

Model 200 Handheld Diaphragm Dispensing Valve

User Guide



About Dymax

Light-curable adhesives. Systems for light curing, fluid dispensing, and fluid packaging.

Dymax manufactures industrial adhesives, light-curable adhesives, epoxy resins, cyanoacrylates, and activator-cured adhesives. We also manufacture a complete line of manual fluid dispensing systems, automatic dispensing systems, and light-curing systems. Light-curing systems include LED light sources, spot, flood, and conveyor systems designed for compatibility and high performance with Dymax adhesives. Dymax adhesives and light-curing systems optimize the speed of automated assembly, allow for 100% in-line inspection, and increase throughput. System designs enable stand-alone configuration or integration into your existing assembly line.

Please note that most dispensing and curing system applications are unique. Dymax does not warrant the fitness of the product for the intended application. Any warranty applicable to the product, its application, and use is strictly limited to that contained in the Dymax standard Conditions of Sale. Dymax recommends that any intended application be evaluated and tested by the user to ensure that desired performance criteria are satisfied. Dymax is willing to assist users in their performance testing and evaluation. Data sheets are available for valve controllers or pressure pots upon request.

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Introduction

This guide describes how to assemble, use, and maintain the Dymax Model 200 dispensing valve safely and efficiently.

Intended Audience

Dymax prepared this user guide for experienced process engineers, maintenance technicians, and manufacturing personnel. If you are new to pneumatically operated fluid dispensing equipment and do not understand the instructions, contact Dymax Application Engineering to answer your questions before using the equipment.

Where to Get Help

Customer Support and Applications Engineering teams are available by phone and email in Germany, Monday through Friday, from 8:00 a.m. to 5:00 p.m. Central European Time. You can also email Dymax Europe GmbH at info_de@dymax.com. Please see the back cover for worldwide contact information. For more information about this product, visit dymax.com.

Additional resources are available to ensure a trouble-free experience with our products:

- Detailed product information on www.dymax.com
- Dymax adhesive Product Data Sheets (PDS) on our website
- Material Safety Data Sheets (SDS) provided with shipments of Dymax adhesives

Safety



WARNING! *If you use this fluid dispensing equipment without first reading and understanding the information in this guide, personal injury can result from the uncontrolled release of high-pressure gas, injection injury, or exposure to chemicals. To reduce the risk of injury, read and understand this guide before assembling and using Dymax fluid dispensing equipment.*

General Safety Considerations

All users of Dymax fluid dispensing equipment should read and understand the user guide before assembling and using the equipment.

To learn about the safe handling and use of dispensing fluids, obtain and read the MSDS for each fluid before using it. Dymax includes an MSDS with each adhesive sold. MSDS for Dymax products can be requested through the Dymax website.

Specific Safety Considerations

Using Safe Operating Pressures

Pressurizing the components in the dispensing system beyond the maximum recommended pressure can result in the rupturing of components and serious personal injury. To minimize the risk of rupturing components and injury, do not exceed the maximum operating pressure of the components in your fluid dispensing system.

Preventing Injection Injury

Discharging fluids or compressed air with a dispensing tip against your skin can cause very serious injection injury. To minimize the risk of injection injury, do not place the dispensing tip in contact with your skin.

Product Overview

Description of the Model 200 Dispensing Valve

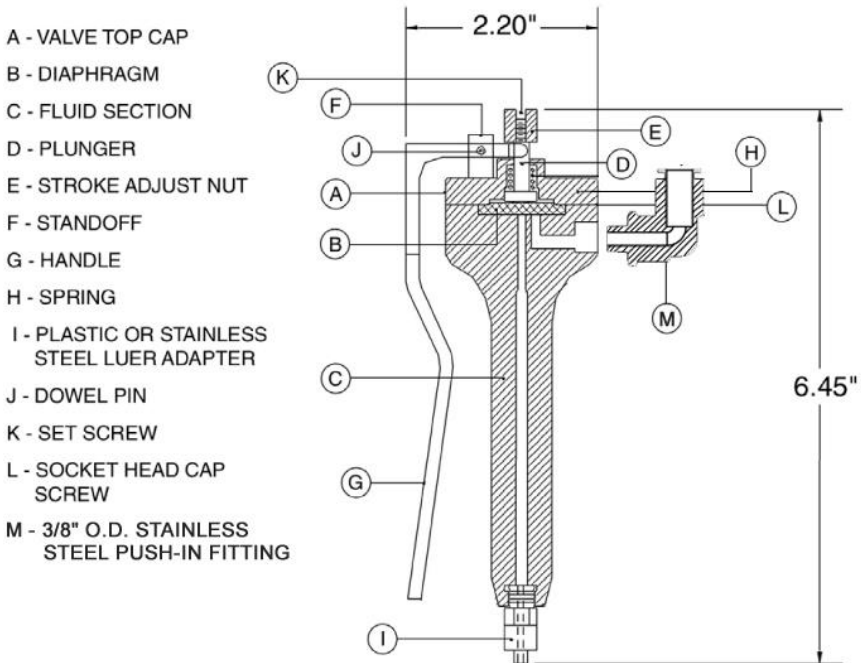
The Model 200 is a normally-closed, hand-held, manually-controlled diaphragm dispensing valve. It uses a unique floating diaphragm to achieve accurate dispensing. This valve is designed with a wand-style body to make it more ergonomic for users while providing compatibility with a variety of low-to-high viscosity fluids, including light-curable adhesives, cyanoacrylates, and anaerobic adhesives. This dispensing valve can be used for a variety of applications including dot, bead, and potting applications.

Component Description

The Model 200 is comprised of two main sections — the Fluid Section and the Piston and Lever Section, which are housed all in one Body. The Body of the Fluid Section is constructed of Delrin® and contains a Teflon® Diaphragm. The Fluid Section and the Piston and Lever Section are separated by a Diaphragm that is clamped in between the two sections. The Piston and Lever Section is comprised of an aluminum Top-Cap that houses a Spring-Loaded Piston. This Piston presses against the Diaphragm to keep the Valve in the closed position. When the Lever is depressed, the Piston raises off the Diaphragm allowing the Diaphragm to float upward to dispense fluid through the Body to the Dispense Tip.

Wetted parts on the Model 200 are made of Delrin®, Teflon®, stainless steel, and polyethylene.

Figure 1.
Model 200 Internal Component Diagram



Assembly and Setup

Unpacking and Inspecting Your Shipment

When your Model 200 dispensing valve arrives, inspect the boxes and notify the shipper of any damage immediately.

Open each box and check for equipment damage. If parts are damaged, notify the shipper and submit a claim for the damaged parts. Contact Dymax so that new parts can be shipped to you immediately.

Check that the parts included in your order match those listed below. If parts are missing, contact your local Dymax representative or Dymax Customer Support to resolve the problem.

Figure 2.
Model 200 Diaphragm Valve



Parts Included in the Model 200 Dispensing Valve

- Model 200 diaphragm valve
- Model 200 user guide

System Set-Up

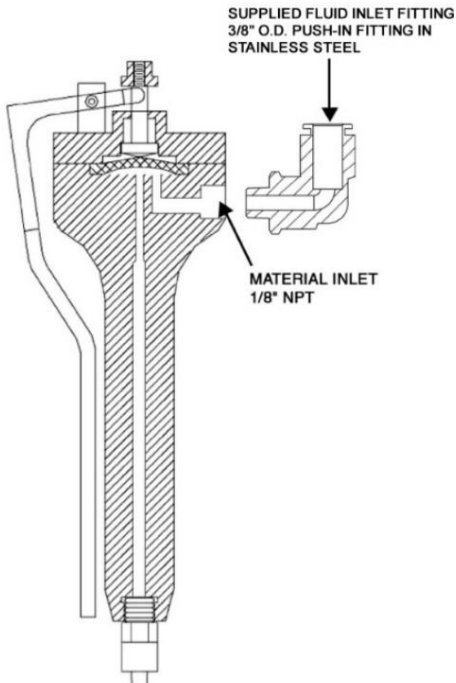
Air

The Model 200 does not require an air source for operation. Instead, the valve relies only on the operator to depress a lever to actuate the valve. The diaphragm of the valve is held in place with a spring-loaded piston, providing constant material pressure.

Fluid

The Model 200 diaphragm valve requires a material reservoir or pressure tank to draw material from. The material reservoir should be connected to the Model 200 through the 1/8" NPT port located on the Delrin® fluid section of the valve. Typically material is fed into the valve through 3/8" O.D. tubing. Depending on material viscosity, dispense tip size, and desired flow rate, the valve can dispense material with less than 15 psi.

Figure 3.
Model 200 Plumbing Diagram

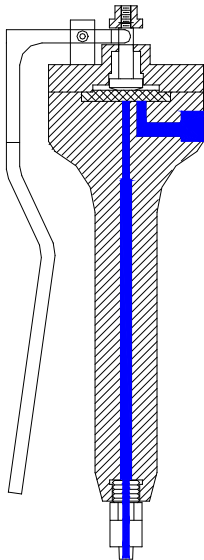


Diaphragm Actuation

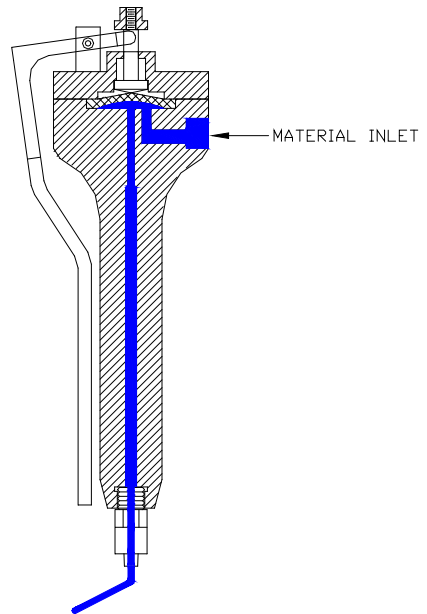
When the lever is depressed to lift the plunger, the diaphragm will flex under fluid pressure to allow the valve to open and dispense fluid. When the lever is released, the spring will again force the plunger into the diaphragm to return the valve to the closed position.

Figure 4.
Model 200 Actuation Illustration

VALVE CLOSED



VALVE OPEN



Operation

Start Up

At the beginning of the day or a shift, it is necessary to properly start the Model 200 to begin normal operation. To start the dispensing valve, follow the instructions below. Refer to Figure 1 for part references.

1. Remove the Luer Lock Plug from the Luer Adapter (I) and discard.
2. Place a new Dispense Tip onto the Luer Adapter (I).
3. Apply fluid pressure to the valve by turning on the pressure to the Material Reservoir.
4. Cycle the valve to the open position to bleed all air that may have become trapped when changing the Dispense Tip.

IMPORTANT: It is often necessary to orient the valve with the Dispense Tip pointing to completely bleed all air from the Fluid Body and Tip.

Operation

Refer to Figure 1 for part reference letters. If any problems are encountered, refer to the troubleshooting section of this manual or call Dymax Technical Support.

1. Plumb up the valve as outlined in the set-up procedures.
2. Pressurize the Fluid Delivery System.

NOTE: The fluid pressure must be set to a minimum of 15 psi to flex the Diaphragm to the open position.

3. Cycle the valve to the open position by depressing the Handle (G). Fluid should begin to dispense from the tip of the valve.
4. Check the Fluid Connection for leaks. If the valve is leaking or dripping, refer to the troubleshooting section of this manual.
5. Adjust the material pressure until the desired flow rate is achieved.

6. Fine tune the flow rate with the Stroke Adjustment Nut (E).
 - Loosen the Set Screw (K) with a .050" Allen key.
 - Turn the Stroke Adjustment Nut (E) clockwise to increase flow rate or counter-clockwise to decrease flow rate.

NOTE: The valve will not open if the Stroke Adjustment Nut is loosened too far out.

- Once the Stroke Adjustment Nut (E) setting is determined, re-tighten the Set Screw (K) using a .050" Allen key.

Shut Down

At the end of the day or shift, it is necessary to shut down the Model 200 dispensing system properly in order to keep material from curing inside the valve. To shut down the dispensing system, follow the instructions below. Refer to Figure 1 for part references.

1. Remove the disposable Dispense Tip from the Plastic Luer Adapter (I) and discard.
2. Thread a Luer Lock Plug onto the Plastic Luer Adapter (I).
3. Relieve fluid pressure on the valve by turning off air pressure at the Material Reservoir.

Cleaning & Maintenance

Routine Cleaning and Disassembly

Cleaning and rebuilding the valve will be required from time to time. Refer to Figure 1 for part reference letters.

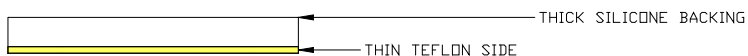
1. If possible, flush the valve thoroughly with an appropriate solvent before disassembly. Refer to the MSDS of the fluid for suggested solvent.
2. Remove the fluid pressure from the system.
3. Remove all fluid delivery fittings, hoses, etc. from the valve.
4. Using the tip of a 9/64" Allen key, remove the four Socket Head Cap Screws (L) that hold the Valve Top Cap (A) to the Fluid Section (C).
5. Lift off the Valve Top Cap (A) assembly and remove the Diaphragm (B).
6. Using an adjustable wrench, unthread and remove the Plastic or Stainless Steel Luer Adapter (I) from the Fluid Section (C).
7. Clean all of the wetted parts thoroughly with an appropriate solvent.
8. Using a .050" Allen key, unthread and remove the Set Screw (K) that threads into the Stroke Adjustment Nut (C).
9. Unthread and remove the Stroke Adjustment Nut (C) from the Plunger (D). This will allow the Plunger (D) and Spring (H) to slide out through the bottom of the Valve Top Cap (A).
10. Using a .050" Allen key, unthread and remove the two Set Screws (K) that thread into the Standoffs (F).
11. Slide the Dowel Pin (J) out of the Standoffs (F) and Handle (G) to separate them from the Valve Top Cap (A).
12. Replace worn components with new components and reassemble the valve (see Assembly Instructions).

Assembly Instructions

1. Slide the Standoffs (F) through the bottom of the Valve Top Cap (A) and rotate the threaded sides outward.
2. Place the Handle (G) in between the Standoffs (F) and insert the Dowel Pin (J) to hold in place.
3. Using a .050" Allen key, thread the two Set Screws (K) into the Standoffs (F) to hold the Dowel Pin (J) in place, but leave loose until the valve is assembled.
4. Place the Spring (H) over the Plunger (D) and insert the assembly through the bottom of the Valve Top Cap (A) and through the cutout in the Handle (G).
5. Thread the Stroke Adjustment Nut (E) onto the Plunger (D) to hold the Plunger (D) and Handle (G) assembly together.
6. Using a .050" Allen key, thread the Set Screw (K) into the Stroke Adjustment Nut (K).
7. Place the Diaphragm (B) onto the groove of the Fluid Section (C) with the thin Teflon® side down, against the fluid.

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

8. Mount the Valve Top Cap (A) over the Diaphragm (B) and assemble to the valve's Fluid Section (C) using the four Socket Head Cap Screws (L). Tighten the Socket Head Cap Screws down evenly with a 9/64" Allen key.



9. Tighten the two Set Screws (K) that thread into the Standoffs (F) using a .050" Allen key.
10. Thread the Plastic Luer Adapter (I) into the bottom of the valve's Fluid Section (C) and tighten using an adjustable wrench.

NOTE: Be sure not to over tighten the Plastic Luer Adapter (I).

Troubleshooting

Table 1.
Troubleshooting Chart for Model 200 Dispensing Valve2

Problem	Possible Cause	Corrective Action
The valve does not dispense anything	The fluid pressure is too low	Increase the fluid pressure above 15 psi
	There is material cured in the Fluid Section	Disassemble and clean the valve
	The Diaphragm is worn	Replace the Diaphragm (B)
The dispense rate is too fast	The fluid pressure is set too high	Decrease the fluid pressure
	Stroke Adjustment Nut (E) set too high	Turn the Stroke Adjustment Nut (E) counter-clockwise
	Dispense tip gauge too large	Replace the Dispense Tip with a smaller size tip
The dispense rate is too slow	Fluid pressure set too low	Increase the fluid pressure
	Stroke Adjustment Nut (E) set too low	Turn the Stroke Adjustment Nut (E) clockwise
	Dispense tip gauge too small	Replace the Dispense Tip with a larger size tip
There are air bubbles in the fluid	Valve not properly purged	Point the valve up and cycle until air bubbles are removed
	There is a problem with the Fluid Reservoir and Delivery System	Diagnose and repair
Material leaks from the valve tip	The Diaphragm is worn	Replace the Diaphragm (B)
	There are air bubbles trapped in the fluid body or in the dispense needle	Point the valve up and cycle it until the air bubbles are removed

Spare Parts and Accessories

Item	Part Number
Handheld Valve Seal Kit (10 pk)	T15594

Warranty

From date of purchase, Dymax Corporation offers a one-year warranty against defects in material and workmanship on all system components with proof of purchase and purchase date. Unauthorized repair, modification, or improper use of equipment may void your warranty benefits. The use of aftermarket replacement parts not supplied or approved by Dymax Corporation, will void any effective warranties and may result in damage to the equipment.

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