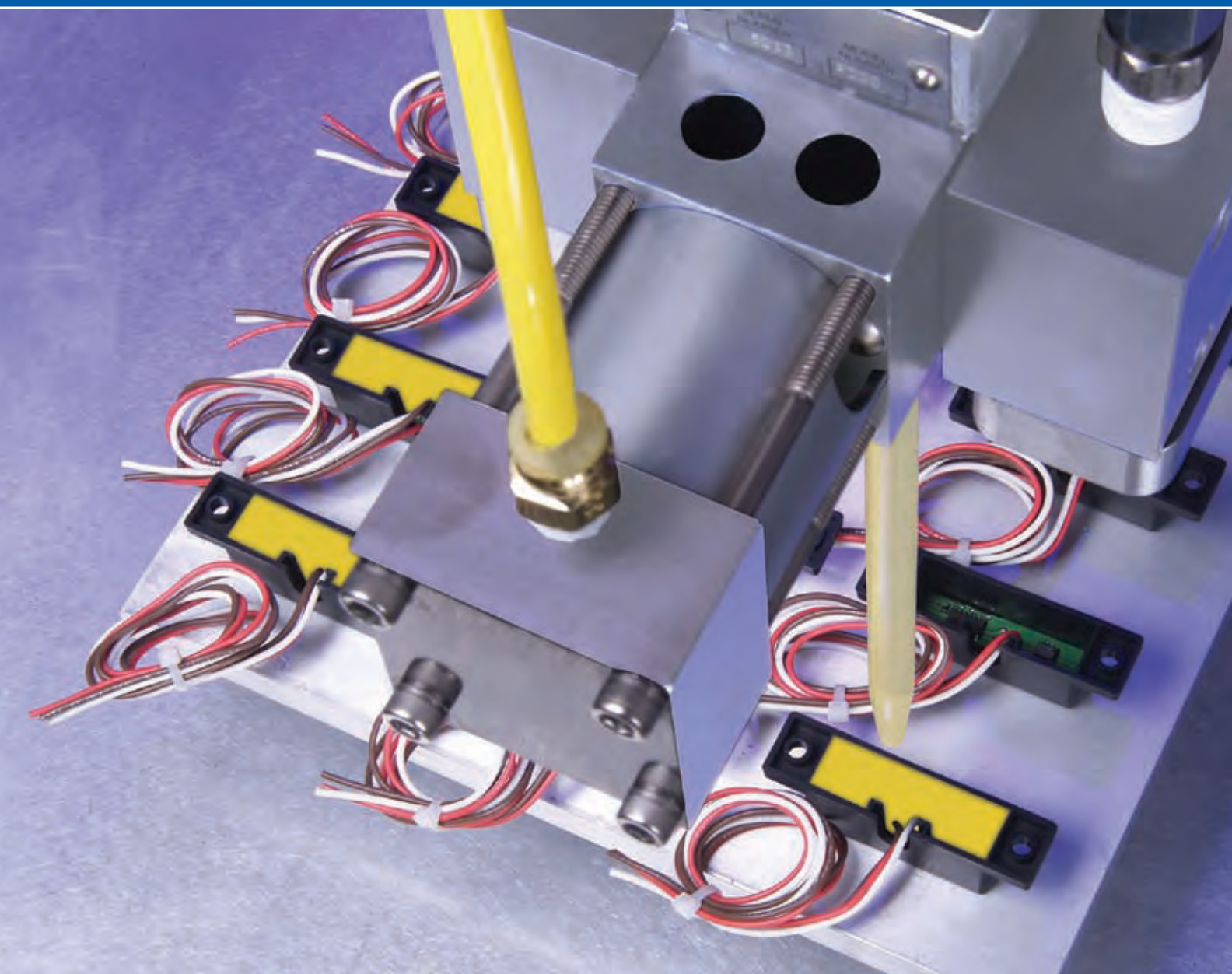




# Graco® PD44

Patented Meter, Mix and Dispense Valve  
for Two-Component Micro Dispensing

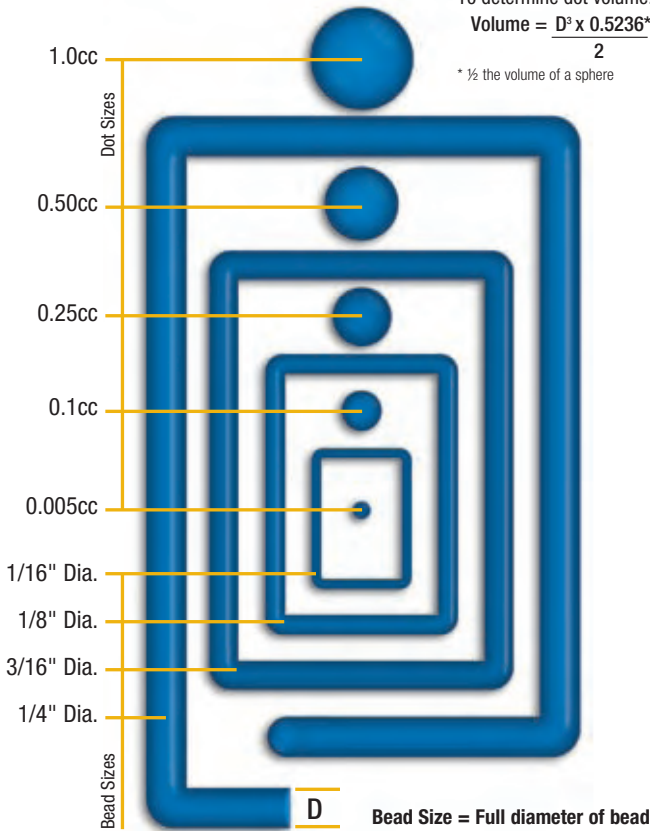


# Graco PD44 Valve for Precise Micro-Dispensing

To determine dot volume:

$$\text{Volume} = \frac{D^3 \times 0.5236^*}{2}$$

\*  $\frac{1}{2}$  the volume of a sphere



## Exceptional Performance

The Graco PD44 Valve is specifically designed to dispense small amounts of water thin to paste viscosity materials from 0.005 cc's to 5 cc's. The metering rods are matched with machined seals for improved seal life. There are no material hoses between the rod pump outlets and mixer inlet which eliminates potential ratio or shot size problems (phasing) due to hose expansion and contraction.

## Graco PD44 Valve features

- Specifically designed to accurately dispense shots of two-component epoxies, urethanes, silicone and most reactive resin systems
- Improved low viscosity spool design
- Rod positive displacement metering
- Precise mix ratio and shot repeatability
- Eliminates cleaning and potential hardening of materials in the valve

## Key Applications

Potting  
Gasketing  
Sealing  
Encapsulation  
Syringe Filling

## Key Industries

Automotive Electronics  
Consumer Electronics  
Medical  
Sporting Goods

Automotive Components  
(ex: lighting)  
Appliance  
Product Assembly



# How It Works

## Materials remain separate until injected into static mixer.

The patented Graco PD44 Valve features balanced inlet/outlet spool assemblies that do not displace material while shifting from the reload to the dispense position. This allows pressure feeding of the "A" and "B" components up to 1200 psi during reloading while isolating the materials from the mixer inlet. Upon shifting to the dispense position, an accurate volume of "A" and "B" components is injected into the disposable mixer inlet by rod displacement metering technology

## Reload

Spools shift to the right

- Material feed inlets are opened
- Materials are transferred into the metering chambers by a pressurized feed system
- Outlet ports are blocked
- Metering rods are retracted to a precise position determining the volume of each material

## Shift

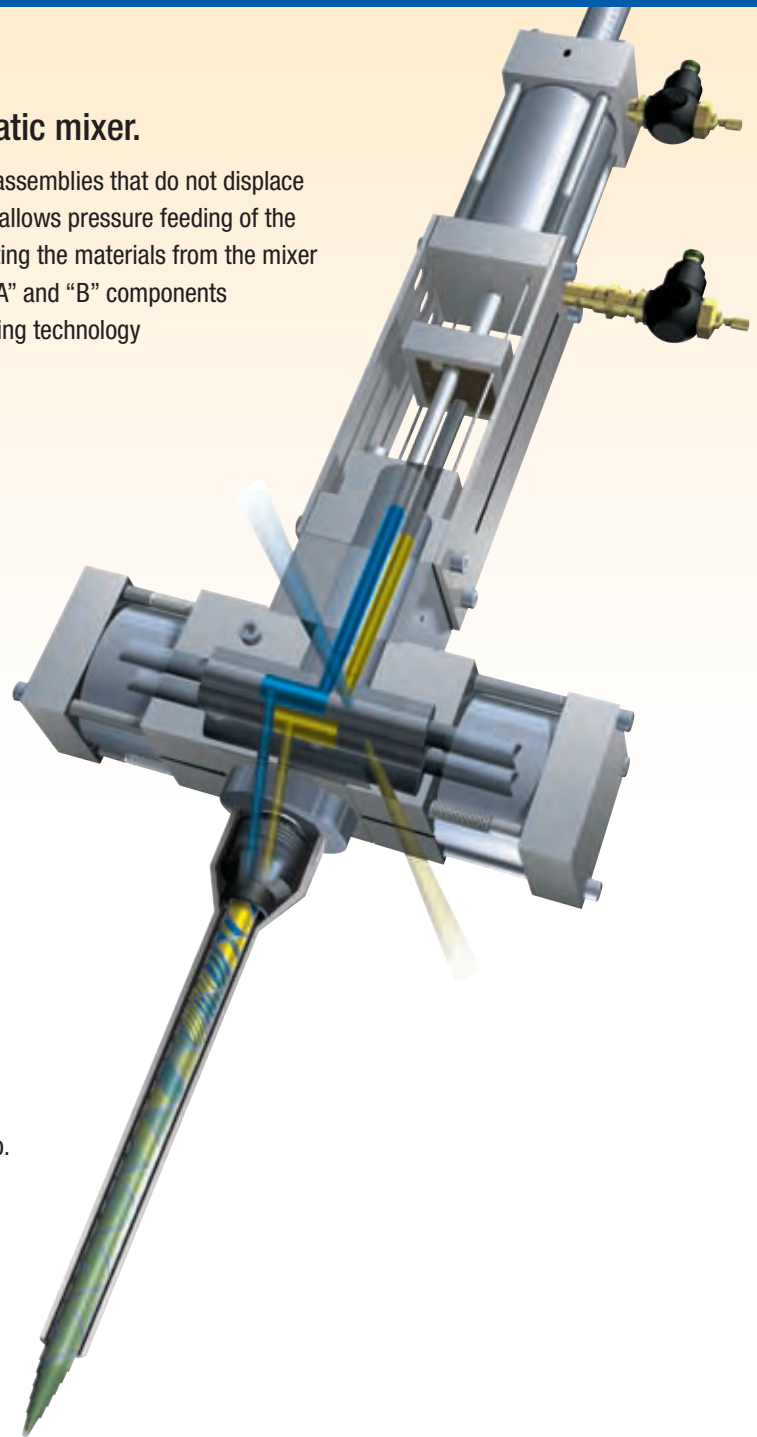
The balanced spool assemblies shift to the dispense position

- Material path to the mixer inlet is opened
- Material feed inlet ports are blocked
- Metering rods remain in the retracted position

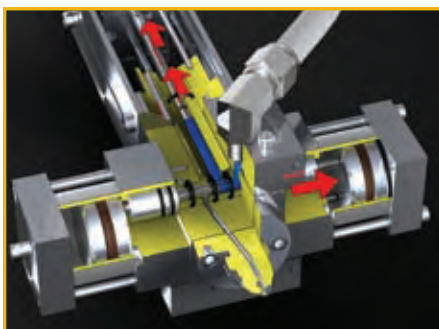
## Dispense

Metering rods drive down

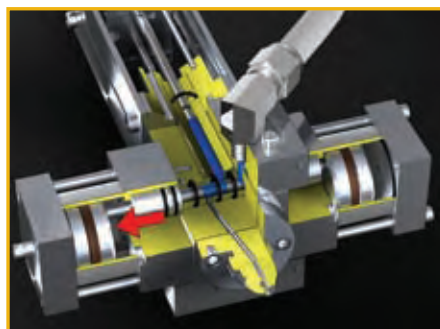
- A and B materials are simultaneously dispensed from the metering chamber into the disposable mixer
  - A and B materials are dispensed at the predetermined volume ratio.
- Upon completion of the dispense stroke, the metering rod and spool assemblies shift back to the reload position



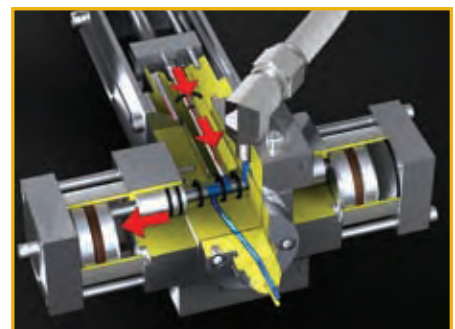
RELOAD



SHIFT



DISPENSE



# 1 Graco PD44 Valve

## Patented PD44 Metering Valves

Meter, mix and dispense shots from 0.005 to 5 cc's and handle material ratios from 1:1 to 25:1.

### Metering Drive

### Machined Seals

A longer life seal means less down time and reduces maintenance costs

### "A" and "B" Precision Metering Rods

Accurate and repeatable volume ratio control

### Upgraded Sensors

Faster response and reliable position control for long term performance

### Balanced Inlet/Outlet Spool/Sleeve Assembly

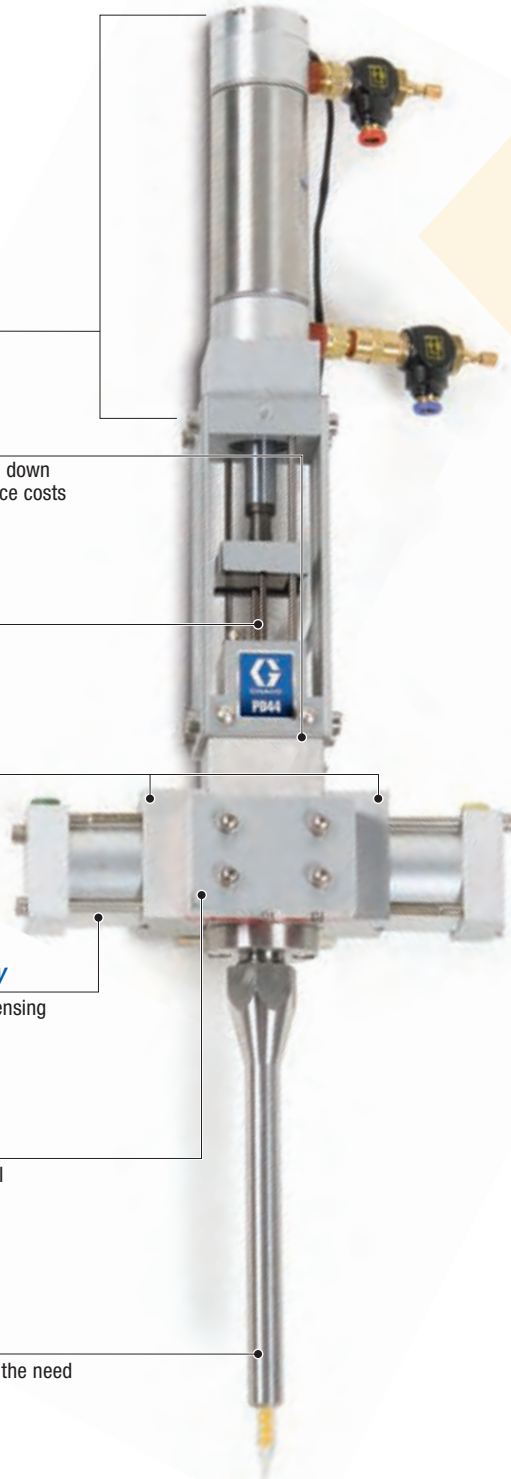
Accurate reloading and dispensing to ensure ratio accuracy

### Material Feed Inlet Block

Keeps material separate until in the mixer, eliminating the need for solvent flush

### Shroud and Disposable Mixer

Reduce waste and eliminate the need to solvent flush your system



## Metering Drives

### Manual control of shot size

Pneumatically-driven valves have a micrometer adjustment to easily set the desired shot size.



### Programmable shot size

Linear actuator provides shot size control. Useful feature when different shot sizes are required.



### Programmable flow and shot size

Electric drive motor programs shot size and flow rate, providing precise control for applying continuous beads of material. This is key when adapting the PD44 valve to X-Y-Z motion tables.



## Pneumatic/Linear Actuator Controller



### Manual and Programmable Shot Size

Sensors in the valve monitor the position of the spool assemblies and metering rods. These sensors interface with the control panel to assure proper valve operation.

PD44 systems can help you save material and labor costs for a variety of dispensing applications, whether you are using manual, semi-automated or automated manufacturing processes.

## Electric Controller



### Programmable Flow and Shot Size

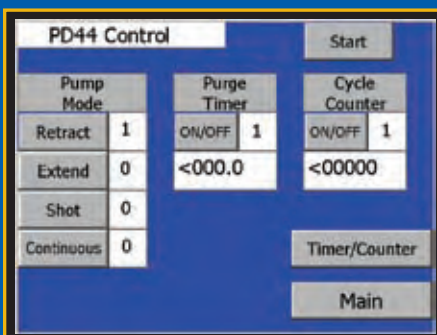
This free standing table top controller includes a NEMA 23 stepper motor for precise flow and shot control.

Other features include:

- A monochrome touch screen, audio alarm and footswitch \*
- Seven programmable shot sizes and flow rates
- Customer I/O connections for integration with auxiliary equipment.\*

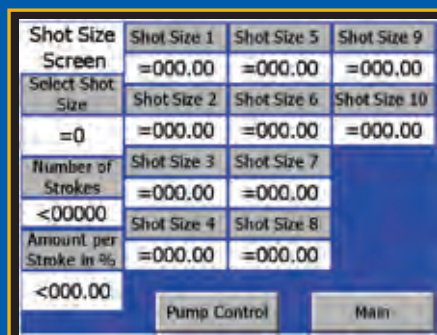
\*Also included with Pneumatic/Linear actuator controller

## Controller Screen Shots



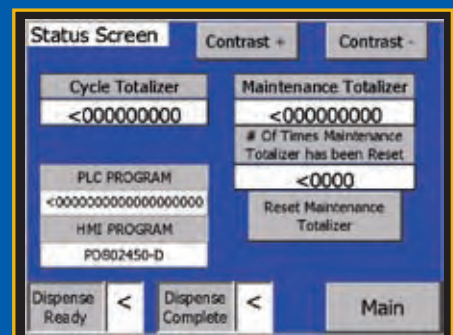
### Graco PD44 Valve Controller

- Simple operator interface for day-to-day operation
- Password protection for added security
- Anti-gel/purge timer to protect static mixer from curing



### Shot size screen

- Programmable shot sizes for fast operator set up
- Shot size storage for quick change between parts



### Status screen

- System monitoring for productive planning
- Scheduling preventative maintenance

## Cartridge Feed Systems

Transfer low to medium viscosity materials to the PD44 valve by placing cartridges of various sizes into pressurized containers.



## Transfer Pumps and Rams

Pump low to high viscosity materials directly from bulk containers. Use pail and drum rams, transfer pumps and feed hoses as required.



## Reservoir Tanks

Transfer low to medium viscosity materials to the PD44 valve using various sized reservoir tanks.



## Complete System



PD44 with pneumatic controller, manual linear actuator and dual one gallon transfer pump feed package.

## Technical Specifications

"A" and "B" Metering Rods . . . . .	A wide selection of standard size metering rods are available depending on the ratio and shot sizes desired. Custom sized metering rods can be machined to accommodate most material ratios. The standard construction of the main body is 303/304 stainless steel.
	The standard construction of the metering assembly is a nitrided tool steel rod and a nitrided tool steel tube. Optional materials include stainless steel rod with UHMW tube and a tungsten rod with UHMW tube.
Ratio Range . . . . .	1:1 to 25:1 by volume depending on the size of the metering rods selected.
Shot Size Capability . . . . .	0.005 cc's to 5.0 cc's depending on the size of the metering rods selected.
Cycle Rate . . . . .	Up to 60 cycles per minute with pneumatic drive Max cycle depends on the length of the stroke, size of metering rods, material viscosity, mixer, outlet needle employed and any back pressure or flow limitations created by the product into which material is being dispensed.
Balanced Inlet/Outlet Spool Assemblies . . . . .	The pneumatically actuated spool assemblies keep the "A" and "B" materials separate in the valve and isolate the material inlets from the outlets to the mixer. The standard construction of the spool assembly is a nitrided tool steel spool and a nitrided tool steel sleeve. Optional materials include stainless steel spool with UHMW sleeve and a tungsten spool with UHMW resleeve.
Material Feed System . . . . .	Pressure feed systems including cartridges, tanks and transfer pumps, can be employed to feed "A" and "B" components up to 1200 psi. The appropriate selection of feed equipment is dependent on material viscosity and processing requirements.
Accessories . . . . .	Level controls, agitators, follower plates, vacuum degassing, nitrogen blanketing, etc. are readily available.
Mixers . . . . .	Disposable Posimixer® is available in sizes from 1/8 in (3.175 mm) to 3/8 in (9.525 mm) in diameter and in various number of elements to provide thorough blending of most reactive resin systems. Lab tests may be required to determine the specific mixer required for a particular application.
Disposable Needles . . . . .	From 14 gauge to 30 gauge A variety of Luer Lock needle sizes are available to adapt to the Posimixer outlets.
Metering Drives . . . . .	The standard drive is an air cylinder with a precise manual stroke adjust. Additional drive options include: A linear resistive transducer air cylinder providing electronic shot size control. A stepper or servo ready lead screw actuator for precise shot and flow control.
Machine Controls . . . . .	Free standing tabletop control panels are available for air cylinder and motor driven valves. Standard hardware includes: Monochrome touch screen, audio alarm and foot switch. Standard features include: Purge timer, cycle counter and totalizer. Motor driven controls include a NEMA 23 stepper motor featuring shot size and flow rate control.
Dimensions . . . . .	Body – 15 in (381 mm) H x 4 1/8 in (105 mm) L x 7 9/16 in (192 mm) W Mixer – Add 4 in (100 mm) to 14 3/4 in (375 mm) H to the height. Pneumatic Controller – 15 in (381 mm) W x 12 in (305 mm) D x 13 in (330 mm) H. Electric Controller – 20 in (508 mm) W x 8 in (203 mm) D x 20 in (508 mm) H.
Weight . . . . .	PD44 valve only – 14 lb (6.35 kg) – 15 lb (6.80 kg) (depends on drive) PD44 bench stand and controller – 50 lb (22.68 kg) to 75 lb (34.02 kg) (depends on options)
Service Requirements . . . . .	Normal industrial compressed air supply - 0.1 (0.0028 m <sup>3</sup> /min) to 2.58 CFM (0.07 m <sup>3</sup> /min) at 80 psi (5.62 kg/cm <sup>2</sup> ). Electric – 120/240V, 50/60Hz.