Nordson
ELECTRONICS SOLUTIONS

ASYMTEK

DV-8000C Heli-Flow® Pump

Owner's Manual

Revision 05

NOTICE

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1 Introduction

1.1 Overview

The DV-8000C Series Heli-Flow Pump is a rotary, positive displacement auger valve. Each valve has a closed-loop, servo-controlled motor with encoder feedback that can reverse to create a clean fluid cutoff. The DV-8000C is designed and exclusively manufactured by Nordson to meet high-volume production requirements.

The DV-8000C Heli-Flow Pump features interchangeable cartridges for use in high flow rate encapsulation and lid seal applications, allowing each pump to work with several different fluid types. The DV-8000C has a fixed head design for use with high-viscosity fluids and high flow rate for fast dam writing.

NOTE The terms pump and valve are synonymous in this manual.

Table 1-1 DV-8000C Heli-Flow Pump

1.2 DV-8000C Features

The DV-8000C is designed with the following key features:

- Tool-free disassembly of wetted parts for quick and easy cleaning
- Fast cartridge changeover
- Closed-loop motor control with encoder feedback ensures high repeatability and precision dispense control
- Motor and gearbox options (19:1 standard and 4:1 for high flow applications) designed for use with thick fluids.

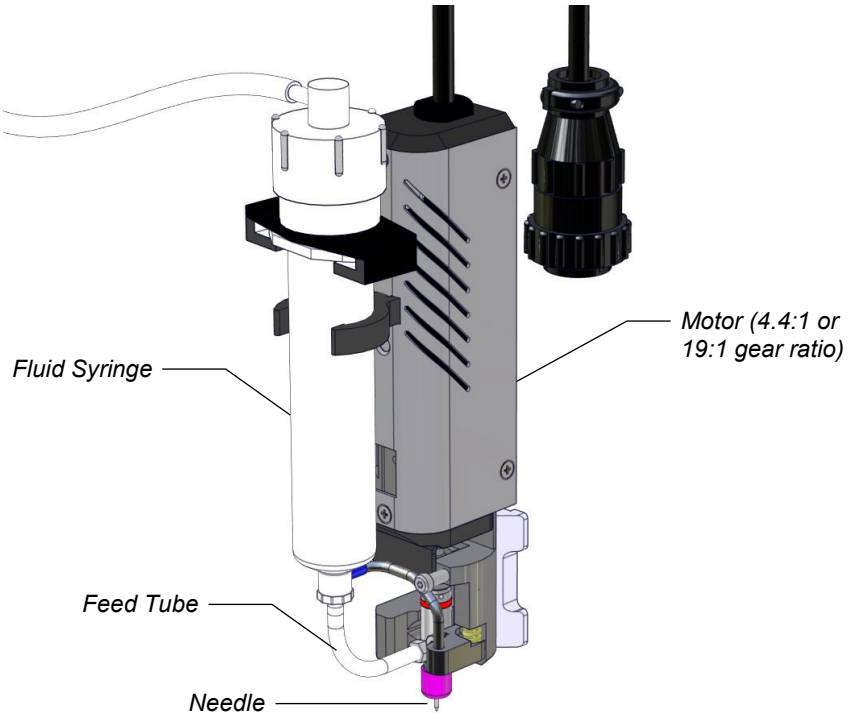


Table 1-2 DV-8000C Features

1.3 Specifications

Table 1-3 DV-8000C Specifications

Parameter	Specification
Dimensions Length Width Depth	 190 to 192 mm (7.48 to 7.56 inch) 33 mm (1.3 inch) 72.6 mm (2.86 inch)
Weight (dry, without syringe):	362 g (0.8 pound)
Operating Voltage:	24 VDC
Operating Air Pressure (max):	34-552 kPA (5-80 psi) Depending on the fluid, higher viscosities require higher pressures
With Feed Tube:	275 kPa (40 psi, 2.75 bars)
With Elbow Fitting:	551 kPa (80 psi, 5.5 bars)
Syringe Sizes:	5, 10, 30, 74, or 177cc (0.17, 0.34, 1.0, 2.5, or 6.0 ounce)
Motor Type:	Closed-loop velocity control with encoder feedback
Flow Rate Range	Flow rate depends on fluid, needle, valve speed, and syringe pressure. Minimum volume displacement allows pump to dispense dots smaller than 0.5 mm in diameter. Maximum flow rate capability for damming material is well over 100 mg/s (viscosity 1 M centipoises, specific gravity 1.76)
Dispensing Systems	Spectrum Series S2-9XX, Quantum Q-6800, Vantage Series, and Forte Series

2 Safety

2.1 Overview

This section is intended to provide basic safety information necessary for operating and servicing the DV-8000C. This section covers the following topics:

- Intended Use
- Basic Safety Precautions and Practices
- Disposal
- Emergency Shutdown
- Safety Warning Labels

To further optimize safe operation, precautions and recommended practices are included with the procedures throughout this manual.

WARNING! Failure to comply with any of the safety recommendations could cause serious injury to the user or damage to the dispensing system.

NOTE Safety is considered a joint responsibility between the original equipment manufacturer (Nordson) and the end-user (owner). All safety precautions and practices should be in accordance with local regulations and facility policy.

2.2 Intended Use

Using Nordson equipment in ways other than those described in the supplied documentation may result in personnel injury or property damage. Examples of unintended equipment use include:

- Using incompatible materials
- Making unauthorized modifications
- Removing or bypassing safety guards or interlocks
- Using incompatible or damaged parts
- Using unapproved auxiliary equipment
- Operating equipment in excess of maximum ratings

WARNING! Unsafe equipment conditions can result in personal injury or property damage. Failure to adhere to safety warnings and precautions can result in serious bodily harm to the user.

2.3 Basic Safety Precautions and Practices

Compliance with the following recommended precautions and practices will prevent personal injury or damage to property during applicator operation and maintenance.

2.3.1 Safety of Personnel

- Only trained personnel should perform installation, operation, maintenance, and troubleshooting procedures on the DV-8000C.
- A second person should always be present when performing maintenance on a powered-up system.
- Before performing maintenance or service on the DV-8000C, position it at the front of the dispensing area. This will provide easy access to components and limit exposure to hazardous areas.
- Immediately push the red Emergency Machine Off (**EMO**) button on your dispensing system if personnel are in danger.
- Do not wear loose clothing or jewelry while operating the system. Tie back long hair to prevent it from being caught in moving parts.
- Do not touch the moving parts while the dispensing system is operating.
- To prevent burn injury, wear thermal gloves when working around heater tooling and fluid heaters.
- Make sure all facility power sources are safely grounded.
- Routinely inspect all air hoses and electrical cables for damage.
- Make sure power cords and air supply hoses do not cross a walkway or aisle.
- Maintain a clean and orderly work area.
- Remove the DV-8000C completely from the dispensing system and allow the heated parts to cool before performing maintenance.
- Relieve pneumatic pressure before adjusting or servicing pressurized components.

2.3.2 Material Safety

- Follow Safety Data Sheet (SDS) recommendations for the proper handling, cleanup, and disposal of all materials and fluids and their containers (i.e., syringes, cups, reservoirs, etc.) used with the dispensing system.
- Know the SDS recommendations for treatment of injury resulting from exposure to hazardous materials.
- Always wear appropriate personal protective equipment (PPE) as recommended by facility safety practices and the material manufacturer's SDS.
- When working with multiple fluids, refer to the SDS to ensure the materials are compatible.
- If possible, save or recycle unused materials. Refer to the SDS before saving or recycling unused materials.
- Do not dispense fluids with a flash point less than 93 °C.

2.3.3 Preventing Equipment and Workpiece Damage

- Immediately push the **EMO** (E-Stop) button if the dispensing system, DV-8000C, or a work piece is in danger of being damaged.
- Use standard Electrostatic Discharge (ESD) precautions when working near sensitive components. Always wear a grounding strap and connect it to the ESD ground before handling workpieces and equipment.
- Perform all recommended maintenance procedures at the suggested intervals.
- Immediately contain and clean up any caustic or conductive fluid spills as recommended in the material manufacturer's SDS.
- If fluid gets into internal portions of the DV-8000C, immediately contact Technical Support.
- Use only replacement parts that are designed for use with the original equipment.

WARNING! The DV-8000C is a precision instrument of inherently safe design. The use of any dispensing fluid and the related choice of solvent for cleaning, as well as all associated safety precautions is the responsibility of the end-user. Consult with your fluid supplier for recommendations on personal protective equipment and safety practices.

2.4 Disposal

Dispose of equipment and materials used in operation and servicing in accordance with local regulations.

Depending on the fluid dispensed and cleaning materials used, the following items may contain substances whose disposal might be regulated:

- Purge/Scale Cups
- Purge Boots
- Dispensing Needles/Nozzles
- Seats
- Luer Fittings
- Fluid Tubes
- Syringes

2.5 Emergency Shutdown

In the event of an emergency or malfunction, press the **EMO** (E-Stop) button on the dispensing system and perform the following steps:

- Disconnect and lockout system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressure.
- Identify the reason for the malfunction and correct it before restarting the system.

2.6 Safety Warning Labels

WARNING! Comply with all safety warning labels or serious injury to personnel or damage to the dispensing system may occur. Worn or damaged labels should be replaced with new labels having the same part number.

Warning labels on your equipment point out areas where personnel must use extreme caution to prevent serious injury and property damage. Table 2-1 shows the warning symbols that may be found on your dispensing system or optional equipment.

Table 2-1 Safety Warning Symbols

Warning Type	Symbol	Part Number	Hazard
Hot Surface		7207206 (1)	Thermal warning labels identify potentially hot components and surfaces. Use extreme caution when working on or around these areas. Can cause severe burns.

Notes: (1) Rectangular labels with symbols and text. These labels are placed on machines that are shipped anywhere but the European community.

(2) Triangular labels with symbols only. These labels are placed on machines that are shipped to the European community, referred to as "CE labeled" machines.

3 Installation

3.1 Overview

This section includes DV-8000C installation instructions.

NOTE For more information, refer to the manual for your applicable dispensing system.

This section covers the following topics:

- Installing the Valve
- Software Configuration
- Installation Verification Test

3.2 Installing the Valve

If your DV-8000C was factory installed, you do not need to perform this procedure.

WARNING! Before installing the valve, perform a dispensing system service shutdown as described in the applicable dispensing system manual. Lockout and tagout power to the dispensing system to prevent accidental restoration of power during valve installation.

WARNING! The procedures in this section should be performed by trained personnel only.

To install the dispensing valve:

1. Prior to installation, use the Fluidmove position controls to move the dispensing head to the front center of the dispensing area.
2. Perform a service shutdown as specified in the applicable dispensing system manual.
3. Remove any valve currently installed on the dispensing system.
4. Slide the dovetail bracket (included with the dispensing valve) into the valve mounting bracket on the Z-axis face plate.
5. Secure by turning the lever on the valve mounting bracket to the upward position. Refer to the applicable dispensing valve manual for additional information.
6. Make the appropriate electric and pneumatic connections.
   - Refer to the applicable dispensing system manual.

3.3 Software Configuration

Once you have installed the valve on your dispensing system, you must configure the Fluidmove software.

WARNING! Only trained service technicians should perform this procedure.

1. Perform a system start-up as specified in the applicable dispensing system manual.
2. Start the Fluidmove software by double-clicking the **Fluidmove** icon on the Windows desktop.
3. Select **Configuration > Setup Valves** from the Fluidmove Main Window.
   - The Setup Valves window opens (Figure 3-1).

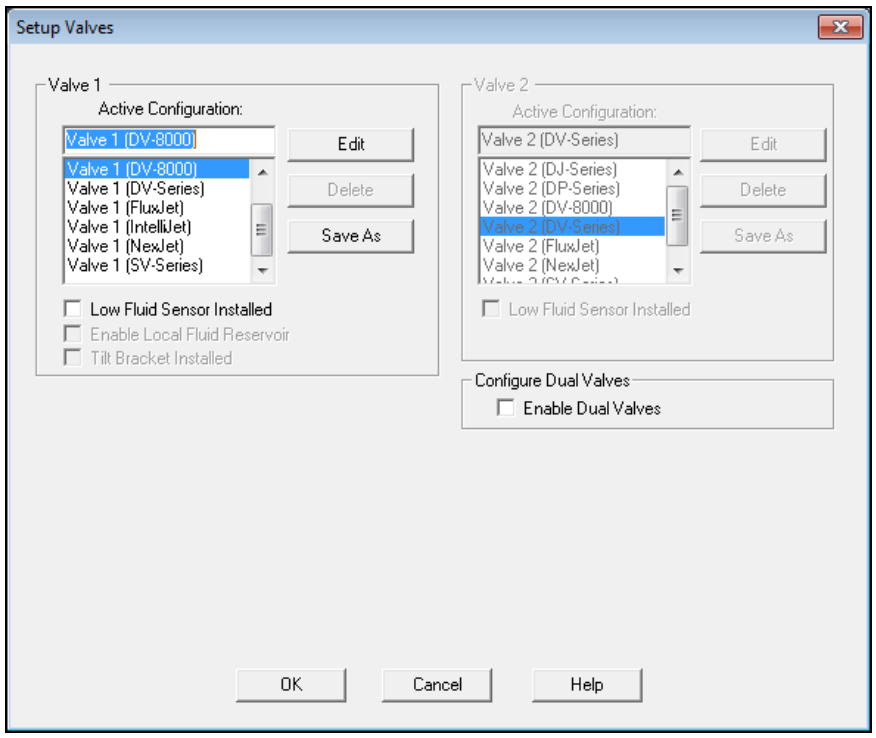


Table 3-1 Fluidmove Setup Valves

4. Select DV-8000 from the Active Configuration list and click **OK**.

NOTE For dispensing systems with a dual action dispensing head, make sure **Enable Dual Valves** is checked. You must configure the appropriate valve position (Valve 1 or Valve 2).

5. In the Setup Valves dialog box, click on **OK**.
   - You will be prompted to restart Fluidmove.
6. Click on **Yes**.
   - Fluidmove will restart and you will be prompted to run valve offsets.

3.4 Installation Verification Test

Once you have installed the valve on your dispensing system and configured the software, it is recommended that you perform this test to ensure that the pump accepts commands from your operating system and responds by moving the feedscrew in the correct direction.

WARNING! Only trained service technicians should perform this procedure.

1. Start Fluidmove.
2. In the Main Window, click on **Tools**.
3. In the Tools Window, click on **I/O Test** and then click on **Dispenser**.
4. In the Dispenser I/O Test dialog box, locate the **Valve Forward** output (Figure 3-2).
   - The output name may be different on your system, but it should be similar enough to be easily identified.
   - On systems with dual action dispensing heads, you will have to select Valve 1 (V1) or Valve 2 (V2) for I/O testing, as applicable.

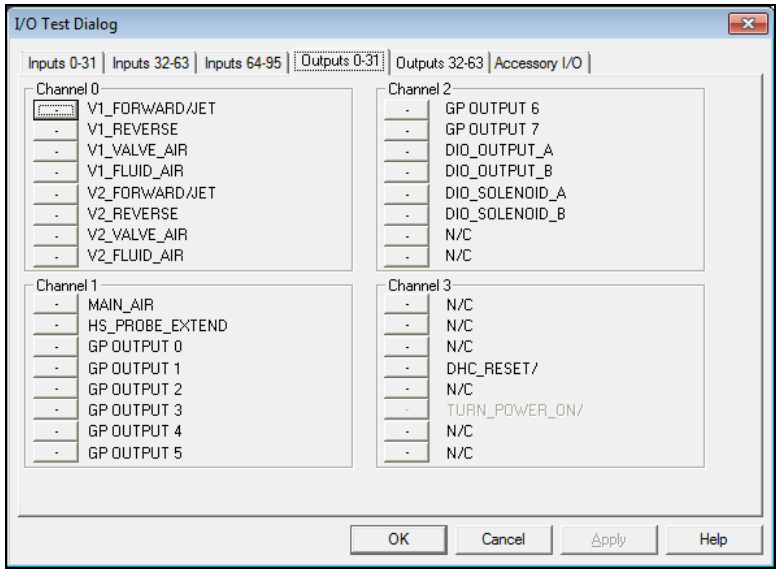


Table 3-2 Dispenser I/O Test Dialog Box (typical)

5. Toggle the output ON and check the direction of the ball coupling (Figure 3-3). It should be turning in a clockwise direction if viewed from above.
   - If the ball coupling is not turning, make sure that the pump power cord is properly connected. Then repeat this step.
6. Toggle the output OFF and make sure that the ball coupling stops turning.
7. In the Dispenser I/O Test dialog box, locate the **Valve Reverse** output (Figure 3-2).
   - The output name may be different on your system, but it should be similar enough to be easily identified.
   - On systems with dual action dispensing heads, you will have to select Valve 1 (V1) or Valve 2 (V2) for I/O testing, as applicable.

8. Toggle the output ON and check the direction of the ball coupling. It should be turning in a counterclockwise direction if viewed from above.

   - If the ball coupling is not turning, make sure that the pump power cord is properly connected. Then repeat this step.

9. Toggle the output OFF and make sure that the ball coupling stops turning.

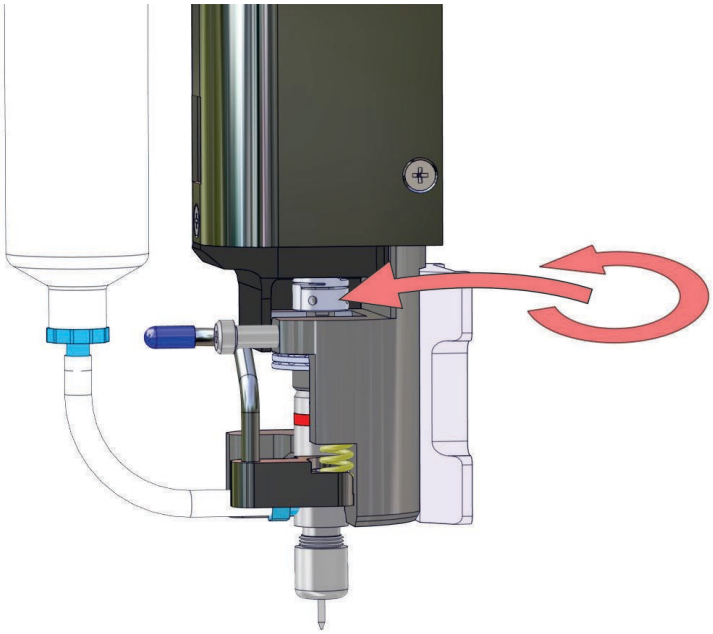


Table 3-3 Ball Coupling Location

4 Operation

4.1 Overview

This section covers the following topics:

- Valve Adjustments
- Loading a Dispensing Cartridge
- Installing/Changing a Fluid Syringe
- Priming the Valve
- Valve Offsets

4.2 Safety First

Operation of the DV-8000C involves air pressure, electrical power, mechanical devices, heat, and the use of hazardous materials. It is essential that every person servicing or operating the DV-8000C fully understands all hazards, risks, and safety precautions, see *Section 2 - Safety.*

4.3 Valve Adjustments

You can optimize the performance of the valve by changing various settings, such as air pressure and motor speed. Software parameters can also be changed to meet your applicable application requirements.

WARNING! Only trained service technicians should perform valve setting adjustments.

4.3.1 Air Pressure

Air pressure is used to move the material from the syringe to the feedscrew. The greater the pressure, the faster the material reaches the feedscrew. However, excessive air pressure can be detrimental to the dispensing process.

4.3.2 Motor Speed

Technical Support must consider the dispensing system model, fluid properties, needle size, and substrate when determining the optimum valve speed for your application.

Valve speed is controlled through the Fluidmove software.

To set the valve speed:

1. Click on **Configuration > Setup Valves** in the Fluidmove Main Window.
   - The Setup Valves window opens (Figure 3-1).
2. Click on **Edit**.
   - The Valve Settings window opens.
3. Select the **Settings** tab (Figure 4-1).
4. Enter the Forward Speed (percent of maximum speed).
5. Enter the Reverse Speed (percent of maximum speed).
   - The Reverse speed is used for the suckback feature.
6. Enter the acceleration.
   - The acceleration is the rate of speed increase for forward and reverse speed settings.
   - Refer to the *Fluidmove User Guide* or Online Help for more information.
7. Click on **OK**.

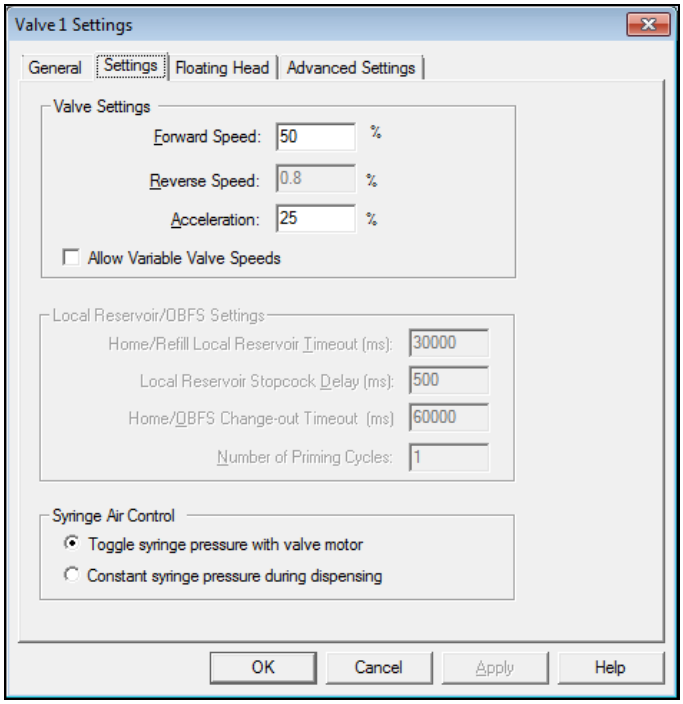


Table 4-1 Setting Valve Speed

4.3.3 Software Parameters

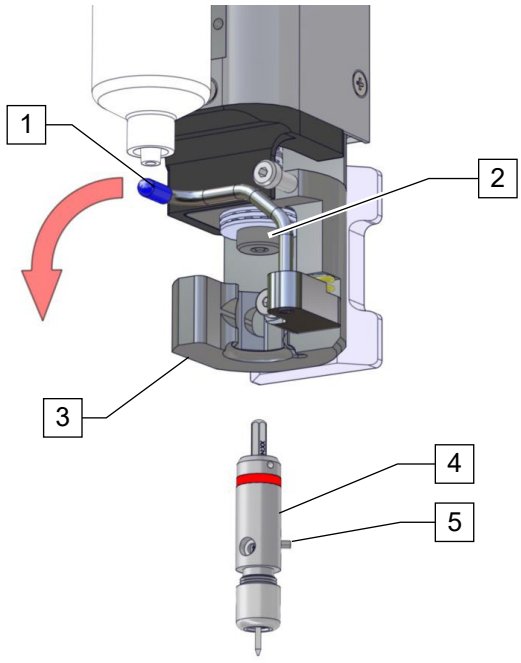
Refer to the *Fluidmove User Guide* or Online Help for detailed explanations of line and dot parameters.

4.4 Loading a Dispensing Cartridge

WARNING! Only trained service technicians should perform this procedure.

NOTE This procedure is for a valve already mounted on the dispensing head.

1. Use the Fluidmove jog controls to move the dispensing head to the front center of the dispensing area.
2. Perform a production shutdown as specified in the applicable dispensing system manual.
3. Open the dispensing system door or hatch and locate the valve on the dispensing head.
4. Obtain the appropriate cartridge assembly for your application.
5. Squeeze the release lever on the valve, while bracing the support beam (Figure 4-2).
6. Insert the cartridge into the valve body making sure to align the guide pin with the slot.
   - The cartridge must be inserted past the ball detent. When the cartridge has been inserted properly, you will hear a click.
   - The top of the cartridge should be flush with the hex coupler.
7. Release the lever.
   - The cartridge will lock into place.



Item	Description	Item	Description
1	Release Lever	4	Cartridge
2	Hex Coupler	5	Guide Pin
3	Support Beam		

Table 4-2 Loading the Cartridge

4.5 Installing/Changing a Fluid Syringe

4.5.1 Installing/Changing a Syringe

WARNING! Refer to the Safety Data Sheet (SDS) for information on safety, handling, and disposal for all fluids and materials before use. All fluids and materials must be disposed of according to local regulations. Wear Personal Protective Equipment (PPE) when performing this procedure to prevent contact with caustic chemicals.

WARNING! Only trained service technicians should perform this procedure. When changing syringes, avoid introducing air into the fluid path. Air in the fluid path will adversely affect dispensing performance.

Tools and Materials Needed

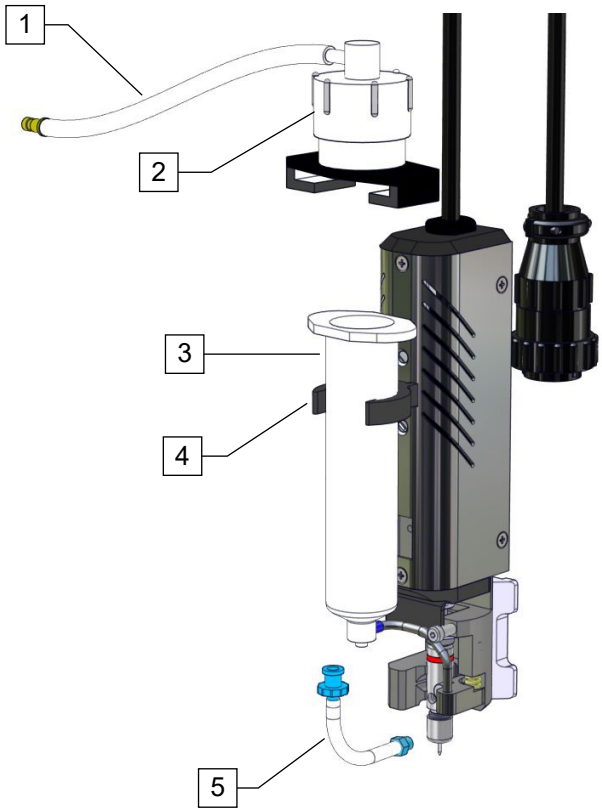
- Clean Cloth and Solvent (for spills)
- 1/4-inch Wrench or Pliers (as needed)
- Syringe of Fluid to be Dispensed
- New Feed Tube and Fittings (if changing fluid)
- Appropriate Personal Protective Equipment

NOTE If changing fluid types, you must first clean and prime the valve, see *5.5 Cleaning the Valve*.

To install a syringe:

1. Use the Fluidmove position controls to move the dispensing head to the front center of the dispensing area.
2. Perform a production shutdown as specified in the applicable dispensing system manual.
   - If there is no syringe installed, skip to Step 6.
3. Disconnect the syringe air hose from the **FLUID AIR** connector on the dispensing system bulkhead (Figure 4-3).
4. Remove the syringe receiver head from the empty syringe and unscrew the depleted syringe from its fitting.
   - If the fitting turns with the syringe, use a small wrench or pair of pliers (as applicable) to hold the fitting while unscrewing the syringe.
5. Remove the syringe and discard it in accordance with local regulations.
6. Obtain a new syringe and inspect the fluid for voids. If voids are present, obtain another syringe.
7. Remove the syringe cap and hold the syringe tip-side-down to allow the fluid to completely fill the syringe tip.
8. Slide the new syringe down through the syringe clip and screw it onto the syringe fitting.
   - There should be no fluid voids at the top of the syringe fitting. If any material seeps over the fitting, clean the fitting with a cloth and recommended solvent.

9. Screw the receiver head onto the top of the new syringe.
10. Connect the syringe air hose to the **FLUID AIR** connector on the dispensing system bulkhead.
11. Perform a dispensing system start-up as specified in the applicable dispensing system manual.



Item	Description
1	Syringe Air Hose
2	Receiver Head
3	Syringe
4	Syringe Clip
5	Feed Tube

Table 4-3 Installing/Changing a Syringe

4.5.2 Installing a Syringe of Conditioning Fluid (Solder Paste Applications Only)

When using the DV-8000C to dispense solder paste, you should install a syringe of conditioning fluid and prime the valve in between cleanings, see *4.6.2 Solder Paste Applications*. You may leave the conditioning fluid installed until you are ready to install the syringe of solder paste.

WARNING! Refer to the Safety Data Sheet (SDS) for information on safety, handling, and disposal for all fluids and materials before use. All fluids and materials must be disposed of according to local regulations. Wear Personal Protective Equipment (PPE) when performing this procedure to prevent contact with caustic chemicals.

WARNING! Only trained service technicians should perform this procedure.

Tools and Materials Needed

- Syringe of Conditioning Fluid
- Syringe Receiver Head and Air Hose
- Personal Protective Equipment
- Feed Tube and Fittings

To install a syringe conditioning fluid (solder paste applications):

1. Use the Fluidmove position controls to move the dispensing head to the front center of the dispensing area.
2. Perform a production shutdown as specified in the applicable dispensing system manual.
   - If there is no syringe installed, skip to Step 6.
3. Disconnect the syringe air hose from the **FLUID AIR** connector on the dispensing head bulkhead.
4. Remove the syringe receiver head from the empty syringe and unscrew the depleted syringe from its fitting.
   - If the fitting turns with the syringe, use a small wrench or pair of pliers (as applicable) to hold the fitting while unscrewing the syringe.
5. Remove the syringe and discard it in accordance with local regulations.
6. Install the fittings and the feed tube on the valve as required by your application (Figure 4-3).
7. Slide the syringe down through the syringe clip and screw it into the syringe fitting.
8. Screw a clean receiver head onto the top of the syringe.
9. Connect the syringe air hose to the receiver head and the **FLUID AIR** connection on the dispensing system bulkhead.
10. Perform a dispensing system start-up as specified in the applicable dispensing system manual.
11. Prime the valve, see *4.6 Priming the Valve*.

4.6 Priming the Valve

The purpose of priming is to initiate fluid flow into the valve and to eliminate any air in the fluid path. Priming is necessary after any of the following has occurred:

- Initial setup of the valve during installation
- Disassembly/cleaning of the dispensing cartridge and/or fittings
- Syringe Change

This subsection contains priming procedures for both solder paste and non-solder paste applications.

WARNING! Refer to the Safety Data Sheet (SDS) for information on safety, handling, and disposal for all fluids and materials before use. All fluids and materials must be disposed of according to local regulations. Wear Personal Protective Equipment (PPE) when performing this procedure to prevent contact with caustic chemicals.

4.6.1 Non-Solder Paste Applications

Tools and Materials Needed:

- Syringe of Production Fluid
- Dispensing Needle (application specific)
- Plastic Purge Cup
- Appropriate Personal Protective Equipment

WARNING! Only trained service technicians should perform this procedure.

NOTE This procedure assumes that a clean dispensing cartridge and needle are installed. If not clean, see *5.5 Cleaning the Valve*.

1. Perform a dispensing system start-up as specified in the applicable dispensing system manual.
2. Use the position controls to move the dispensing head directly over the purge station.
3. Open the dispensing system door/hatch and perform the following:
   a. Install a syringe of production-run fluid on the valve, see *4.5 Installing/Changing a Fluid Syringe*.
   b. Remove the purge station lid.
   c. If the purge cup contains fluid, remove it and replace with a clean cup.
4. Close the dispensing system door/hatch.
5. In the Fluidmove Main Window, click on **Run a Program** (Figure 4-4).
   - Authorized personnel can also turn the Valve ON and OFF by going to **Tools > I/O Test > Dispenser** and toggling the Valve Forward output.
6. In the Production Window, click on **Setup** and then double click on **Valve-Forward/Reverse**.

7. In the Select Valve dialog box, select the valve you want to prime and click on **OK**.
   - On systems with dual action dispensing heads, you will have to select Valve 1 (V1) or Valve 2 (V2), as applicable.
8. In the Forward dialog box, click the radio button next to **Duration** and enter 120 seconds (2 minutes).
   - The 120-second Valve Forward duration is an estimate of the time necessary for the fluid to flow completely through the valve and be dispensed in a steady, unbroken stream. The preferred duration may vary.
   - Valve motor speed should be at your production-run setting.

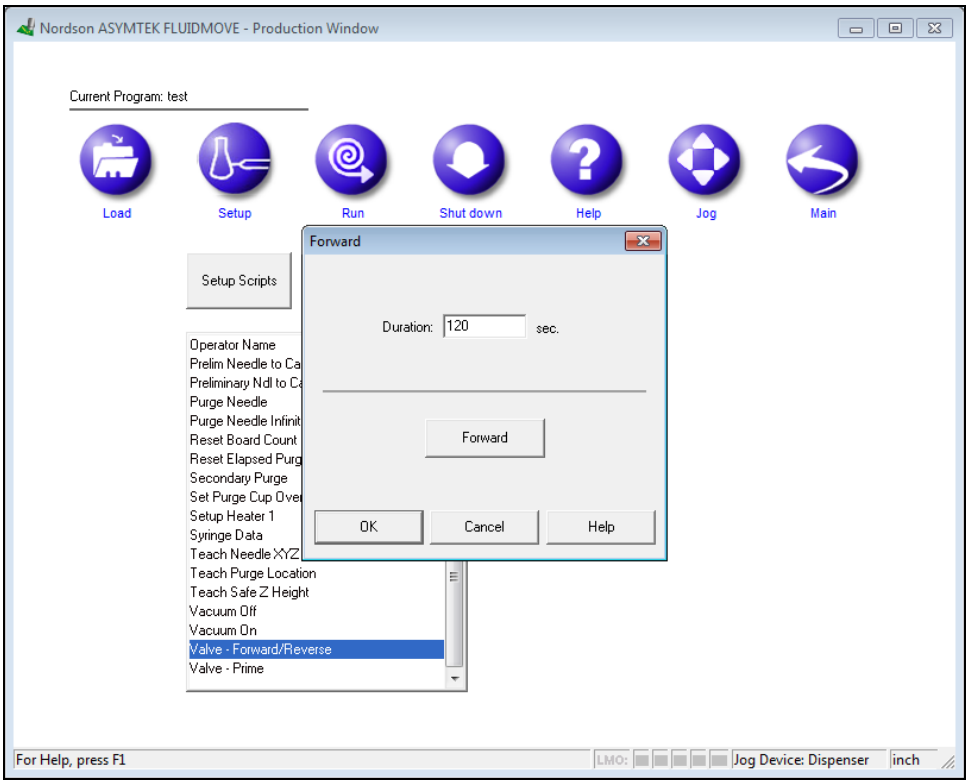


Table 4-4 Valve Forward Window

9. Click on the **Forward** button to start the valve.
10. After the valve has stopped, check for drooling.
    - "Drooling" means that fluid continues to drip from the tip of the needle when the valve is OFF. Drooling occurs because there is air in the fluid path or the air pressure is too high.
11. If there is no drooling present, proceed to Step 12. If the fluid is still drooling, repeat Step 8 through Step 10 until no drooling occurs.
    - There should be no drooling of fluid from the needle after the valve has stopped. If drooling is persistent, see *Section 6 - Troubleshooting*.
12. Open the dispensing system door/hatch, replace the purge cup if necessary, and replace the purge station lid.

4.6.2 Solder Paste Applications

Solder paste applications require a different priming procedure than non-solder paste applications that increases feedscrew wear and affects dispensing performance.

Tools and Materials Needed

- Syringe of Solder Paste
- Syringe of Conditioning Fluid
- Dispensing Needle (application specific)
- Appropriate Personal Protective Equipment
- Plastic Purge Cup
- Clean Cloth with Recommended Solvent

WARNING! Only trained service technicians should perform this procedure.

NOTE This procedure assumes that a clean dispensing cartridge and needle are installed. If not clean, see *5.5 Cleaning the Valve*.

1. Perform dispensing system start-up as specified in the applicable dispensing system manual.
2. Use the position controls to move the dispensing head directly over the purge station.
3. Open the dispensing system door/hatch and perform the following:
   a. Install a syringe of conditioning fluid on the valve, see *4.5 Installing/Changing a Fluid Syringe.*
   b. Remove the purge station Lid. If the purge cup contains fluid, remove it and replace with a clean cup.
4. Close the dispensing system door/hatch.
5. In the Fluidmove Main Window, click on **Run a Program**.
   - The Fluidmove Production Window opens.

   NOTE Authorized personnel can also turn the Valve ON and OFF by going to **Tools > I/O Test > Dispenser** and toggling the Valve Forward output.
6. In the Production Window, click on **Setup** and then double click on **Valve - Forward/Reverse (**Figure 4-4).

   NOTE On systems with dual action dispensing heads, you will have to select Valve 1 (V1) or Valve 2 (V2), as applicable.
7. In the Valve Forward dialog box click the radio button next to **Duration** and enter 60 seconds (1 minute).
   - The 60-second Valve Forward duration is an estimate of the time necessary for the conditioning fluid to flow completely through the valve and be dispensed in a steady, unbroken stream. The preferred duration may vary. Valve motor speed should be at your production-run setting.
8. Click on the **Forward** button to start the valve.
9. After the valve has stopped, check for drooling.
   - "Drooling" means that fluid continues to drip from the tip of the needle when the valve is OFF. Drooling occurs because there is air in the fluid path or the air pressure is too high.

10. If there is no drooling present, proceed to Step 11. If drooling persists, see *Section 6 - Troubleshooting*.

11. When drooling has stopped, open the dispensing system door/hatch, and perform the following:

    a. Remove the syringe of conditioning fluid and install a syringe of solder paste.

    b. Remove and set aside the needle from the dispensing cartridge.

    c. If the purge cup is full, remove it and replace with a clean purge cup.

12. Close the dispensing system door/hatch.

13. Set the valve motor speed to a slow rate (approximately 10%) to prevent cold welding of the solder paste during the priming operation.

14. Set the Valve Forward duration to 180 to 300 seconds (3 to 5 minutes) and click on the **Forward** button to start the valve.

    - The Valve Forward duration above is an estimate of the time necessary for the solder paste to completely purge the conditioning fluid from the valve.

15. Repeat Step 14 as needed until you can see that all conditioning fluid has been purged into the purge cup.

    - There should be no drooling of solder paste from the valve after it has stopped.

16. Open the dispensing system door/hatch and clean any residual solder paste from the end of the cartridge using a clean cloth and manufacturer-recommended solvent.

17. Reinstall the needle removed in Step 11.b and close the dispensing system door/hatch.

    - The needle should still be coated inside with conditioning fluid.

18. Set the Valve Forward duration to 60 seconds (1 minute) minimum and click on the **Forward** button to start the valve. Valve motor speed should still be at the slow rate set in Step 13.

    - The Valve Forward duration above is an estimate of the time necessary for the solder paste to flow through the needle and into the purge cup.

19. Reset the valve motor speed to the rate recommended for your dispensing application.

    - If the needle becomes plugged during the first few minutes of dispensing, do not clean the dispensing cartridge. Remove the needle and repeat Step 13 through Step 19. Make sure the needle is clean before reattaching it.

4.7 Valve Offsets

A Valve offsets routine in Fluidmove must be performed after any of the following:

- Initial Valve Setup
- Valve Change
- Height Sensor Change or Adjustment

This prompted setup routine identifies and records a safe z-height for dispensing head travel, the XYZ locations of the purge station and weigh station (if present), needle, and the substrate height. It also calibrates the camera-to-needle and needle-to-height sensor probe offsets, if applicable. Refer to the *Fluidmove User Guide* or *Online Help* for additional information.

5 Maintenance and Service

5.1 Overview

Maintenance of the DV-8000C consists of cleaning and priming after dispensing operations, or between changes of dispensing fluids. Regular cleaning of the valve is essential to maintaining maximum dispensing performance. This section covers the following topics:

- Recordkeeping
- Routine Maintenance
- Cleaning the Valve
- Removing the Valve from the Dispensing System

5.2 Safety First

Operation of the DV-8000C involves air pressure, electrical power, mechanical devices, heat, and the use of hazardous materials. It is essential that every person servicing or operating the DV-8000C fully understands all hazards, risks, and safety precautions. See *Section 2 - Safety* for specific information.

WARNING! Before performing any of the maintenance procedures in this section, perform a service shutdown as described in the applicable dispensing system manual.

WARNING! Only trained service technicians should perform troubleshooting, servicing, and parts replacement.

5.3 Recordkeeping

The type of maintenance performed (such as preventive and parts replacement) should be recorded in maintenance records for the valve. Dates, part numbers/serial numbers of replaced parts, names of technicians, and other pertinent data should be recorded.

5.4 Routine Maintenance

The recommended routine maintenance schedule the DV-8000C is shown in Table 5-1. The recommended frequencies are based on an average production environment. Your production operations and environment may differ.

Table 5-1 Recommended Maintenance Schedule

Maintenance Procedure	Recommended Frequency	Instructions
Clean the dispensing cartridge.	Daily	See *5.5 Cleaning the Valve*.
Prime the fluid valve.	Daily	See *4.6 Priming the Valve*.
Inspect for fluid leakage and other abnormalities.	Daily	See *Section 6 - Troubleshooting*.

5.5 Cleaning the Valve

NOTE The cleaning procedures assume that a syringe is presently connected to the valve.

WARNING! Refer to the Safety Data Sheet (SDS) for important information about safety, handling, and disposal for all fluids and solvents. All fluids, solvents, and contaminated materials must be disposed of according to local regulations. Wear Personal Protective Equipment (PPE) when performing this procedure to prevent contact with caustic chemicals.

Tools and Materials Needed

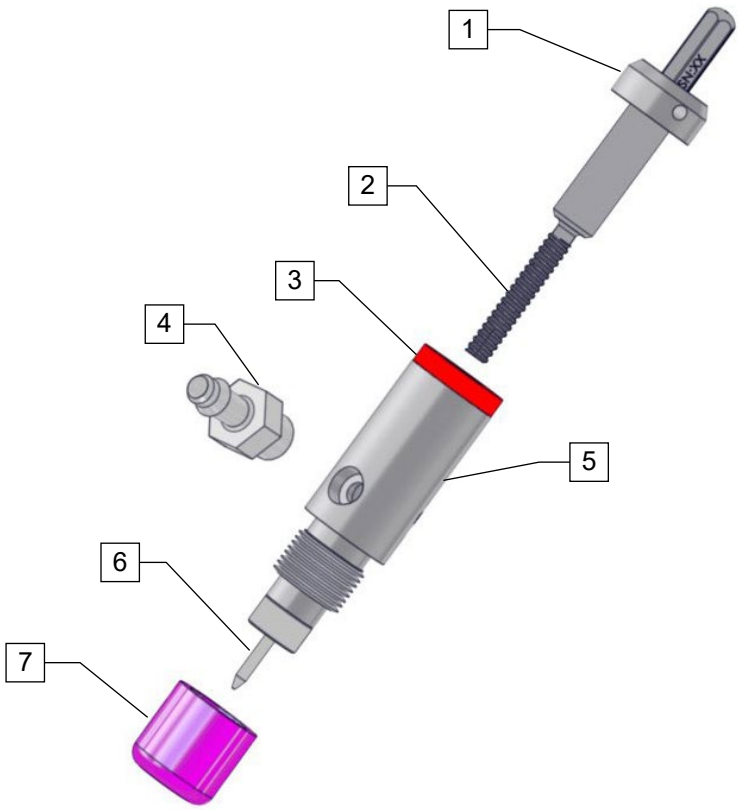
- Cotton Swabs
- Elbow Fitting Kit (Item 21)
- 1/4-inch Wrench
- Cartridge Fitting
- Appropriate Personal Protective Equipment
- Seal Insertion Tool Set (Item 20)
- Cleaning Solution

To clean the cartridge (see Figure 5-1):

1. Use the dispensing system position controls to move the dispensing head to the front and center of the dispensing area.
2. Perform a service shutdown as specified in the applicable dispensing system manual.
3. Open the dispensing system front doors/hatch and locate the valve on the dispensing head.
4. Remove the receiver head and unscrew the syringe from the 90-degree elbow fitting.
5. While holding onto the elbow fitting, pull the blue cartridge release lever to the side and rotate it forward towards the front of the valve.
6. Pull the dispensing cartridge out of the valve by gently pulling down on the nozzle.
7. Disconnect the 90-degree elbow fitting from the cartridge fitting.
8. Using a 1/4-inch wrench, unscrew the cartridge fitting from the cartridge.
9. Discard the cartridge fitting in accordance with SDS recommendations.
10. While holding the cartridge body in one hand and the end of the feedscrew in the other, gently pull the feedscrew out of the body.
    - The thrust collar should remain attached to the feedscrew.
11. Using your fingers, remove the lower bearing from inside of the cartridge body.

NOTE If the cartridge does not have a seal, skip to Step 13.

12. Using a cotton swab, carefully remove the seal from inside of the cartridge body.
    - The seal is very fragile. If the seal is not damaged, it may be reused.
13. While holding the cartridge body, gently twist the needle retainer to remove it from the end of the cartridge.



Item	Description	Item	Description
1	Collar	5	Cartridge
2	Feed Screw	6	Precision Needle
3	Lower Bearing	7	Nozzle Cap
4	Barb Fitting		

Table 5-2 DV-8000C Cartridge Disassembly (typical)

14. Use an SDS recommended cleaning solution and a small bottle brush or cotton swab to thoroughly clean the following parts making sure all fluid and residue is removed:

- Thrust Collar/Feedscrew
- Lower Bearing
- Seal (if present)
- Needle Retainer
- Cartridge Body

NOTE If your DV-8000C is configured with a precision needle, perform Step 15 through Step 17. If your DV-8000C is configured with standard Luer needle, skip to Step 18.

15. Flush the large end of the needle with cleaning solvent.

16. Insert the appropriate size tungsten wire into the needle to open a path through the end of the needle. Do not force the wire through the needle. If there is a hard plug, proceed as follows:

    a. Use the supplied drill bit to remove the plug by gently rotating the bit by hand, being careful not to run the bit all the way through the needle.

WARNING! Do not run the drill bit all the way through the needle as this will increase the size of the needle opening.

    b. Once you have removed most of the material with the drill bit, try again to push the tungsten wire through the needle.

    c. If the wire still does not go through the needle, try again with the drill bit until you can get the wire all the way through the needle.

17. Once you have cleared a path through the needle, flush the needle with cleaning solvent until a clear stream of solvent flows from the end of the needle.

    If necessary, use the small bottle brush to remove any residual fluid. Rotating the bottle brush counterclockwise while slowly inserting it into the needle will pull out any residual fluid.

18. Inspect the seal and the lower bearing for wear. If they are worn, replace them.

19. Reassemble the cartridge.

20. Install a new 90-degree elbow fitting onto the cartridge fitting.

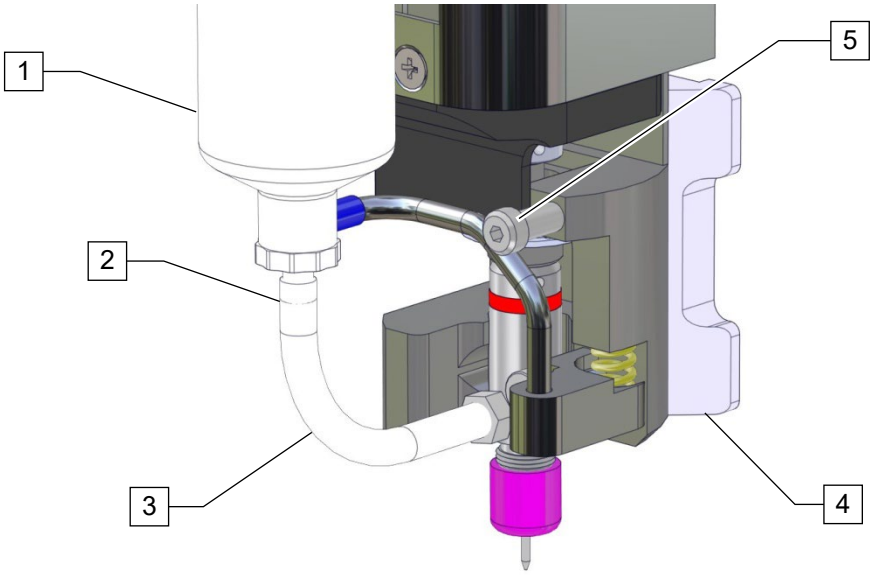
21. Load the cartridge, see *4.5 Loading a Dispensing Cartridge*.

22. Prime the valve, see *4.6 Priming the Valve*.

5.6 Removing the Valve from the Dispensing System

To remove the valve (Figure 5-2):

1. Use the Fluidmove position controls to move the dispensing head to the front center of the dispensing area.
2. Perform a service shutdown as specified in the applicable dispensing system manual.
3. Open the dispensing system front door/hatch.
4. Disconnect the following:
   a. Syringe air hose from the fluid syringe.
   b. Power cords for the valve and height sensor (if present) from the dispensing head bulkhead.
5. Unscrew and remove the fluid syringe with the receiver head from the syringe fitting.
6. Use a 4 mm hex key to loosen the locking screw on the side of the valve bracket.
7. Carefully lift the valve out of the valve bracket and place it in a safe location.



Item	Description
1	Fluid Syringe
2	Syringe Fitting
3	Feed Tube
4	Valve Bracket
5	Lever Stop

Table 5-3 Removing the Valve for Service

6 Troubleshooting

6.1 Overview

To quickly identify problems, look for obvious signs such as burnt, missing, damaged, or loose parts, as well as fluid obstructions and leakages. If a problem recurs, there may be other root causes. This section facilitates troubleshooting based on symptom.

NOTE Refer to the *Fluidmove User Guide* for recovery procedures pertaining to Fluidmove.

6.2 Safety First

Operation of the DV-8000C involves air pressure, electrical power, mechanical devices, heat, and the use of hazardous materials. It is essential that every person servicing or operating the DV-8000C fully understands all hazards, risks, and safety precautions. See *Section 2 - Safety* for additional information.

WARNING! Dispensing equipment in need of troubleshooting may have high voltage present in both designated and unsuspected places. High voltage can result in personal injury or death. If power is not necessary for troubleshooting purposes, perform a service shutdown as described in the applicable dispensing system manual.

WARNING! Only trained service technicians should perform troubleshooting, servicing, and parts replacement.

6.3 Troubleshooting the Valve

Basic troubleshooting and suggested recovery measures are presented in Table 6-1. Due to variances in production environment and operational conditions, not every possible problem can be addressed.

Table 6-1 Troubleshooting

Symptom	Possible Cause	Recovery
Intermittent or no fluid dispensing	Valve poorly primed	
	Clogged needle	Clean or replace the needle.
	Plugged valve	Clean Valve, see *5.5 Cleaning the Valve*.
	Speed Control set to 0 rpm	See *4.3 Valve Adjustments*.
	No power to motor	Make sure that valve power cord is connected to the power outlet on the dispensing head.
	Fluid syringe is empty	See *4.5 Installing/Changing a Fluid Syringe*.
Needle repeatedly clogs with fluid	Fluid particles too big for needle size	Replace needle with a larger diameter needle.
	Needle bent or damaged	Replace needle.
	Fluid has exceeded pot life or fill has separated	See *4.5 Installing/Changing a Fluid Syringe*.
Material drips or drools continuously from dispensing tip	Valve poorly primed	See *4.6 Priming the Valve.*
	Wrong type of stopper in the syringe	Use zero draft (orange or yellow) stoppers in the syringe.
	Air inside syringe expands	Add a short reverse motor command to the end of the dispensing command. Refer to the *Fluidmove User Guide* or Online Help for instructions.
	Cartridge preload is improperly set	See *4.4 Loading a Dispensing Cartridge*.
Inconsistent shot sizes	Syringe air pressure set too low	Increase syringe air pressure (30 psi max.). Refer to the applicable dispensing system manual for instructions.
	Drive mechanics do not have time to damp-out after an X-Y move	Increase the settling time in the Dot Parameters. Refer to the *Fluidmove User Guide* or Online Help for instructions.
	Feed screw damaged or binding	Contact Technical Support.
Shots too large	Needle is too big	Replace needle with a smaller needle.
	Syringe air pressure set too high	Decrease syringe air pressure (30 psi max). Refer to the applicable dispensing system *Operations Manual* for instructions.
Fluid flow rate too fast or too slow	Incorrect valve motor speed	Correct valve motor speed to rate recommended for the fluid used. Refer to the applicable dispensing system *Operations Manual* for instructions.
Valve is contacting other components during dispensing head movement	Incorrect Valve Bracket/Mounting Plate installation	Adjust bracket/plate height, see *Section 3 - Installation*.
Inconsistent line dispensing	Cartridge not seated properly	Reinstall cartridge. Ensure there is no gap between the top of the cartridge and the coupler.

7 Parts Replacement

7.1 Overview

This section contains information that will aid in assembling, disassembling, and ordering replacement parts for the DV-8000C. This section contains the following:

- Parts Ordering Information
- Unpacking and Inspecting Replacement Parts
- Record Keeping
- Spare Parts List

7.2 Safety First

Operation of the DV-8000C involves air pressure, electrical power, mechanical devices, heat, and the use of hazardous materials. It is essential that every person servicing or operating the DV-8000C fully understands all hazards, risks, and safety precautions. See *Section 2 - Safety* for additional information.

WARNING! Only trained service technicians should perform troubleshooting, servicing, and parts replacement.

7.3 Parts Ordering Information

Customers can order spare parts by contacting Technical Support. Contact information is listed in the front of this manual. Spare parts can also be ordered online through our Internet Web Store. To set up a web store account, send an email to americas.es.cs@nordson.com.

When ordering parts, be prepared to provide the following information:

- Your Company Name
- Shipping Address
- Purchase Order Number
- System Serial Number (found on back panel)
- Billing Address
- Part Number and Description of Part
- Quantity
- Shipping Instructions with Collect Account Number

7.3.1 Warranty

Contact Technical Support for any warranty issues pertaining to spare parts. Wear items and consumables are covered under warranty against manufacturer defect only. Expected lifetimes for these parts will vary based upon application and use model.

Consumable parts are generally considered as parts that are replaced on a frequency of > 1 per calendar year under expected regular usage. In most cases, these parts are “wetted parts” that make contact with the dispensed fluid.

Wear items are those items that have been identified to have limited life expectancy (less than 5 years) but are not considered consumables. Wear items are often highly application dependent, high user-touch, or adjusted parts.

7.3.2 Return Material Authorization

Contact Technical Support to obtain a Return Material Authorization (RMA) before returning any parts.

7.4 Unpacking and Inspecting Replacement Parts

Replacement parts are shipped to distributor or customer facilities in individual shipping cartons. Review the packing slip to ensure that the correct parts were received. Contact Technical Support if any discrepancies are discovered.

Before unpacking your spare parts, visually inspect the carton for damage. If applicable, check the ShockWatch and the Tip N' Tell stickers for indications of improper shipping and handling. Inform the freight carrier of any damage.

7.5 Record Keeping

The type of maintenance performed (such as preventive and parts replacement) should be recorded in maintenance records for the valve. Dates, part numbers/serial numbers of replaced parts, names of technicians, and other pertinent data should be recorded.

7.6 Spare Parts List

Use the following tables to locate the item number corresponding to a procedure in this technical manual. Nearly all spare parts are sold as part of a spares kit, with a few exceptions. To order parts, access www.nordson.com/electronics, use the search feature to search for a kit part number or part description to locate the appropriate spares list, and follow the instructions in that file to complete the ordering process. Contact Technical Support for questions.

Table 7-1 Spare Parts List

Kit Part Number	Kit Name	Item Number	Part Description	Quantity
6652117	**KIT, STARTUP, DV-8000C**			
			LUER, F 1/8" BARB, 1/4-28	10
			LUER, FEMALE, 10-32 TPD, NYLON	10
			ELBOW, LUER M/F, LOCKING	10
			LUER ADAPTOR, MALE-FEM, PLASTIC	10
			LOCK RING, SNAP LUER	10
			FTG, 1/8" BARB, 10-32	10
			LABEL, ZEBRA, 4"X2", THERM WHT	8
			CONNECTOR, 1/4"MP 1/4" PUSH IN	5
			BAG, SEALTOP 2X3, 2 MIL, W/WHT	4
			SEAL, SPRING ENGERG .250D.187ID	2
			BAG, SEALTOP 6 X 9, .002 MIL	2
			BAG, SEALTOP 3X5, 2 MIL, W/WHT	2
			DRILL BIT,.020" DIA X 7/8" L	3
			BOX, 11X6.5X2 WITH CHERRY LOCKS	1
			CLIP, SYRINGE, LOWER, 30CC	2
			SCREW, M3 X 0.5 SOCKET X 6	2
			TIP CAP O BL 50	1
			ASSY, RECEIVER HEAD,30CC, BLUE	1
			LOWER BEARING/SEAL	2
			BAG, SEALTOP 4X6, 2 MIL, W/WHT	1
			TOOL, INSERT, SEAL, DV-7000	1

Kit Part Number	Kit Name	Item Number	Part Description	Quantity
			TOOL, GUIDE, SEAL, DV-7000	1
			SEAL, SPRING, WHITE, .250D.187ID	1
			CLIP, SYRINGE, 30CC	1
			PROBE, VIAL, NZL CLEAN., .011 IN	1
			PROBE, VIAL, NZL CLEAN., .007 IN	1
			PROBE, VIAL, NZL CLEAN, .014 IN	1
			REAMER, .1000", STRAIGHT FLUTE	1
			PROBE, VIAL, NZL CLEAN., .003	1
			VISE, PIN	1
			6-460Y-A - VALVE PURGE YELLOW 8G 10CC	1
			6-460Y-B - VALVE PURGE YELLOW 25G 30CC	1
			TUBE, POLYURETHANE 6X4X80MM (PKG OF 50)	1
			FEED TUBE (BAG OF 30)	1
			WRENCH, TORQUE, 14MM	1
			TUBING, PU, CLR 1/4"OD 1/8"ID	1.13
			FITT'G, 1/4"NPTF X 10-32 UNF, ELB/B	1
			WASHER, #8 .032 FLAT-NYLON	1
			FITTING, QUICK DISCONNECT MALE	1
			FITT'G, 1/8 BARB X 10-32 UNC	1
			PISTON O 30/55CC WH WIPER 50	1
			FEED TUBE 65mm (BAG OF 50)	1
196194	**KIT, CONSUMABLE, DV-7001**			
			LUER ADAPTOR, MALE-FEM, PLASTIC	50
		21	KIT, ELBOW, LUER	1
			SEAL, SPRING ENGERG .250D.187ID	1
			LUER, FEMALE, 10-32 TPD, NYLON	50
196191	**KIT, CARTRIDGE, 6 OZ, DV-7000**			
			ELBOW, 1/4 NPT TO LUER, DISP	50
			STANDOFF RING, INTEL C4	1
			CAPTIVE METRIC FASTENER, 8MM	2
			CLIP, 6OZ/2.5OZ., DV-7000.LOWER	1
			CLIP, 6OZ., DV-7000 UPPER	1
			CARTRIDGE, 6OZ	1
			LOCK RING, SNAP LUER (PKG OF 50)	1
			RETAINER, 6OZ	1
			PLUNGER, CARTRIDGE	1
			SCREW, 6-32X1.00, SOCK HD, SST	1
			ASSY, RECEIVER HEAD,2.5/6 OZ	1
			LUER, FEMALE,10-32TPD, NYLON	50

Kit Part Number	Kit Name	Item Number	Part Description	Quantity
6655202	**KIT, REPAIR, DV-8000C**			
			DV-X000 COVER	1
			SHIELD, COUPLER, DV-8500	1
			BEARING, THRUST, NTA-411	10
			WASHER, THRUST, TRA-411	20
			PLUNGER, BALL, M5	5
			SPRING, CAM, DV-8500	1
			RETAINING CLIP, 4MM SHAFT	1
SOLD AS INDIVIDUAL PARTS				
			COUPLER, SHAFT, 4MM/5MM	
			COUPLER, HEX, DV-8500	
			MOTOR ASSY, 11 WATT W/ENC, 4.4:1	
			MOTOR ASSY, 11 WATT W/ENC, 19:1	
			BRACKET, DOVETAIL, DJ-9500	
			CABLE ASSY, DV8000	
			CBL, ASSY, DV8000C, 28P	
			CAM, LEVER, DV8500 (8000C), INTL	
			ASSY, CAM LEVER, DV-8500	
			SEAL, SPRING ENGERG .250D.187ID	
			LOWER BEARING/SEAL	
			SEAL, SPRING, WHITE, .250D.187ID	
		20	ASSY, TOOL, INSERT, SEAL, DV-7000	
			FEED TUBE (BAG OF 30)	
			FEED TUBE 65mm (BAG OF 50)	
			LUER ADAPTOR, MALE-FEM, PLASTIC	
		21	KIT, ELBOW, LUER	
			LUER, FEMALE,10-32TPD, NYLON	
			CARTRIDGE, 6OZ	
			ASSY, RECEIVER HEAD, 2.5/6 OZ	
			CLIP, SYRINGE, LOWER, 30CC	
			ASSY, NEEDLE HEATER, 28 PIN	
			ASSY, NEEDLE HEATER	
		10	ASSY, CARTRDG, X442-CL9, RLVD	
		16	ASSY, CART/SCREW, X223-CP0LP	
		3	ASSY, CART/SCREW, X321-CL8	
		1	ASSY, CART/SCREW, X331-CL8	
		13	ASSY, CART/SCREW, X222-CL1	
		2	ASSY, CART/SCREW, X322-CL8	
		11	ASSY, CART/SCREW, X124-CP1	
		14	ASSY, CART/SCREW, X222-CP1	
		6	ASSY, CART/SCREW, X332-CP0LP	

Kit Part Number	Kit Name	Item Number	Part Description	Quantity
			ATS, ASSY, CRTG, HIGH MAX FLOW-8 PITCH	
		8	ASSY, CART/SCREW, X442-CL9	
			NEEDLE, 20GA, 1/2", SS (12)	
			NEEDLE, 18GA, 1/2", SS (12)	
			NEEDLE, 22GA, 1/2", SS (12)	
			NEEDLE, NO FOOT, 23GA, .250HT	
			NEEDLE, 23GA, 1/2", SS (12)	
			NEEDLE, 20GA, 1/4", SS (12)	
			NEEDLE, 27GA, 1/4", SS (12)	
			NEEDLE, 21GA, 1/4", SS (12)	
			NEEDLE, 25GA, 1/4", SS (12)	
			NEEDLE, 22GA, 1/4", SS (12)	
			NEEDLE, 18GA, 1/4", SS (PKG OF 12)	
			NEEDLE, 25GA, NO FOOT, .250HT	
			NEEDLE, 30GA, NO FOOT	
			NEEDLE, 23G, 0.250, MM BACK	
			NEEDLE, 27GA,.25HT, NO FOOT	
			BM, DV8000C, 19:1, 28P	
			BM, DV8000C, 4.4:1, 28P	
			BM, DV-8500, STND 19:1	
			BM, DV-8500, STND 4.4:1	
			ASSY, DV-8500,4.4:1, DLA, 14P	

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