



WHERE  
PRECISION  
DRIVES  
PRODUCTION



**PVA2000**

# PVA2000

## SPECIFICATIONS

### Travel Speed

0 to 700 mm/sec  
(0 to 27.6 in/sec)

### Payload Capacity

25 pounds  
(11.4 kg)

### Standard Work Area

500 mm x 500 mm x 100 mm  
(19.68 in x 19.68 in x 3.94 in)

### Repeatability

0.025 mm  
(0.0001 in)

### Positional Resolution

0.005 mm  
(0.0002 in)

### Power Requirements

120V, 220V, +/-10%, 50-60 Hz

### Air Supply Requirements

80 PSI dry, unlubricated air

### Conveyor Speed

Programmable up to 1.67 in/sec

### Conveyor Compatibility

SMEMA

### Conveyor Process Flow

Programmable right to left or left to right

### Conveyor Edge Clearance

SMEMA standard 0.185 in

### Belt Conveyor Weight Limit

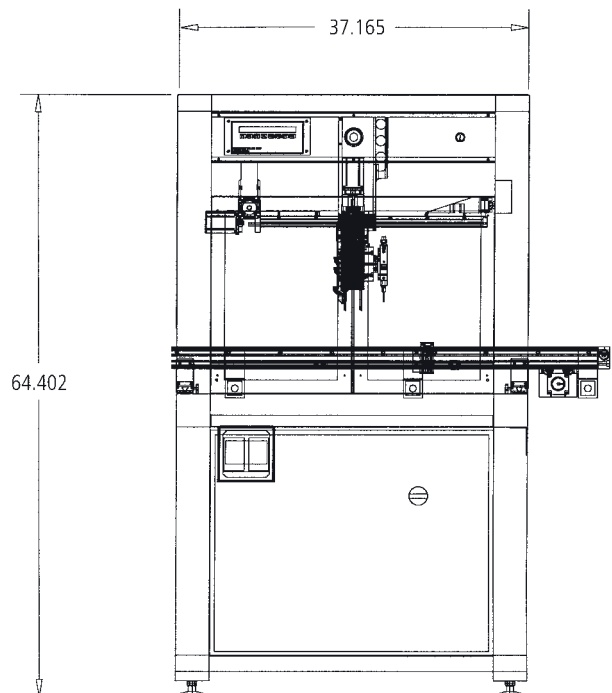
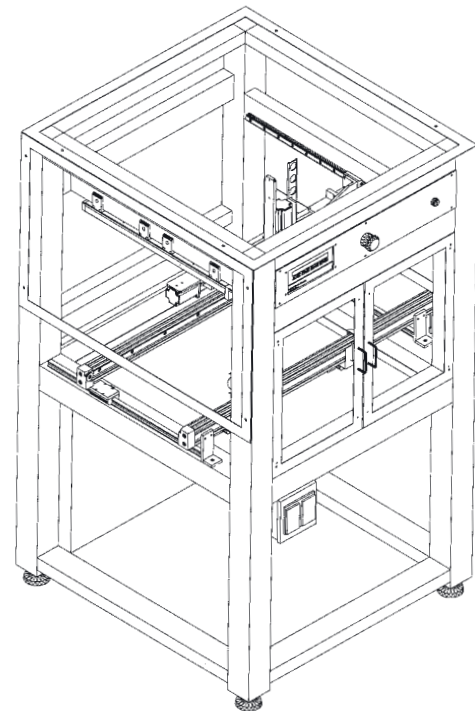
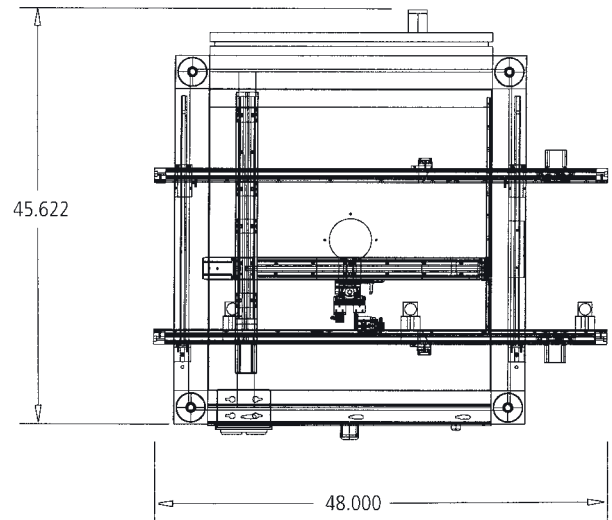
5 pounds per section

### Chain Conveyor Weight Limit

15 pounds per section

### Certification

CE certified



### Software

PathMaster® is PVA's proprietary Windows®-based software package for programming the PVA2000. PathMaster® has many integrated point and click features including area fill functions, FastMask™ keep out area selection and FastPath™ offline programming.

### Operator Interface

An LCD screen with function keys allows the operator to select a stored program in memory, teach robot positions, detect specific fault modes, and select all machine operations.

### Safety

The PVA2000 features front doors protected by safety interlocks that will cease system operation if opened during a cycle. All PVA2000 systems possess a 5" exhaust flange for ventilation. A low level exhaust alarm is factory set at 150 cfm and will not allow a cycle start if there is inadequate ventilation through the work cell.

### Motion

The PVA robot offers continuous motion in all axes simultaneously. This capability is critical to developing seamless coating patterns and adjusting spray width on the fly. PVA's patented four-axis technology is the only coating system on the market that permits rotational motion of the spray and dispense head to access the sides and shadowed areas of a component.

### Gantry Design

This closed loop process features brushless DC servo motors with optical encoder feedback driving precision grade ball screw slides. The PVA gantry system has a payload capacity of 25 pounds (11.4 kg).

# PVA2000

### Board Location / Transport Options

PVA offers a conveyor transport option featuring edge handling silicone edge belts or pin chain conveyors. If the desired process flow is not inline, an adjustable printed circuit board fixture can accommodate various substrate sizes for manual placement of an assembly.

### Coating Applicators

PVA has a variety of atomized and non-atomized coating applicators to customize your selective application. All valve heads are manufactured by PVA and feature a low pressure application process. All commercially available conformal coating materials are compatible with PVA's dispensing valves.

### Teach Pendant Control

The PVA2000 comes with a detachable teach pendant and trackball. This tool allows manual movement of the robot for teaching points and building path programs. The teach pendant can be removed as well to provide a secure working environment on your production floor by restricting program modification.

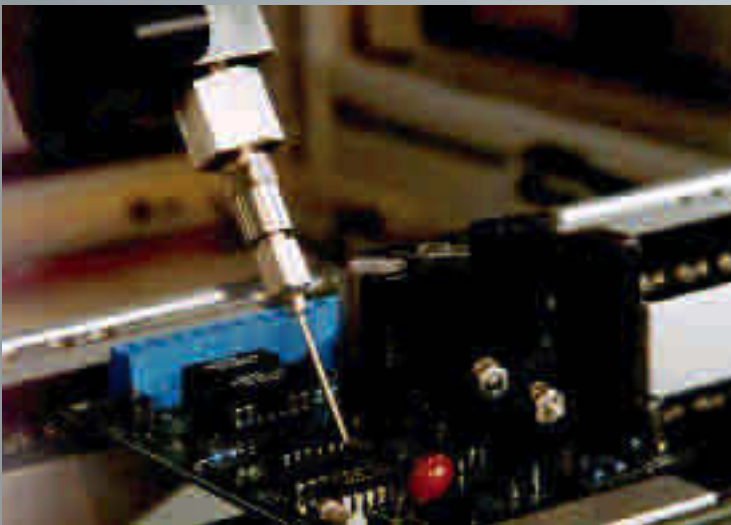
PathMaster® is a registered trademark of Precision Valve & Automation, Inc.  
Windows® is a registered trademark of Microsoft Corporation.  
Fusion® is a registered trademark of Fusion UV Systems, Inc.

## ELIMINATE MASKING

The PVA2000 introduces a cleaner, more efficient process for applying conformal coatings while eliminating labor intensive and costly masking operations. Utilizing the widest range of motion in the industry, and a controlled atomized spray, the PVA2000 can build films as low as 0.01 mm (0.0005") while limiting coating to a programmed coverage area. Selective coating provides transfer efficiencies of 99%, a significant increase over dip, brush, or hand spray applications.

## MOTION

The PVA2000 is a fully programmable three-axis motion platform. A robust gantry system consists of **brushless DC servo motors driving precision-grade ball screw slides**. This closed-loop system includes **optical encoder feedback on all axes**. In addition to the traditional three-axis movement of the PVA2000, a standard pneumatic tilt motion alters the valve from the vertical position to an angle allowing access to shadowed areas and the side of components. The PVA2000 offers **motion in all axes simultaneously** allowing the programmer to contour application heads in and around intricate devices. This capability also permits adjustment of the spray pattern width on the fly with no starts or stops for a seamless application.



## FOUR AXIS MOTION

PVA's patented four-axis motion offers unparalleled coating capabilities by rotating the entire dispense head in a **360-degree motion**. As valve assemblies utilize the pneumatic tilt motion, they can only approach shadowed areas in one direction in a three-axis environment. However, PVA's fourth axis allows access to all sides in a fully programmable axis of motion. This capability is illustrated below where the FC100 needle valve can access all sides of a component.



## PROCESS CONTROL

The PVA2000 offers a variety of process control options to allow you to verify results of your selective coating application. Flow monitoring provides real time feedback on the amount of coating applied per each cycle. This data can be logged over a period of time to assess consistency of the process. Flow monitoring is built around pre-programmed acceptability criteria and will reject out of tolerance values.



## PROGRAMMING

PVA's exclusive Windows®-based programming software offers a quick and easy integrated solution to creating coating patterns, lines, dots, circles, arcs, and more. PathMaster® is compatible with Windows® 95, 98, 2000, NT, Me, and XP formats. A programmer utilizes a remote teach pendant with trackball to interface with PathMaster®, moving to and selecting points to build a program. If your boards are in a pallet or an array, you can simply create one original path and copy the program across the work area.

The PVA2000's non-volatile memory can hold up to 30 average sized programs for immediate recall on the front panel LCD screen. Greater program storage capabilities are available when you tether a computer system to the coating platform. An RS232 communication port comes standard on the PVA2000.

## FASTMASK™

Many board programs are developed by creating areas within PathMaster® to be covered with coating. FastMask permits the programmer to set the board dimensions by selecting three perimeter corners and then simply choose areas within the surface to be free of coating. PathMaster® will complete the program by filling in the entire board area exclusive of the keep-out zones.

## FASTPATH™ OFFLINE PROGRAMMING

PathMaster® permits offline programming. Utilizing CAD exported images or digital photography you can quickly fill area functions and create brush strokes by simply clicking on desired coverage areas. An adjustable brush stroke width lets you tailor your path program to eliminate masking in your application.



## APPLICATORS

PVA utilizes a combination of atomized spray, airless spray, and non-atomized flow coating to achieve desired coverage results. PVA applicators are versatile, allowing a wide range of viscosities to be processed without any hardware changes. All wetted sections are stainless steel for compatibility with all coating chemistries. Fan and circular spray patterns, as well as a non-atomized bead mode are available to assist in eliminating masking requirements.



### FCS100-ES

A controlled, atomized spray down to 0.125" makes the FCS100-ES the premiere spray head for work around delicate keep-out areas.



### FCS100

The FCS100 features an interchangeable spray cap offering the flexibility of circular or fan-shaped spray patterns in widths ranging from 0.25" to over two inches.



### FC100

A non-atomized flow coating valve used for applying dots and beads of conformal coating in and around keep-out areas. The FC100 is mounted on a tilt axis to allow coating on the side or under components.

## CONFIGURATION

Configure the PVA2000 with a variety of valve mount, process control, and board handling options to best meet your specific needs. A certified PVA applications engineer can assist in developing a solution that best fits your process.

The PVA2000 is available as a conveyorized or manually fed module to best fit your application. A pin chain or edge-handling conveyor is available for an inline process. To fit a manual load/unload application, an adjustable circuit board fixture can accommodate various part sizes with one flexible design.

## CURING AND BOARD HANDLING OPTIONS

PVA offers a full line of board handling and inline curing equipment to help enhance your coating application. These modular systems provide for efficient expansion of your coating line to create a "hands off" process. All equipment comes equipped with fault recovery software that closely monitors each step of the process and alerts the operator of any malfunction.

## HEAT / MOISTURE CURE



The IR2000 from PVA offers complete infrared heat capabilities in four foot or eight foot curing lengths. Single or double-sided processing is available with maximum IR panel temperatures reaching 260-degrees Celsius (500-degrees Fahrenheit). Each heating zone measures 24" (610 mm) in width and can be

independently controlled. A humidity option and CO<sub>2</sub> presence can also be added to the IR2000 to enhance the curing cycle. Temperature profile, humidity level, and pin chain conveyor speed can be programmed to meet your specific curing requirements.

## UV CURE

The UV2000 features Fusion® UV lamps for fast and consistent cure of coatings throughout the life of the bulb. A wide array of lamp widths between 6" and 20" are available to meet your specific requirements. Edge belt conveyor speed is programmable and optimized to decrease cycle time through the tunnel. Single and double-sided capabilities are available.



## BOARD INVERTER

The PVA BI2000 is a compact inverting device to allow double-sided processing of any board or pallet. A pneumatic, motorized action flips up to an 18" (457 mm) square device. Bi-directional conveyor travel allows maximum flexibility in designing a line configuration.

## QUEUE / INSPECTION STATIONS

PVA also manufactures a variety of conveyorized queue, loading or unloading, and inspection stations for your inline process. Custom lengths are available to maximize line efficiency.



## GLOBAL SERVICE NETWORK

PVA provides award winning 24-hour global support for all customers. *Circuits Assembly* and *Technology Forecasters* have twice honored PVA as the industry leader in customer service with the presentation of their prestigious Service Excellence Award. PVA provides sales and service offices in Los Angeles, Ireland, China, Belgium, and the United Kingdom to enhance the capabilities of our world headquarters in New York.

