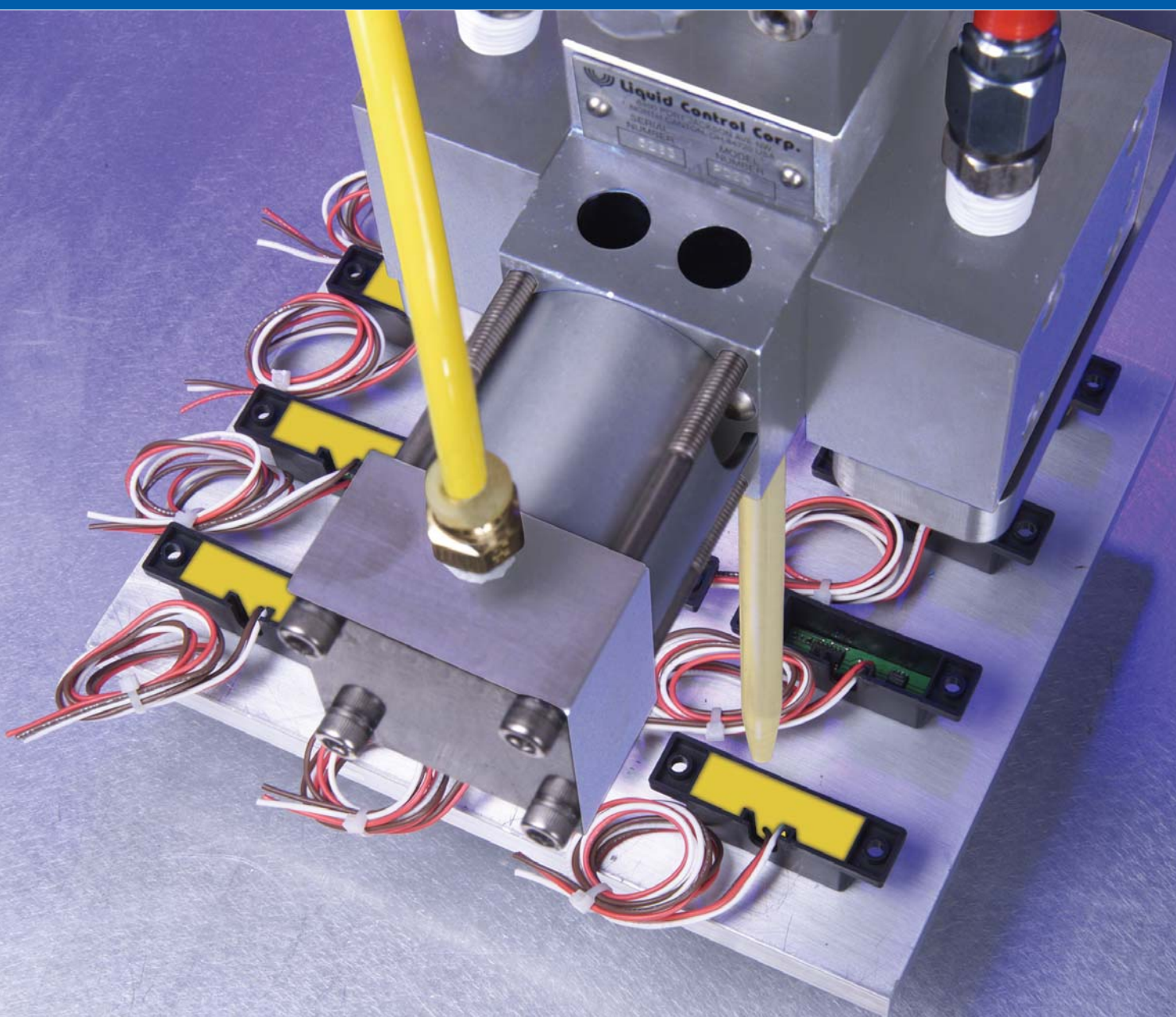




PD44 Dispensing System

A unique Patented Technology for Micro Dispensing
Two-Component Materials



GRACO | LIQUID CONTROL

PROVEN QUALITY. LEADING TECHNOLOGY.

Application



PD44 Dispensing System Key Industries and Applications

Applications

- 4 Potting
- 4 Gasketing
- 4 Sealing
- 4 Encapsulation
- 4 Syringe Filling

Industries

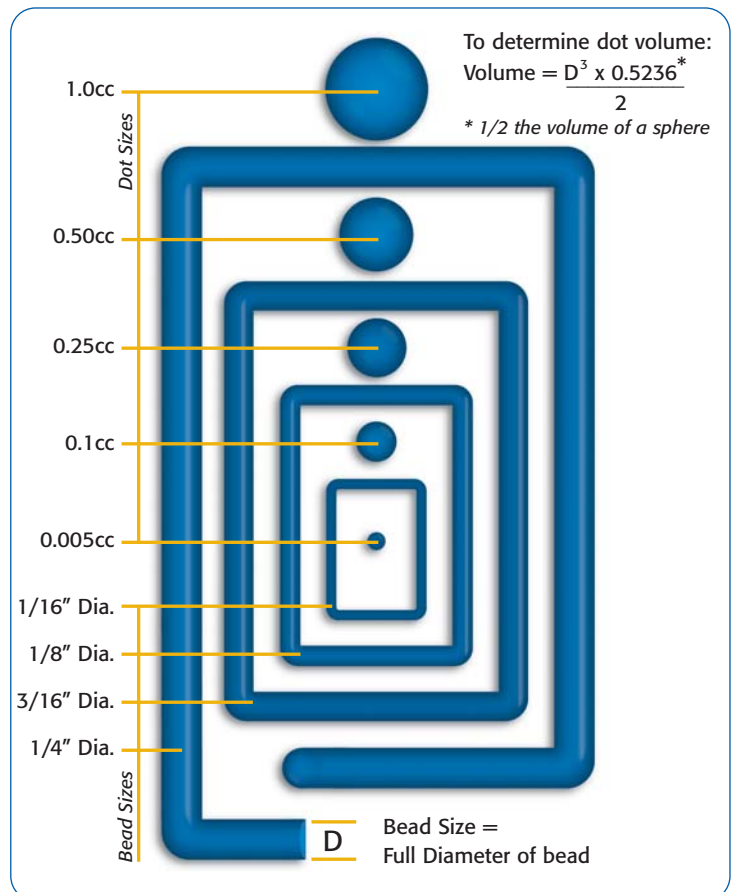
- 4 Automotive Electronics
- 4 Consumer Electronics
- 4 Medical
- 4 Sporting Goods
- 4 Automotive Components (ex: lighting)
- 4 Appliance
- 4 Product Assembly

Exceptional Performance

The PD44 is specifically designed to dispense small amounts of water thin to paste viscosity materials from 0.005cc's to 5cc'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.

PD44 Dispensing System 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



How it works

Materials remain separate until injected into static mixer

The patented 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 without any material displacement, 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

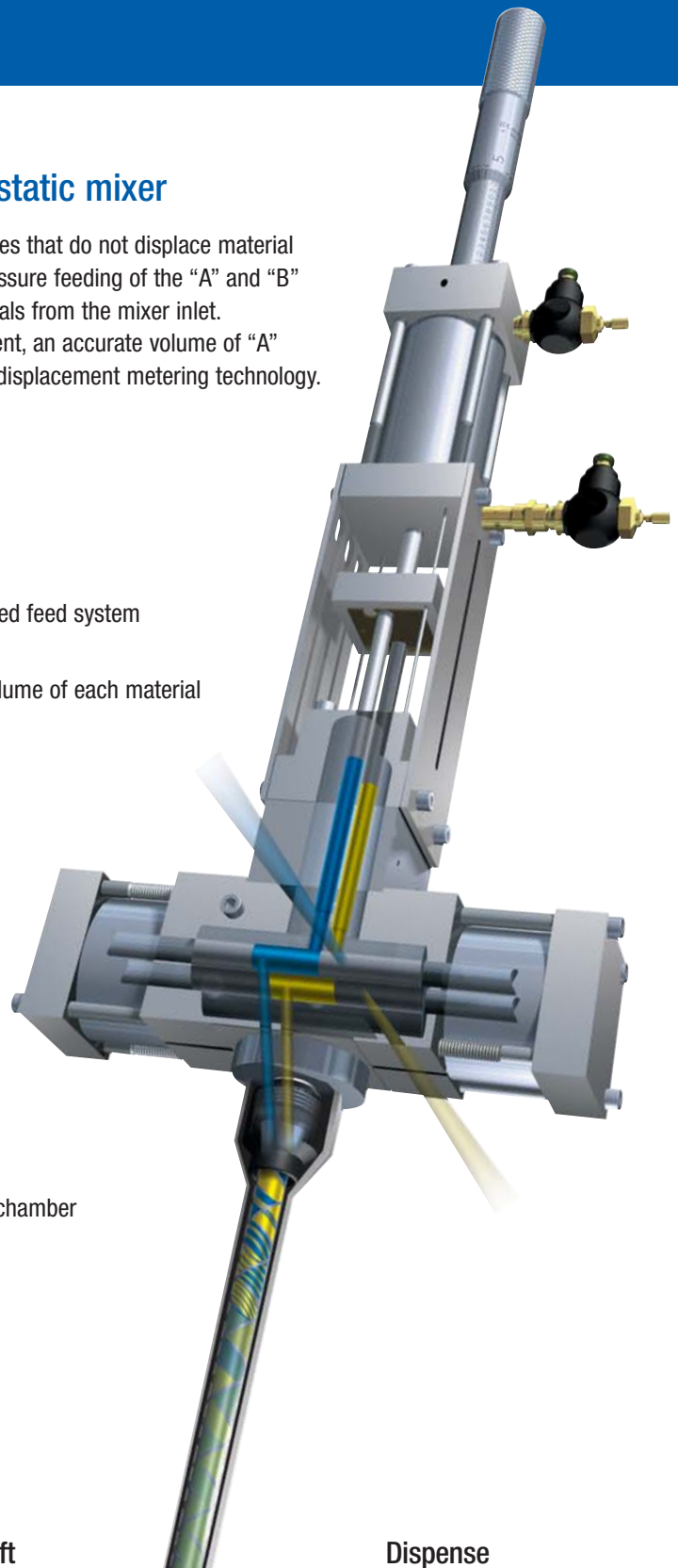
The balanced spool assemblies shift to the dispense position

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

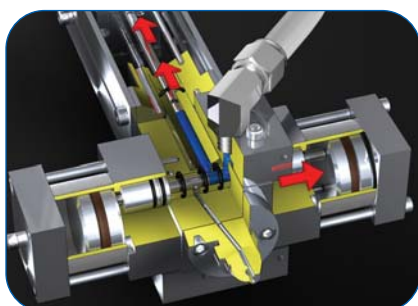
Dispense

Metering rods drive down

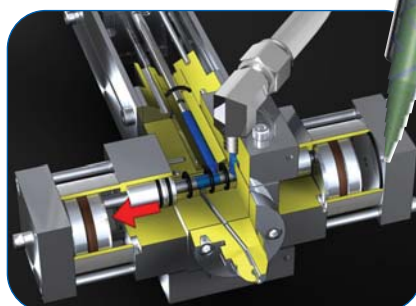
- A and B materials are simultaneously dispensed from the metering chamber into the disposable mixer
- A and B materials are dispensed at the predetermined ratio. Upon completion of the dispense stroke, the metering rod and spool assemblies shift back to the reload position



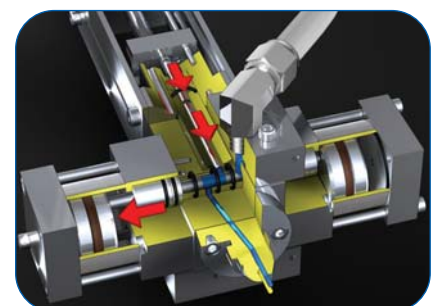
Reload



Shift



Dispense



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

"A" and "B" Precision Metering Rods

for accurate and repeatable volume ratio control

Machined Seals

for longer cycle life

Material Feed Inlet Block

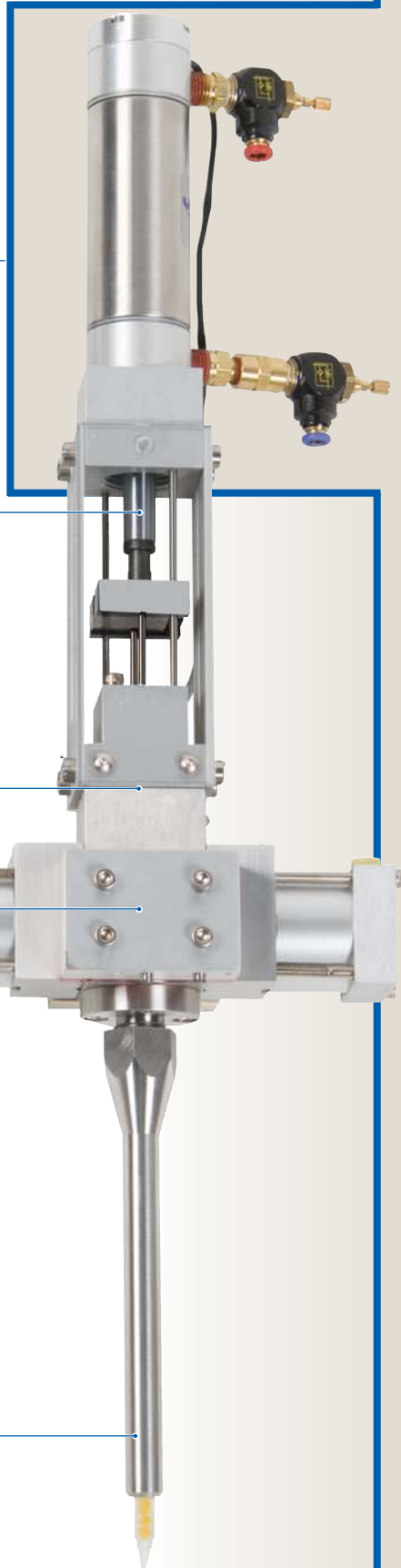
Balanced Inlet/Outlet Spool/Sleeve Assembly

for accurate reloading and dispensing

Upgraded Sensors

for faster response and reliable position control for long term performance

Shroud and disposable mixer



Metering Drives

Manual control of shot size

Pneumatically-driven valves have micrometer adjuster to easily set the desired shot size. The micrometer features a locking mechanism to fix the selected shot size.



Programmable Shot size control

Linear actuator provides shot size control. Useful feature when a different programmable shot size is required.



Programmable flow and shot size control

Electric drive motor allows programmable shot size and flow rate. This is important when adapting the PD44 valve to X-Y-Z motion tables and to provide precise flow rate control when applying continuous beads of material.



Controller

Pneumatic controller



Used for Manual and Programmable Shot Size Control

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 labour costs for a variety of dispensing applications, whether you are using manual, semi-automated or automated manufacturing processes.

Electric controller



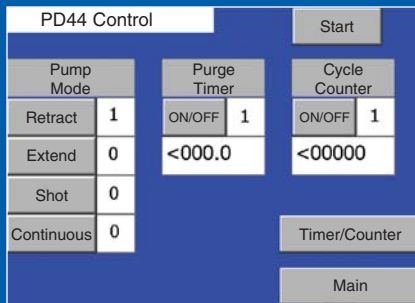
Used for Programmable Flow and Shot Size

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

Other features include:

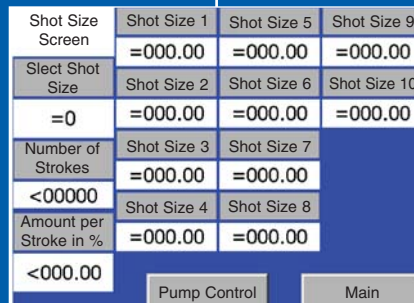
- A monochrome touch screen, audio alarm and foot switch
- Seven programmable shot sizes and flow rates
- Customer I/O connections for integration with auxiliary equipment.

Controller Screen Shots



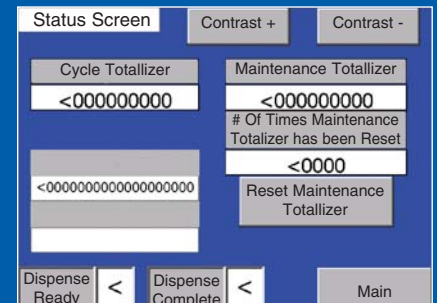
PD44 Controller

- 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

Systems

Feed System

Cartridge Feed Systems

Cartridges of various sizes can be placed in pressurized retainers to allow low to medium viscosity materials to transfer to the PD44 valve.



Transfer Pumps and Rams

Low to high viscosity materials can be pumped directly from bulk containers using pail and drum rams, transfer pumps and feed hoses as required.



Reservoir Tanks

Various sized reservoir tanks can be used to transfer low to medium viscosity materials to the PD44 valve.



Complete System

PD44 with pneumatic controller, manual micrometer shot adjuster and dual one gallon transfer pump feed package.



Technical Specifications

"A" and "B" Metering Rods	<p>A wide selection of standard size metering rods are available depending on the ratio and shot sizes desired.</p> <p>Custom sized metering rods can be machined to accommodate most material ratios.</p> <p>The standard construction of the main body is 303/304 stainless steel.</p> <p>The standard construction of the metering assembly is a nitrided tool steel rod and a nitrided tool steel tube.</p> <p>Optional materials include stainless steel rod with UHMW polyethylene tube and a tungsten rod with UHMW polyethylene tube.</p>
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	<p>Up to 60 cycles per minute with pneumatic drive</p> <p>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.</p>
Balanced Inlet/Outlet Spool Assemblies	<p>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.</p> <p>Optional materials include stainless steel spool with UHMW polythene sleeve and a tungsten spool with UHMW polythene sleeve.</p>
Material Feed System	<p>Pressure feed systems including cartridges, tanks and transfer pumps, can be employed to feed "A" and "B" components up to 1200 PSI.</p> <p>The appropriate selection of feed equipment is dependent on material viscosity and processing requirements.</p>
Accessories	level controls, agitators, follower plates, vacuum degassing, nitrogen blanketing, etc. are readily available.
Mixers	<p>Disposable Posimixers are available in sizes from 1/8" (3.175mm) to 3/8" (9.525mm) in diameter and in a various number of elements to provide thorough blending of most reactive resin systems.</p> <p>Lab tests may be required to determine the specific mixer required for a particular application.</p>
Disposable Needles	<p>from 14 gauge to 30 gauge.</p> <p>A variety of Luer Lock needle sizes are available to adapt to the Posimixer outlets.</p>
Metering Drives	<p>The standard drive is an air cylinder with a precise manual stroke adjustment.</p> <p>Additional drive options include:</p> <p>A linear resistive transducer air cylinder providing electronic shot size control.</p> <p>A stepper or servo ready lead screw actuator for precise shot and flow control.</p>
Machine Controls	<p>Free standing table-top control panels are available for air cylinder and motor driven valves.</p> <p>Standard hardware includes: Monochrome touch screen, audio alarm and foot switch.</p> <p>Standard features include: Purge timer, cycle counter and totalizer.</p> <p>Motor driven controls include a NEMA 23 stepper motor featuring shot size and flow rate control.</p>
Dimensions	<p>Body - 15" (381mm) H x 4 1/8" (105mm) L x 7 9/16" (192mm) W.</p> <p>Mixer - Add 4" (100mm) to 14 3/4" (375mm) H to the height.</p> <p>Pneumatic Controller - 15" (381mm) W x 12" (305mm) D x 13" (330mm) H.</p> <p>Electric Controller - 20" (508mm) W x 8" (203mm) D x 20" (508mm) H.</p>
Weight	<p>PD44 valve only - 6.35 kg - 6.80 kg (depends on drive).</p> <p>PD44 bench stand and controller - 22.68kg to 34.02kg (depends on options).</p>
Service Requirements	<p>Normal industrial compressed air supply - 0.1 (0.0028 m³/min) to 2.58 CFM (0.07m³/min) at 80psi (5.62 Kglcm²).</p> <p>Electric - 120/230V, 50/60Hz.</p>



ABOUT GRACO

Founded in 1926, Graco is a world leader in fluid handling systems and components. Graco products move, measure, control, dispense and apply a wide range of fluids and viscous materials used in vehicle lubrication, commercial and industrial settings.

The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service. Working closely with qualified distributors, Graco offers systems, products and technology that set the quality standard in a wide range of fluid handling solutions. Graco provides equipment for spray finishing, protective coating, paint circulation, lubrication, and dispensing sealants and adhesives, along with power application equipment for the contractor industry. Graco's ongoing investment in fluid management and control will continue to provide innovative solutions to a diverse global market.

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