear and the buzzer will sound. Press the “**Silence**” icon to turn the alarm signal "off". Remove the cable tie from the jaw area. Press the "**Load**" icon to load cable ties into the dispenser and continue operation. If the cable tie does not advance to the tool jaw area after depressing the "**Air Burst**" icon several times, replace the feeder hose with another and notify your maintenance department. Pressing the "**Back**" will return to the previous menu level.

**PREVENTION:** If this same error is repeated, the dispenser exit sensor lens may be cleaned with a cotton swab dampened with isopropyl alcohol. Disconnect the feeder hose from the dispenser and insert the dampened end of the cotton swab into the dispenser transfer tube about 1.5" (38 mm). Gently move the cotton swab in and out, against the top and bottom walls of the transfer tube, to clean the sensor.

### ERROR 10 - Blocked or dirty tool sensor



Error Screen



Help Screen Step 1



Help Screen Step 2



Help Screen Step 3

**POSSIBLE CAUSE:** This will occur if the tool (optical) sensor in the tool becomes obstructed due to a cable tie or excess debris (dirt, grime, etc.) on the lens. The cable tie will remain in the tool or the end of the PHM Feeder Hose that is attached to the tool. When this occurs, the tool cannot be actuated until the cable tie or ties are cleared from the tool or feeder hose.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Disconnect feeder hose from tool. Look for cable tie in tool jaws or tool end of hose and remove cable tie, if present. Reconnect feeder hose, and resume operation. If cable tie is not found, reconnect feeder hose. Straighten the feeder hose to eliminate any bends or twists and point the tool away from yourself and others. Press the "**Air burst**" icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The "**Air Burst**" icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw area, the "Tie in tool" message will appear and the alarm signal will sound. Press the “**Silence**” icon to turn the alarm signal "off". Remove the cable tie from the jaw area and then press the "**Back**" icon. Press the "**Load**" icon to load cable tie into the dispenser and continue operation. If the cable tie does not advance to the tool jaw area after depressing the "**Air Burst**" icon several times, replace the feeder hose with another and notify your maintenance department.

**PREVENTION:** If this same error is repeated, the tool sensor lens may require cleaning. Contact your maintenance department to have the tool sensor lens cleaned.

**ERROR 11 - Tie stuck, exit sensor obstructed**



Error Screen



Help Screen Step 1



Help Screen Step 2



Help Screen Step 3

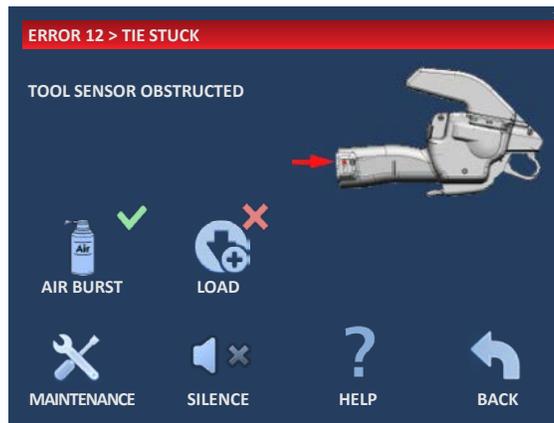
**POSSIBLE CAUSE:** This will happen when the exit of the dispenser is blocked so that the cable tie cannot exit the dispenser. It may be blocked by a cable tie that was not removed from an earlier error, or from excess debris (dirt, grime, etc.) on the dispenser exit sensor lens. The cable tie has not exited the dispenser and must be removed before actuating the tool.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Disconnect feeder hose from dispenser. Look for cable tie in dispenser connector block and remove cable tie, if present. Reconnect feeder hose, and resume operation. If cable tie is not found, reconnect feeder hose. Straighten the feeder hose to eliminate any bends or twists and point the tool away from yourself and others. Press the "**Air burst**" icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The "**Air Burst**" icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw

area, the "Tie in tool" message will appear and the buzzer will sound. Press the **"Silence"** icon to turn the alarm signal "off". Remove the cable tie from the jaw area and then press the **"Back"** icon. Press the **"Load"** icon to load one cable tie into the dispenser and continue operation. If the cable tie does not advance to the tool jaw area after depressing the **"Air Burst"** icon several times, replace the feeder hose with another and notify your maintenance department.

**PREVENTION:** If this same error is repeated, the dispenser exit sensor lens may be cleaned with a cotton swab dampened with isopropyl alcohol. Disconnect the feeder hose from the dispenser and insert the dampened end of the cotton swab into the end of the strap tube about 1.5" (38 mm). Gently move the cotton swab in and out, against the top and bottom walls of the transfer tube, to clean the sensor.

### ERROR 12 - Tie stuck in tool sensor



Error Screen



Help Screen Step 1



## Help Screen Step 2



## Help Screen Step 3

**POSSIBLE CAUSE:** This message appears when the cable tie advances to the tool sensor area of the tool and remains there. When this occurs, the tool will not actuate again until the cable tie is cleared from the tool.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Disconnect feeder hose from tool. Look for cable tie in tool and remove cable tie, if present. Reconnect feeder hose, and resume operation. If cable tie is not found, reconnect feeder hose. Straighten the feeder hose to eliminate any bends or twists and point the tool away from yourself and others. Press the "**Air burst**" icon to provide a burst of air to dislodge and advance the cable tie to the jaw area of the tool. The “**Air Burst**” icon can be pressed again if the cable tie does not advance to the jaw area. When the cable tie is advanced to the tool jaw area, the "Tie in tool" message will appear and the buzzer will sound. Press the “**Silence**” icon to turn the alarm signal "off". Remove the cable tie from the jaw area and then press the "**Back**" icon.

If the cable tie does not advance to the tool jaw area after depressing the "**Air Burst**" icon several times, replace the feeder hose with another and notify your maintenance department.

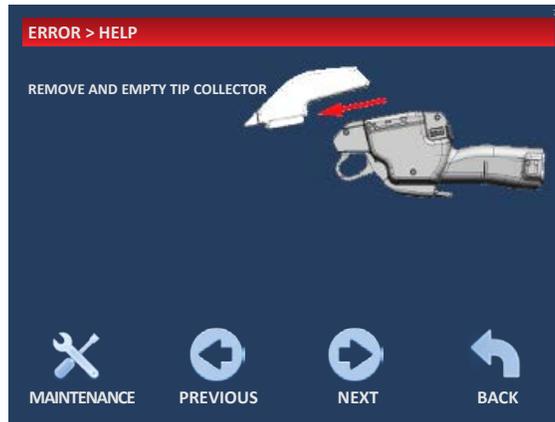
**PREVENTION:** Always remove the cable tie from the jaw area of the tool if the cycle is not completed (cable tie did not wrap and tension around the bundle). Always have the air supply at the recommended pressure setting and avoid severe bends in the feeder hose.

**ERROR 13 - Detent sensor blocked or dirty**

## Error Screen

**POSSIBLE CAUSE:** Most likely, the tip collector is too full. The detent sensor lens may be blocked by the detent cam, a foreign object, or the lens is dirty.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off".



Help Screen Step 1



Help Screen Step 2

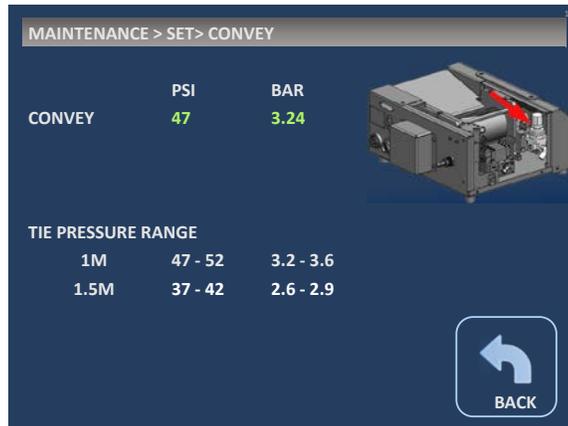
Remove the cable tie from the jaw area of the tool and empty the tip collector. Press the "**Back**" icon and resume operation. If the error message appears again, notify your maintenance department.

**PREVENTION:** Always empty the tip collector before it is full (no more than 300 cycles). This will prevent debris from re-entering the tool because the tip collector is too full. Keeping the tip collector clear will allow the cable ties an area to exit the tool. The tool should also be cleaned periodically by your maintenance department.

### ERROR 14 - Internal regulator incorrectly set, low



Error Screen



**POSSIBLE CAUSE:** This error message appears if the PDM4.0 Dispenser internal regulator was adjusted incorrectly, or the dispenser piston is not fully shifting.

**CORRECTIVE ACTION:** Press the “Silence” icon to turn the alarm signal "off", and resume operation. If the message remains, the system will not operate. Write down the message and notify the maintenance department.

**PREVENTION:** Never adjust the PDM4.0 Dispenser internal regulator. Follow the maintenance schedule for greasing the piston.

**ERROR 15 - Internal regulator incorrectly set, high**



**Error Screen**



**POSSIBLE CAUSE:** This error message appears if the PDM4.0 Dispenser internal regulator was adjusted incorrectly.

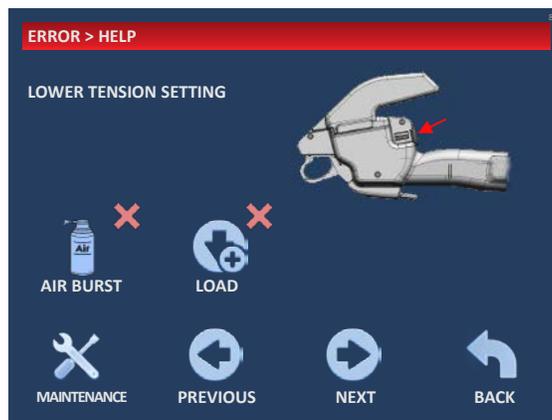
**CORRECTIVE ACTION:** Press the “Silence” icon to turn the alarm signal "off". See Section on Convey Pressure under Maintenance menu.

**PREVENTION:** Never adjust the PDM4.0 Dispenser internal regulator.

**ERROR 16 – Tie stuck in gripper**



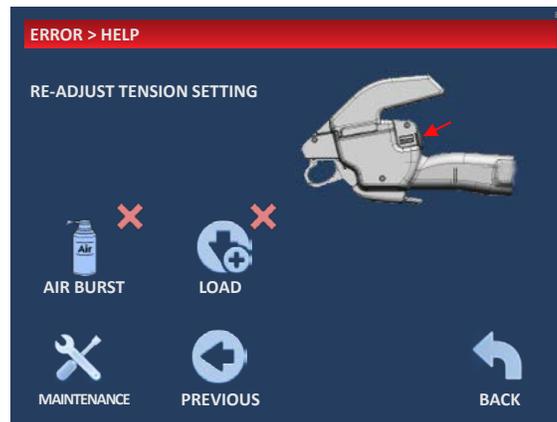
**Error Screen**



**Help Screen Step 1**



**Help Screen Step 2**

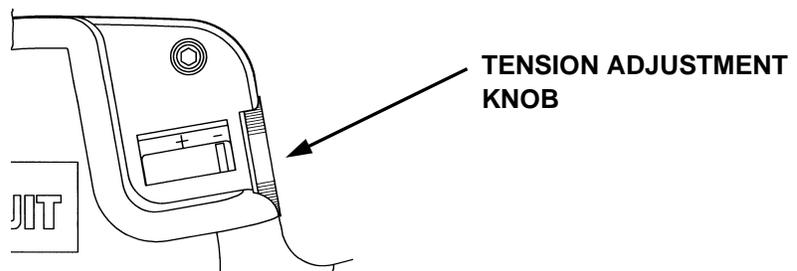


**Help Screen Step 3**

**POSSIBLE CAUSE:** Excessively dry or excessive high humidity and high tension conditions causing cable tie and tool to be locked onto the bundle.

**CORRECTIVE ACTION:** Press the “Silence” icon to turn the alarm signal "off". Lower the tension setting on the tool by turning the tension adjustment knob counter clockwise 2 clicks.

**Fig. 19**



Pull the trigger to cut the tie and eject the tip from the tool. Reset the tension by turning the tension adjustment clockwise 2 clicks. If the message remains, the system will not operate. Write down the message and notify the maintenance department.

**PREVENTION:** Control Humidity of ties.

**ERROR 17 – Full tip collector**



**Error Screen**

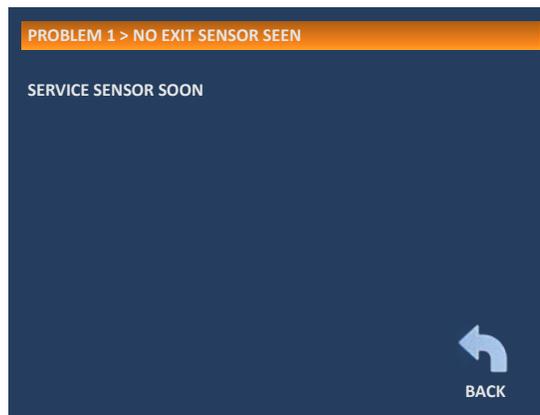
**POSSIBLE CAUSE:** Tip collector is full and contains 300 tips.

**CORRECTIVE ACTION:** Press the “**Silence**” icon to turn the alarm signal "off". Remove and empty the tip collector. Replace the tip collector. Press “**Back**” to reset the internal tip collector counter. Continue to use the “**Back**” icon until you are at the Ready Menu.

## 9C: Functional Messages

Functional messages notify the operator about component malfunction and/or maintenance requirements. Like the error messages, the operator is alerted that an error has occurred by two types of signals: an alarm signal (audible) and the dispenser display (visual). The dispenser display will indicate the possible problem that has occurred. Depending on the nature of the problem, the system may not become operational until the system is serviced.

### Problem 1 - No exit sensor seen - service sensor



**CORRECTIVE ACTION:** If this message appears, operation can be resumed immediately. If operation is resumed and the same message is displayed, the dispenser exit sensor may be dirty, or it may not be functioning properly.

**PREVENTION:** If this same error is repeated, the dispenser exit sensor lens may be cleaned with a cotton swab dampened with isopropyl alcohol. Disconnect the feeder hose from the dispenser and insert the dampened end of the cotton swab into the dispenser strap tube about 1.5" (38 mm) and gently move the cotton swab in and out, against the top and bottom walls of the strap tube. If the same error is repeated again, notify your maintenance department.

**POSSIBLE CAUSE:** This message is displayed if a cable tie has passed thru the exit sensor without producing the signal required for secondary air burst. This situation is usually due to the dispenser exit sensor not functioning properly.

### Problem 2 - Trigger Malfunction

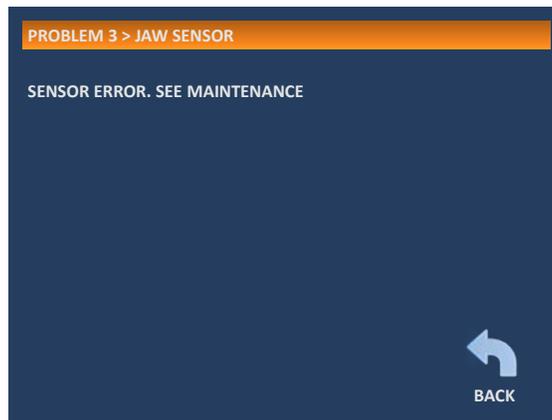


**POSSIBLE CAUSE:** This message will appear if the trigger is held down or stuck when the dispenser is turned "on". This message will also appear if the switch has malfunctioned.

**CORRECTIVE ACTION:** When this occurs, the message will disappear when the trigger has been freed or released. If the "**Trigger is stuck or broken**" message does not disappear, then the trigger is bad. Contact your maintenance department to have the trigger replaced.

**PREVENTION:** To prevent this problem from recurring, do not press or hold down the trigger when turning the dispenser power "**on**".

### Problem 3 Jaw sensor error



**POSSIBLE CAUSE:** A buildup of debris in the tool gears caused by not emptying the tip collector often enough.

**CORRECTIVE ACTION:** Press the "**Silence**" icon to turn the alarm signal "off". Remove the cable tie and any obstruction from the jaw and exit areas of the tool, and empty the tip collector. Press the continue icon and resume operation. If the tool does not operate contact maintenance.

**PREVENTION:** Always empty the tip collector before it is full (no more than 300 cycles). Keeping the tip collector clear will allow the cable ties an area to exit the tool. The tool should also be cleaned periodically by your maintenance department.

### Problem 4 - Dispenser sensor error

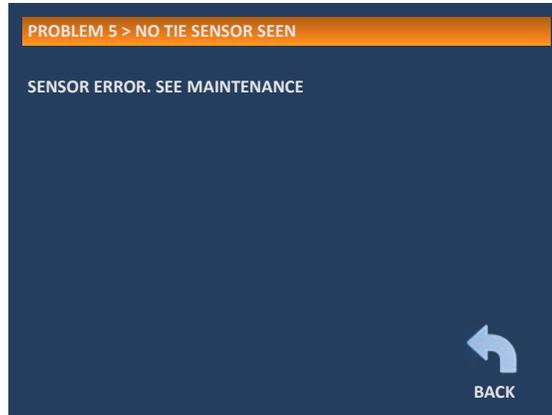


**POSSIBLE CAUSE:** A buildup of debris in the dispenser rotary caused by not cleaning the dispenser sensor often enough.

**CORRECTIVE ACTION:** Press the "**Back**" icon continue and resume operation. If the dispenser does not operate contact maintenance.

**PREVENTION:** The dispenser must be cleaned periodically by your maintenance department.

**Problem 5 – Tie sensor error**



**POSSIBLE CAUSE:** A buildup of debris in the dispenser rotary caused by not cleaning the tie sensor often enough.

**CORRECTIVE ACTION:** Press the “**Back**” icon continue and resume operation. If the dispenser does not operate contact maintenance.

**PREVENTION:** The dispenser must be cleaned periodically by your maintenance department.

**9D: Status Messages**

Status messages are displayed as the dispenser performs self-diagnoses. No action is required on the part of the operator other than notifying the maintenance department of the status message.

**STATUS 1 - Calibrate line pressure sensor**

**STATUS 2 - Calibrate back pressure sensor**

**STATUS 3 - Reset EEPROM**

**STATUS 4 - Reset dispenser RAM**

**STATUS 5 - Reset tool RAM**

## 10: MAINTENANCE

### 10A: Daily Preventive Maintenance

The following maintenance of the PAT1M4.0/PAT1.5M4.0 Systems must be performed daily (as needed) to ensure optimum performance and trouble-free operation of the system.

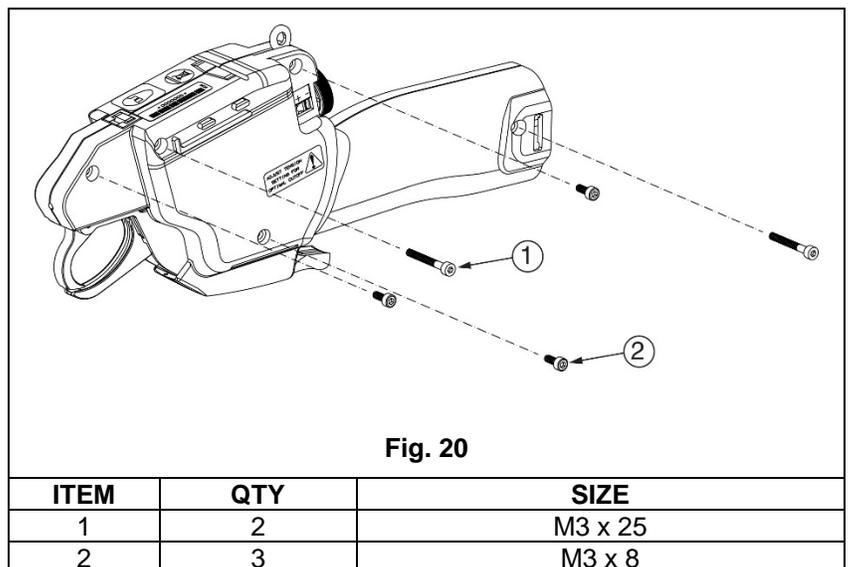
INTERVAL	MAINTENANCE PROCEDURE
No more than 300 cycles	Empty tool tip collector <b>before full</b> . (Refer to the <i>Tip Collector</i> section on Page 22.)
No more than 2500 cycles (= ½ cable tie reel)	Empty dispenser carrier strip scrap bin. (Refer to the <i>Reloading Procedure</i> section on Page 19.)

### 10B: Extended Maintenance

	CAUTION: SAFETY GLASSES WITH SIDE SHIELDS MUST BE WORN AT ALL TIMES DURING THE MAINTENANCE OR ADJUSTMENT OF THE PAT1M4.0 / PAT1.5M4.0 TOOLS.
	CAUTION: ALWAYS DISCONNECT AIR SUPPLY FROM TOOL <b>BEFORE</b> DISASSEMBLY.
	CAUTION: ELECTROSTATIC SENSITIVE DEVICE. DO NOT OPEN OR HANDLE EXCEPT AT A STATIC FREE WORK STATION.

The following maintenance of the PAT1M4.0/PAT1.5M4.0 Systems must be completed within the recommended intervals to ensure trouble-free operation and longevity of the system. Certain extended maintenance procedures must be performed by your maintenance department. Please notify your maintenance department when these specific maintenance intervals are reached.

1. Disconnect the PHM Feeder Hose from the PAT1M4.0 or PAT1.5M4.0 Tool. Remove the tip collector from the tool.
2. Place the tool on a table top with the jaws to the left. Using a 2.5 mm hex wrench, remove the five (5) socket head cap screws from the left hand housing. Make note of the correct locations for each of the screws using Fig. 20.
3. Perform the following maintenance procedures shown below at the prescribed interval:



INTERVAL	MAINTENANCE PROCEDURE (See Figure 8 below)	LUBRICANT
Every 100,000 cycles	Clean tool housings and gears of debris (not shown). (Maintenance department must perform this procedure.)	N/A
	1. Lubricate detent cam follower. (Maintenance department must perform this procedure.)	General Purpose Light Machine Oil
	2. Clean and lubricate all pivots and shafts. (Maintenance department must perform this procedure.)	
	3. Oil shaft (1 drop) on each side of Gripper Drive Gear. (Maintenance department must perform this procedure.)	
	4. Clean and re-grease the Cam on the Front Jaw Gear. (Maintenance department must perform this procedure.)	Schaeffer's Moly Ultra 800 EP
Every 200,000 cycles	Replace PHM Hose (not shown).	N/A

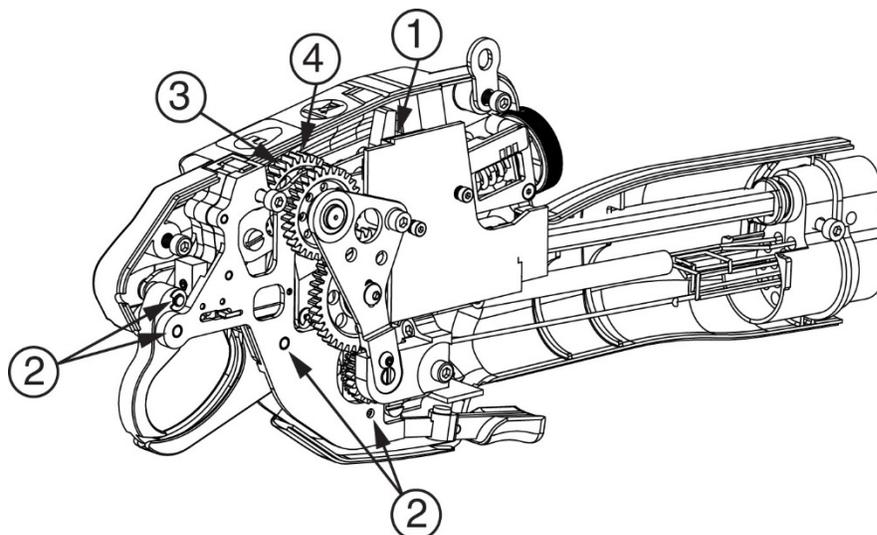


Fig. 21

- Replace the left hand housing in position and fasten the left hand housing to the tool using the 5 socket head cap screws removed in Step 2 (see Fig. 20). Use a 2.5 mm hex wrench to torque the cap screws to 60 oz - in (0,42 Nm).
- Replace tip collector and attach PHM Feeder Hose as required to resume operation.

The following maintenance procedures may be required every 500,000 cycles or more. Contact your maintenance department as required to perform the following procedures at the prescribed intervals.

INTERVAL	UNIT	MAINTENANCE PROCEDURE
Every 500 000 cycles (=100 cable tie reels)	PAT1M4.0 PAT1.5M4.0	Clean tool sensor lens. (Maintenance department must perform this procedure.)
	PDM4.0	Clean dispenser, tie and exit sensor, lens. (Refer to <i>Cleaning the Dispenser Exit Sensor Lens</i> section below.)
Every 750,000 cycles (=150 cable tie reels)	PAT1M4.0 PAT1.5M4.0	Replace tool transfer tube, if worn. (Maintenance department must perform this procedure.)
Every 1,000,000 cycles (=200 cable tie reels)	PDM4.0	Clean and re-grease piston and O-rings in connection block. (Maintenance department must perform this procedure.)

### **10C: Cleaning the Dispenser Tie and Exit Sensor Lens**

Disconnect the PHM Feeder Hose from the PDM Dispenser. Dampen one end of a cotton swab with isopropyl alcohol and insert the dampened end of the cotton swab into the dispenser transfer tube about 1.5" (38 mm) and gently move the cotton swab in and out, against the top and bottom walls of the transfer tube until clean. Reconnect the feeder hose to the dispenser and resume operation.

Disconnect power to the PDM4.0 Dispenser. Disconnect the PHM Feeder Hose from the PDM4.0 Dispenser. Use air to blow out the internal debris from the bottom port underneath the dispenser. This will clear the tie sensor located on the rear plate assembly.

### **10D: Touch Screen Calibration**

Touch screen calibration may be required due to changes in environment conditions and variations in resistance coating over time thru wear. Environmental conditions such as temperature and humidity can alter the resistance characteristics therefore, affecting the position measurements of the touch screen.

Tap the touchscreen display 20 times within 4 seconds in a non- button area to activate calibration mode. Calibration mode is signaled by a long beep from the display buzzer preceding a solid blue screen. Click "X" positions on the touch screen to calibrate. When the calibration is complete, the system will return to the "Ready" screen.



## 12: TROUBLESHOOTING

### 12A: Error Message Troubleshooting

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
ERROR 01 Out of ties or tie in dispenser	A. Reel empty; dispenser has run out of cable ties.  B. Reel not empty; tool cycled without enough cable ties loaded, or cable tie prevented from leaving dispenser.	A. 1. Press "Silence" icon to silence the alarm. 2. Perform the standard reloading procedure.  B. 1. Press "Silence" icon to silence the alarm. 2. Disconnect air hose and feeder hose from dispenser. 3. Remove cable tie from connector block, if present. If not, notify your maintenance department. 4. After cable tie is removed, reconnect air hose and feeder hose to dispenser. 5. Press "Load" icon to load cable ties and resume operation.
ERROR 02 Door is open, no tie loaded	A. Door was open when "Load" icon was pressed.  B. Cover was open when tool was cycled.	A. 1. Press "Silence" icon to silence the alarm. 2. Close the door. 3. Resume loading procedure. B. 1. Press "Silence" icon to silence the alarm. 2. Close the door. 3. Press "Load" icon to load cable ties and resume operation.
ERROR 03 Check for low air pressure	A. Incoming air pressure is too low or not connected.  B. Air is not connected to dispenser.	A. 1. Press "Silence" icon to silence the alarm. 2. Set air pressure between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop. B. Connect air to dispenser.
ERROR 04 Check for high air pressure	Incoming air pressure is too high.	1. Press "Silence" icon to silence the alarm. 2. Set air pressure between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.
ERROR 05 Dispenser jam - check tie loading	Dispenser rotary receiver did not advance (rotate) to the next position due to bowed or misaligned cable ties feeding into the rotary receiver, or due to a backed-up cable tie carrier strip in the carrier strip exit chute.	1. Check and clear the scrap chute of all carrier strip debris. Using a light, look down the chute and verify that the chopper blade is up. If the blade is down, press Maintenance> Settings and press Chopper icon twice. 2. Disconnect the hose from the front of the dispenser and check the dispenser launch tube for loose cable ties. Open the cover to the dispenser, use a flash light above the rotary receiver to illuminate the launch tube. Verify that there are no cable ties stuck in the tube. If there are cable ties stuck in the launch tube, send the dispenser to maintenance for repair. 3. Check the loading area of the rotary receiver for any obstructions or pinched cable ties. Clear the parts that are interfering. 4. If there are no obstructions in these areas, go to Settings > Maintenance and press the "Unload" icon four times. Gently pull on the remaining carrier strip to remove the reel going into the dispenser. Continue to press the "Unload" button until all cable ties have fallen out the bottom of the dispenser. If the jam persists when trying to remove the cable ties, remove the rear motor cover and use the wrench flats on the extended shaft to help remove the ties.  Cut the excess carrier strip and any distorted or damaged cable ties from the cable tie strip. Perform the normal loading procedure.

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
ERROR 06 Tie in tool	Cable tie reaches the tool but is prevented from completing the cycle due to a large air pressure drop, too large of a bundle, improper feeder hose connections, an obstruction blocking the cable tie path, a severe bend or twist in the feeder hose, or the tool jaws are opened during the cycle.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Remove cable tie and any obstruction from the jaw area.</li> <li>3. Press the "Back" icon to resume operation.</li> <li>4. Correct any conditions that prevent the cable tie cycle from being completed.</li> </ol>

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
ERROR 07 Tie in hose - press air burst	Cable tie is caught or remains in feeder hose upon actuation due to a severe bend or twist in the feeder hose, low air pressure, or an interrupted cycle.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Straighten feeder hose to eliminate any bends or twists, and point tool away from yourself and others.</li> <li>3. Press "Air burst" icon to dislodge and advance cable tie to jaw area of tool. Press several times, if necessary. When cable tie is advanced to jaw area, "Tie in tool" message will appear and buzzer will sound.</li> <li>4. Press "Silence" icon to silence the alarm.</li> <li>5. Remove cable tie from jaw area and press the "Back" icon.</li> <li>6. Press "Load" icon to load one (1) cable tie and resume operation.</li> <li>7. If the cable tie does not advance to the tool jaw area after depressing the "Air Burst" icon several times, replace the feeder hose with another and notify your maintenance department.</li> </ol>
ERROR 08 Blocked hose - failed back pressure test	Tool was actuated while a cable tie was still in the feeder hose.	Follow corrective action for "Tie in hose - press air burst" error above.
ERROR 09 Blocked or dirty exit sensor	Exit (optical) sensor in the dispenser is obstructed due to a cable tie or excess debris (dirt, grime).	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Disconnect feeder hose from dispenser. Look for cable tie in dispenser connector block and remove cable tie, if present.* Reconnect feeder hose, and resume operation. If cable tie is not found, reconnect feeder hose. Follow the same Corrective Action for "Tie in hose - press air burst" error to remove the cable tie from the system.</li> <li>3. If the same error is repeated, clean the dispenser exit sensor lens (Refer to the <i>Cleaning the Dispenser Exit Sensor Lens</i> section on Page 53).</li> </ol>
ERROR 10 Blocked or dirty tool sensor	Tool (optical) sensor is obstructed due to a cable tie or excess debris (dirt, grime).	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Disconnect feeder hose from tool. Look for cable tie in tool or tool end of hose and remove cable tie, if present. Reconnect feeder hose, and resume operation. If cable tie is not found, reconnect feeder hose. Follow the same Corrective Action for "Tie in hose - press air burst" error to remove the cable tie from the system.</li> <li>3. If the same error is repeated, the tool sensor lens may require cleaning. Contact your maintenance department to have the tool sensor lens cleaned.</li> </ol>
ERROR 11 Tie stuck in exit sensor obstructed	The dispenser exit sensor in is blocked so that a cable tie cannot exit the dispenser. It may be blocked by another cable tie that was not removed from an earlier cycle.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Disconnect air hose and feeder hose from dispenser. Look for cable tie in dispenser connector block and remove cable tie, if present.* Reconnect air hose and feeder hose, and resume operation. If cable tie is not found, reconnect air hose and feeder hose. Follow the same Corrective Action for "Tie in hose -press air burst" error to remove the cable tie from the system.</li> <li>3. If the same error is repeated, clean the dispenser exit sensor lens (Refer to the <i>Cleaning the Dispenser Exit Sensor Lens</i> section on Page 53).</li> </ol>

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
ERROR 12 Tie stuck in tool sensor	Cable tie has stopped in the tool sensor area of tool.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Follow corrective action for "Blocked or dirty tool sensor" error above.</li> </ol>
ERROR 13 Detent sensor blocked or dirty	Tip collector full. Detent sensor blocked by detent cam, foreign object, or detent sensor lens is dirty.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Remove cable tie from jaw area of tool.</li> <li>3. Press the "Back" icon and resume operation.</li> <li>4. If message reappears, notify maintenance department.</li> </ol>
ERROR 14 Internal regulator incorrectly set, low	Internal regulator was adjusted incorrectly, or the piston is not fully shifting.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm and resume operation.</li> <li>2. If message remains, system will not operate. Write down message and notify maintenance department.</li> </ol>
ERROR 15 Internal regulator incorrectly set, high	Internal regulator was adjusted incorrectly.	
ERROR 16 Tie stuck in gripper	Excessive humidity or dry ties with high tool tension	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Lower the tension setting on the tool.</li> <li>3. Pull trigger to complete cycle</li> <li>4. Reset tension</li> </ol>
ERROR 17 Full tip collector	Tip collector counter has reached maximum number of tips	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to silence the alarm.</li> <li>2. Remove tip collector and empty.</li> <li>3. Re- attach the tip collector</li> <li>4. Press "Back" to reset the internal counter</li> </ol>

\*If the cable tie does not come out freely, turn the dispenser "off" and then "on" again to reset the rotary receiver's position.

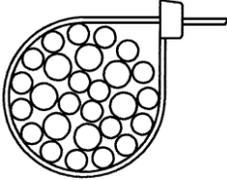
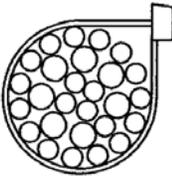
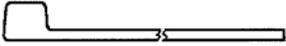
## 12B: Functional Message Troubleshooting

MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
No exit sensor seen - service tool soon	Cable tie in feeder hose when tool was actuated or dispenser exit sensor is not functioning properly.	<ol style="list-style-type: none"> <li>1. Resume operation.</li> <li>2. If the same error is repeated, the exit sensor lens may be dirty, or it may not be functioning properly.</li> <li>3. Clean the exit sensor lens (Refer to the <i>Cleaning the Dispenser Exit Sensor Lens</i> section on Page 53).</li> <li>4. If the same error is repeated, notify your maintenance department.</li> </ol>
Trigger Malfunction	The trigger was held down or was stuck when the dispenser was turned "on". This message will remain if the trigger switch has malfunctioned.	<ol style="list-style-type: none"> <li>1. The message will disappear when the trigger has been freed or released.</li> <li>2. If the message does not disappear, then the trigger is bad. Contact your maintenance department to have the trigger switch replaced.</li> </ol>
Jaw sensor error	Cable tie stopped in tool gears.	<ol style="list-style-type: none"> <li>1. Press "Silence" icon to turn buzzer "off".</li> <li>2. Remove the cable tie from the jaw area.</li> <li>3. Press the "Continue" icon and resume operation.</li> </ol>
Dispenser Sensor	Sensor is not functioning correctly.	<ol style="list-style-type: none"> <li>1. Press the "Back" icon and resume operation.</li> <li>2. If the same error is repeated, notify your maintenance department.</li> </ol>
Tie Sensor	See Page 50.	See Page 50

**12C: Cable Tie Installation Troubleshooting**

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Cable tie too loose on bundle.	<ul style="list-style-type: none"> <li>A. Tool tension setting is too low.</li> <li>B. Operator holding tool at angle to bundle.</li> <li>C. Bundle exceeds .82" (21 mm) / 1.31" (33 mm) in diameter.</li> <li>D. Tool is held away from bundle by previously installed tie, harness support, or other object on bundle.</li> <li>E. Tool is pulled on as the tie is being tensioned.</li> </ul>	<ul style="list-style-type: none"> <li>A. Increase tool tension setting.</li> <li>B. Hold tool perpendicular to bundle in both directions.</li> <li>C. Dress the wires to result in a more compact bundle for the specific tool being used.</li> <li>D. Do not install cable ties too close to other cable ties, harness supports or other objects on bundle.</li> <li>E. Allow tool to seek its own position as the tie is being tensioned.</li> </ul>
Cable tie too tight on bundle.	Tool tension setting is too high.	Decrease tool tension setting.
Cable tie not cut off flush to head.	<ul style="list-style-type: none"> <li>A. Tool tension setting too high for humidity conditions.</li> <li>B. Operator holding tool at angle to bundle.</li> <li>C. Tool is pulled on as the tie is being tensioned.</li> <li>D. Tool is held away from bundle by previously installed tie, harness support or other object on bundle.</li> </ul>	<ul style="list-style-type: none"> <li>A. Decrease tool tension setting.</li> <li>B. Hold tool perpendicular to bundle in both directions.</li> <li>C. Allow tool to seek its own position as the tie is being tensioned.</li> <li>D. Do not install cable ties too close to other cable ties, harness supports or other objects on bundle.</li> </ul>
Cable tie does not stay on bundle.	<ul style="list-style-type: none"> <li>A. Bundle exceeds .82" (21 mm) / 1.31" (33 mm) in diameter.</li> <li>B. Cable ties are too dry and brittle.</li> <li>C. Tool tension setting is too high.</li> <li>D. Incoming air pressure is too high.</li> </ul>	<ul style="list-style-type: none"> <li>A. Dress the wires to result in a more compact bundle for the specific tool being used.</li> <li>B. Store cable ties properly and use before expiration date.</li> <li>C. Decrease tool tension setting.</li> <li>D. Set air pressure between 65 and 85 PSIG (4,5 and 5,8 bar), with a maximum 10 PSI (0,7 bar) drop.</li> </ul>
Misfeed; cable tie cycle was not completed	<ul style="list-style-type: none"> <li>A. Cable tie path was blocked; bundle against jaw tie track.</li> <li>B. Air pressure is not set correctly.</li> </ul>	<ul style="list-style-type: none"> <li>A. DO NOT place bundle forcefully against jaw tie track.</li> <li>B. Verify that air pressure is at 65 PSIG (4,5 bar) (minimum). Air pressure can be increased by 5 PSI (0,35 bar) increments until cable ties feed properly. Do not exceed 85 PSIG (5,8 bar) (maximum).</li> </ul>

### 13: CABLE TIE CONDITION FACTORS

13A: Cable Tie Condition Factors		
		
<p><b>INCORRECT CABLE TIE CUT-OFF</b> (Long cut-off / tail)</p>	<p><b>CORRECT CABLE TIE CUT-OFF</b></p>	<p><b>CABLE TIE DETACHES FROM BUNDLE</b></p>
<ul style="list-style-type: none"> <li>• <b>Cable ties are too moist (due to high humidity)</b></li> <li>- Turn down tension until correct cut-off occurs.</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Cable ties are too brittle (due to dry conditions)</b></li> <li>- Take new reel of ties out of original bag.</li> <li>- Place new ties on PDM4.0.</li> <li>- Place used reel in bag with damp paper towel or sponge to recondition.</li> </ul>

### 14: WEB Browser Interface

#### 14A: REQUIREMENTS

The PAT SYSTEM web server has been tested with Microsoft Internet Explorer 11 running on Windows 7 operating system. Other web browsers and operating systems may work as well, but proper operation is not guaranteed. The appearance of the WBI can be adjusted through the web browser settings.

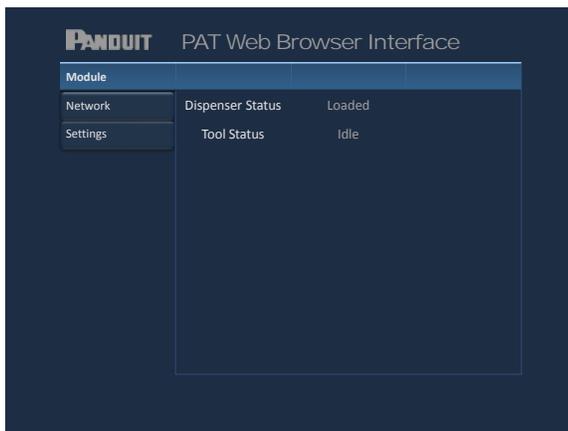
#### 14B: STATUS VIA PC

Status information for the PAT SYSTEM may be accessed by running a web browser on a PC that is connected to the same network to which the PAT SYSTEM is connected. The Network is accessed via the Ethernet port located on the back of the dispenser. The connection is a standard RJ-45 type receptacle. This port should be connected to a router running a DHCP server. The PAT SYSTEM will be assigned an IP address by the DHCP server running on the network. The network can be configured to assign either a static or dynamic IP address to the PAT SYSTEM. Consult with the network administrator as to how to determine the assigned IP address.

#### 14C: CONNECTING TO THE PAT SYSTEM

Within the web browser address bar type "<http://nnn.nnn.nnn.nnn>" where nnn.nnn.nnn.nnn is the IP address assigned to the PAT SYSTEM unit by the network.

## 14D: MODULE STATUS



**NOTE:** No username and password authentication is required to view the Module page.

The Module Status indicates the general state of the PAT SYSTEM. A table of Module Status states is below. Minor Faults may be corrected by a Reset. Major faults may be corrected by using the Restore Factory Defaults. If normal operation does not follow after a “Restore”, see Page 64; please contact Panduit for technical support or service.

Tool Status	Description
Disconnected	Tool is not connected to the dispenser
Running	Tool is operating correctly
Idle	Waiting
Error	Tool has a fault
Dispenser Status	Description
Running	Dispenser is operating correctly
Error	Dispenser has a fault

## 15: NETWORK

### 15A: USERNAME AND PASSWORD



When first accessing the Network and Setting pages on the PAT SYSTEM; or after approximately 30 minutes of inactivity, entry of a Username and Password is required. The default Username is "Panduit PAT" and the default Password is "password".

**15B: NETWORK STATUS**



See *Username and Password* on Page 60 for username and password authentication.

The Network Status indicates the state of the Ethernet/IP connection. A table of Network Status states is below.

Summary	Requirement
No Power, No IP address	The device is powered off, or is powered on but with no IP address configured (Interface Configuration attribute of the TCP/IP Interface Object).
No Connections	An IP address is configured, but no CIP connections are established, and an Exclusive Owner Connection has not timed out.
Standby	At least one CIP connection (any transport class) is established, and an Exclusive Owner Connection has not timed out.
Connection Timeout	An Exclusive Owner Connection for which this device is the target has timed out, the network status indicator shall return to steady green only when all timed out Exclusive Owner connections are reestablished.  Devices that support a single Exclusive Owner Connection shall transition to steady green when subsequent Exclusive Owner Connections are established  Timeout of connections other than Exclusive Owner Connections shall not cause the indicator to flash red.  The Flashing Red state applies to target connections only. Originators and CIP Routers shall not enter this state when an originated or routed CIP connection times out.
Duplicate IP	For devices that support duplicate IP address detection, the device has detected that (at least one of) its IP addresses are already in use.
Self-Test	The device is performing its power-on self-test (POST); During POST the network status indicator shall alternate flashing green and red.

### 15C: DEVICE NAME

The Device Name parameter is used as the text in the Web Interface window. In addition to providing a convenient way to identify one device (e.g. “Plant 1 Line G”), having different Device Names allows multiple PAT SYSTEM windows to be displayed, each with a unique name in the Title Bar, allowing one screen to view multiple devices on a network. The Device Name can be edited by clicking on the “Change” button immediately to the right. The Device Name can be restored to the factory default value as described in *Restore* section on Page 64.

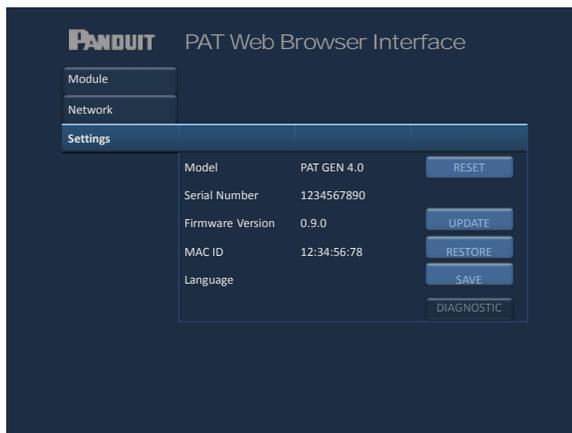
### 15D: NETWORK SETTINGS

The Network Settings shows the current method the PAT SYSTEM uses to obtain an IP Address on the network, the current IP Address, the Network Mask and Gateway address values. In the default DHCP setting, the PAT SYSTEM will connect to the network and look for a DHCP server to issue an IP Address. The IP Address Mode can be changed to Static by clicking on the “Change” button immediately to the right.



When the IP Address Mode is changed, an IP Address, an optional Network Subnet Mask and optional Gateway address can also be entered. The IP Address Mode can be restored to the factory default value as described in *Restore* section on Page 64.

### 16: SETTINGS



See *Username and Password* on Page 60 for username and password authentication.

### 16A: MODEL

The Model displays the Model Number of this PAT SYSTEM (PATGEN4.0).

## 16B: RESET

The Reset button can be used to restart the PAT SYSTEM in the event of a Minor or Major Fault, or after a change to Network Settings, or performing a Restore Factory Defaults or Firmware Update.



## 16C: SERIAL NUMBER

The Serial Number displays the Serial Number of this PAT SYSTEM device, which is also printed onto a label on the side of the unit.

## 16D: FIRMWARE VERSION

The firmware version is displayed. To check for firmware updates, please visit [www.panduit.com](http://www.panduit.com) and click on the below steps to link to the latest Firmware Update page: **NOTE: The tool MUST be connected to the dispenser before attempting to update the firmware.**

1. Support
2. Download Center (Automatic Tools)
3. Download Firmware Upgrade (.bin)

Or navigate using hyperlink:

<https://www.panduit.com/en/support/download-center/automatic-tools.html>

The "image.bin" firmware file should be downloaded and placed on an accessible drive.

After the "image.bin" firmware file is located, and the UPDATE button is clicked, the PAT SYSTEM will import and update its software using the new "image.bin" firmware. After performing the firmware update, the PDM4.0 dispenser will restart with new firmware version.

## 16E: UPDATE

Clicking on the OPEN button will prompt the user to locate the "image.bin" firmware file for uploading, as shown below.



### 16F: MAC ID

The MAC ID (Ethernet adapter device identifier) is displayed. The MAC ID is also printed on a label affixed to the side of the PAT SYSTEM.

### 16G: RESTORE

Clicking on the Restore button will prompt the user to confirm before setting parameters back to their factory default values. After a restore to factory defaults, the user should perform a *Reset* (Page 63).



### 16H: LANGUAGE

The current Language for the WBI is displayed. Clicking on the arrow displays a menu of available Languages. Clicking on a different language followed by clicking on the SAVE button immediately to the right will change the Language setting. After changing the Language, the user should perform a *Reset* (Page 63) for the new Language to take effect.

