

Model 485 Needle 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 485 needle 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
- 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 11).

Preventing Injection Injury

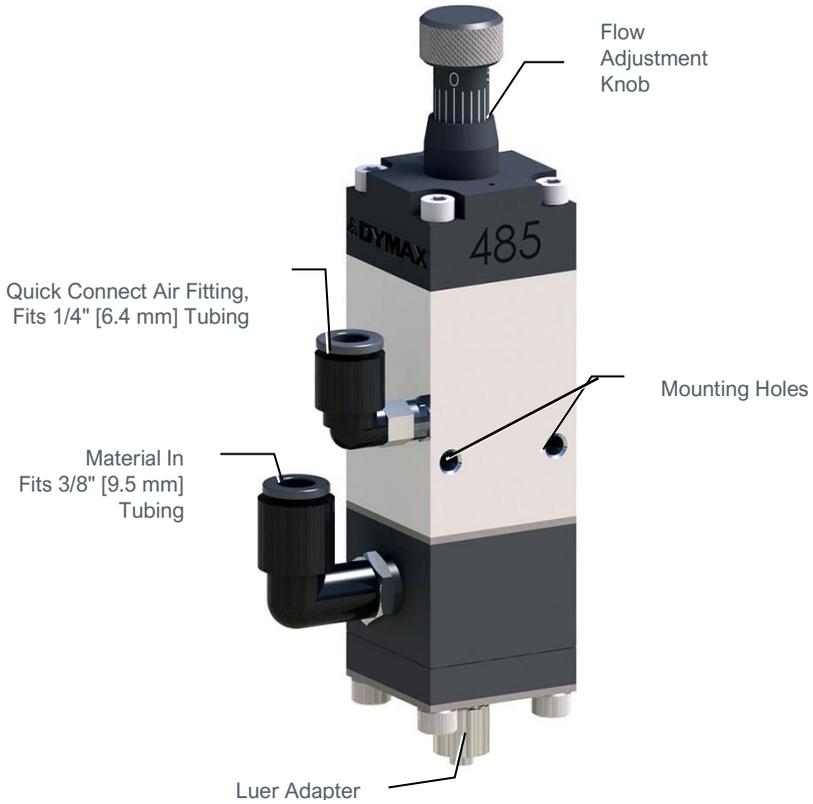
Discharging fluids or compressed air with a dispensing tip against your skin can cause very serious injection injury. To minimize the risk of injection injury, do not place the dispensing tip in contact with your skin.

Product Overview

Description of the Model 485 Needle Valve

The Model 485 needle valve is designed to deliver highly accurate and consistent deposits of low- to high-viscosity fluids such as adhesives and inks. The valve features a precise flow adjustment control which allows an operator to finely adjust the flow rate. The valve's low maintenance design and precision make it ideal for high-speed and long-run production. It easily mounts to process automation and robotics for repeatable performance or it can be configured in a bench-top system with a DVC-345 valve controller and reservoir.

Figure 1.
Model 485 Component Diagram



Assembly and Setup

Unpacking and Inspecting Your Shipment

When your Model 485 dispensing valve arrives, inspect the boxes and notify the shipper of any damage immediately.

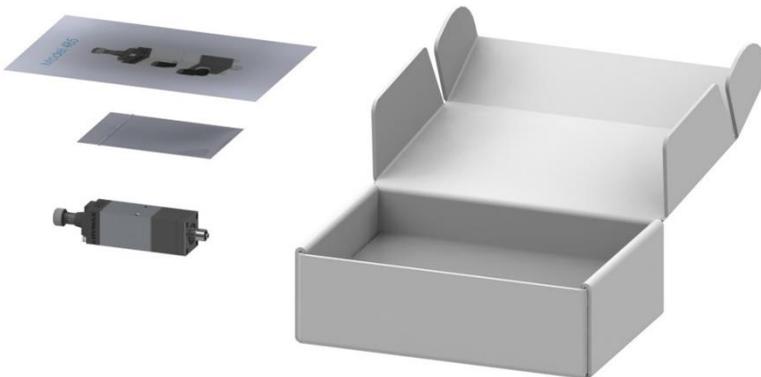
Open each box and check for equipment damage. If parts are damaged, notify the shipper and submit a claim for the damaged parts. Contact Dymax so that new parts can be shipped to you immediately.

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.

Parts Included

- Model 485 needle valve
- Assorted dispense tip kit
- Model 485 dispensing valve user guide

Figure 2.
Model 485 Needle Valve Unpacking Diagram



Mounting

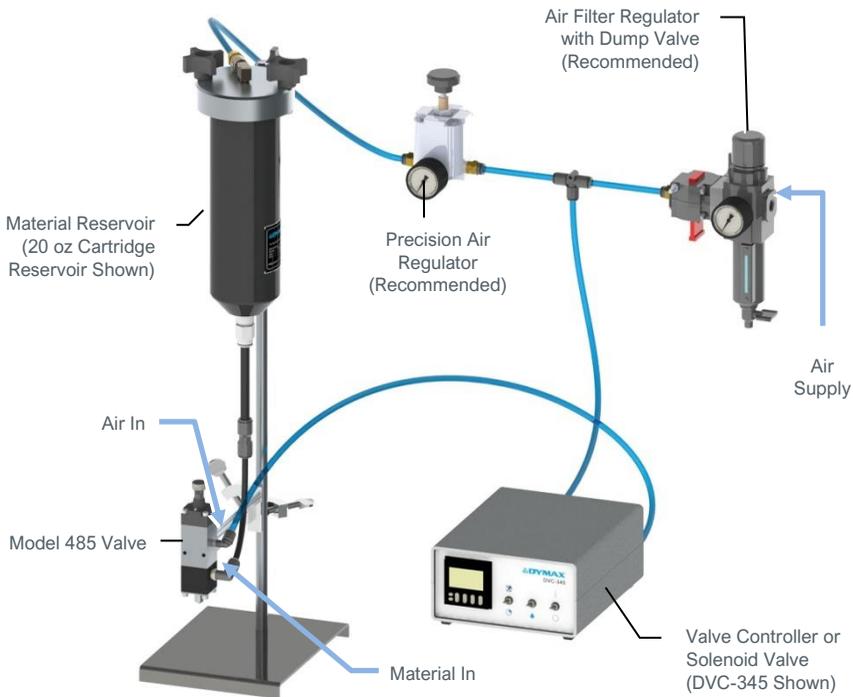
NOTE: If the dispense valve is to be mounted in an area that limits access to the valve, it is recommended that the setup operation be done prior to mounting. Access to various surfaces of the valve is necessary for periodic adjustment (see Specifications).

There are two 8-32 UNC holes on the dispense valve for mounting purposes (Figure 5).

System Interconnect

Figure 3.

Valve Interconnect Diagram



Air

Once the dispense valve is secured to its mounting surface, connect the airline to the port provided on the valve (Figure 3). Also connect your air supply (60-80 psi) to your valve controller or 3-way solenoid valve (a valve controller or a 3-way solenoid valve must be used to operate the Model 485 valve (CV of .01 or greater)). Please refer to the valve controller user guide for detailed instructions.

Fluid

The Model 485 valve requires a material reservoir or pressure tank to draw material from. The material reservoir should be connected to the 485 valve through the material-in port (Figure 3) located on the valve body.

Adjusting Material Flow

Flow can be adjusted using the Flow Adjustment Knob. Turn the knob clockwise to decrease the flow or counterclockwise to increase flow.

Operating the Dispensing Valve

Operation

1. Plumb up the valve as outlined in the setup procedures.
2. Apply air pressure by turning on the pressure to the controller.
3. If necessary, place a new dispense tip onto the valve.
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. You may need to tip the valve up to 60° incline and continue cycling the air to remove it all.
5. Check the fluid connection for leaks. If the valve is leaking or dripping, refer to the troubleshooting section of this manual.
6. With the flow adjustment knob backed off counterclockwise 3 or 4 turns and the dispense tip in place, adjust the air pressure on the fluid (the valve will be in the open dispense position). Use the flow adjustment knob to reduce the material flow until the desired flow rate is achieved.

Shutdown

At the end of the day or shift, it is necessary to shut down the Model 485 dispensing system properly in order to keep material from curing inside the dispensing valve.

1. Remove the disposable dispense tip from valve and discard.
2. Relieve fluid pressure on the valve by turning off air pressure at the material reservoir.
3. Relieve the air pressure operating the valve by turning off the air pressure to the controller.

Maintenance and Cleaning

General

To clean the Model 485 valve, flush system with an appropriate solvent. Common solvents used to degrade adhesive bonds include the following:

- Methylene chloride
- Chlorine bleach (dilute 10%)
- Strong base, NaOH, or KOH solution with a $\text{pH} \geq 12$
- MEK (methyl ethyl ketone) or acetone

For assistance in selecting a compatible solvent, please contact Dymax Application Engineering.

To access the valve's wetted components for cleaning or replacement, remove the four Allen Hex Cap Screws (Figure 4) from the bottom of the valve.

Troubleshooting

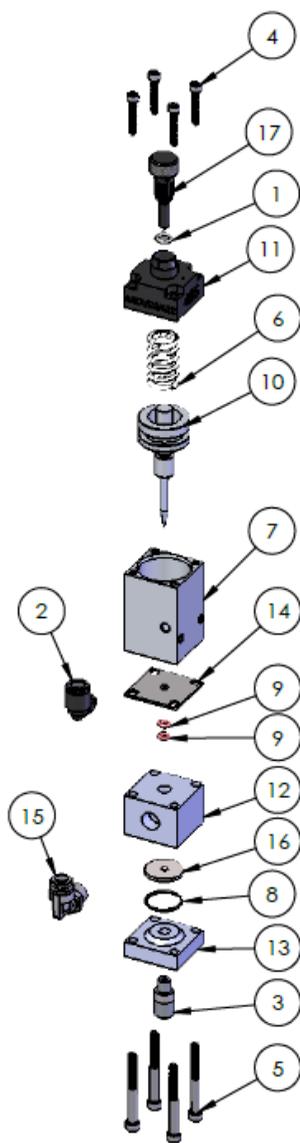
Table 1.
Troubleshooting Chart for Model 485 Dispensing Valve

Problem	Possible Cause	Corrective Action
The valve does not dispense anything	The fluid pressure is too low	Increase the fluid pressure
	The material is cured in the valve or tip	Disassemble and clean the valve
There are air bubbles in the fluid	The valve is not properly purged	Point the valve up and cycle it until the air bubbles are removed
	There is a problem with the material reservoir and fluid delivery system	Diagnose and repair
Material leaks from the valve tip	An air bubble is trapped in the fluid section of the valve or in the dispense tip	Point the valve up and cycle it until air bubbles are purged out

Spare Parts and Accessories

Item	Part Number
Air Regulators	
Air Filter Regulator	T16307
High-Precision Air Regulator	T16629
Controllers	
DVC-345 Digital Valve Controller	T11146
Stands	
Lab Stand – 24" [60.96 cm]	T15279
Valve Mounting Assembly for Lab Stand	T16857
Rebuild Kits	
Valve Rebuild Kit	T17605

Figure 4.
Model 485 Replacement Parts



LUBRICATE O-RING VERY LIGHTLY
WITH LOW TEMP SYNTHETIC GREASE
(DOW CORNING MOLYKOTE 33
MEDIUM OR EQUIV.) DESIGN
INTENT IS TO PROVIDE ANTI
ROTATION FRICTION

Table 2.
BOM for Figure 4

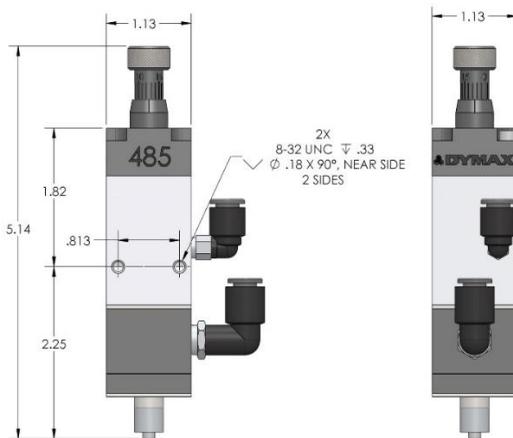
Item	Part #	Description
1*	T18269	Silicone O-Ring, 009
2*	T18272	Air Inlet Fitting L, 1/4" X 10-32
3	T11819	Fitting, 1/4-28 To Lock, 316 SS
4	T14204	Screw, SHCS, 6-32, 0.75, SS
5	T14217	Screw, SHCS, 8-32 X 1-1/2, 18-8
6	T14936	Spring, 0.6 OD X 0.72 WR X 2 L X K 26
7	T18261	Model 475 Valve Body
8*	T18260	Buna O-Ring, 016
9*	T18275	Silicone O-Ring, 2-006
10*	T17619	Model 485 Piston Assembly
11	T17622	Model 485 Endcap
12	T17624	Model 485 Inlet Body
13	T17625	Adapter
14	T17627	O-Ring Retainer
15*	T17830	Material Inlet Fitting L, 1/4" X 1/8 NPT, SS
16*	T18276	Needle Seat
17	T18479	Model 485 Adjusting Screw

*Parts included in Model 485 Valve Rebuild Kit T17605

Specifications

Property	Specification
Part Numbers	T17617 Model 485 needle valve
Valve Type	Pneumatic needle valve, normally closed
Construction Materials	Body: SS, Anodized Aluminum Wetted path: Acetal/SS Wetted valve seals: Silicone
Operating Air Pressure	80 to 100 psi (5.5 to 6.9 bar)
Maximum Fluid Pressure	80 psi (5.51 bar)
Air Input Thread	10-32
Fluid Inlet Thread	1/8 NPT
Fluid Outlet Thread	1/4 - 28
Activation	Dymax DVC-345 valve controller or 3-way solenoid valve
Dimensions (W x H x D)	1.13" x 5.14" x 1.13" (2.87 cm x 13.06 cm x 2.87 cm)
Weight	7.2 oz (0.2 kg)
Unit Warranty	One year

Figure 5.
Model 485 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.

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