



**WHERE
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JDX Jet Valve

OWNER'S MANUAL

Revision H

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1. Introduction

Before you operate this system, read the operation and setup manual. This will help you to become familiar with the product and ensure successful operation.

If any questions or problems arise, contact PVA's Technical Support department for support.

1.1 PVA Contact Information

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1.2 Document History

Revision	Revision Date	Reason for Changes
Rev H	March 2016	Updated Part Numbers
Rev G	July 2015	Updated Part Numbers
Rev F	May 2015	Updated O-ring Information
Rev E	Dec. 2014	Updated Controller Content
Rev D	Fall 2014	Updated to Include HV-2000 Controller
Rev C	Oct. 2014	Updated Nozzle Content
Rev B	May 2014	Updated to Include Portal Screens

NOTE: All photographs and CAD model representations in this document are a “general representation” of the valve and its components. The actual appearance of the valve and its components can differ based upon customer specific configuration.

1.3 Safety

Certain warning symbols are affixed to the machine and correspond to notations in this manual. Before operating the system, identify these warning labels and read the notices described below. Not all labels may be used on any specific system.



Always wear approved safety glasses when you operate or work near the workcell.



Before you operate the system, read and understand the manuals provided with the unit.



Never put hands or tools in areas with this symbol when the machine is in operation. A dangerous condition may exist.



Read and understand the manuals provided with the unit before any repairs or maintenance is done. Only a qualified individual should do service.



Use caution when there are pressurized vessels. Find and repair any leaks immediately. Always wear appropriate safety equipment when you work with pressurized vessels or vessels that contain chemicals.



Shear hazard from moving parts. Avoid contact.

1.4 Theory of Operation

The JDX Jet Valve is a high speed, non-contact dispenser that applies small shots of fluid as individual dots or in rapid succession. Only 3 components come in contact with fluid: the feed tube, diaphragm, and nozzle plate. The unique diaphragm design allows for fast cycling of the jet, up to 300Hz for high speed line dispensing. The JDX is designed to dispense coatings, underfill, encapsulant, SMT glue, grease, and more with very fine control.

1.5 Description of Components

Refer to Section 2.1 for an overview image.

Component	Description
Syringe Bracket	The bracket for 30cc syringe is one piece with jet body. Inserts are available for smaller syringe sizes.
Jet Body	This component contains the pneumatic solenoid that controls the on/off function of the jet.
Heater	Built into jet body, the fluid is warmed at the point of dispense.
Feed Tube	A disposable tube with a female luer fitting. It supplies fluid from the syringe to the nozzle plate.
Diaphragm	Small component that fits into the heater and is held in position by the nozzle plate. It comes in three materials for dispense material compatibility.
Nozzle Plate	The nozzle plate has the dispense port orifice in it and is connected to the syringe with the feed tube. The nozzle plate is available in multiple sizes and materials of dispense ports orifices.

1.6 Personal Protective Equipment

Operators must use eye protection because material contents are under pressure. Always wear gloves when handling materials and solvents. Refer to MSDS sheets on the material being dispensed for other precautions.

1.7 Waste Disposal

Dispose of all used parts and materials in accordance with local laws and regulations.

1.8 Necessary Tools

PVA offers tools and cleaning accessories to maintain the JDX jet valve.

Part Number	Description
02597	3mm hex wrench
	Philips screwdriver

2.Setup

Before you operate the jet, know the components. Follow the steps instructed below for safe and correct operation.

2.1 Overview

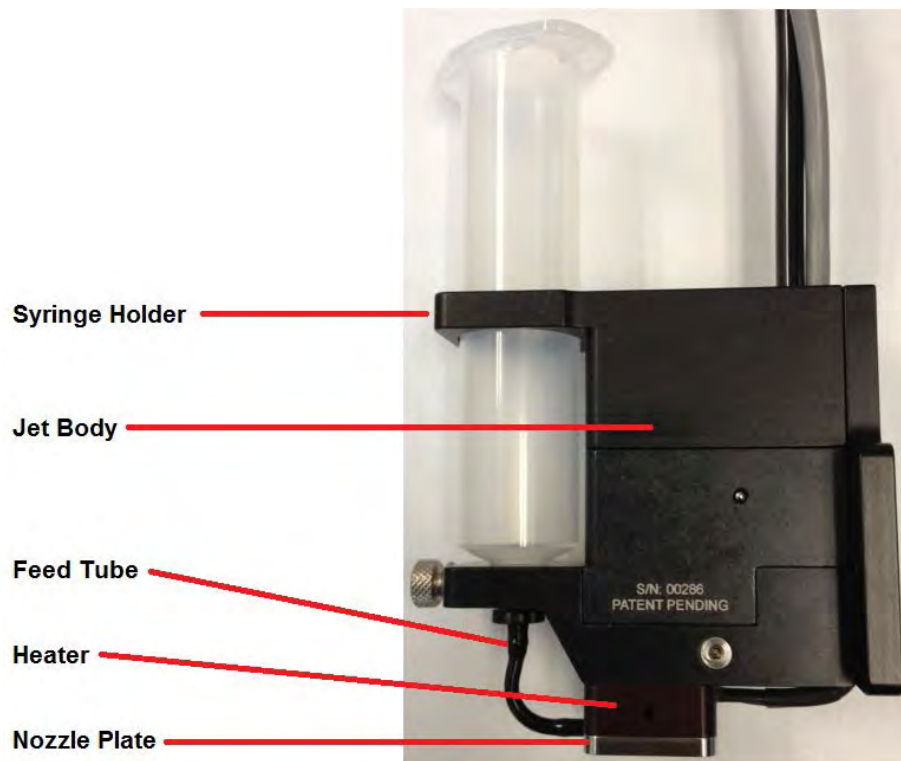


Figure 1: Jet Components

3. Operation

NOTE: Use only compatible solvents and materials or the seals and O-rings will be damaged.

The sections that follow are in the recommended order to operate the jet valve. Do the sub-sections in Section 3, in the order shown.

NOTE: The jet valve is shown removed from the workcell in the procedures below. It is not necessary to remove the jet valve to do the procedures.

3.1 Install the Diaphragm

1. Set the jet valve to open with the operator interface of JDX controller box.
2. Align the ribs on top of the diaphragm to the groove features on the bottom of the heater block.



Figure 2: Diaphragm and Heater Block Grooves

3. Put the diaphragm on your finger tip and gently press it into heater block with metal insert aligned with the center hole.

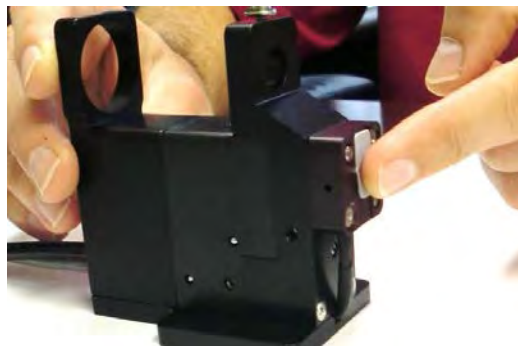


Figure 3: Diaphragm Installed in the Heater Block

3.2 Install Nozzle Plate and Feed Tube

1. Align the feed tube with the barb inlet on the nozzle plate.
2. Push the feed tube onto the barb inlet.

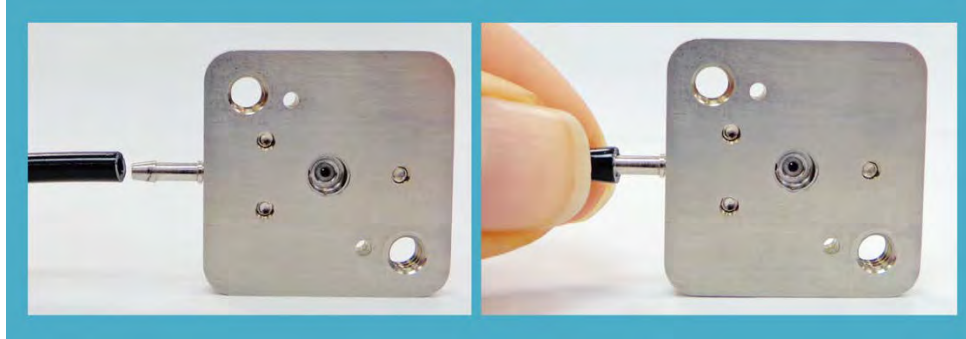


Figure 4: Feed Tube and Nozzle Plate

3. Align the nozzle plate on the heater block with the barb inlet facing toward the syringe bracket. The heater block has two locating pins that will guide the nozzle plate onto the heater block.

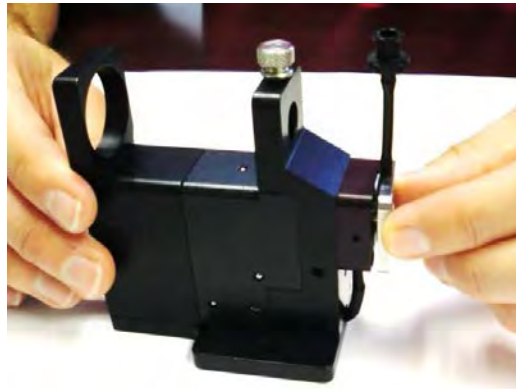


Figure 5: Align the Heater Block and Nozzle Plate

4. Make sure the nozzle plate faces the correct way.



Figure 6: Nozzle Plate

5. Use a hex wrench to tighten the recessed screws in the two holes shown. Turn the screws clockwise until they are tight and the nozzle plate does not move.

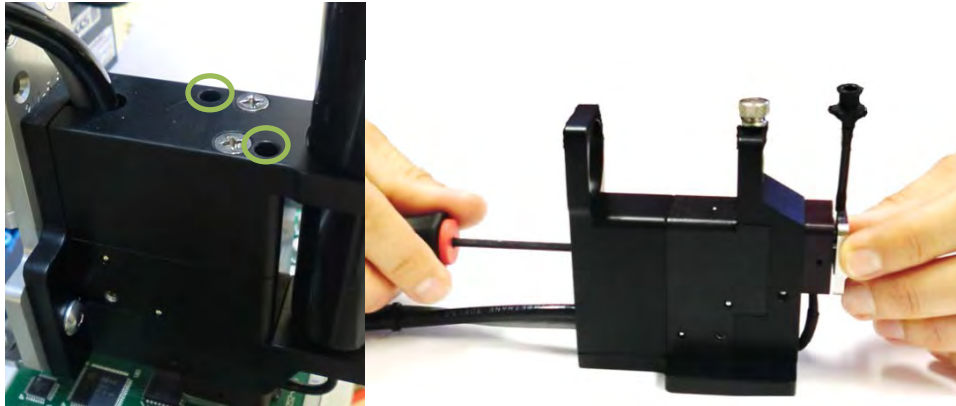


Figure 7: Tighten the Screws to Attach the Nozzle Plate

6. Install the syringe into holder.
7. Push the feed tube into the end of the syringe.



Figure 8: Install the Fluid Syringe

8. Turn the thumb screw clockwise until the fluid syringe is tight in holder.

3.3 Prime the Jet

1. Set the jet to close with the operator interface or JDX controller box.
2. Fill the syringe with material.
3. Attach the air cap to the syringe.



Figure 9: Attach the Air Cap

4. Set the supply pressure to 10 psi.
5. Check the jet and syringe for fluid leaks.

3.4 Set the Heater Temperature

The temperature can be adjusted to improve dispense quality. The fluid will dispense with a cleaner break and better flow when the heat is set correctly. The viscosity and rheology of the material have an effect on the necessary dispense temperature.

Generally the higher the viscosity the more heat you will need.

1. Turn on heater and wait 5-10 minutes for the temperature to stabilize.
2. Examine the table shown below to find a good temperature to start with.

Table 1: Fluid Viscosity And Dispense Temperatures

Fluid Type	Viscosity cps	Temperature °C
Hysol 3800	300	35
EMI3553	1K	40
EMI 1748S-HTG-HV3	400K	45
Loctite 3621	50K	45
EMI 1768-VTG	65K	45
Alpha WS-619	100K	50
Norland 123 TKHGA	200K	50
Namics 8439	50K	55
Namics 8410	60K	55

3. Use trial and error to find the best temperature setting for your material. Fluid viscosity does not directly relate to the necessary temperature.

WARNING: If the temperature is set too high the material will cure in the nozzle plate.

3.5 Set Fluid Pressure

The fluid pressure supplies the material to the jet chamber to keep the drop size correct and consistent. Higher fluid pressure is usually better.

1. Set the jet to open with the operator interface or JDX controller box.
2. Start at 10 psi and increase the fluid pressure until a steady stream or a continuous flow of dots exit the nozzle. Fluids react differently, some may curl up or pool at the nozzle outlet.

Refer to Section 10 for more information.

3.6 Jet Pressure

Jet pressure is the force that pushes the fluid out of the jet when it is dispensed. Too little jet pressure and the fluid will not leave the nozzle completely and material will accumulate on the nozzle. Too much jet pressure and the fluid will have satellites or splatter when it hits the surface of the product. Jet pressure must be between 35-65 psi to work correctly.

1. Set jet pressure at 45 psi to start.
2. Dispense the material and examine the nozzle and surface that was dispensed on for buildup, splatter, or satellites.
3. Adjust the jet pressure until the results are correct.

Do not set jet pressure higher than 65 psi.

3.7 Jet Shutdown Procedure

1. Decrease system pressure to 0 psi.
2. Shut off the heater and wait approximately five minutes for the heater block to cool.
3. Turn the air cap counterclockwise to remove it.
4. Turn the thumb screw counterclockwise to loosen the syringe.

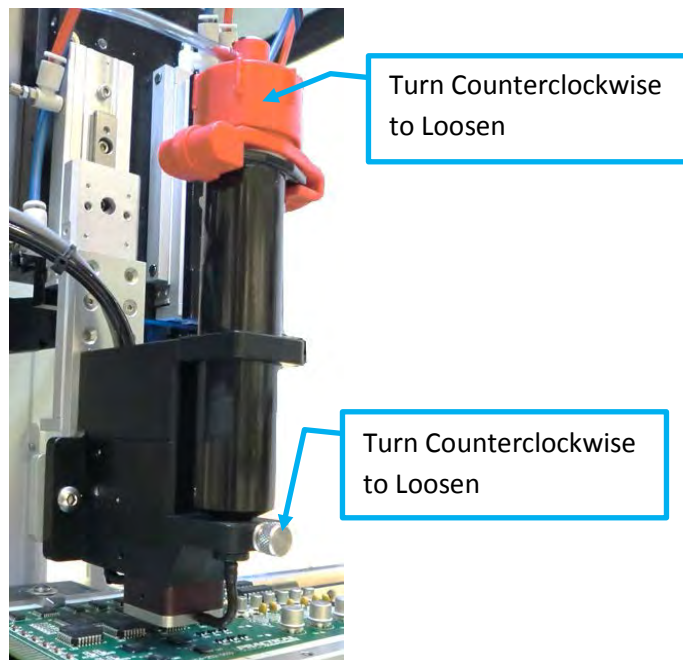


Figure 10: Remove the Air Cap and Loosen the Thumb Screw

5. Loosen and remove the feed tube off of the syringe.
6. Remove the syringe.



Figure 11: Remove the Syringe

7. Use a 3mm hex wrench to loosen the two recessed screws and remove the nozzle plate.

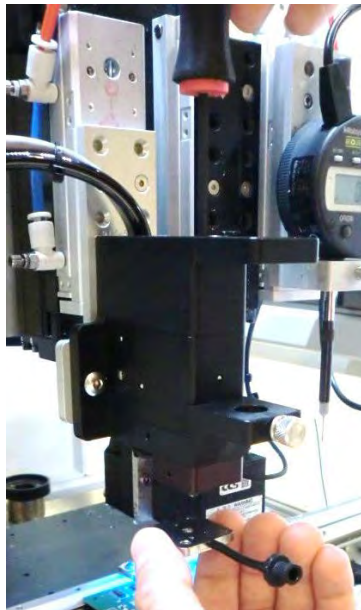


Figure 12: Remove the Nozzle Plate

8. Remove the diaphragm.

3.8 Clean the Wetted Parts

1. Clean the diaphragm with cotton tipped swabs and solvent.

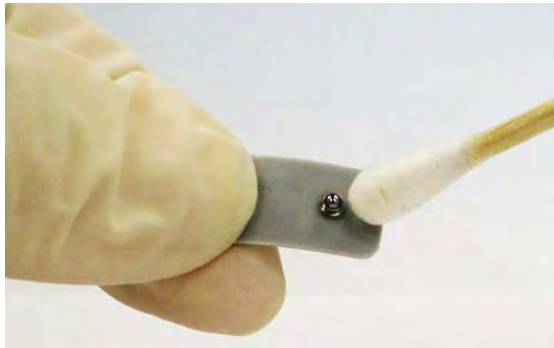


Figure 13: Clean the Diaphragm

2. Remove the feed tube from the nozzle plate and discard it.
3. If necessary, soak the nozzle plate in ultrasonic cleaner for 5 minutes.
4. Clean the nozzle plate with cotton tipped swabs and solvent.



Figure 14: Clean the Nozzle Plate

5. Examine the parts for wear, replace if necessary.

3.9 Replace the Orifice

1. Loosen the three screws in the nozzle plate.



Figure 15: Remove the Nozzle Plate Screws

2. Remove the barb plate.

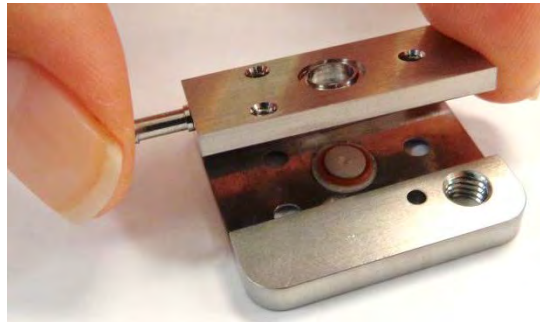


Figure 16: Remove the Barb Plate

3. Remove the O-ring from the barb plate. Clean and replace as necessary.

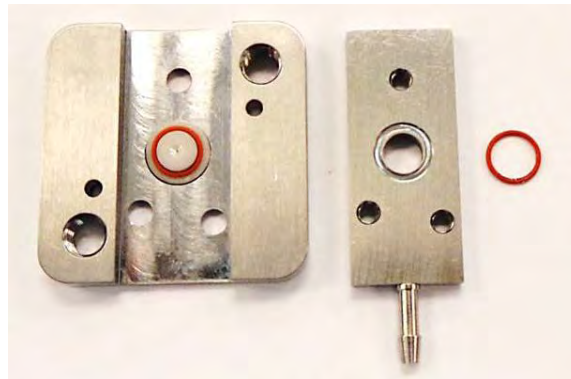


Figure 17: Remove the O-ring

NOTE: There is an O-ring on the barb plate and one on the orifice. Make sure you keep them separate; the O-ring on the barb plate is slightly larger than the orifice O-ring and they are not interchangeable.

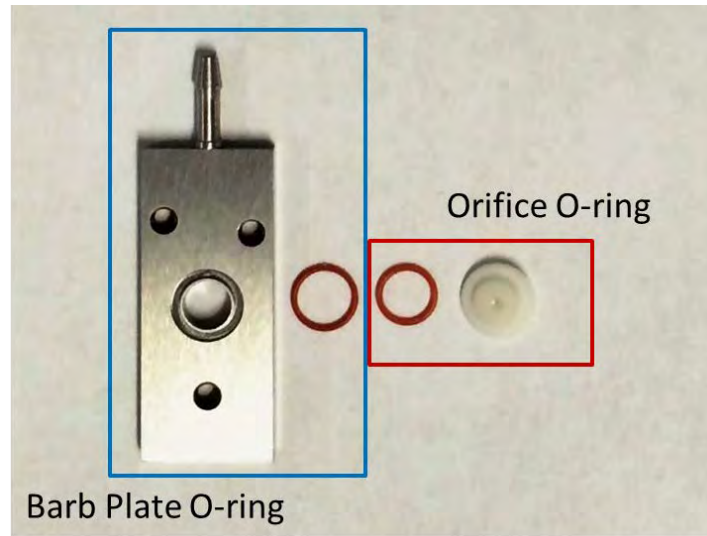


Figure 18: Barb Plate and Orifice O-rings

4. Remove the orifice (the orifice shown is ceramic; you may have a different orifice). You may have to turn the nozzle plate over and push on the orifice tip to remove the orifice.

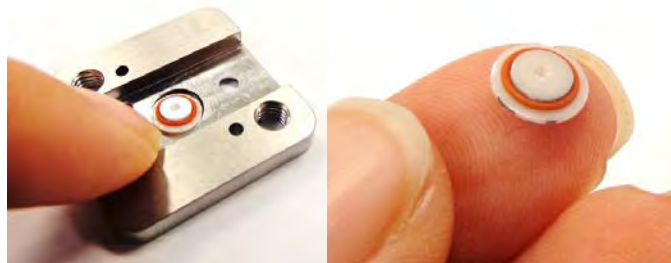


Figure 19: Remove the Orifice

5. Clean the nozzle plate, barb plate, and O-ring if necessary.
6. Install a new orifice. Make sure the orifice has an O-ring installed.



Figure 20: Install the Orifice

7. Install the barb plate. Make sure the nozzle plate screw holes are aligned.

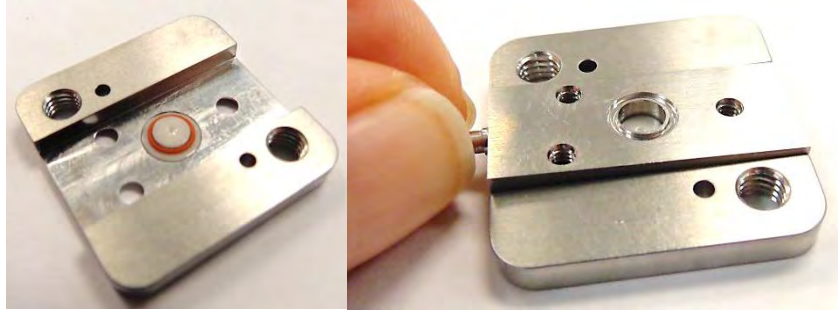


Figure 21: Install the Barb Plate

8. Turn the nozzle plate over and install the three screws. Make sure the screws are correctly tightened. Do not damage the screws when you tighten them



Figure 22: Install the Nozzle Plate Screws

9. Install the barb plate O-ring.

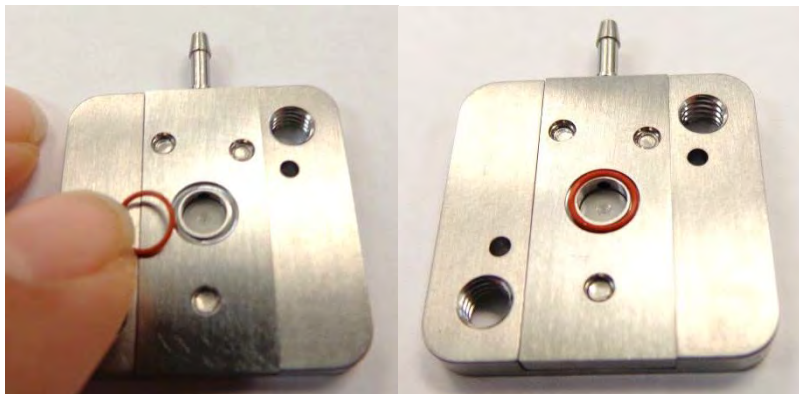


Figure 23: Install the O-ring

The above example is a ceramic orifice; you may have an extended nozzle or a carbide orifice, as shown below.



Figure 24: Extended Nozzle and Carbide Orifice Examples

NOTE: *Nozzle plates have the part number and orifice size engraved in them.*



Figure 25: Nozzle Plate Part Number

4. Maintenance

Interval	Action
Daily	<ul style="list-style-type: none">• Examine the material outlets for contamination and cured material.
Weekly	<ul style="list-style-type: none">• Examine material containers or cartridges for signs of cured or dried material.
Shutdown	<ul style="list-style-type: none">• Flush or clean the system.• Clean or replace the nozzle plate, diaphragm, and feed tube.

4.1 Flush the System

1. Decrease the air pressure to 0 psi.
2. Turn the air cap counterclockwise to remove it.
3. Turn the thumb screw counterclockwise to loosen it.
4. Remove the feed tube from the syringe.
5. Remove the syringe from the syringe holder.
6. Install a clean empty syringe.
7. Push the feed tube in the end of the syringe.
8. Turn the thumb screw clockwise to tighten.
9. Fill the syringe with approximately 3 cc of solvent.
10. Put the air cap on.
11. Increase air pressure.
12. Make sure the solvent is dispensed in a purge cup, and dispense 250 drops. Do this 5-6 times until the solvent is clear and all the solvent has been used from the syringe.
13. Do steps 1-5 again.
14. Remove and clean the diaphragm and the nozzle plate as necessary. Refer to Section 3.8.
15. Assemble the jet again. Refer to Section 3.

5. How to Use the Valve with Portal

If your valve is on a workcell with PVA Portal, use the screens that follow to operate the valve. Refer to the Portal manual for additional information on how to use the program.

NOTE: *The screens may be different based on customer specific configuration.*

The screens that relate to the JDX jet valve are in manual mode under “**Jetter**”. In this screen, a row of tabs will be shown under the row of manual mode tabs.

5.1 Setup Mode

The settings that are used in Auto Cycle can be changed in Setup Mode as shown below.

1. Select Setup Mode.
2. Select the **Setup Tree** tab.

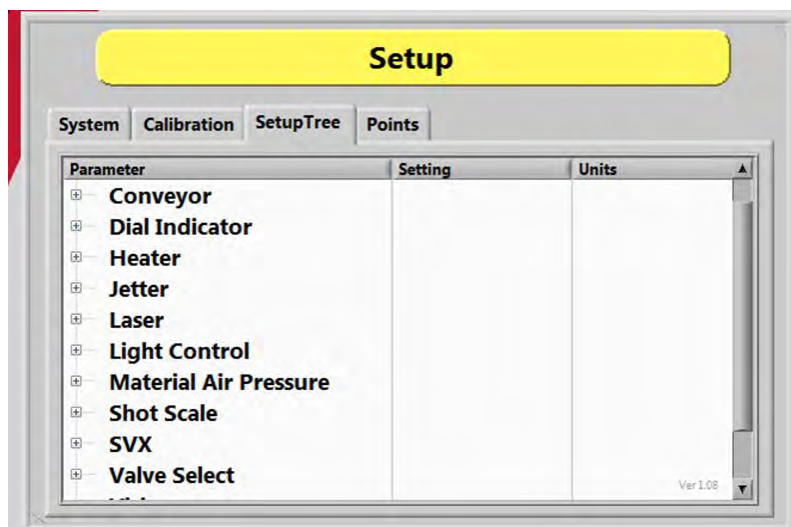


Figure 26: Setup Tree Tab

3. Select the + symbol next to a Parameter to expand the setup tree as shown in the examples below.

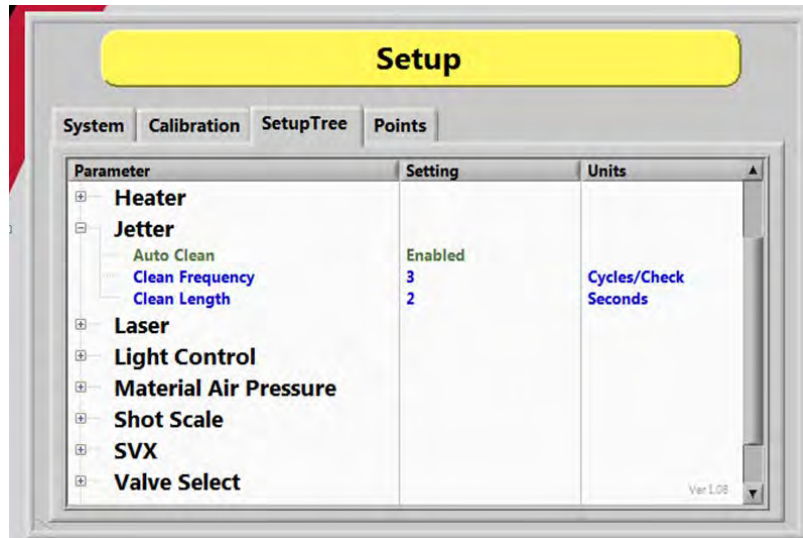


Figure 27: JDX Setup Options

- Double click on any parameter to open an edit window.

NOTE: Most settings for the Jet Valve are set with the PVA JDX Jet Valve Controller.

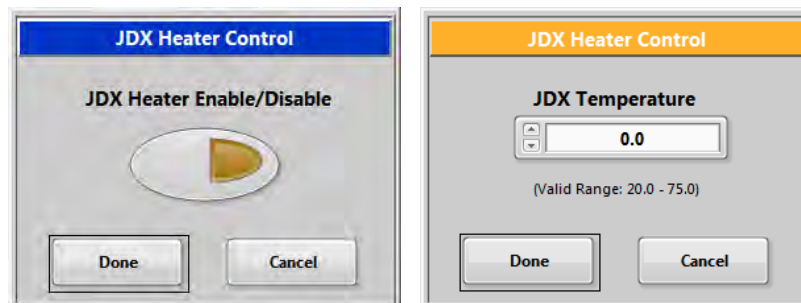


Figure 28: JDX Parameter Edit Windows

- Select the button shown to enable or disable an option. To adjust a value, use the arrows or type the value in the value box shown.
- Select **“Done”** to keep the change or **“Cancel”** to exit without making any changes.

5.2 Select a Recipe

To select a recipe in Manual mode do the steps below.

1. Select Manual Mode.
2. Select the **Valves** tab.
3. Click on the **Select Valve** drop down menu, and select a recipe for the JDX valve.
A screen will show that the parameters are loading.

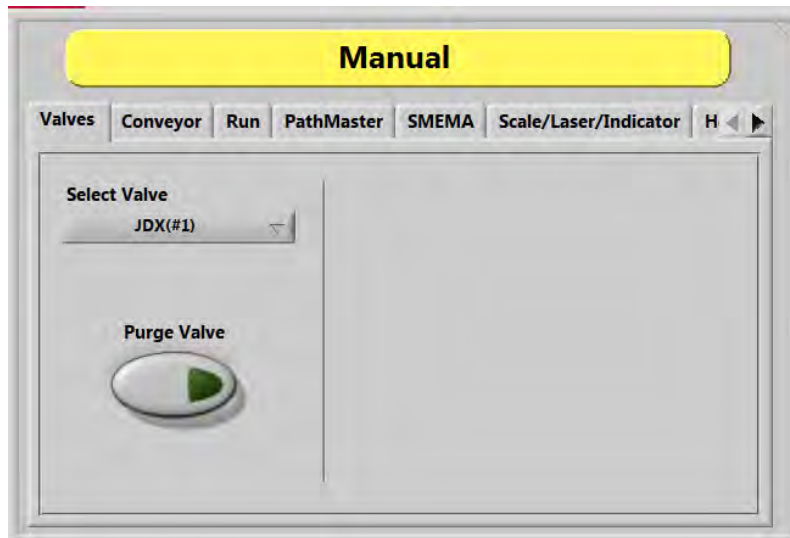


Figure 29: Valves Tab

NOTE: The settings are found in the tabs shown when you select the Jetter tab. These settings and changes apply only in Manual mode.

5.3 Jetter Maintenance

1. Select **“Manual”** from the cycle stop screen.
2. Select the **“Jetter”** tab.

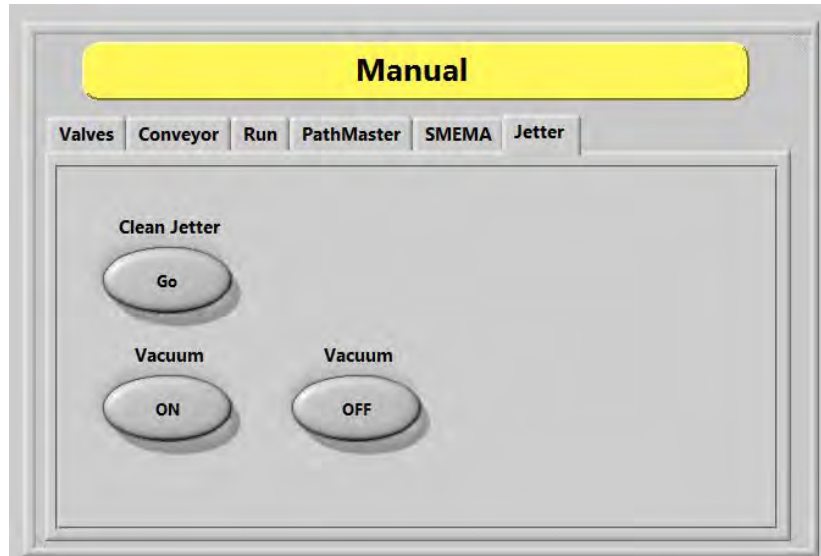


Figure 30: Jetter Maintenance

3. Select the **Clean Jetter “Go”** button to move the valve to the vacuum cup
4. Select the **Vacuum “ON”** and **“OFF”** buttons to turn the vacuum on and off.

6. How to Use the Jet with the PVA JDX Jet Valve Controller

If your valve is on a workcell with the PVA JDX Jet Valve Controller, use the screens that follow to operate your valve.

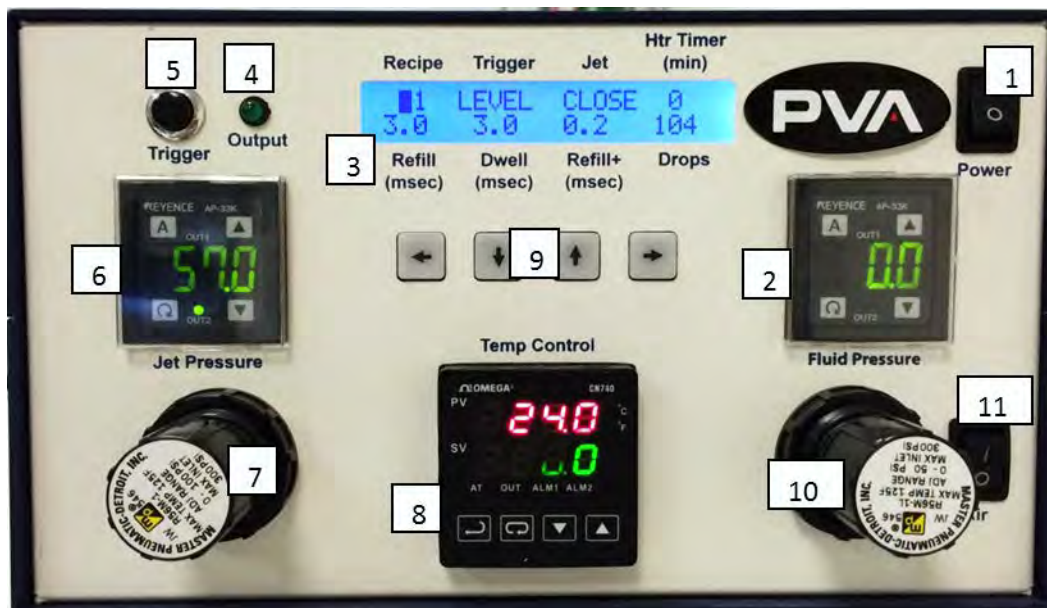


Figure 31: PVA JDX Jet Valve Controller Front Panel

1. **Power switch** – Turns on/off device power
2. **Fluid Pressure gauge** – Displays fluid delivery pressure
3. **LCD display** – Displays the program parameters
4. **Trigger LED** – Turns on when dispensing
5. **Trigger switch** – Activates current recipe displayed on LCD once
6. **Jet Pressure gauge** – Displays jet actuation pressure
7. **Jet Pressure regulator** – Regulates the jet actuation pressure
8. **Temperature controller** – controls the temperature of the dispensing nozzle
9. **Keypad** – Moves the curser on the LCD display and changes the parameter values
10. **Fluid Pressure regulator** – Regulates the fluid delivery pressure
11. **Air switch** – Turns on and off the fluid delivery pressure

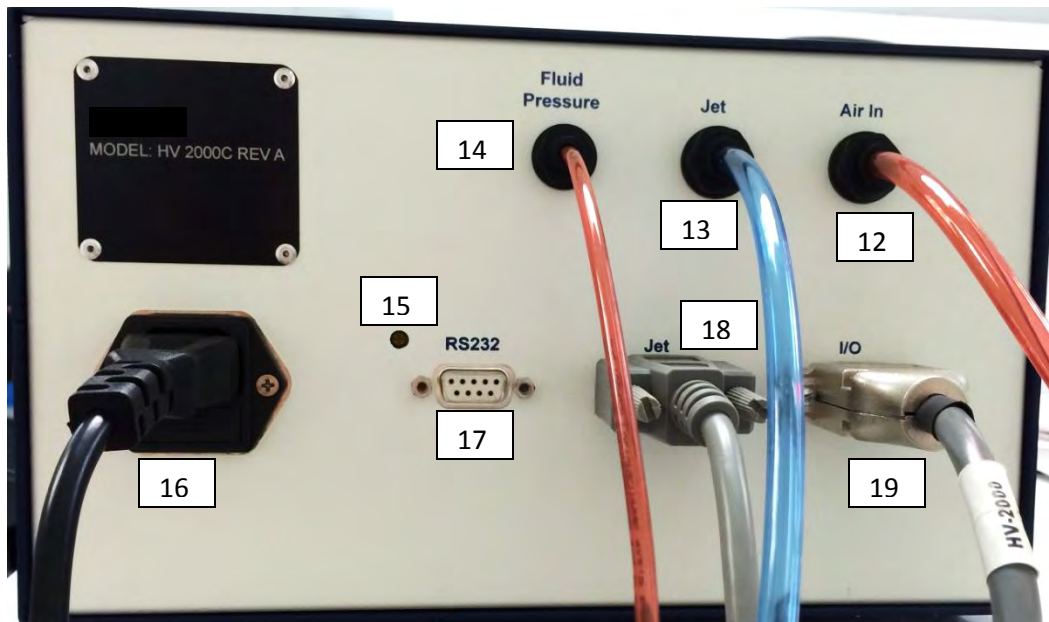


Figure 32: PVA JDX Jet Valve Controller Rear Panel

12. **Air inlet** – This port should be connected to the source pressure with a 6mm diameter hose.
13. **Jet Pressure outlet** – This port provides air pressure for the jet dispenser and should be connected with a 6mm diameter hose.
14. **Fluid Pressure outlet** – This port provides fluid delivery air pressure and should be connect to the fluid syringe with a 4mm diameter hose.
15. **LCD contrast adjustment** – The adjustment changes the contrast level on the LCD display by rotating the switch with a small screw driver.
16. **AC connector with fuse**– Power is supplied here and one fuse is required. The controller can operate from 100 to 240 Vac. Operation in different countries is easily accomplished by using a locally acceptable power cord.
17. **RS-232C** – Serial communication connector.
18. **Jet connector** – this connector should be connected to the jet electrical connector using the approved cable supplied with the system. This connector sends output trigger signals for the dispensing jet and heater settings.
19. **I/O connector** – This connector is used to trigger the dispensing recipes and outputs, busy flag, and error signals from the pressure gauges and heater controller.

6.1 Jet and Fluid Pressure

The PVA JDX Jet Valve controller has integrated air regulators (7, 10) which control the pressure to the Jet and the Fluid supply. Two digital gages (2, 6) show the pressure levels. The Fluid Pressure can be turned off with the air switch (11).

The jet requires a minimum of 35psi to function correctly. In general, 45psi is a good starting point for jet pressure. If the jet does not break off cleanly, increase the jet pressure. If you increase the jet pressure to 65psi and still have accumulation, increase the material temperature.

6.2 Temperature Controller

The main menu of the temperature controller shows the current temperature (PV) on the top line, and the set point temperature (SV) on the bottom line of the display.



Figure 33: Temp Control

6.2.1 To change the SV temperature

1. Use the UP/DOWN arrows to increase or decrease the temperature.
2. Press the ENTER key to save the change.



Figure 34: To Change the SV Temperature

6.2.2 To turn ON the heater

1. Press the INDEX key until you see the Run-Stop Output Control screen (**r-5**) on the top line of the display.
2. Now use the arrow key to select **run** setting to turn ON the heater as shown by the figure below.
3. Then press the ENTER key to save the change. Now the heater is turned ON.
4. Press ENTER key again to return to the main screen display.

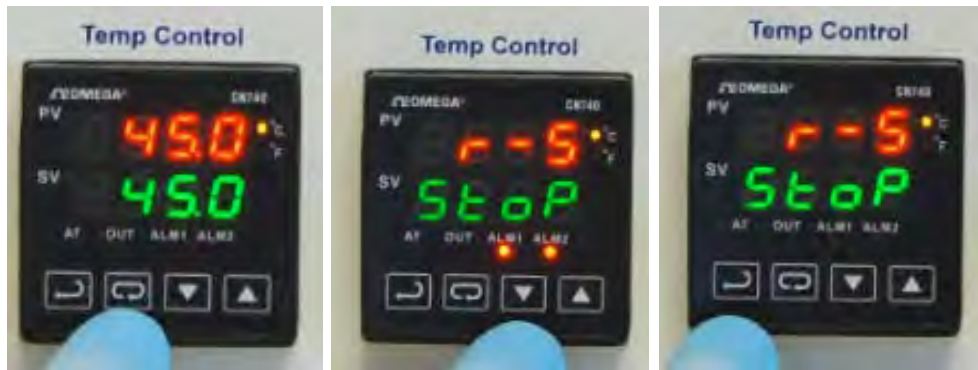


Figure 35: Turn the Heater On

6.2.3 To turn OFF the heater

1. Press the INDEX key until you see the Run-Stop Output Control screen (**r-5**)
2. Now use the arrow key to select **Stop** setting to turn OFF the heater.
3. Then press the ENTER key to save the change. Now the heater is turned OFF.
4. Press ENTER key again to return to the main screen display.

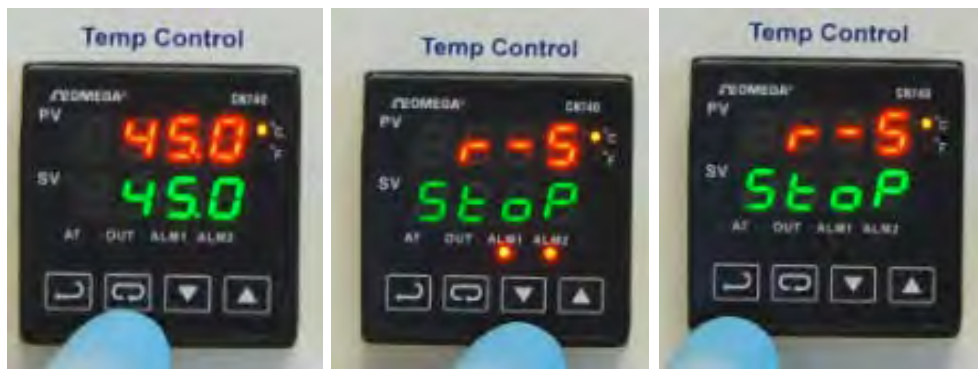


Figure 36: To Turn the Heater Off

6.3 LCD Display Functions and Selection Keys

There are 8 settings available on the main LCD menu. The UP/DOWN keys are used to change the values in the settings. The LEFT/RIGHT keys are used to select the settings. The selected setting is shown with a blinking cursor. The settings are described below.



Figure 37: LCD Display

- **Recipe** - You can have up to 6 timing recipes saved in the controller.
- **Trigger** - You can choose between PULSE and LEVEL for Trigger Mode.
- **Jet** - Use this option to CLOSE or OPEN the Jet valve.
- **Htr Timer (min)** - Setting a value n greater than zero will cause the controller to turn off the Heater after n minutes of idle time.
- **Refill (msec)** - Specify the Refill Time in msec for Recipe # n . Sets the *Flow* time required for the material to flow into the orifice after each drop has been ejected. Time is set in msec with 0.1 msec resolution.
- **Dwell (msec)** - Specify the Dwell Time in msec for Recipe # n . Sets the time required for the material to be ejected from the orifice. Time is set in msec with 0.1 msec resolution.
- **Refill+** -Specify the Refill+ Time in msec, used to compensate for small first drops. Refill+ is a time value that is added to Refill Time. This value is added to every drop in **DROP** Mode. However, this value is added only to the very first drop in **LINE** Mode. i.e. The Refill Time for all drops in DROP mode would be $2 + 0.5 = 2.5$ msec. The value of Refill Time in LINE mode is 2 msec except for the very first drop which is 2.5msec.
- **Drops** - Specify the number of drops to be repeated. For example, if you want a single drop per trigger signal, then enter 1. If you want 10 drops to be dispensed per trigger signal, enter 10.

NOTE: To set the additional parameter Refill ++, you will press the **LEFT** and **RIGHT** keys simultaneously below the LCD display and the following screen will appear on the LCD display:



Figure 38: Additional Parameters

- The **RCP**: option selects the timing recipe from #1 to #6. The **AFTER**: and **REFILL++**: values are equivalent to the **Add XX msec after YY seconds** in the Timing Recipes menu.

Press the LEFT and RIGHT keys at the same time twice to accept the new settings, the LCD display will return to the main menu.

Note: After the first press, the LDC display will change to the RS232 menu, and then to the main menu on the second press.

6.4 Trigger Button and LED

- **Trigger Button (5)**: Press the button to immediately trigger the current recipe # displayed on the LCD screen. If there were multiple drops specified in the recipe #, then multiple drops will be dispensed.
- **Output (4)**: The Output light is on when the Jet is firing so you can verify a signal was sent to the Jet. The light is off when the Jet is in idle state.

7.Exploded View

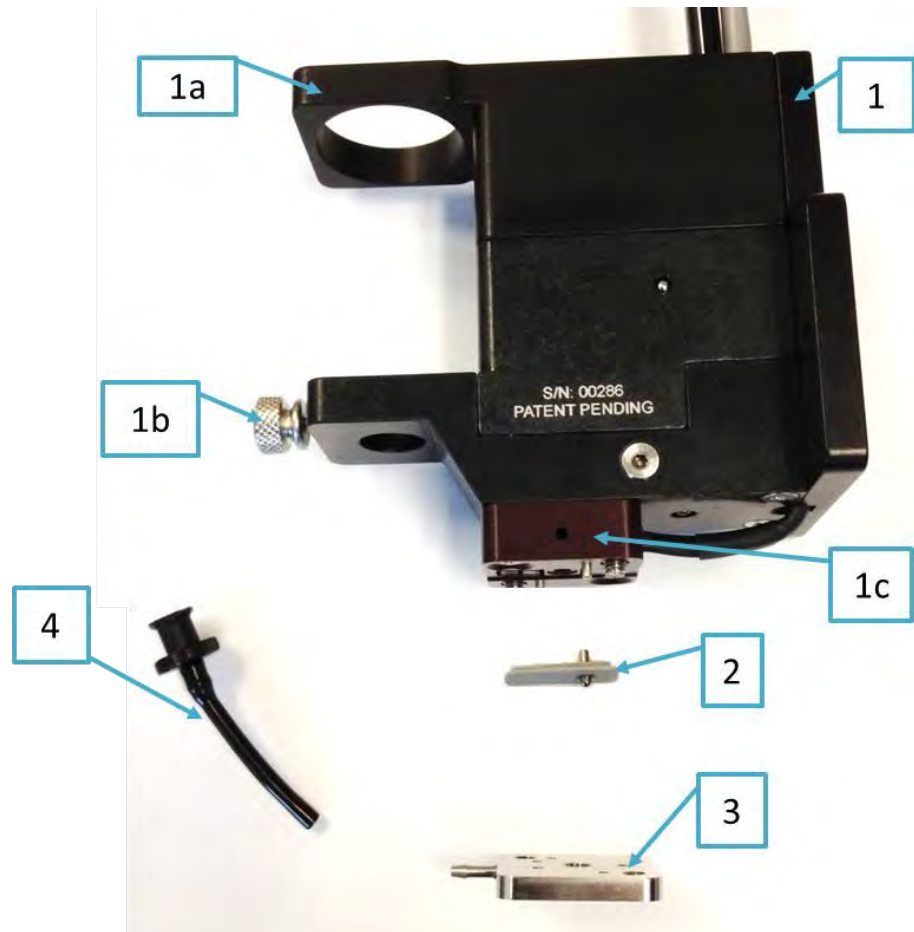


Figure 39: Exploded View

7.1.1 Item Numbers and Descriptions

Item	Description	Part Number	QTY
1.	Jet body, includes syringe holder (1a), thumb screw (1b), and heater (1c)		1
2.	Diaphragm	Refer to Table 2	1
3.	Nozzle Plate	Refer to Table 2	1
4.	Feed Tube	Refer to Table 2	1

8.Replacement Parts and Accessories

Table 2: Replacement Parts and Accessories

Description	Part number	Notes
Diaphragm – Silicone	AD09-2023	Old flat design
Diaphragm – Silicone	AD09-2029	New dimple design
Diaphragm - Kalrez	AD09-2026	Old flat design
Diaphragm - Kalrez	AD09-2028	New dimple design
Diaphragm - EPDM	AD09-2021	Old flat design
Diaphragm - FKM	AD09-2027	New dimple design
Nozzle Plate – 75µm, Ceramic	09-2303	
Nozzle Plate – 100µm, Ceramic	09-2304	
Nozzle Plate – 125µm, Ceramic	09-2305	
Nozzle Plate – 200µm, Ceramic	09-2308	
Replacement Insert –75µm, Ceramic	03-2303	
Replacement Insert –100µm, Ceramic	03-2304	
Replacement Insert –125µm, Ceramic	03-2305	
Replacement Insert –200µm, Ceramic	03-2308	
Nozzle Plate – 50µm, Carbide	09-2602	
Nozzle Plate – 64µm, Carbide	09-26025	
Nozzle Plate – 75µm, Carbide	09-2603	
Nozzle Plate – 100µm, Carbide	09-2604	
Nozzle Plate – 125µm, Carbide	09-2605	
Nozzle Plate – 150µm, Carbide	09-2606	
Nozzle Plate – 200µm, Carbide	09-2608	
Nozzle Plate – 300µm, Carbide	09-2612	
Nozzle Plate – 400µm, Carbide	09-2616	
Replacement Insert –50µm, Carbide	03-2602	
Replacement Insert –64µm, Carbide	03-26025	
Replacement Insert –75µm, Carbide	03-2603	
Replacement Insert –100µm, Carbide	03-2604	
Replacement Insert –125µm, Carbide	03-2605	
Replacement Insert –150µm, Carbide	03-2606	

Replacement Insert –200µm, Carbide	03-2608	
Replacement Insert –300µm, Carbide	03-2612	
Replacement Insert –400µm, Carbide	03-2616	
Extended Nozzle Plate – 75µm	09-2673	
Extended Nozzle Plate – 125µm	09-2675	
Extended Nozzle Plate – 200µm	09-2678	
Replacement Extended Nozzle Insert – 75µm	03-2673	
Replacement Extended Nozzle Insert – 125µm	03-2675	
Replacement Extended Nozzle Insert – 200µm	03-2678	
Nozzle Plate O-ring	NP09-2820	
Nozzle O-ring	NP09-2830	
PVA JDX Feedtube	112-09307	
50µm Nozzle cleaning kit	CL-50	
64µm Nozzle cleaning kit	CL-64	
75µm Nozzle cleaning kit	CL-75	
100µm Nozzle cleaning kit	CL-100	
125µm Nozzle cleaning kit	CL-125	
150µm Nozzle cleaning kit	CL-150	
200µm Nozzle cleaning kit	CL-200	
300µm Nozzle cleaning kit	CL-300	
400µm Nozzle cleaning kit	CL-400	

Contact PVA for information on replacement parts or to order.

9. Technical Specifications

Table 3: JDX Technical Specifications

Weight	Approximately 348 g (0.77lbs)
Material inlet	Female Luer
Operating fluid pressure	10-60 psi
Operating air pressure	35-65 psi
Viscosity range	1-400,000 Cps
Minimum shot size	10 nl
Maximum speed	Up to 300 Hz continuous duty
Maximum heater temperature	70°C
Wetted parts	17-4 stainless steel, carbide, silicone or tygon, and silicone, EPDM, Kalrez®, or Viton
Refill time	>1.7 msec
Dwell time	> 1.9 msec
Fluid syringe sizes	5, 10, 30 and 50 cc, also available for a reservoir setup
Heater	± 1°C from up to 70°C

10. Troubleshooting

Troubleshooting Problem	Possible Cause	Corrective Action
Material does not dispense	<ul style="list-style-type: none"> Material cured in nozzle plate Nozzle plate is clogged material accumulation around nozzle 	<ul style="list-style-type: none"> Heater may be too hot, decrease temperature. Disassemble and clean nozzle Disassemble and clean nozzle Clean outside of nozzle with wipe or vacuum purge
Material leaks from the nozzle plate	<ul style="list-style-type: none"> Jet pressure is too low Diaphragm is worn or dirty Nozzle plate is worn or dirty 	<ul style="list-style-type: none"> Increase Jet pressure. Max is 65 psi Clean or replace diaphragm Clean or replace nozzle plate
Material leaks from between the diaphragm and the nozzle plate	<ul style="list-style-type: none"> Diaphragm is worn or dirty Nozzle plate is worn or dirty 	<ul style="list-style-type: none"> Clean or replace diaphragm Clean or replace nozzle plate
Material leaks from material feed tube	<ul style="list-style-type: none"> Material feed tube is not attached correctly The material feed tube is worn 	<ul style="list-style-type: none"> Push the material feed tube on so that it is tight Replace the material feed tube
Material splatters	<ul style="list-style-type: none"> Jet pressure is too high 	<ul style="list-style-type: none"> Decrease jet pressure Increase distance to target substrate
Diaphragm swells	<ul style="list-style-type: none"> Diaphragm material and dispensed material are not compatible 	<ul style="list-style-type: none"> Replace the diaphragm with a diaphragm made of a compatible material
Dispense size is inconsistent	<ul style="list-style-type: none"> Nozzle is clogged Material thickens when static 	<ul style="list-style-type: none"> Disassemble and clean nozzle Run pre-dispense routine or increase first drop setting

11. Notes

12. Warranty

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 are 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: _____

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