

CAM200

DIAPHRAGM DISPENSE VALVE

Version: B12-2112

Rev: C

Operation Manual



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CAM200

Diaphragm Dispense Valve, Lever Actuated

Thank you for purchasing the CAM200 dispensing valve from PVA. Before attempting to operate the CAM200, we recommend that you take a few minutes and read the following operation and setup manual. This will assist in familiarizing you with the product and ensure a successful installation.

As always, if any questions or problems arise, do not hesitate to contact PVA's Valve Service Department for support. This department can be reached at PVA headquarters via telephone or e-mail.

Again, thank you for your purchase, and we look forward to assisting you in the future as you continue to improve your dispensing processes.

Theory of Operation

The CAM200 is an all plastic handheld dispense valve that uses a unique "floating diaphragm" design. This valve is designed with a wand style body to make it more ergonomic for a variety of handheld applications. The all plastic construction allows adhesives such as Cyanoacrylates and Anaerobics to be dispensed through the valve along with a variety of other low to medium viscosity fluids. Applications can include dispensing dots, beads, or for potting.

The CAM200 has one body to house the fluid and piston & lever section. These include:

- 1) Piston & Lever section (Aluminum top cap with spring loaded lever)
- 2) Fluid section (Delrin body with Teflon diaphragm)

The piston & lever section and fluid section are separated by a diaphragm that is clamped in between the two pieces. The piston & lever section is an aluminum top cap that houses a spring loaded piston which presses against the diaphragm to keep the valve in the closed position. When the lever is depressed it will raise the piston off the diaphragm allowing it to float upward to dispense fluid through the wand style body to the dispense tip.

Wetted parts on the CAM200 include:

- Delrin
- Teflon
- Polyethylene

Safety

Due to material contents being under pressure eye protection is required for operators. Refer to MSDS sheets on material being dispensed for other precautions.

Setup

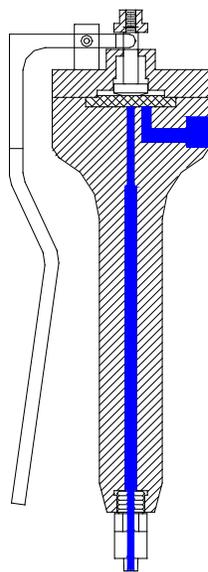
The CAM200 does not require an air source for operation but relies only on the operator to depress a lever to actuate the valve. Constant material pressure is applied to the diaphragm of the valve which is held in place with the spring loaded piston. When the lever of the valve is depressed, the plunger lifts off the diaphragm and fluid is allowed to dispense. When the lever is released, the spring will again force the plunger into the diaphragm to return the valve to the closed position. Note that the valve is normally in the closed position.

Fluid is supplied to the CAM200 through the 1/8"npt port located on the Delrin fluid section of the valve.

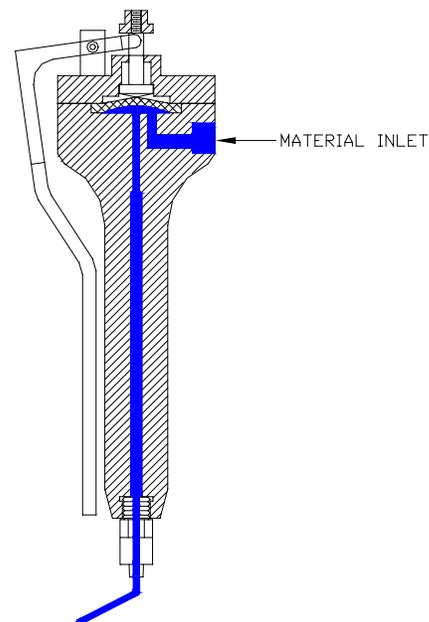
Diaphragm Actuation

When the lever is depressed to lift the plunger, the diaphragm will flex under fluid pressure to allow the valve to open and dispense.

VALVE CLOSED



VALVE OPEN



Shutting Down Valve

At the end of the day or shift, it is necessary to shut down the CAM200 dispense system properly in order to keep material from curing inside the valve.

- 1) Remove the disposable dispense tip from the luer adapter (9) and discard.
- 2) Thread a luer lock plug onto the luer adapter (PVA part # PV-LLCAP)
- 3) Relieve fluid pressure on the valve by turning off air pressure from the fluid reservoir.

Starting Up Valve

At the beginning of the day or a shift it is necessary properly set up the CAM200 to resume normal operation.

- 1) Remove the luer lock plug from the luer lock adapter (9) and discard.
- 2) Place a new dispense tip onto the luer lock adapter (9).
- 3) Apply fluid pressure to the valve by turning on the pressure to the fluid reservoir.
- 4) Cycle the valve to the open position to bleed all air that may have become trapped when changing the needle tip.

Tool Kit

PVA offers standard tool kits for all dispensing valves. The tool kit for the CAM200 is part number **B12-2113**, which includes all necessary tools to perform maintenance on this dispense valve:

B12-2113 Includes:

Qty	Part Number	Description
1	0266244	8" Adjustable Wrench
1	7122A38	0.050" Allen Key
1	26569	9/64" Allen Key
1	9570K71	Hook and Pick Set

Operation

Refer to assembly drawing **112-2928** for part reference numbers.

- 1) Plumb up the valve as outlined above in the **Setup** procedures.
- 2) Being sure the valve is not aimed toward anyone, pressurize the fluid delivery system. Note: The fluid pressure must be set to a minimum of 15psi. to flex the diaphragm to the open position.
- 3) Cycle the valve to the open position by depressing the lever (7) to purge. Fluid should begin to dispense from the tip of the valve. Continue dispensing until all air is removed.
- 4) Check fluid connection for leaks. If the valve is leaking or dripping, refer to the **Troubleshooting** section.
- 5) Adjust the material pressure until the desired flow rate is achieved.
- 6) Fine tune the flow rate with the stroke adjustment nut (5). First loosen the set screw (11) with a .050" Allen key then turn the stroke adjustment clockwise to increase flow and counter-clockwise to decrease the flow rate. If the stroke is loosened too far out then the valve will not open.
- 7) Once the stroke adjustment setting is determined, retighten the set screw (11) using a .050" Allen key.

Note: Refer to **Troubleshooting** section for any problems.

Routine Cleaning and Disassembly

Cleaning and rebuilding the valve will be required from time to time. A spare parts kit, part # **CAM2-SP** is available with all the normal wear parts included.

- 1) If possible, flush the valve thoroughly with an appropriate solvent before disassembly. (Refer to MSDS sheets of fluid for suggested solvent)
- 2) Begin disassembly by first removing fluid pressure from the system.
- 3) Remove all fluid delivery fittings, hoses, etc. from the valve.
- 4) Using the tip of a 9/64" Allen key, remove the four machine screws (12) that hold the top cap (1) to the fluid section (3).
- 5) Lift off the top cap assembly and remove diaphragm (2).
- 6) Using an adjustable wrench, unthread and remove the plastic luer adapter (9) from the fluid section (3).
- 7) Clean all of the wetted parts thoroughly with an appropriate solvent.
- 8) Using a .050" Allen key unthread and remove the set screw (11) that threads into the stroke adjustment nut (3).
- 9) Unthread and remove the stroke adjustment nut (3) from the piston (4) which will allow the piston and spring (8) to slide out through the bottom of the top cap (1).
- 10) Using a .050" Allen key unthread and remove the two set screws (11) that thread into the standoffs (6).
- 11) Slide the dowel pin (10) out of the standoffs (6) and lever (7) to separate them from the top cap (1).
 - Replace components with spares provided in the spare parts kit.

Assembly Instructions

- The diaphragm must be assembled into the valve with the Teflon side facing the fluid.
Note: The Teflon side is the thinner, smooth side.



- Slide the standoffs (6) through the bottom of the top cap (1) and rotate the threaded sides outward.
- Place the lever (7) in between the standoffs (6) and insert the dowel pin (10) to hold in place.
- Using a .050" Allen key thread the two set screws (11) into the standoffs (6) to hold the dowel pin (10) in place but leave loose until the valve is assembled.
- Place the spring (8) over the plunger (4) and insert the assembly through the bottom of the top cap (1) and through the cutout in the lever (7).
- Thread the stroke adjustment nut (5) onto the plunger (4) to hold the piston and lever assembly together.
- Using a .050" Allen key thread the set screw (11) into the stroke adjustment (11).
- Place the diaphragm (2) onto the groove of the fluid section (3) with the thin Teflon side down, against the fluid.
- Mount the top cap (1) over the diaphragm (2) and assemble to the fluid section (3) using the four socket head cap screws (12) tightening them down evenly with a 9/64" Allen key.
- Tighten the two set screws (11) that thread into the standoffs (6) using a .050" Allen key.
- Thread the plastic luer adapter (9) into the bottom of the fluid section (3) and tighten using an adjustable wrench.
Note: Be sure not to over tighten the luer adapter (4).

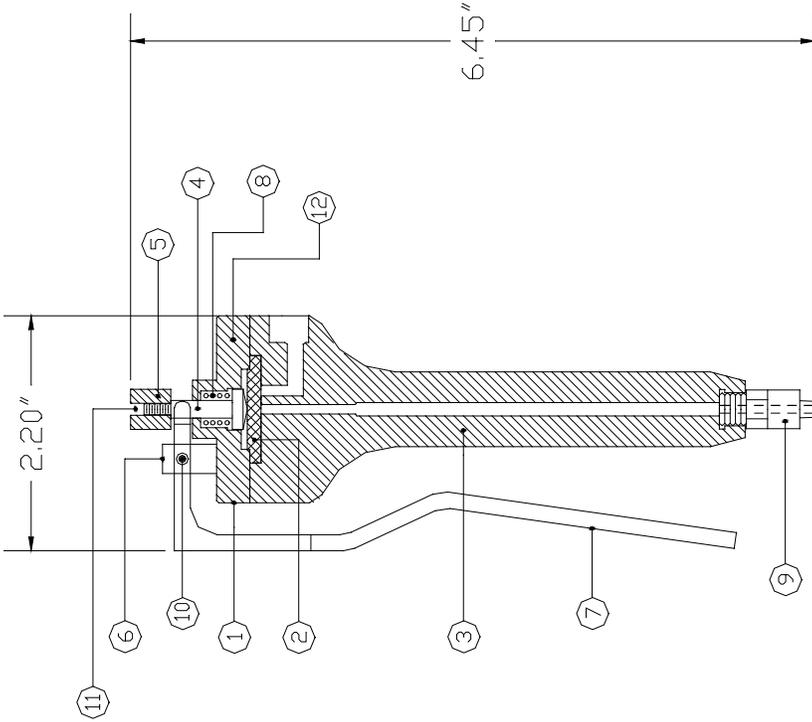
Spare Parts

PVA offers standard spare parts kits for all dispensing valves. These kits are stocked for immediate shipment and allow replacement of all wearable parts of the valve.

The spare parts kit for this valve, product number **CAM2-SP**, includes the following components:

CAM2-SP Includes:

Qty	Part Number	Description
10	V323	Diaphragm
1	V300-UV	Luer Adapter



REV	REVISION DESCRIPTION	DRN BY	DATE	DESIGN REV	REVISION DESCRIPTION	DRN BY	DATE	DESIGN	MATERIAL
A	ORIGINAL DESIGN	J.A	3.24.09	J.A					PVA
									TITLE: CAM200
									DWG#: 112-2928
									QTY:- SHEET 1 OF 1
									REVA

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BILL OF MATERIALS FOR CAM200 (B12-2112):

Refer to Drawing #: 112-2928

Item	Part Number	Description	Quantity
1	V351	Valve Top Cap	1
2	V323	Diaphragm	1
3	V333-NPT	Fluid Section	1
4	214-14855	Plunger, stainless steel	1
5	V348	Stroke Adjust Nut	1
6	V352	Standoff	2
7	614-5898-1	Handle	1
8	V059	Spring	1
9	V300-UV	Plastic Luer Adapter	1
10	V061	Dowel Pin	1
11	V060	Set Screw	3
12	SH8-32X0.5	Socket Head Cap Screw	4

Troubleshooting

Problem	Possible Cause	Corrective Action
Valve does not cycle	- Fluid pressure too low - Worn diaphragm	- Increase fluid pressure above 15psi. - Replace diaphragm
Material leaks from valve tip	- Worn diaphragm - Air bubble trapped in fluid body or in dispense needle	- Replace diaphragm - Flip valve upside down and cycle until air bubbles are removed
Valve does not dispense anything	- Fluid pressure is too low - Material cured in fluid section - Worn diaphragm	- Increase fluid pressure above 15psi. - Disassemble and clean valve - Replace diaphragm
Air bubbles in fluid	- Valve not properly purged - Problem with fluid delivery system	- Flip valve upside down and cycle until air bubbles are removed - Diagnose and repair.
Dispense rate too fast	- Fluid pressure set too high - Stroke adjustment set too high - Dispense tip gauge too large	- Decrease fluid pressure - Turn stroke adjust counter-clockwise - Replace dispense tip with smaller size
Dispense rate too slow	- Fluid pressure set too low - Stroke adjustment set too low - Dispense tip gauge too small	- Increase fluid pressure - Turn stroke adjust clockwise - Replace dispense tip with larger size

PVA Warranty Policy

PVA warrants the enclosed product against defects in material or workmanship on all components for one year from the date of shipment.

The warranty does not extend to components damaged due to misuse, negligence, or installation and operation that is not in accordance with the recommended factory instructions. Unauthorized repair or modification of the enclosed product, and/or the use of spare parts not directly obtained from PVA (or from factory authorized dealers) will void all warranties.

All PVA warranties extend only to the original purchaser. Third party warranty claims will not be honored at any time.

Prior to returning a product for a warranty claim, a return authorization must be obtained from PVA's customer service department. Authorization will be issued either via the telephone, facsimile, or in writing upon your request.

To qualify as a valid warranty claim, the defective product must be returned to the factory during the warranty period. Upon return, PVA will repair (or replace) all components found to be defective in material or workmanship.

(Retain this for your records)

Product Information:

PRODUCT: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____