

Model 100 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 100 hand-held diaphragm 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

Dymax Customer Support and Application Engineering teams are available in the United States, Monday through Friday, from 8:00 a.m. to 5:30 p.m. Eastern Standard Time. You can also email Dymax at info@dymax.com. Contact information for additional Dymax locations can be found on the back cover of this user guide.

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 (MSDS) 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 SDS for each fluid before using it. Dymax includes an SDS with each adhesive sold. SDS 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. Always wear eye protection when working with materials under pressure.

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 100 Dispensing Valve

The Model 100 is an all plastic, normally-open, hand-held 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. The all plastic construction is compatible 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.

The Model 100 is comprised of two main sections — the fluid section and the air section, which are housed all in one body. The fluid section and air section are

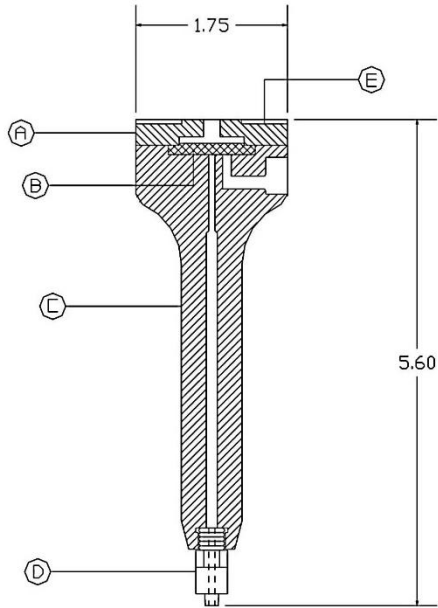
separated by a diaphragm that is clamped in between the two pieces. The air section is made up of an aluminum cap with a single air port that applies air pressure to the back of the diaphragm to stop material from dispensing. When air pressure is relieved from this section, the diaphragm will float upward allowing fluid to dispense through the wand style body to the dispense tip.

Wetted parts on the Model 100 include:

- Delrin®
- Teflon®
- Polyethylene

Figure 1.
Model 100 Internal Component Diagram

A VALVE AIR CAP
B DIAPHRAGM
C FLUID SECTION
D LLER ADAPTER
E SOCKET HEAD CAP SCREW



Assembly and Setup

Unpacking and Inspecting Your Shipment

When your Model 100 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 100 Hand-Held Diaphragm Valve



Parts Included in the Model 100 Dispensing Valve

- Model 100 valve
- Model 100 user guide

Set-Up

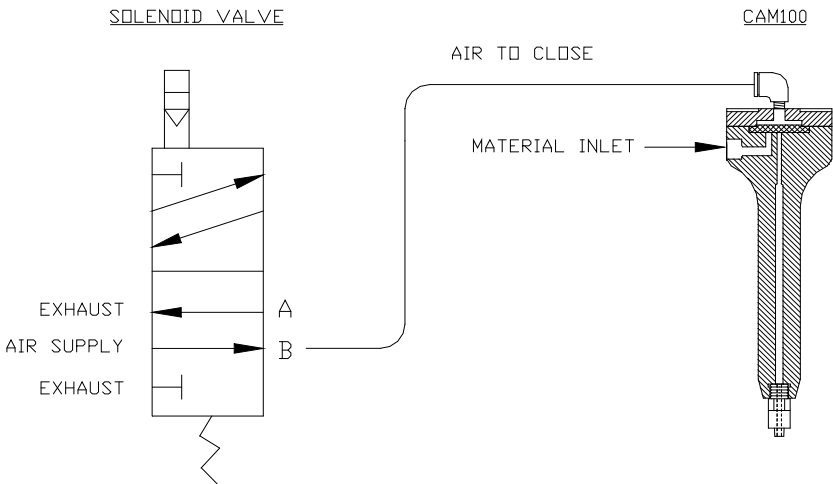
Air

The Model 100 diaphragm valve requires a Model 345 valve controller or a 2-position, 4-way air solenoid valve to actuate the air section. The valve should be operated with clean, dry air between 60-100 psi [4 - 7 bar]. One #10-32 threaded air port is located on the top section of the valve. This port is used to close the valve when air pressure is applied and open the valve when air pressure is relieved. A quick-connect air fitting is typically supplied with the Model 100 to fit 1/4" [6.4 mm] tubing.

Fluid

The Model 100 diaphragm valve requires a material reservoir or pressure tank to draw material from. The material reservoir should be connected to the Model 100 valve through the 1/8" [3.2 mm] npt port located on the Delrin® fluid section of the valve.

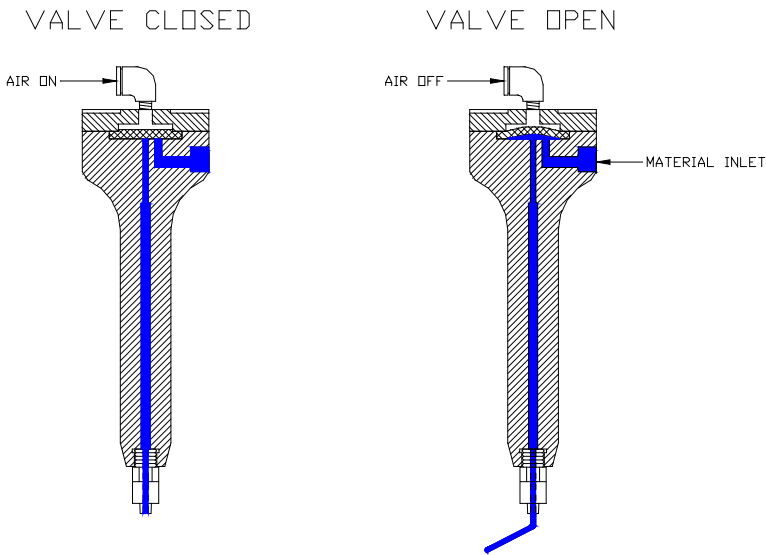
Figure 3.
Model 100 Plumbing Diagram



Diaphragm Actuation

When the valve cycles, the diaphragm will flex under fluid pressure to allow the valve to open and dispense.

Figure 4.
Model 100 Actuation Illustration



Operation

Start Up

At the beginning of the day or a shift, it is necessary to properly start the Model 100 to begin normal operation. To start the dispensing valve, follow the instructions below. Refer to Figure 1 for part references.

1. Apply air pressure, to operate the valve, by turning on the pressure to the controller.
2. Remove the luer lock plug from the Luer Adapter (D) and discard.
3. Place a new dispense tip onto the Luer Adapter (D).

4. Apply fluid pressure to the valve by turning on the pressure to the material reservoir.
5. Cycle the valve to the open position to bleed all air that may have become trapped when changing the needle tip.

Note: Operating air pressure must be applied before turning on fluid pressure.

Dispense

Refer to Figure 1 for part reference letters. If any problems are encountered, refer to the Troubleshooting Section of this manual or call Customer Service.

1. Plumb up the valve as outlined in the Set-Up Procedures.
2. Regulate the air pressure, operating the valve, to between 60-100 psi [4-7 bar].
3. Pressurize the fluid delivery system.

Note: the fluid pressure must be set lower than the operating air pressure but no less than 15 psi [1.03 bar]. If the pressure is below 15 psi [1.03 bar], the diaphragm will not flex to the open position.

4. Cycle the valve to the “Open” position to purge. Fluid should begin to dispense from the tip of the valve. Continue dispensing until all air is removed.
5. Check fluid connection for leaks. If the valve is leaking or dripping, refer to the Troubleshooting section.
6. Adjust the material pressure until the desired flow rate is achieved.
7. Thread a dispense needle onto the Luer Adapter (D) of the valve to fine tune the flow rate of the fluid.
 - Using a smaller gauge dispense needle will reduce the flow rate.
 - Using a larger gauge dispense needle will increase the flow rate.

Shut Off

At the end of the day or shift, it is necessary to shut down the Model 100 dispense system properly in order to keep material from curing inside the valve. Refer to Figure 1 for part reference letters.

1. Remove the disposable dispense tip from the Luer Adapter (D) and discard.
2. Thread a luer lock plug onto the Luer Adapter (D).
3. Relieve fluid pressure on the valve by turning off air pressure from the material reservoir.
4. Relieve the air pressure operating the valve by turning off the air pressure to the controller.

Note: Fluid pressure must be off before removing operating air pressure.

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 sheets of the fluid being dispensed for a suggested solvent.
2. Remove the fluid pressure from the system.
3. Remove the operating air pressure from the valve.
4. Remove all pneumatic tubing and fluid delivery fittings, hoses, etc. from the valve.
5. Using the tip of a 9/64" [3.6 mm] Allen key, remove the four Socket Head Cap Screws (E) that hold the Valve Air Cap (A) to the Fluid Section (C).
6. Lift off the Valve Air Cap (A) and remove the Diaphragm (B).

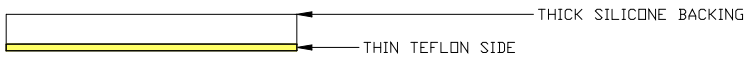
7. Using an adjustable wrench, unthread and remove the plastic Luer Adapter (D) from the Fluid Section (C).
8. Clean all of the wetted parts thoroughly with an appropriate solvent.
9. Replace worn components with new components and reassemble valve (see Assembly Instructions).

Assembly Instructions

1. 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.

Figure 5.
Diaphragm



2. Mount the Valve Air Cap (A) over the Diaphragm (B) and assemble to the Fluid Section (C) using the four Socket Head Cap Screws (E). Tighten the Socket Head Cap Screws (E) down evenly with a 9/64" [3.6 mm] Allen key.
3. Thread the plastic Luer Adapter (D) into the bottom of the Fluid Section (C) and tighten using an adjustable wrench.

Note: Be sure not to over tighten the Luer Adapter (D).

Troubleshooting

Table 1.
Troubleshooting Chart for Model 100 Dispensing Valve

Problem	Possible Cause	Corrective Action
The valve does not cycle	The fluid pressure is too low	Increase the fluid pressure above 15 psi [1.03 bar]
	The Diaphragm (B) is worn	Replace the Diaphragm (B)
Material leaks from the valve's tip	The Diaphragm (B) is worn	Replace the Diaphragm (B)
	An air bubble is trapped in the fluid body or in the dispense needle	Flip the valve upside down and cycle it until air bubbles are removed
The valve does not dispense anything	The fluid pressure is too low	Increase the fluid pressure above 15 psi [1.03 bar]
	Material is cured in the fluid section	Disassemble and clean the valve
	The Diaphragm (B) is worn	Replace the Diaphragm (B)
There are air bubbles in the fluid	The valve is not properly purged	Flip the valve upside down and cycle it until the air bubbles are removed
	There is a problem with the fluid delivery system	Diagnose and repair
The dispense rate is too fast	The fluid pressure is set too high	Decrease the fluid pressure
	The dispense tip gauge is too large	Replace the dispense tip with a smaller size tip
The dispense rate is too slow	The fluid pressure set too low	Increase the fluid pressure
	The dispense tip gauge is too small	Replace the dispense tip with a larger size tip

Spare Parts and Accessories

Item	Part Number
Replacement Seal Kit	PRV0100-2104
Optional Valve Stand	PRT8000-0063

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.

IMPORTANT NOTE: DYMAX CORPORATION RESERVES THE RIGHT TO INVALIDATE ANY WARRANTIES, EXPRESSED OR IMPLIED, DUE TO ANY REPAIRS PERFORMED OR ATTEMPTED ON DYMAX EQUIPMENT WITHOUT WRITTEN AUTHORIZATION FROM DYMAX. THOSE CORRECTIVE ACTIONS LISTED ABOVE ARE LIMITED TO THIS AUTHORIZATION.

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