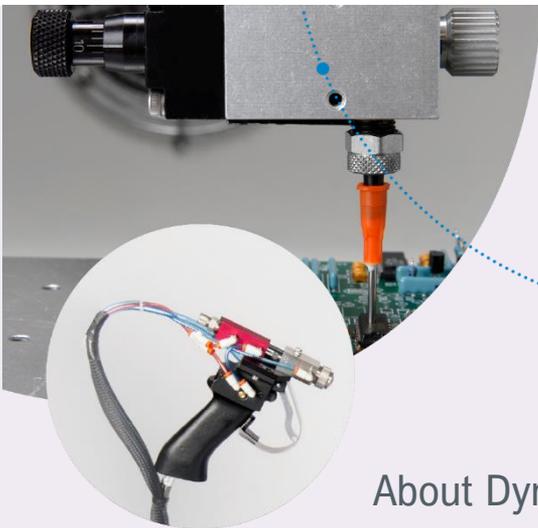


# Model 300 Handheld Diaphragm Dispensing Valve

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 300 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

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](mailto: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](http://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 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 (see system specifications on page 15).

### 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 300 Diaphragm Valve

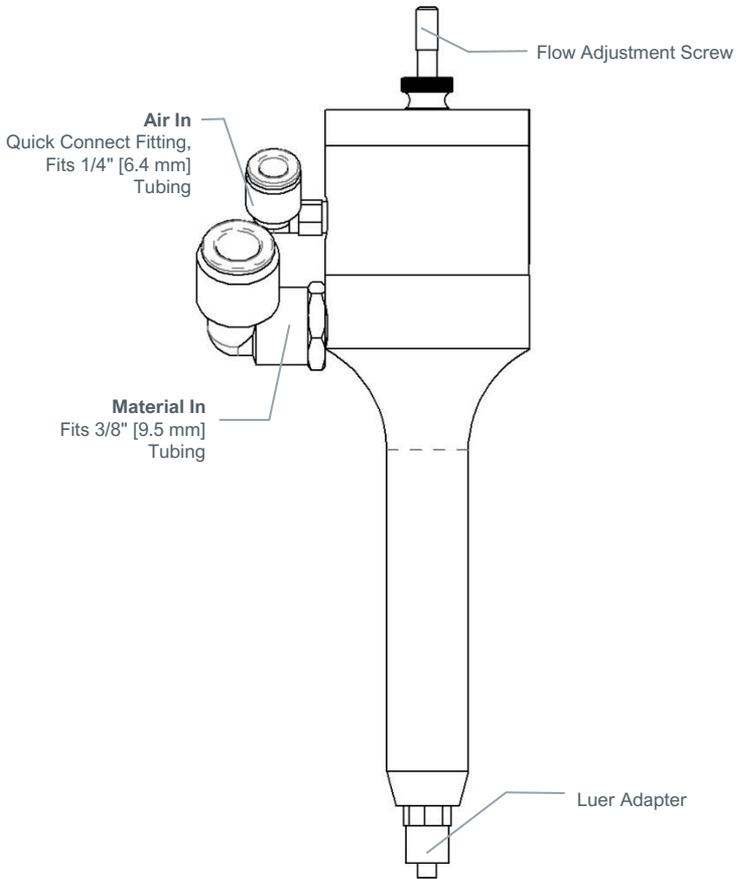
The Dymax Model 300 is a normally closed, hand-held, diaphragm dispensing valve. It uses a unique floating diaphragm to achieve accurate dispensing. Designed with a wand-style body to make it more ergonomic for users, the valve provides compatibility with a variety of low-to-medium viscosity fluids, including light-curable adhesives, cyanoacrylates, and anaerobic adhesives. It can be used for a variety of applications including dot, bead, and potting applications.

The Model 300 is comprised of two main sections – the fluid section and the air section, which are housed all in one body. The fluid and air sections are separated by a diaphragm, which is clamped in between the two pieces. The air

section is made up of an aluminum cap with a single air port. When air pressure is applied to 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 300 include Delrin®, Teflon®, and Polyethylene.

**Figure 1.**  
Model 300 Component Diagram



# Assembly and Setup

## Unpacking and Inspecting Your Shipment

When your Model 300 dispensing valve arrives, inspect any 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 300 Diaphragm Valve



## Parts Included in the Model 300 Dispensing Valve

- Model 300 Diaphragm Valve
- Model 300 Dispensing Valve User Guide

# System Interconnect

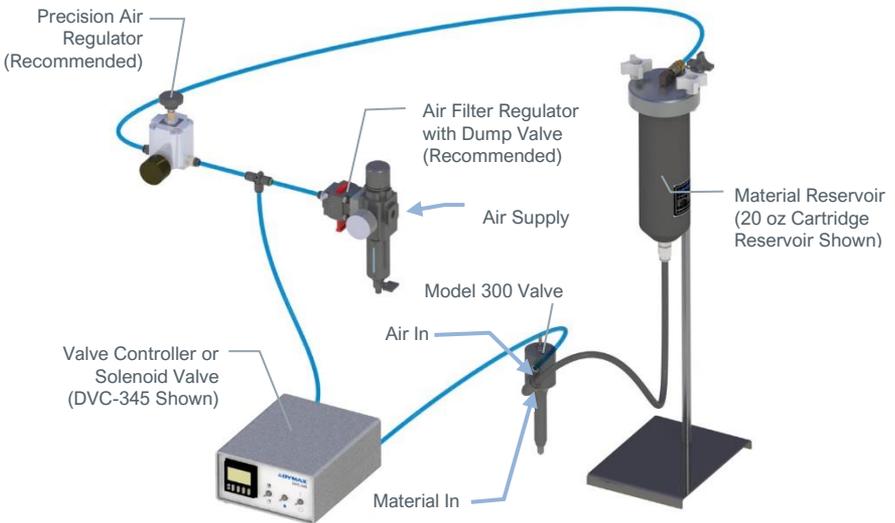
## Air

The Model 300 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 valve. This port is used to open the valve when air pressure is applied and close the valve when air pressure is relieved. A quick-connect air fitting is typically supplied with the Model 300 to fit 0.25" [6.4 mm] tubing.

## Fluid

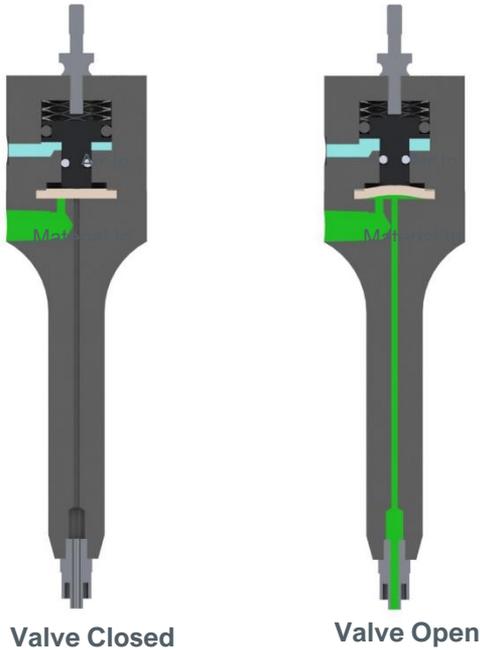
The Model 300 diaphragm valve requires a material reservoir or pressure tank to draw material from. The material reservoir should be connected to the Model 300 valve through the 1/8" [3.2 mm] NPT port located on the fluid section of the valve.

**Figure 3.**  
Valve Interconnect Diagram



# Operation

**Figure 4.**  
Valve Actuation Diagram



## Start Up

At the beginning of the day or a shift, it is necessary to properly start the Model 300 to begin normal operation. To start the dispensing valve, follow the instructions below.

1. Apply air pressure by turning on the pressure to the Controller.
2. Remove the Luer Lock Plug from the Luer Adapter and discard.
3. Place a new Dispense Tip onto the Luer Adapter.
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 Dispense Tip.

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

## Dispense

If any problems are encountered, refer to the troubleshooting section of this manual or call Dymax Customer Support.

1. Plumb the valve as outlined in the set-up procedures.
2. Regulate the air pressure to between 60-100 psi [4 - 7 bar].
3. Pressurize the Fluid Delivery System.
4. Cycle the valve to the open position to purge. Fluid should begin to dispense from the tip of the valve.
5. Check the Fluid Connection for leaks. If the valve is leaking or dripping, refer to the troubleshooting section of this manual.
6. Adjust the material pressure until the desired flow rate is achieved.
7. Thread a Dispense Tip onto the Luer Adapter of the Valve to fine tune the flow rate of the fluid.

*Note: Using a smaller gauge Dispense Tip will reduce the flow rate while using a larger gauge Dispense Tip will increase the flow rate.*

## Adjusting Material Flow

Material flow can be easily adjusted by setting the Flow Adjustment Screw on the top of the valve. To adjust material flow:

1. Turn the Flow Adjustment Screw to the closed position.
2. Turn the Flow Adjustment Screw to the appropriate position.

## Shutdown

At the end of the day or shift, it is necessary to shut down the Model 300 dispensing system properly in order to keep material from curing inside the dispensing valve.

1. Remove the disposable Dispense Tip from the Luer Adapter and discard.
2. Thread a Luer Lock Plug onto the Luer Adapter.
3. Relieve fluid pressure on the valve by turning off air pressure at the Material Reservoir.
4. Relieve the air pressure operating the valve by turning off the air pressure to the Controller.

## Cleaning and Maintenance

### Routine Cleaning

#### Disassembly

Cleaning and rebuilding the valve will be required from time to time. Refer to Figure 5 for part reference letters.

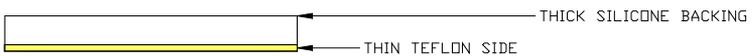
1. If possible, flush the Valve thoroughly with an appropriate solvent before disassembly. Refer to the SDS sheets of the fluid being dispensed for a suggested solvent.
2. Remove the fluid pressure from the Dispensing System.
3. Remove the operating air pressure from the Valve.
4. Remove all Pneumatic Tubing and Fluid Delivery Fittings, Hoses, etc. from the Valve.
5. Using a 9/64" Allen key, remove the four Socket-Head Cap Screws (A) that hold the Air Cap (B) to the Fluid Section (D).
6. Lift off the Air Cap (B) and remove the Diaphragm (C).
7. Using an adjustable wrench, unthread and remove the plastic Luer Adapter (E) from the Fluid Section (D).

- Clean all of the wetted parts thoroughly with an appropriate solvent.
- Replace worn components with new components and reassemble the valve (see Assembly).

## Assembly

- Place the Diaphragm (C) onto the groove of the Fluid Section (D) with the thin Teflon<sup>®</sup> side down, against the fluid.

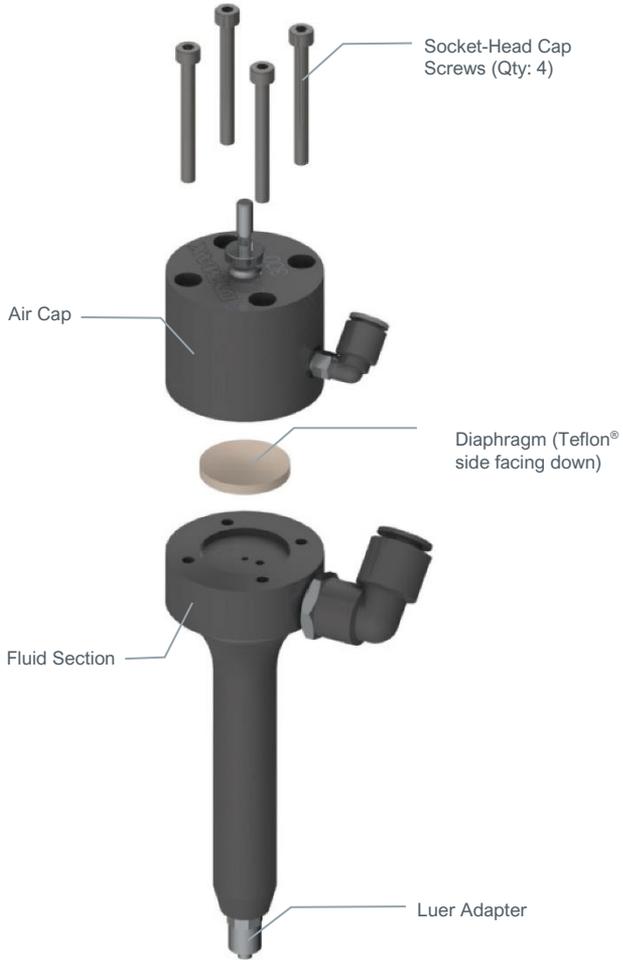
*Note: The Diaphragm must be assembled into the Valve with the Teflon<sup>®</sup> side facing the fluid. The Teflon<sup>®</sup> side is the thinner, smooth side.*



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

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

**Figure 5.**  
Model 300 Exploded View



# Troubleshooting

**Table 1.**  
Troubleshooting Chart for Model 300 Diaphragm Valve

Problem	Possible Cause	Corrective Action
<b>Valve does not dispense anything</b>	The fluid pressure is too low	Increase the fluid pressure above 15 psi
	Material is cured in the fluid section	Disassemble and clean the valve
	The diaphragm is worn	Replace the diaphragm
	Air pressure is too low	Adjust air pressure accordingly
<b>Dispense rate too fast</b>	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
<b>Dispense rate too slow</b>	The fluid pressure is set too low	Increase the fluid pressure
	The dispense tip gauge is too small	Replace the dispense tip with a larger gauge
<b>Air bubbles in fluid</b>	The valve is not properly purged	Point the valve up and cycle it until any air bubbles are removed
	There is a problem with the material reservoir and fluid delivery system	Diagnose and repair
	Fluid pressure is too high	Adjust fluid pressure accordingly
<b>Material leaks from Valve Tip</b>	The diaphragm is worn	Replace the diaphragm
	Air bubbles are trapped in the fluid section of the body or in the dispense tip	Point the valve up and cycle it until any air bubbles are removed

# Spare Parts and Accessories

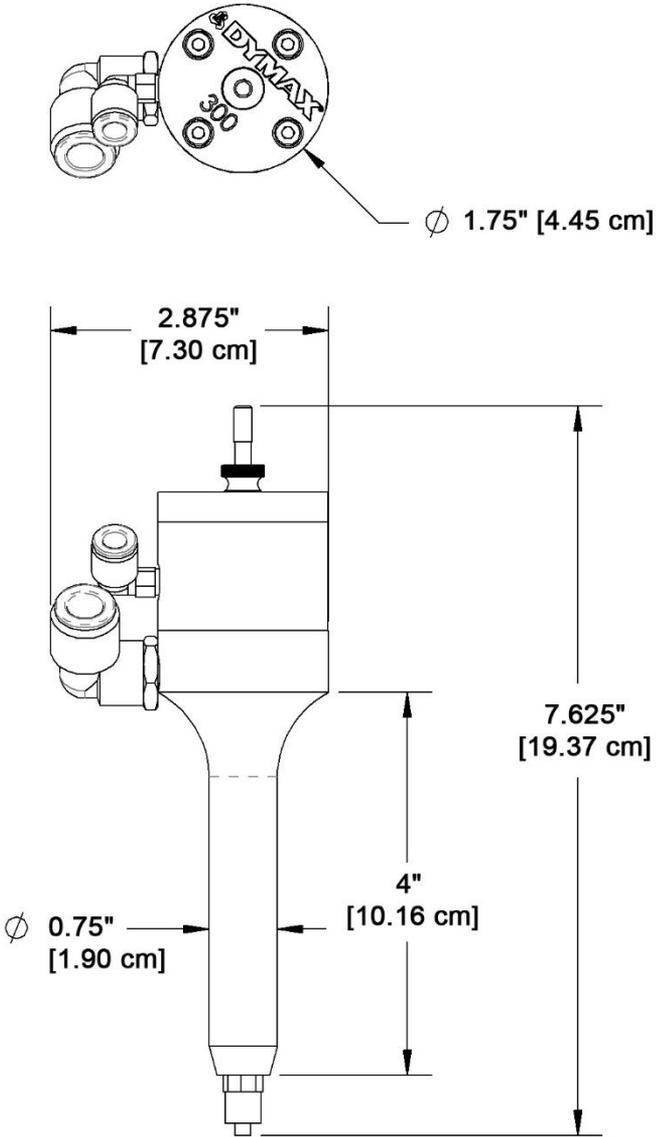
Item	Part Number
<b>Air Regulators</b>	
Air Filter Regulator with Dump Valve	T16307
High-Precision Air Regulator	T16629
<b>Controllers</b>	
DVC-345 Digital Valve Controller	T11146
<b>Stands</b>	
Valve Stand	T15466
<b>Valve Replacement Parts</b>	
Handheld Valve Seal Kit (10 pk)	T15594

# Specifications

Property	Specification
Part Numbers	<b>T17020</b>
Valve Type	Diaphragm valve, normally closed
Construction Material	Teflon®, Delrin®, Silicone
Power Requirements	110 / 220 VAC
Operating Air Pressure	60 - 100 psi (4.1 - 6.9 bar)
Maximum Fluid Pressure	80 psi (5.5 bar)
Activation	Valve controller or 2-position, 4-way air solenoid valve
Air Inlet Thread	10-32
Fluid Inlet Thread	1/8" [3.2 mm] NPT
Dimensions (H x D)*	7.63" x 1.75" [19.37cm x 4.45 cm] (Figure 6)
Weight	3.7 oz [105 g]
Unit Warranty	1 year from purchase date



**Figure 6.**  
Model 300 Dimensional Drawing



# 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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T17016 MAN038 7/8/2019