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Instructions for  
 Xandex Pneumatic Controller Preventive  
 Maintenance Set  
 370-0108  
 for Micro-Z Controller model 350-0027

**PNEUMATIC CONTROLLER PREVENTIVE MAINTENANCE SCHEDULES**

Preventive maintenance for Xandex pneumatic controllers requires replacement of the controller internal air valves at the intervals specified below.

Controller Model	Replace	Interval
350-0027	Cartridge Valve (V1), Shuttle Valve (V2) and internal tubing as required.	Every 24 months

This Micro-Z Controller Preventive Maintenance Kit is available from Xandex and Xandex Authorized Distributors. Instructions for are detailed in this document.

- Micro-Z valve set contains two valve assemblies, electrical connectors, adequate tubing to replace all internal controller pneumatic routes in the Micro-Z pneumatic controller, and these replacement instructions. Internal tubing can be damaged during valve replacement, and this can result in leaking connections at the valve and coupling connections. Replacement tubing is provided so it can be replaced as required. This set is used for 24-month controller preventive maintenance.





**MAINTENANCE SET PART LISTS**

Part lists for the valve set is provided in the 370-0108 drawing Bill of Material (BOM) provided with this instruction. Reference the BOM for item number, part number and descriptions used in this instruction.





## SAFETY INFORMATION

Safety and Hazard identification symbols used in this document are intended to be compliant with ANSI/NEMA Z 535.6 2006. The table below lists the symbols used in this document along with a description of each type of safety hazard. Failure to observe identified safety risks may result in serious injury or death.

### Safety and Hazard Identification Symbols

SYMBOL	DESCRIPTION
	<b>DANGER</b> = Indicates a hazardous situation which, if not avoided, will result in death or serious injury
	<b>WARNING</b> = Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	<b>CAUTION</b> = Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	<b>NOTICE</b> = Indicates a practice that is not related to personal injury, but may cause damage to equipment or property.

## BEFORE YOU BEGIN

	<b><i>ALWAYS POWER DOWN AND DEPRESSURIZE THE CONTROLLER BEFORE PERFORMING MAINTENANCE ON A PNEUMATIC INKING SYSTEM!</i></b>
	<b><i>Making any modifications to the controller circuitry or components other than Xandex recommended maintenance procedures may void your controller warranty, disable protections provided by the manufacturer and expose the user to electric shock hazard.</i></b>
	<b><i>Use appropriate ESD precautions when working inside of the controller! Disconnect all inputs/outputs from the rear panel of the controller, including power, input air and all inker electronic and pneumatic connections. Remove the controller to an appropriate ESD safe maintenance area for servicing.</i></b>
	<b><i>Do not place undue strain on internal electrical connections when working inside the controller. Failure to follow recommended procedures may result in damage to the controller unit.</i></b>

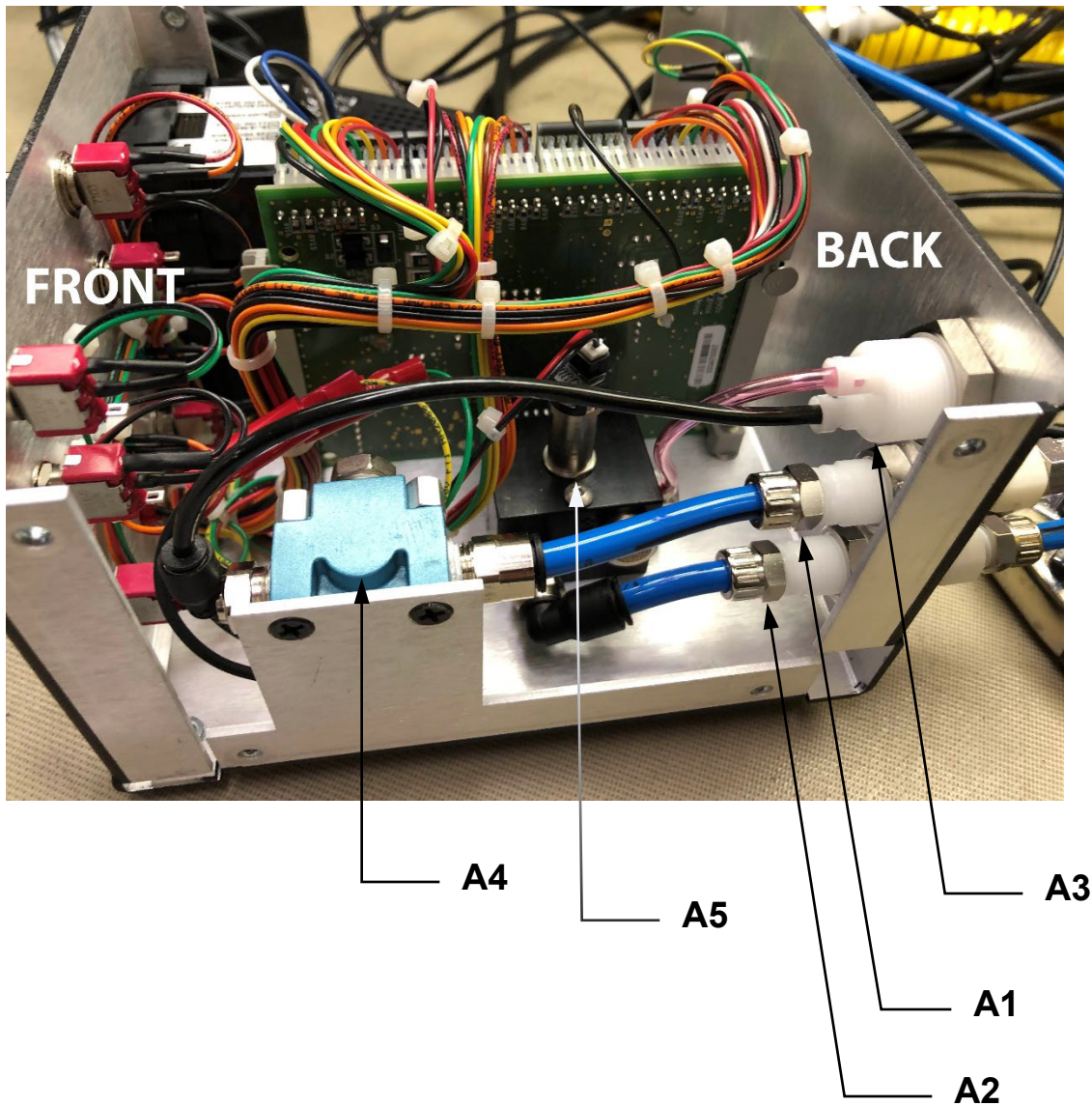
## VALVE LOCATIONS

View with the controller cover removed.

**Table 1. Valve and air IN and OUT locations**

DESIGNATION	DESCRIPTION
A1	SHUTTLE VALVE AIR INPUT FROM REGULATOR 1
A2	CARTRIDGE VALVE AIR INPUT FROM REGULATOR 2
A3	AIR OUTPUT TO SHUTTLE (BLACK TUBE) AND CARTRIDGE (PINK TUBE)
A4	SHUTTLE VALVE (V2) (ON CONTROLLER SIDE WALL)
A5	CARTRIDGE VALVE (V1) (IN BLACK MANIFOLD ON ENCLOSURE BOTTOM)

**Figure 1. Valve and air IN and OUT locations**



## 370-0108 CARTRIDGE VALVE (V1) REPLACEMENT

Illustrations of the appropriate cartridge valve fittings are supplied in this section. Use this instruction for cartridge valve replacement in the Micro-Z Pneumatic Controller.

### With Power and Main Air removed:

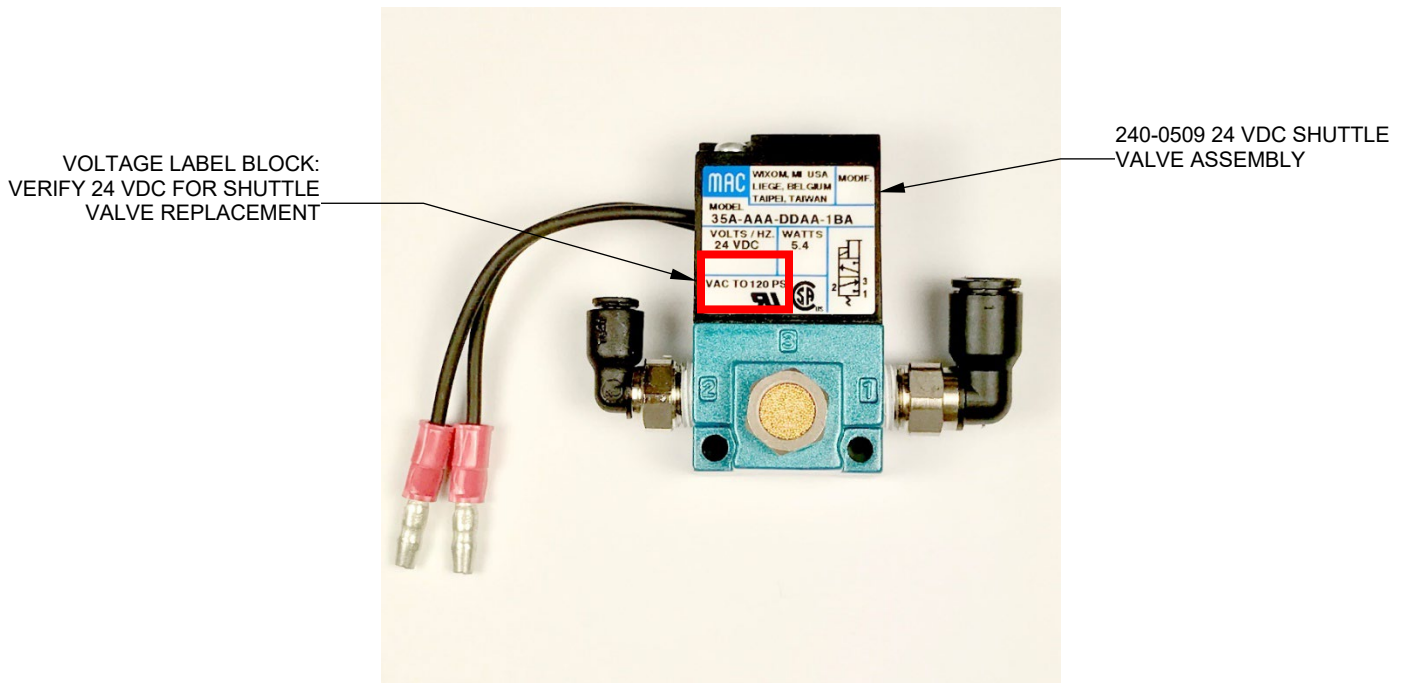
1. Remove the four (4) cover screws from each side of the controller (8 total screws) and remove the controller cover.
2. Locate the Cartridge Valve (V1) installed in the manifold on the bottom (inside floor), of the controller enclosure. Reference **Figure 1** and **Table 1** to identify valve locations. Controller Drawing 350-0027 (Micro-Z Controller) included with this instruction can also be used for more detailed views.
3. Remove the electrical connector at the top of the valve.
4. Using a hex wrench, remove the valve from the manifold.
5. Install the new valve. Screw in hand-tight, then tighten 1/4 turn with a hex wrench.
6. Re-connect the connector at the top of the valve.
7. If the Shuttle Valve will also be replaced, see Standard Controller Shuttle Valve (V2) Replacement section.
8. If only the Cartridge Valve is being replaced, apply power and main air. Check for air leaks and repair as necessary. Disconnect main air and power before re-installing the controller cover after installation is complete.



**Figure 2. 160-0372 Cartridge Valve Assembly**

## 370-0106 SHUTTLE VALVE (V2) REPLACEMENT

1. Locate the Shuttle Valve (V2), which is mounted to the lower right-side wall of the controller, when facing the controller front panel. Reference **Figure 1** and **Table 1** to identify valve locations. Controller Drawing 350-0027, included in this instruction, contains more detailed information.
2. Remove the two (2) Phillips mounting screws and nuts securing the valve to the controller wall and remove the valve. Retain the screws and nuts to re-install the valve.
3. Disconnect the input and output pneumatic hoses from the valve by depressing the colored fitting collar and pulling on the pneumatic hose simultaneously.
4. Disconnect the two (2) snap in connectors that connect the valve wires to the controller wiring harness.
5. Unpackage the 240-0509 24V Shuttle Valve Assembly and verify that the label on the valve body reads 24 VDC. See **Figure 3**.



**Figure 3. 240-0509 24 VDC Shuttle Valve Assembly**

6. Install the pneumatic lines in the new Shuttle Valve fittings, insuring that each hose is firmly seated in the valve fitting.
7. Connect the two (2) snap in connectors on the valve wires to the receptacle connectors on the controller. Polarity does not matter.
8. Install the replacement valve assembly in the controller base, securing with the two Phillips screws and nuts removed previously.
9. Apply power and main air. Check for leaks and repair as necessary. Disconnect main air and power before re-installing the controller cover after installation is complete.

## **PNEUMATIC TUBING REPLACEMENT GUIDELINES**

**IMPORTANT: Read this section completely before beginning tubing replacement.**

The tubing used in Xandex pneumatic controllers is made of polyurethane. The recommended preventive maintenance schedule calls for inspection and replacement of the pneumatic tubing within the controller at 24 month intervals to insure trouble free operation. Tubing replacement is a recommendation for units in high volume production environments. At a minimum, tubing should be inspected at 24 month intervals for leaks, cracks, compression and replaced as required.

Tubing replacement is done in conjunction with Shuttle and Cartridge Valve replacement. Remove the valves per instructions and replace tubing as the valves are reinstalled.

It is important that tubing is not kinked or pinched to restrict air flow. The recommended method for tubing replacement is to cut the tubing lengths listed in the chart on the controller drawing for your controller model before beginning. Reference the tubing ID and length tables in drawing 350-0027 sheet 4. Use a sharp cutting tool (diagonal cutters or similar tool) to cut tubing. Make 90 degree cuts without burrs. It is helpful to label each tube length with tube ID and at each end with beginning and end point designations with an indelible marker as it is cut.

Use caution when working around electrical connections when replacing tubing. Do not place stress on electrical connections.

## **TUBING CONNECTION TYPES**

### ***Air Input Connection (A1 and A2)***

The air input couplings designated A1 and A2 use a compression lock nut to retain the internal tubing. To disconnect the tube from this fitting, use a 7/16 wrench to loosen the silver compression nut and slide the nut back over the tubing. Support the coupling with one hand and pull the tubing, gently moving it from side to side to disconnect the tube from the barbed fitting in the coupling. To reconnect new tube to the fitting, press the end of the appropriate tube length onto the barbed fitting in the coupling. Slide the compression nut over the unconnected end of the tube and tighten it onto the coupling. Connect the other end of the tube to its appropriate endpoint.

### ***Locking Collar Fittings***

All valve and Elbow fittings use a locking collar to retain the tubing in the fitting. To remove tubing from this type of connection, depress the fitting collar and pull on the tube simultaneously. To install tubing, depress the fitting collar and push the tubing firmly into the fitting. The fitting collar should retain the tubing when the tubing is gently pulled (tugged) after installation.

### ***Shuttle Connection (A3) Barbed Fittings***

On all controller models, the Shuttle output coupling on the back of the controller has two barbed fittings that connect to pink and black 1/8 O.D. tubing inside the controller. To remove tubing from the barbed fittings on A3, grasp the tubing as close to the coupling as possible and pull on the tubing, gently moving the tubing from side to side if necessary, until the tubing is disconnected. To replace tubing, push the tubing onto the barbed fitting until the cut end of the tubing stops against the coupling body. Note that the PINK tubing from the Cartridge Valve (V1) connects to the top barbed fitting and the BLACK tubing from the Shuttle Valve (V2) connects to the bottom barbed fitting on the A3 Shuttle connection.

## Pneumatic Shuttle Maintenance

In addition to maintaining the pneumatic controller, periodic preventive maintenance of the inker shuttle mechanism is recommended to insure continued, trouble free operation of your Xandex pneumatic inking system. The recommended maintenance schedule is as follows;

- Off-line use = 6 month intervals
- In-Line / Post Probe use = Once per year

Shuttle preventive maintenance kits are available, which include all parts necessary for one normal shuttle maintenance procedure. These kits may be ordered direct from Xandex or through your local Xandex distributor. To determine which kit to order, consult the inker assembly drawing in your inker manual for the shuttle assembly part number used on your inker, then reference the following tables.

Inker Model Reference	Shuttle Assembly Part Number	Preventive Maintenance Kit Part Number
	<b>Original Shuttle Design (pre-2023)</b>	
All models with original shuttle design except those listed below	216-0001	370-0001
	216-0002	
	216-0003	
	216-0005	
	316-0005	
Series X1100, X1200, X1300 with original shuttle design	316-0001	370-0002
	316-0002	
	316-0003	
Series X5200 (pre and post 2023)	216-0004	370-0003
Series X5100 (pre and post 2023)	X5100 Series Inkers (Integral Shuttle)	370-0004
	<b>Precision Shuttle Design (post-2023)</b>	
X1100 / X1105, X7110* / X7120*	316-0010	370-0006
X1412	316-0011	370-0007
X7110** / X7210** X1101*** / X1102***	316-0012	370-0008
X1410 TSK Retrofit	316-0013	370-0009
X4115, X4117, X4215, X4216	316-0014	370-0010
X1413 OEM	316-0015	370-0011

*\*When equipped with 36 inch controller to shuttle air hose assembly*

*\*\* When equipped with 60 inch controller to shuttle air hose assembly*

*\*\*\*After Precision Shuttle Retrofit Only. Without Precision Shuttle retrofit, use 370-0002*

To order or for assistance selecting the correct kit for your inker, contact Xandex Customer Service at (707) 763-7799 or Toll Free in the U.S. (800) 767-9543. FAX (707) 763-2631. Each kit comes with maintenance instructions. To view the instruction sheet and parts list for each kit, visit our web site at <http://www.xandexsemi.com/>

# SERVICE AND SUPPORT INFORMATION



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**DRAWINGS SUPPLIED WITH THIS INSTRUCTION**

Drawing Title	Drawing Number
PNEUMATIC CONTROLLER, MICRO-Z WITH BILL OF MATERIALS	350-0027
SET VALVE REPLACEMENT WITH BILL OF MATERIALS	370-0108

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