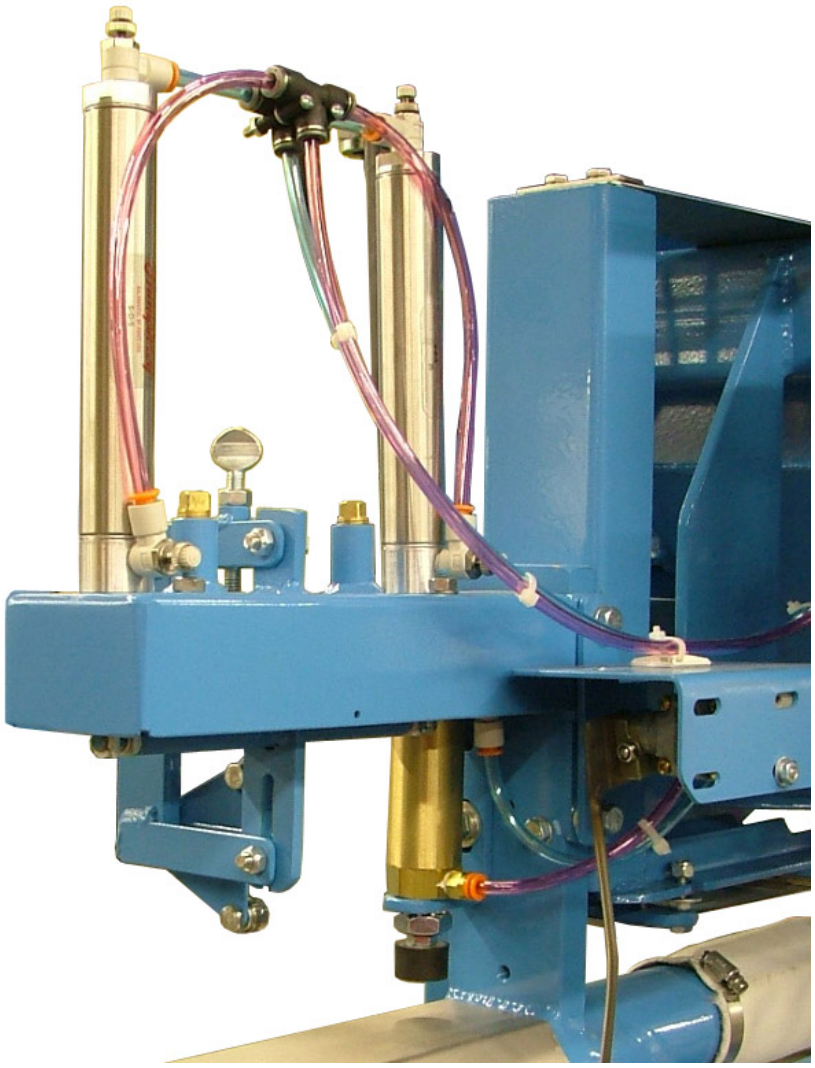
MAGNUM SYSTEMS

Self-Inking Spout Printer



Operation and Maintenance Manual

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Machine Serial Number: _____

Sales Order Number: _____

Important Information

Conventions

Safety Alert Symbols

The ⚠ symbol indicates that important personal safety information follows. Carefully read this text for the warnings information it contains. The signal word next to each safety alert symbol is defined as:

	***WARNING***	*Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.*
	**CAUTION**	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or damage to the equipment. This single word may also be used to identify unsafe practices.
	**LOCKOUT**	This symbol will be used anytime that a procedure requires an electrical lockout.

Static Sensitive Symbols for Equipment Handling Instructions

The  and  symbols indicate important handling guidelines for proper handling of electronic equipment modules and sensitive components for the prevention of potential damage that could be caused by ESD (electrostatic discharge) during routine maintenance, handling and transportation.

	**ESD NOTICE**	To protect against ESD damage to electronic equipment, follow the Standard ESD Prevention Procedures. Failure to use protective measures could result in permanent equipment damage, either immediate or latent, when handling modules.
	**ESD NOTICE**	To protect against ESD damage to electronic equipment containing components, follow the Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components.

Standard Electro-static Discharge (ESD) Prevention Procedures
The Self-Inking Spout Printer utilizes some electronic components that are susceptible to damage from Electro-static Discharge. Anytime electronic components are serviced, the following precautions should be followed:

1. Wear a commercial grounding wrist strap.
2. Remove power from the machine.
3. Leave all static sensitive components in their protective packaging until it is time to install the component
4. Always hold static sensitive components by their metal mounting tabs, and/or by their edges

Important/Notable Information
While all of the information in this manual is important, there are some pieces of information where special attention needs to be paid to avoid equipment damage, or specific information needs to be emphasized. This information will be handled as follows:

> ***Important:*** *Indicates an operating procedure, practice, or condition that, if not strictly followed, may cause equipment damage.*
>
> ***Note:*** *Indicates additional information or emphasizes a topic related to the subject being discussed.*

Personal Safety Instructions
Only qualified personnel should work on or around this equipment. To ensure the highest degree of personal safety, all who use this equipment are required to become thoroughly familiar with all safety instructions contained in this document. Successful and safe operation of this equipment depends upon proper handling, operation, maintenance, and application of associated equipment. Refer to Appendix A of this manual for all safety instructions. Safety instructions are also provided where they apply within the body of this manual.

WARNING

No information in this manual supersedes or replaces your employer's operating rules. If there is a difference in instructions between this manual and the employer's operating rules, follow the most restrictive instruction.

Deliberate misuse or abuse of electronic components may cause personal injury or death.

Warranty Information
Seller warrants that the Products will operate substantially in conformance with Seller's published specifications, when subjected to normal, proper and intended usage by properly trained personnel, for a period of one (1) year from the date of shipment to Buyer (the "Warranty Period"). Seller agrees during the Warranty Period, provided it is promptly notified in writing upon the discovery of any defect and further provided that all costs of returning the defective Products to Seller are pre-paid by Buyer, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said specifications. Replacement parts may be new or refurbished, at the election of Seller. All replaced parts shall become the property of Seller. Replacement Parts will be billed at list price, unless they are approved as warranty replacement item(s) by the service technician and the technical services manager.

Lamps, fuses, bulbs and other expendable items are expressly excluded from the warranty. Seller's sole liability with respect to equipment, materials, parts or software furnished to Seller by third party suppliers shall be limited to the assignment by Seller to Buyer of any such third party supplier's warranty, to the extent the same is assignable. In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage of the Products or (vii) use of the Products in combination with equipment or software not supplied by Seller. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by the warranty, the Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

Field Service
Magnum Systems can provide field service for start-up assistance, training, maintenance, and replacement/spare parts for new and existing equipment. Contact Magnum Systems at (888) 882-9567.

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Self-Inking Spout Printer

Table of Contents

List of Figures

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List of Tables

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Chapter 1
Product Description

1.1 General Description
This chapter will provide a high-level product description of the self-inking spout printer.

1.2 Introduction
The Magnum Systems self-inking spout printer has been designed to stamp product information on the top panel of a valve bag, while the bag is on the spout.

1.3 Manual Scope
This manual will provide information on the components that make up the spout printer, operation, preventive maintenance, troubleshooting, and repair.

The appendices will include safety information, spare parts list, mechanical and electrical drawings, and information regarding any custom features.

1.4 Major Systems and Components
The spout printer is available as an option on Magnum Systems packaging machines that utilize a valve bag spout. The spout printer is used to print information on the top panel of each valve bag.

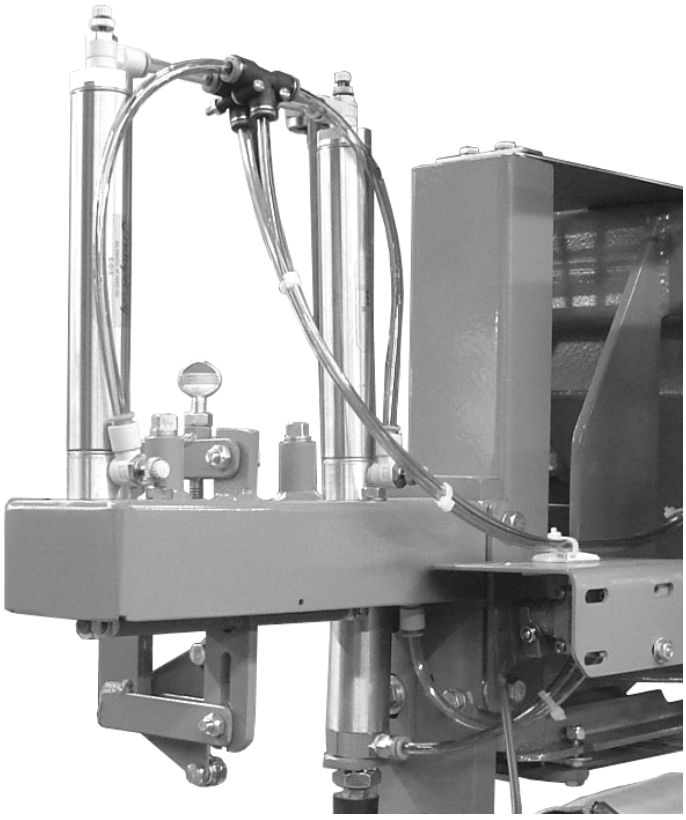
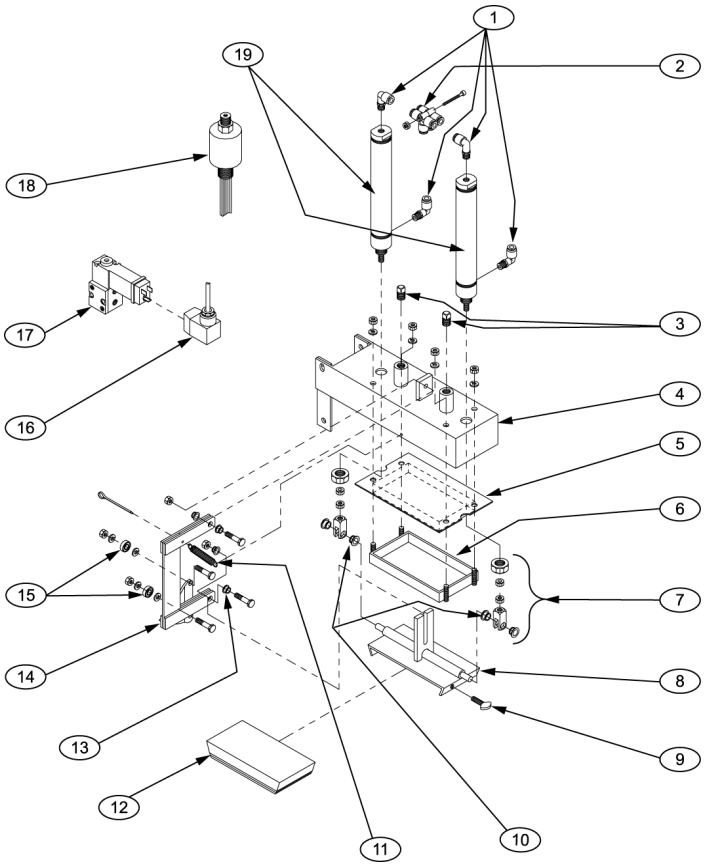


Figure 1-1. Spout Printer

General Description

The spout printer is comprised of the following components:

- Printer hood
- Print block
- Print block holder
- Flip-over arm
- Inkpad
- Pneumatic cylinders
- MAC valve
- Timer
- Air/Electric switch
- Quick connect fittings and tees
- Air lines

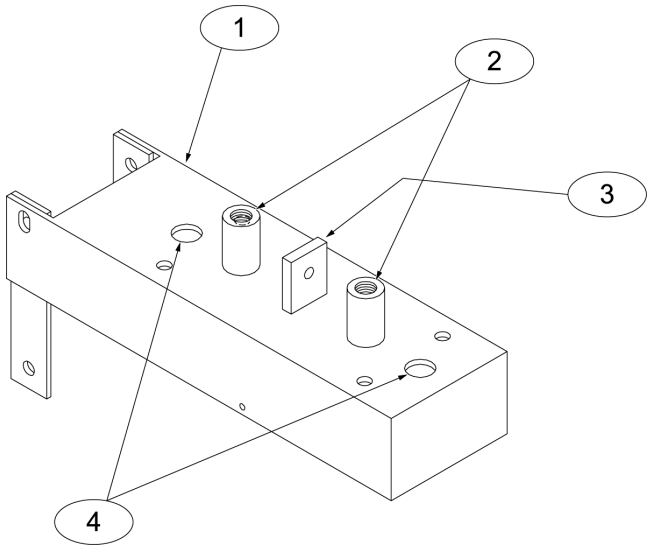


Item #	Description	Item #	Description
1	Pneumatic quick connect fittings	11	Flip-over arm return spring
2	Pneumatic tee fittings	12	Print block
3	Ink reservoir plugs	13	Flip-over arm pivot bushing
4	Printer hood	14	Flip-over arm
5	Ink pad	15	Bearings
6	Ink pad retainer	16	Timer
7	Clevis, adj./jam & cylinder mounting nuts	17	MAC valve
8	Print block holder	18	Air/Electric switch
9	Print block locking screw	19	Pneumatic cylinders
10	Print block holder shaft bushings		

Figure 1-2. Spout Printer, Exploded View

1.6.1 Printer Hood

The printer hood is the constructed from metal, and is the foundation for the other components that make up the spout printer. The printer hood mounts directly to the spout. The printer hood has two holes in the top that are used for mounting the two pneumatic cylinders. Just inside the two mounting points for the pneumatic cylinders are two access ports for the ink reservoir. Just inside the two reservoir ports is the mounting tab for the flip-over arm.

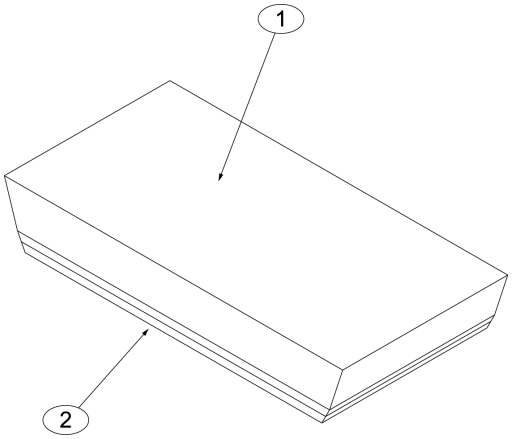


Item #	Description	Item #	Description
1	Printer hood	3	Pivot arm mounting tab
2	Ink reservoir ports	4	Pneumatic cylinder mounting holes

Figure 1-3. Printer Hood

1.6.2 Print Block

The print block is a wood block that has a ribbed rubber mat that is attached to the bottom face. The ribbed rubber mat is used to hold the rubber letters that are used to stamp information on the packages. Each end of the block has been cut at an angle so the block will fit in the print block holder.



Item #	Description	Item #	Description
1	Printer block	2	Printer mat

Figure 1-4. Print Block

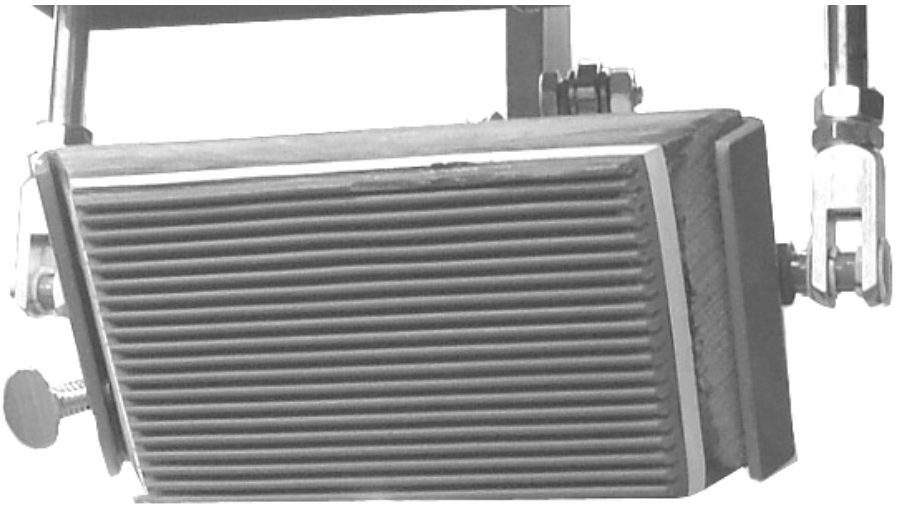
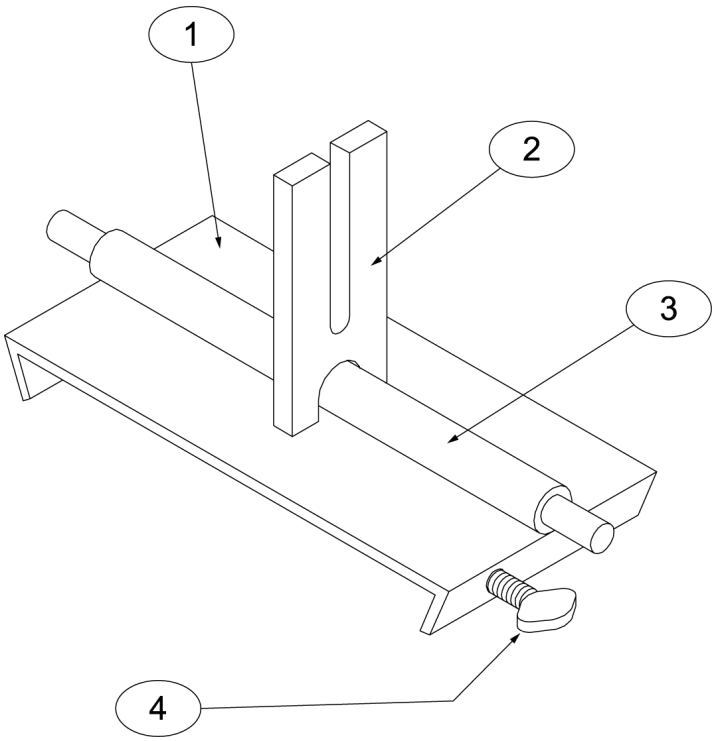


Figure 1-5. Printer Mat

1.6.3 Print Block Holder

The print block holder is constructed of metal. It consists of several components that are welded together to form one unit. The base of the unit is a flat metal plate that has been bent over on each end to create two retaining tabs.



Item #	Description	Item #	Description
1	Print block holder	3	Pivot shaft
2	Depth adjustment tab	4	Print block retaining thumbscrew

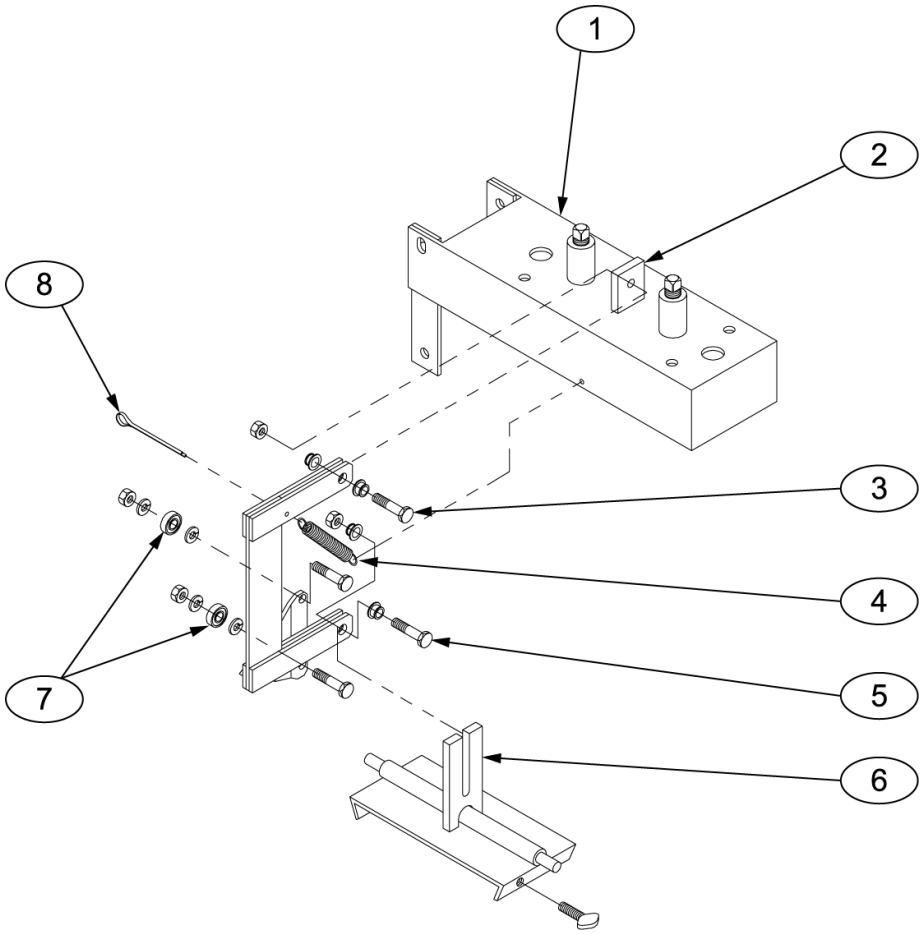
Figure 1-6. Print Block Holder

There is a pivot shaft that runs lengthwise across the top of the print block holder. Each end of the shaft is where the pneumatic cylinders are attached to the print block holder.

1.6.4 Flip-Over Arm

The spout printer uses a flip arm to allow the printer block to rotate 180° when extended. When retracted, the rubber mat side of the printer block will face up. This positions the letters against the inkpad. When the extended, the rubber mat side of the printer block will face down.

One end of the flip-over arm is bolted directly to the printer hood. The other end of the flip-over arm is connected to the adjustment tab on the print block holder.

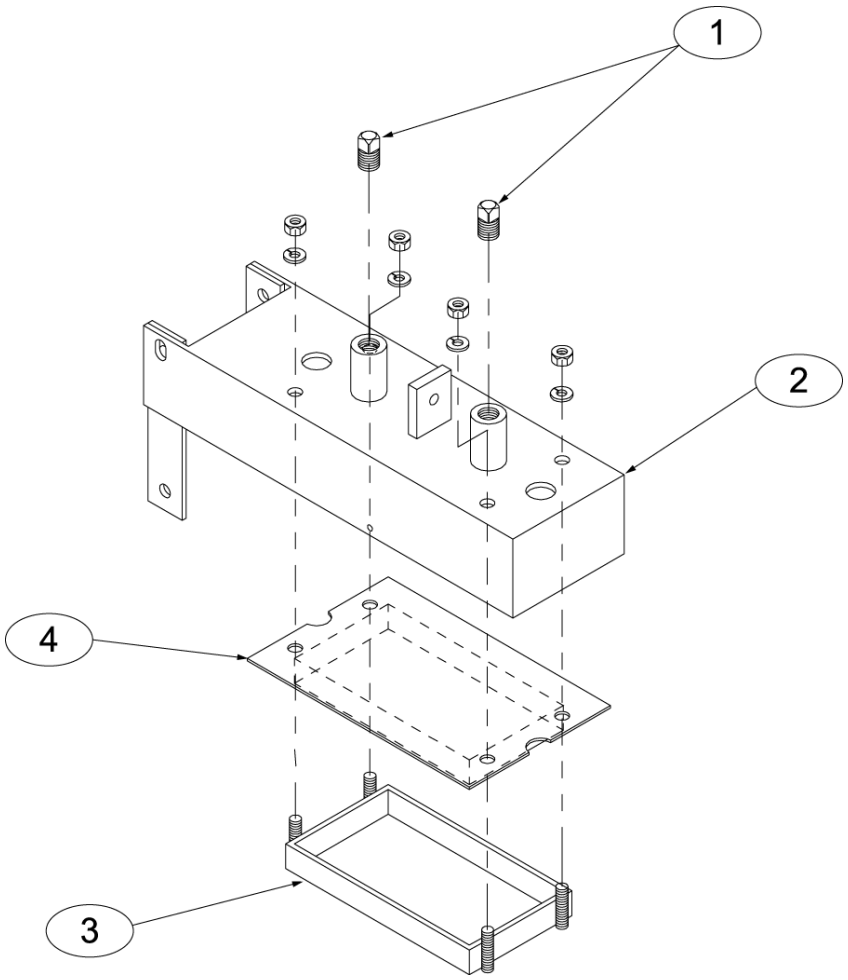


Item #	Description	Item #	Description
1	Printer hood	5	Flip over arm adjustment bolt
2	Flip over arm mounting tab	6	Flip over arm adjustment tab
3	Flip over arm pivot bolt	7	Flip over arm pivot bushings
4	Flip over arm return spring	8	Cotter pin

Figure 1-7. Flip-Over Arm And Related Components

1.6.5 Inkpad

The spout printer uses an inkpad to apply ink to the letters in the printer prior to each print cycle. The inkpad is mounted inside the printer hood. The inkpad is held in place by the inkpad retainer. It is connected to the printer hood using four nuts, one on each corner of the retainer. On the top of the printer hood, are two ports that provide the operator with access for adding ink to the inkpad. Each port has a threaded plug to seal the ports when the printer is in use.

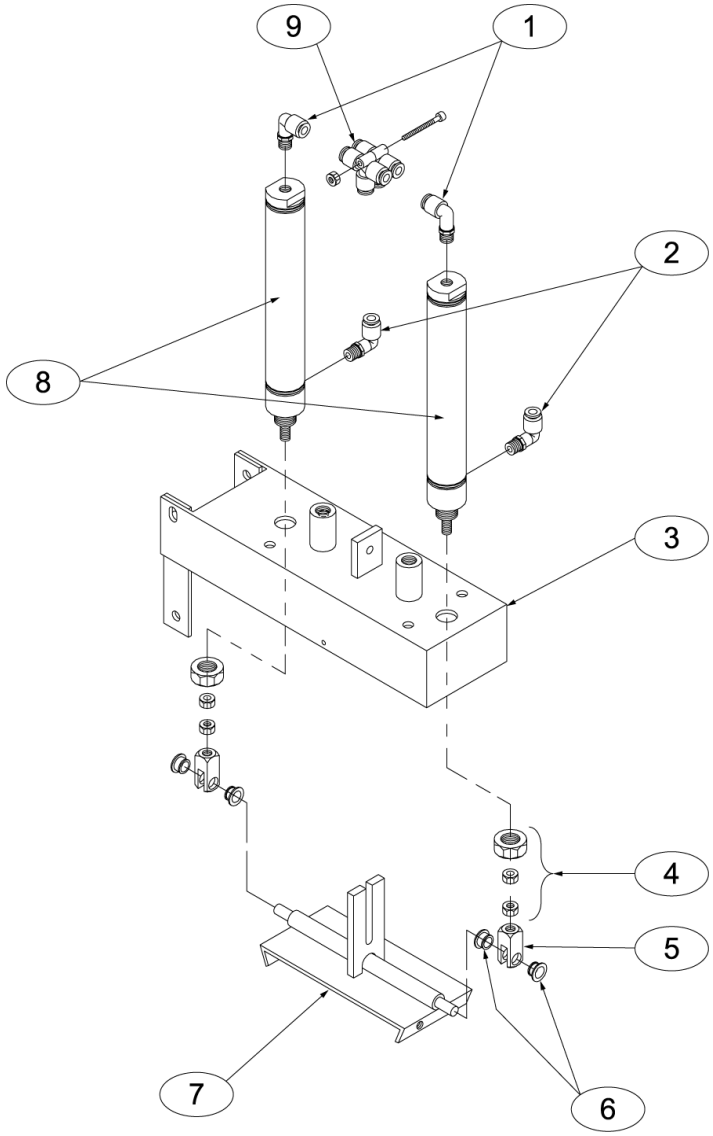


Item #	Description	Item #	Description
1	Reservoir port plugs	3	Inkpad reservoir retainer
2	Printer hood	4	Inkpad

Figure 1-8. Inkpad And Related Components

1.6.6 Pneumatic Cylinders

The spout printer utilizes two pneumatic cylinders to raise and lower the print block. The two cylinders are mounted in the printer hood. The cylinders are installed in the top of the printer hood. One is mounted toward the front and one is mounted toward the rear. The cylinders are actuated simultaneously and should be adjusted so that they apply the print block evenly.

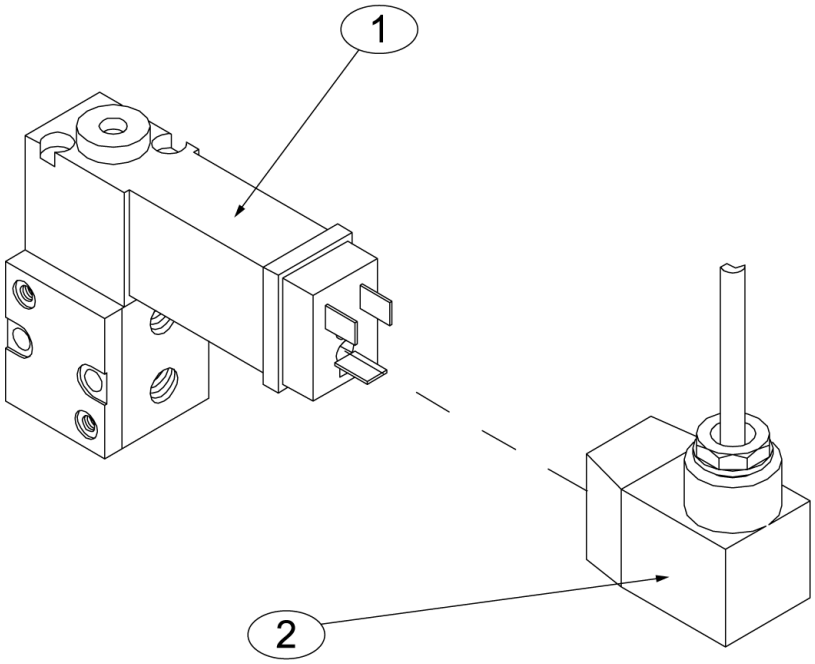


Item #	Description	Item #	Description
1	Upper pneumatic quick connect fittings	6	Bushings
2	Lower pneumatic quick connect fittings	7	Print block holder
3	Printer hood	8	Pneumatic cylinders
4	Cylinder mount & adj./jam nuts	9	Pneumatic tee fittings
5	Clevis		

Figure 1-9. Pneumatic Cylinder Mounting

1.6.7 MAC Valve

The spout printer uses a single MAC valve to control the when the pneumatic cylinders extend and retract. Compressed air is supplied to the MAC valve. The pneumatic valve is controlled via an electric solenoid. When power is not being supplied to the solenoid, the pneumatic valve is in the position that causes the pneumatic cylinders to retract. When power is applied to the solenoid, the pneumatic valve changes position and directs air to extend the pneumatic cylinders.



Item #	Description	Item #	Description
1	Pneumatic valve	2	Electronic solenoid

Figure 1-10. MAC Valve

The MAC valve also is equipped with a test button. To test the operation of the valve or one of the downstream components, the operator can press the button to momentarily actuate the downstream components.

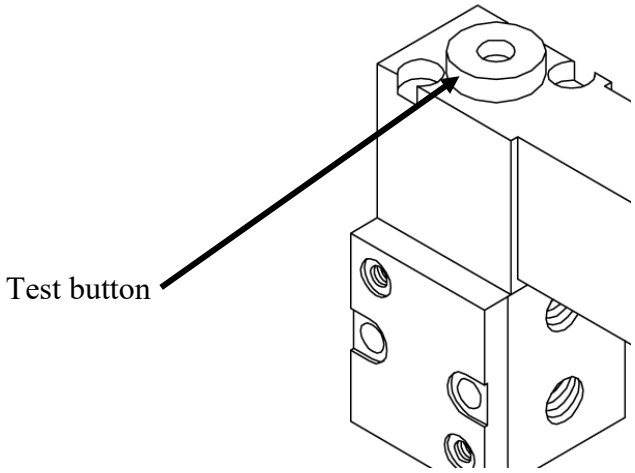


Figure 1-11. Test Button

1.6.8 Timer

The spout printer utilizes a timer mechanism to control when the printer is actuated. The timer will be installed on the packaging machine.

Figure 1-12. Timer Mechanisms (Two Timers Shown)

1.6.9 Air/Electric Pressure Switch

An air/electric pressure switch is used to initiate the print cycle. The pressure switch receives an air signal when the fill cycle is initiated. This air signal is translated into and electrical output that is used to initiate the print cycle.

Figure 1-13. Air/Electric Pressure Switch

1.6.10 Quick Connect Fittings and Tees

The pneumatic system that makes the spout printer function utilizes a series of quick connect fittings and tees. The use of quick connect fittings allow the operator to quickly replace lines when necessary. Tees are used to split the pneumatic output from the MAC valve. There is one tee installed in each pneumatic output circuit from the MAC valve.

1.6.11 Air Supply Lines

The spout printer utilizes a series of plastic air supply lines to supply compressed air to the various pneumatic components. Magnum Systems uses two different colors of air supply lines. In the case of the spout printer, the blue lines are typically used on the pneumatic circuits that are used to apply the spout printer. Red supply lines are typically used on the pneumatic circuits that are used to retract the spout printer.

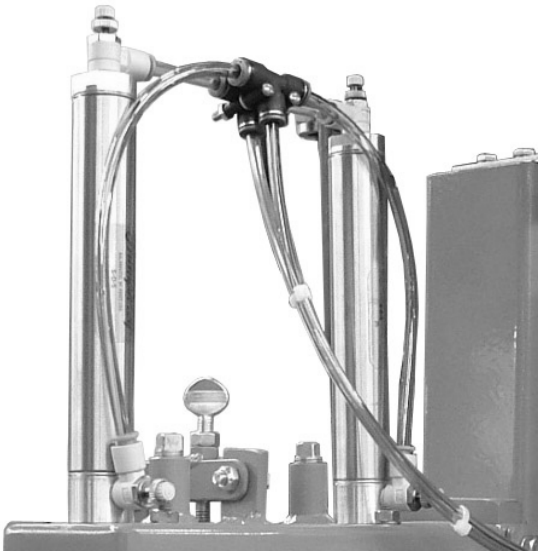


Figure 1-14. Air Supply Lines

Chapter 2
Operation

2.1 General Description
This chapter will provide detailed descriptions of the operational controls of the spout printer.

2.2 Operational Overview
There are several factors that contribute to the operation of the spout printer. Understanding those factors is critical to understanding overall function of the device.

2.3 Electrical Operation
The electrical control for the spout printer is provided via the packaging machine that the printer is mounted on.

2.4 Pneumatic Operation
The printer uses a pair of pneumatic cylinders to function. The cylinders are controlled by an electro/pneumatic valve. The control system on the packaging machine will apply power to either coil A or Coil B. When power is applied to a coil, the pneumatic valve is pulled toward the coil. This allows the air supplied to the valve to be directed to a specific outlet port.

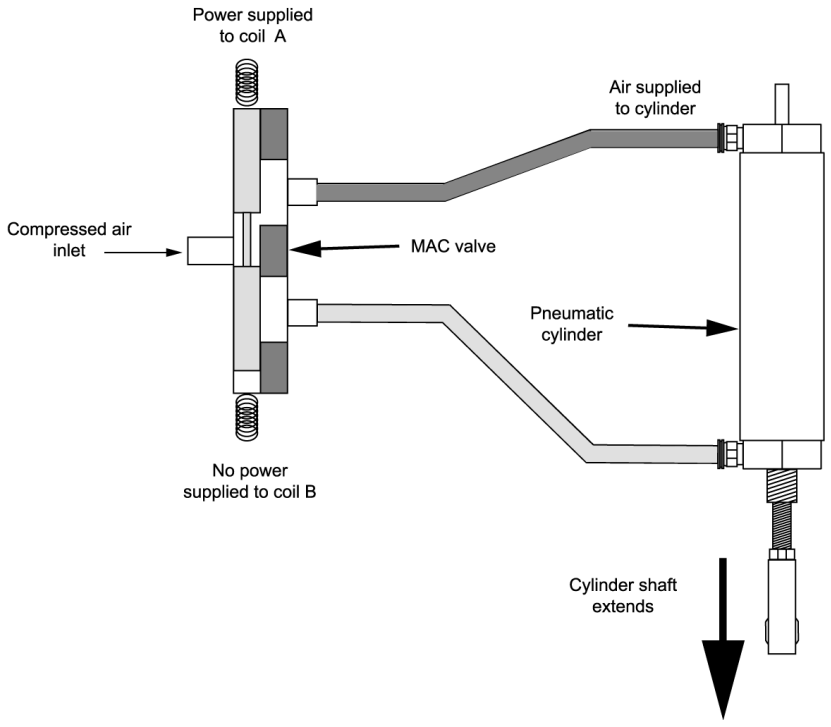


Figure 2-1. MAC Valve and Pneumatic Cylinder Operation – Cylinder Extending

Important: *The graphic shown above is a flow diagram. It is not a physical arrangement, or layout, of the components used on the spout printer. This graphic is intended to provide operators and maintenance personnel with an understanding of how air flows through the system.*

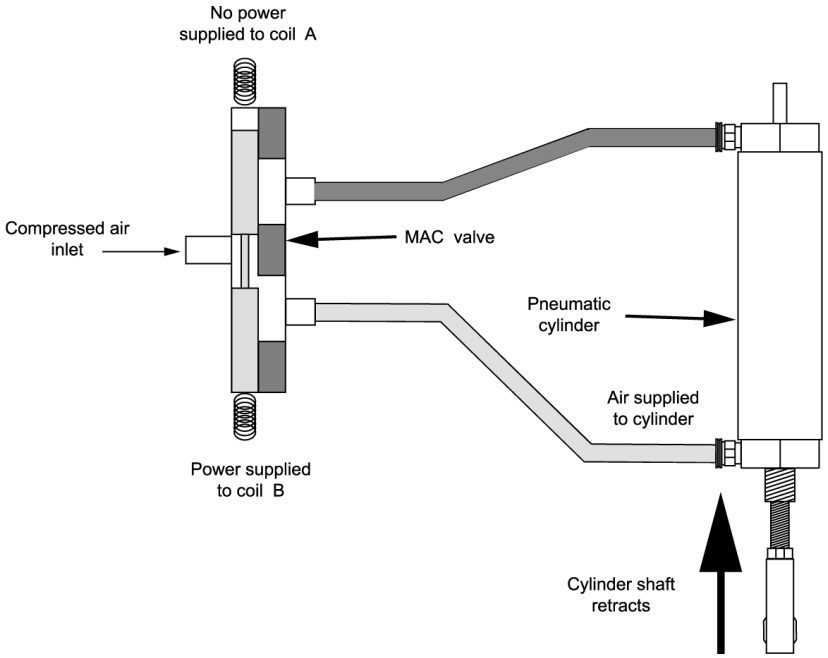


Figure 2-2. MAC Valve and Pneumatic Cylinder Operation – Cylinder Retracting

Chapter 3
Preventive Maintenance

3.1 General Description

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

3.2 Maintenance Procedures

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

1. Thoroughly clean the spout printer.
2. Check all fasteners.
3. Add ink as needed.

3.2.1 Cleaning

Keeping the spout clean is an important part of the maintenance tasks. Remove any dust and/or dirt that may accumulate on a daily basis. Keeping the unit clean will keep debris from entering the control mechanisms, which could cause the performance of the spout printer to suffer. Also, by taking the time to clean on a daily basis, it will allow the operator to thoroughly inspect the spout printer. Take the time to inspect all wiring, air supply lines and connections, and components for possible damage.

3.2.2 Check All Fasteners

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

3.2.3 Adding Ink

The spout printer will require that ink be added to the inkpad periodically. The frequency required will depend on several factors.

3.2.3.1 Inking The Pad For The First Time

Before inking the pad for the first time, the operator should cycle the printer to ensure that it operates correctly on the down and up strokes and that the cycle time isn't too long or too short.

1. Turn the packaging machine off.
2. Disconnect the main electrical and pneumatic connections.
3. Manually pull the print block down away from the inkpad. Stop just before the print block starts to flip-over.
4. Fold a few paper towels to the size of the printer block and place them on to the print block.
5. Push the print block back up into the printer hood so that it is against the inkpad.

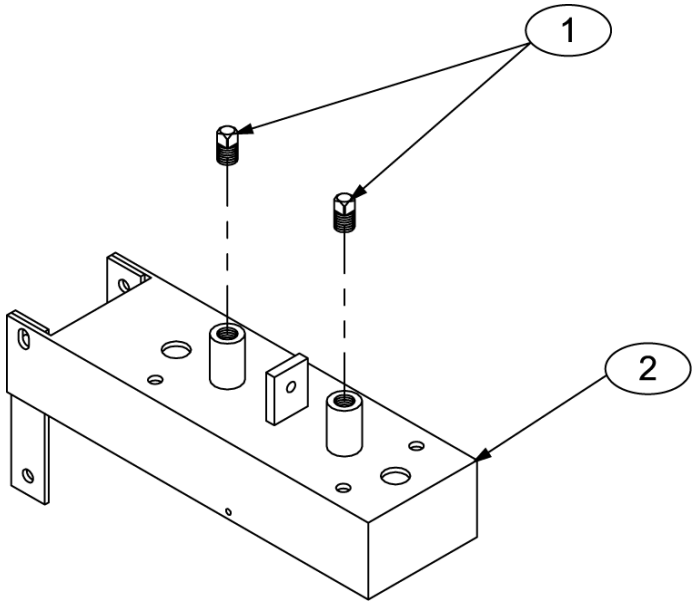
CAUTION Be careful when removing the ink reservoir plugs. If they are stuck, in the printer hood, hold the printer hood solid when removing the plugs. Failure to do so could result in the upper and lower flex leaves being damaged.

6. Remove the reservoir port plugs.
7. Slowly add ink to each port.
8. Install the reservoir port plugs. Do not tighten them tighter than hand tight.
9. Wait 20-30 minutes and then manually pull the print block down away from the inkpad. Stop just before the print block starts to flip-over.
10. Check the surface of the paper towels to see if they are mostly ink soaked. If the paper towels are not saturated, go back to step 5. If the paper towels are saturated, proceed to step 10.
11. Remove the paper towels.
12. Push the print block back up into the printer hood so that it is against the inkpad.
13. Connect the main electrical and pneumatic connections.
14. Test the operation of the printer by placing an empty package on the spout and then pressing the test button on the MAC valve using a small punch or ballpoint pen. Cycle the printer a couple of times to test properly.
15. If the printer does not have adequate ink coverage, go back to step 3. If ink coverage is adequate, inking procedure is complete.

3.2.3.2 Re-Inking The Pad

When needed, the operator can add ink by following the steps below:

1. Turn the packaging machine off.
2. Remove the reservoir port plugs.
3. Add ink to each reservoir port for even ink distribution.
4. Install the reservoir port plugs. Do not tighten them tighter than hand tight.
5. Turn the packaging machine on and test for proper operation.



Item #	Description	Item #	Description
1	Reservoir port plugs	2	Printer Hood

Figure 3-1. Ink Reservoir

3.2.4 Changing Letters

It will be necessary from time to time to change out the letters in the spout printer. Each letter has a ridge that protrudes from the center of the back of the letter. The printer mat has many rows of slots that the ridges fit into. This is how the letters are held in place in the printer mat.

Figure 3-2. Printer Mat

1. Manually pull the printer block down so that it rotates until the point where the printer mat is facing the side. Refer to the graphic above.
2. Gather the letters that are going to be installed in the printer mat.
3. Lay the letters out, as they will be installed.

   Note: *The type will have to be laid out backward, as if it looking at the print at in a mirror.*

4. Install the letters in the printer by pressing the ridge on the back of the letter into a slot in the printer mat.
5. Manually push the printer block up so the printer mat is pressing against the inkpad.

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Chapter 4
Troubleshooting

4.1 General Description

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

4.2 The Troubleshooting Process

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

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

4.3 Trouble Symptoms

Use the following information to assist in troubleshooting.

4.3.1 The Printer Does Not Extend

In the event that the printer will not extend to stamp the package, follow the steps below to determine the cause.

1. Check the MAC valve to make sure that air is being supplied to the valve. If air is not being supplied to the MAC valve, correct the air supply problem.
2. Check the MAC valve to make sure that it is being supplied electricity. If the MAC valve is not receiving electricity, correct the power supply problem. If the MAC valve is receiving electricity, check to see if the valve changes states.
3. Check the valve to see if it is the receiving air. If it is not receiving air, correct the air supply problem.
4. Check the flow control valves on the top of the pneumatic cylinders to make sure that they are open. Refer to 5.2.1 Pneumatic Cylinder Airflow Adjustment.

4.3.2 The Printer Does Not Retract

If the printer mechanism fails to retract, follow the steps below to determine the cause.

1. Check the MAC valve to make sure that air is being supplied to the valve. If air is not being supplied to the MAC valve, correct the air supply problem.
2. Check the MAC valve to make sure that it is being supplied electricity. If the MAC valve is not receiving electricity, correct the power supply problem. If the MAC valve is receiving electricity, check to see if the valve changes states.
3. Check the valve to see if it is the receiving air. If it is not receiving air, correct the air supply problem.
4. Check the flow control valves on the bottom of the pneumatic cylinders to make sure that they are open. Refer to 5.2.1 Pneumatic Cylinder Airflow Adjustment.
5. Check the cylinders to make sure they are perfectly parallel to one another and that they are attached squarely to the printer hood.
6. Adjust the upper flow control valves on the cylinders to make sure that the stroke speed and movement of the cylinders is balanced. If the cylinders are not balanced, they will bind.
7. Check the return spring to make sure it has the proper amount of tension. Only factory springs should be used. Using an aftermarket spring may result in too much or too little spring tension. Proper tension is required to allow the block and block holder to flip-over 180-degrees.
8. Make sure the pivot points of the block holder and flip-over arm are free. It may be necessary to lubricate the pivot points. Any common 3-in-1 oil or silicone spray lube will work for this purpose.

4.3.3 The Printer Does Not Extend Far Enough

If the printer mechanism does not extend far enough to print on the package, follow the steps below to determine the cause.

1. Check the compressed air supply to make sure adequate air pressure is available to fully extend the pneumatic cylinders. Adjust air pressure as necessary. DO NOT exceed the maximum recommended air pressure that is allowed for the machine that the spout printer is mounted on.
2. Check the rod ends on the pneumatic cylinder shafts to make sure that they are adjusted properly. Refer to 5.2.2 Pneumatic Cylinder Rod End Adjustment.
3. Check the cylinders to make sure they are perfectly parallel to one another and that they are attached squarely to the printer hood.
4. Adjust the upper flow control valves on the cylinders to make sure that the stroke speed and movement of the cylinders is balanced. If the cylinders are not balanced, they will bind.
5. Check the return spring to make sure it has the proper amount of tension. Only factory springs should be used. Using an aftermarket spring may result in too much or too little spring tension. Proper tension is required to allow the block and block holder to flip-over 180-degrees.
6. Make sure the pivot points of the block holder and flip-over arm are free. It may be necessary to lubricate the pivot points. Any common 3-in-1 oil or silicone spray lube will work for this purpose.
7. Increase the dwell time (on time) of the timer. This will allow the print block to remain in contact with the printing surface for a longer period of time.

4.3.4 The Printer Does Not Apply Evenly

If the printer mechanism is only printing one side of the desired print information, use the steps below to determine the cause.

1. Check the print block for damage. If it is damaged, replace it. Refer to 5.3.3 Print Block Replacement.
2. Check the air supply lines and fittings to the cylinder on the side that is not printing for leaks, restrictions, or damage. Repair as necessary.
3. Check the pneumatic cylinder rod ends on both pneumatic cylinders to see if they are set to different lengths. Refer to 5.2.2 Pneumatic Cylinder Rod End Adjustment.
4. Check the pneumatic cylinders for damage. If one is damaged, replace it. Refer to 5.3.2 Pneumatic Cylinder Replacement.

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Chapter 5
Repair and Adjustment

5.1 General Description

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

5.2 System Adjustments

The spout printer has several components that may require adjustments over time. These changes may be due to normal wear, or may be required when changing products. Items that may require adjustments are:

- Pneumatic cylinder airflow
- Pneumatic cylinder rod ends
- Timer

5.2.1 Pneumatic Cylinder Airflow Adjustment

Each connection on the pneumatic cylinders has an airflow adjustment. This adjustment controls the speed that the cylinder will extend or retract. It is also used to balance the motion of each cylinder with one another. This allows the cylinders to stroke up and down evenly.

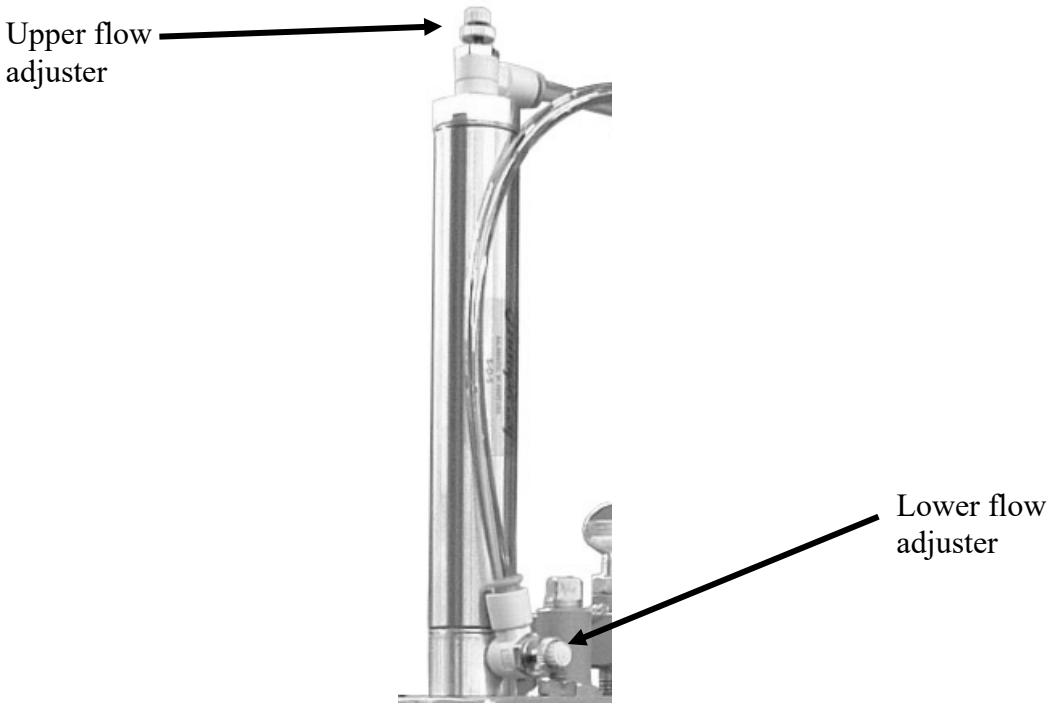


Figure 5-1. Flow Adjusters

A flow control valve has been installed at each port on each pneumatic cylinder. To increase the flow of air, turn the valve counter-clockwise. To decrease the flow, turn the valve clockwise.

5.2.2 Pneumatic Cylinder Rod End Adjustment

If the print on the packages is uneven, or if the print block is not coming into contact with the package, the operator can adjust for this by adjusting the rod end on each pneumatic cylinder.

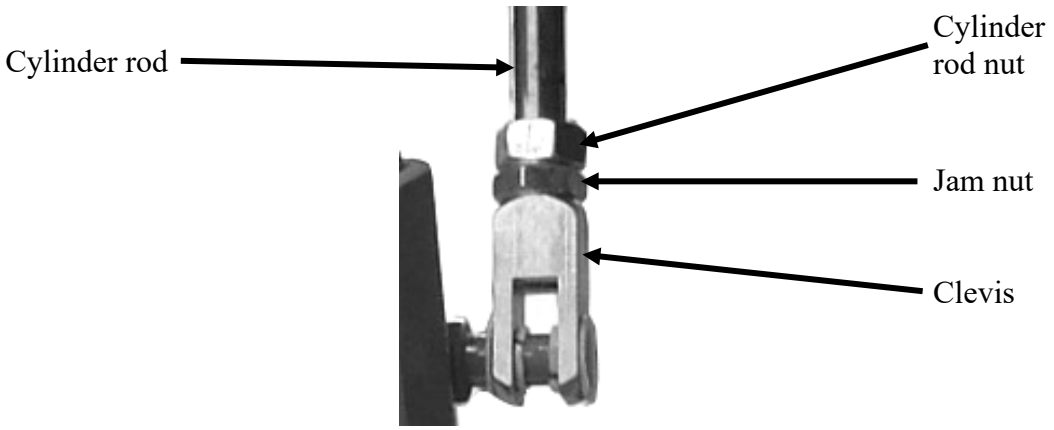


Figure 5-2. Pneumatic Rod End

1. Loosen the jam nut.
2. Turn the cylinder rod nut to either lengthen or shorten the overall length.
3. Tighten the jam nut against the clevis to lock the rod in place.
4. Repeat the process on the second pneumatic cylinder.

Important: *When adjusting the pneumatic cylinder rod ends, it is important to make sure that the overall length of each rod is the same. Failure to do so will result in an uneven print result.*

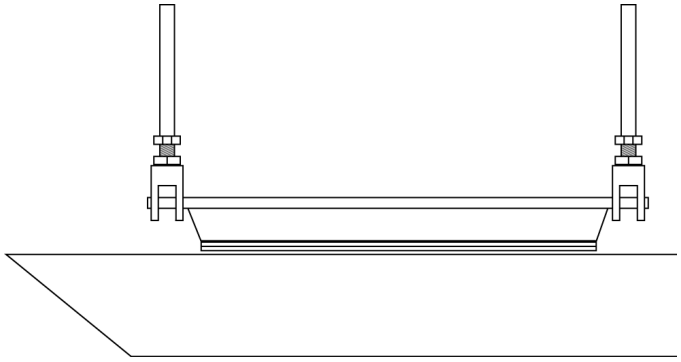


Figure 5-3. Rod Ends Aligned – Print Pad Applying Even Pressure

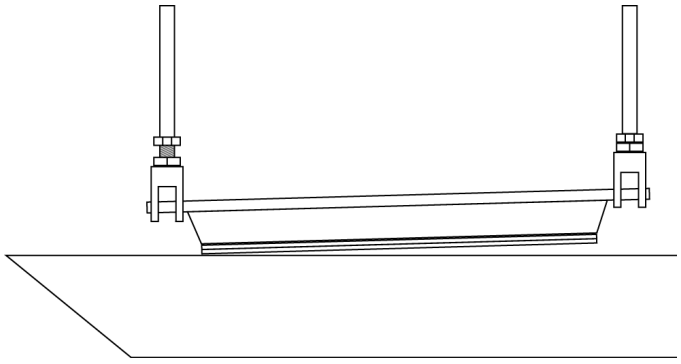


Figure 5-4. Rod Ends Misaligned – Print Pad Applying Uneven Pressure

5.2.3 Timer Adjustments

The spout printer is controlled via a timer mechanism that is mounted on the packaging machine. Timer adjustments are made via an adjustment screw on the bottom of the timer.

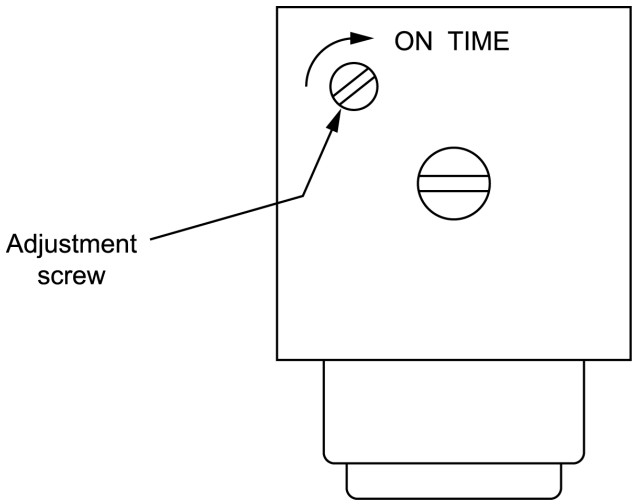


Figure 5-5. Timer Adjustment Screw

5.3 System Repairs

Over time, components on the spout printer may become worn or damaged. If this occurs, follow the procedures in this section to repair or replace individual components.

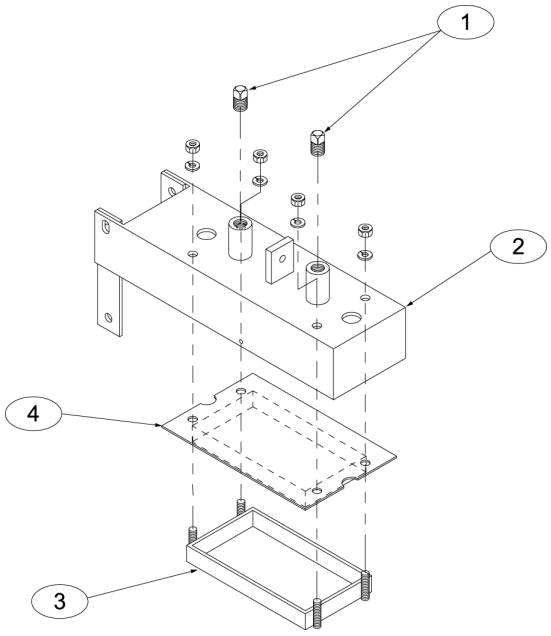
WARNING *When replacing parts, it is critical that only parts approved by Magnum Systems are used.*

5.3.1 Inkpad Replacement

If the inkpad requires replacement, follow the steps below.

5.3.1.1 Inkpad Removal

1. Turn the packaging machine off.
2. Disconnect the main electrical and pneumatic connections from the packaging machine.
3. Manually extend the spout printer cylinders to fully lower the print block.
4. Remove the two ink refill port plugs and set them aside.
5. While supporting the inkpad retainer from below, loosen and remove the four inkpad retainer mounting nuts and washers.
6. Lower the inkpad retainer and inkpad out from under the printer hood.
7. Remove the inkpad from the inkpad retainer.



Item #	Description	Item #	Description
1	Reservoir port plugs	3	Inkpad reservoir retainer
2	Printer hood	4	Inkpad

Figure 5-6. Inkpad and Related Components

5.3.1.2 Inkpad Installation

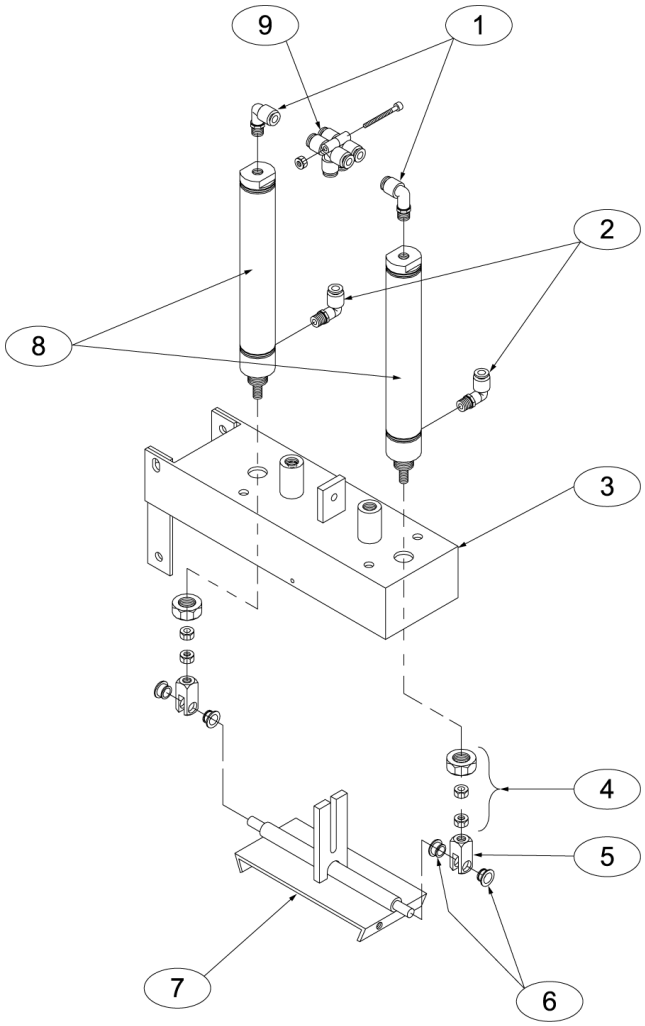
1. Position the inkpad on the inkpad retainer.
2. Raise the inkpad retainer up under the printer hood and guide the four inkpad retainer mounting studs through the mounting holes.
3. Install the washers and nuts on the four inkpad retainer mounting studs. Tighten the nuts.
4. Add ink to the two ink refill ports. Refer to 3.2.3 Adding Ink.
5. Install the two ink refill port plugs.
6. Manually retract the spout printer cylinders to pull the print block back into the printer hood.
7. Connect the main electrical and pneumatic connections to the packaging machine.
8. Turn the packaging machine on and test for proper operation.

5.3.2 Pneumatic Cylinder Replacement

If troubleshooting procedures have indicated that a pneumatic cylinder requires replacement, follow the procedures below to replace the cylinder.

5.3.2.1 Pneumatic Cylinder Removal

1. Turn the packaging machine off.
2. Disconnect the main electrical and pneumatic connections from the packaging machine.
3. Label the pneumatic connections to the pneumatic cylinder being replaced.
4. Loosen the jam nut that is against the clevis on the cylinder rod of the cylinder being replaced.
5. Turn the cylinder rod so that it is backing out of the clevis. Turn the rod until it is completely disconnected from the clevis.
6. Remove the jam nut from the cylinder rod.
7. Loosen and remove the cylinder mounting nut.
8. Remove the cylinder by lifting it up and out of the printer hood.



Item #	Description	Item #	Description
1	Upper pneumatic quick connect fittings	6	Bushings
2	Lower pneumatic quick connect fittings	7	Print block holder
3	Printer hood	8	Pneumatic cylinders
4	Cylinder mount & adj./jam nuts	9	Pneumatic tee fittings
5	Clevis		

Figure 5-7. Pneumatic Cylinders and Related Components

5.3.2.2 Pneumatic Cylinder Installation

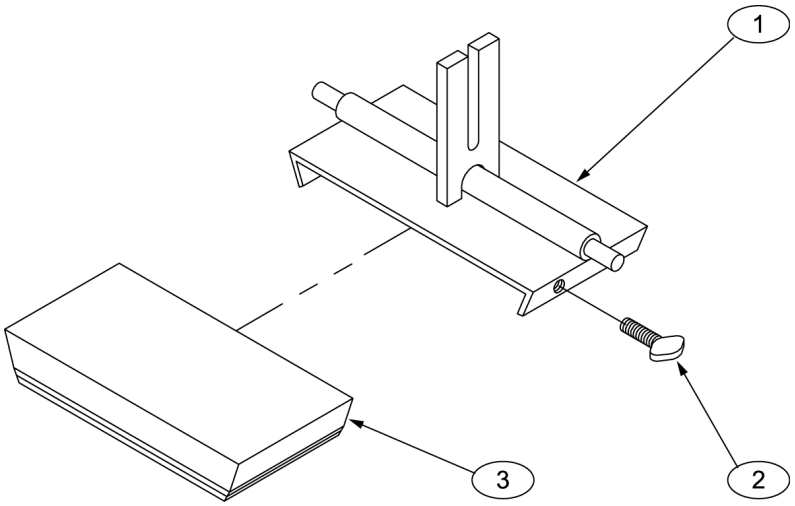
1. Insert the rod end of the cylinder through the mounting hole on the printer hood.
2. Install and tighten the cylinder mounting nut.
3. Install the jam nut on the cylinder rod. Thread the jam nut all the way onto the cylinder rod.
4. Thread the cylinder rod into the clevis.
5. Connect the air supply lines to the pneumatic cylinder.
6. Connect the main electrical and pneumatic connections to the packaging machine.
7. Adjust the pneumatic cylinder rod ends. Refer to 5.2.2 Pneumatic Cylinder Rod End Adjustment.
8. Turn the packaging machine on and test for proper operation.

5.3.3 Print Block Replacement

If the print block needs to be replaced, follow the steps below to replace it.

5.3.3.1 Print Block Removal

1. Turn the packaging machine off.
2. Loosen the thumbscrew in the end of the print block holder.
3. Slide the print block out of the print block holder.



Item #	Description	Item #	Description
1	Print block holder	3	Print block
2	Print block thumbscrew		

Figure 5-8. Installing The Print Block

5.3.3.2 Print Block Installation

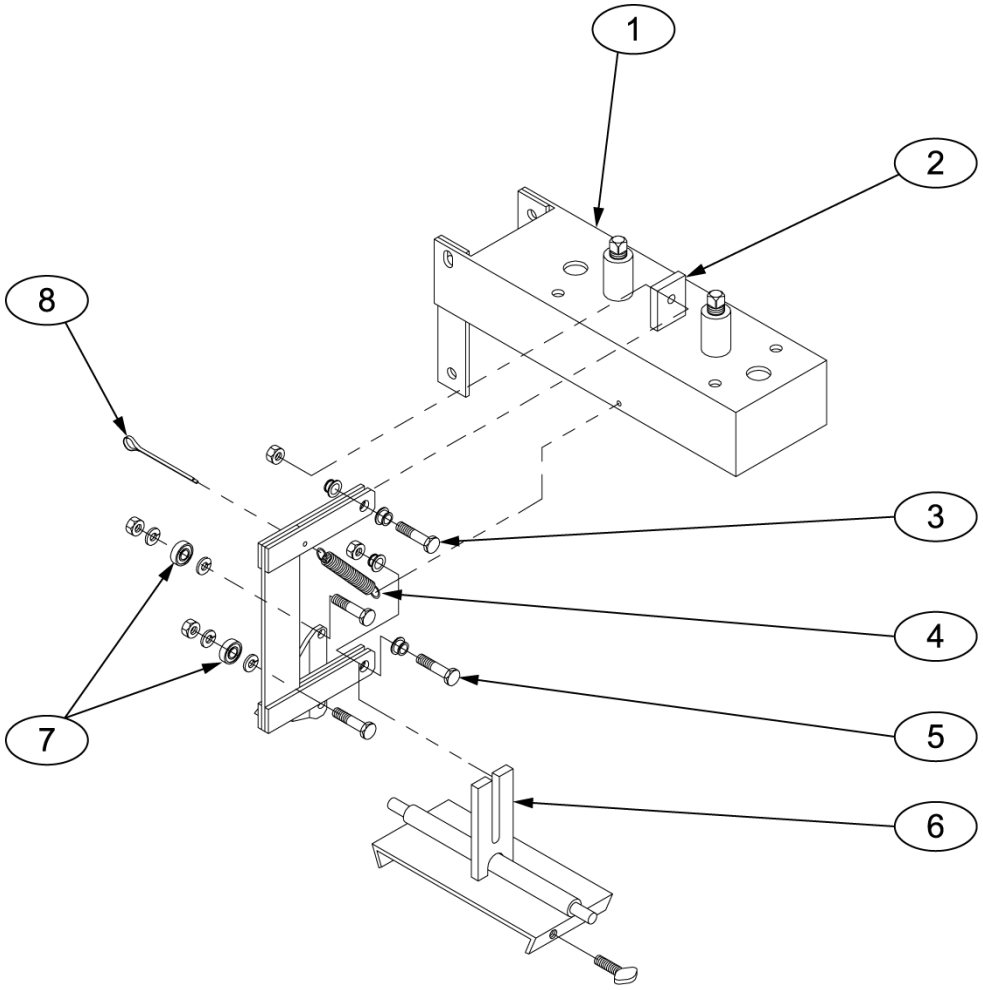
1. Slide the print block into the print block holder.
2. Align the print block so that it is centered in the print block holder.
3. Tighten the thumbscrew in the end of the print block.
4. Turn the packaging machine on and test for proper operation.

5.3.4 Flip-Over Mechanism Replacement

If the flip-over mechanism becomes damaged or worn, follow the steps below to replace it.

5.3.4.1 Flip-Over Mechanism Removal

1. Turn the packaging machine off.
2. Disconnect the main electrical and pneumatic connections from the packaging machine.
3. Disconnect the spring from the printer hood.
4. Using a permanent marker, mark the position of the flip-over arm on the depth adjustment tab on the print block holder.
5. Loosen and remove the adjustment nut and bolt from the print block holder.
6. Loosen and remove the nut, washer, and bolt from the flip-over mechanism mounting tab on the printer hood.
7. Remove the flip-over mechanism.



Item #	Description	Item #	Description
1	Printer hood	5	Flip over arm adjustment bolt
2	Flip over arm mounting tab	6	Flip over arm adjustment tab
3	Flip over arm pivot bolt	7	Flip over arm pivot bushings
4	Flip over arm return spring	8	Cotter pin

Figure 5-9. Flip-Over Arm Components

5.3.4.2 Flip-Over Mechanism Installation

1. Position the flip-over mechanism so that the bolthole is lined up with the flip-over mounting tab on the printer hood.
2. Install the bolt, washer, and nut in the flip-over mechanism mounting tab on the printer hood.
3. Position the lower flip-over mechanism bolthole so that the flip-over arm is lined up with the marks that were made on the depth adjustment tab on the print block holder.
4. Install the bolt, washer and nut to secure the lower flip-over mechanism to the depth adjustment tab on the print block holder.
5. Connect the spring to the printer hood.
6. Connect the main electrical and pneumatic connections to the packaging machine.
7. Turn the packaging machine on and test for proper operation.

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Index

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Appendix A
Safety Procedures, Cautions, Warnings, and Notices

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

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Appendix B
Spare Parts

Table B-1. Spout Printer Spare Parts List

	Part Description	Part Number
1	Pneumatic quick connect fittings	Floor stock
2	Pneumatic tee fittings	Floor stock
3	Ink reservoir plugs	Floor stock
4	Printer hood	60-0315
5	Inkpad	60-0177
6	Inkpad retainer	60-0316
7	Clevis	50-7176
8	Print block holder	60-0317
9	Print block locking screw	Floor stock
10	Print block	60-0178
11	Flip-over arm	60-0318
12	Bearings	50-7062
13	Timer	50-1850
14	MAC valve	50-1673
15	Air/Electric switch	50-1588
16	Pneumatic cylinders	50-1165
17	Flip-over spring	50-7489
18	Flip-over arm bushings	50-7334
19	Pint block holder shaft bushings	50-7335

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Appendix C
Mechanical Drawings

Table C-1. Spout Printer Mechanical Drawings

	Drawing Title	**Part Number**
1		
2		
3		
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5		
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10		

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Appendix D
Electrical Drawings

Table D-1. Spout Printer Electrical Drawings

	Drawing Title	**Part Number**
1		
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3		
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8		
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10		

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