

Setup and Operation



HM-2600 Hotmelt Jet

3A6327A

Diaphragm-Jet™ Technology

EN

**For non-contact dispensing of hot melt material in industrial environments.
For professional use only.**



Important Safety Instructions

Read all warnings and instructions in this manual and all related manuals before using this equipment. Save these instructions.



Model 25B315

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Related Manuals

Manuals are available at www.graco.com. Component manuals below are in English:

3A6166	HM-2600C Hotmelt Jet Controller Setup and Operation
3A6328	HM-2600 Hotmelt Jet Maintenance and Repair
3A5937	Jet Dispensing Parameters Supplement
3A5908	Jet Maintenance Tool Kits

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> ▪ Turn off and disconnect power cord before servicing equipment. ▪ Connect only to grounded electrical outlets. ▪ Use only 3-wire extension cords. ▪ Ensure ground prongs are intact on power and extension cords.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> ▪ Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using. ▪ Store hazardous fluid in approved containers and dispose of it according to applicable guidelines.
	<p>BURN HAZARD</p> <p>Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns: Do not touch hot fluid or equipment.</p>
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> ▪ Protective eyewear, and hearing protection. ▪ Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> ▪ Do not operate the unit when fatigued or under the influence of drugs or alcohol. ▪ Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. ▪ Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer. ▪ Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. ▪ Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. ▪ Make sure all equipment is rated and approved for the environment in which it is used. ▪ Use equipment only for its intended purpose. Contact your distributor for information. ▪ Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. ▪ Do not kink or over bend hoses or use hoses to pull equipment. ▪ Keep children and animals away from work area. ▪ Comply with all applicable safety regulations.

1. Specifications

1.1 Technical Specifications

PARAMETER	SPECIFICATION
Size (including mounting bracket)	Width: 62.5 mm (2.46 in) Height: 187.7 mm (7.39 in) Depth: 113.4 mm (4.46 in) Weight: 1.06 kg (2.33 lb)
Viscosity Range	Up to 7,000 mPa·s (cPs) at 110 °C (230 °F)
Speed	Up to 250 drops/sec
Fluid Syringe	30 cc
Nozzle Features	Tungsten Carbide and long-life ceramic Sizes from 50 µm to 600 µm Extended tips available from 3 mm to 6 mm
Wetted Parts	17-4 Stainless Steel, Tungsten Carbide, Ceramic, FKM, FFKM, Silicone
Nozzle Heater	Heating up to 150 °C Max (302 °F)
Fluid Heater	Heating up to 150 °C Max (302 °F) (depends on Max syringe temperature)
Fluid Pressure	0.41 MPa (60 psi) Max
Jet Pressure	0.24 MPa (35 psi) Min 0.62 MPa (90 psi) Max
Operating Temperature	15 °C to 50 °C (59 °F to 122 °F)
Operating Noise Sound pressure measured 1.5 m (4.9 ft) from applicator at 40 psi (225 kPa), per EN ISO 3746	79.4 dB(A)

1.2 Technical Assistance

For customer service and technical assistance:

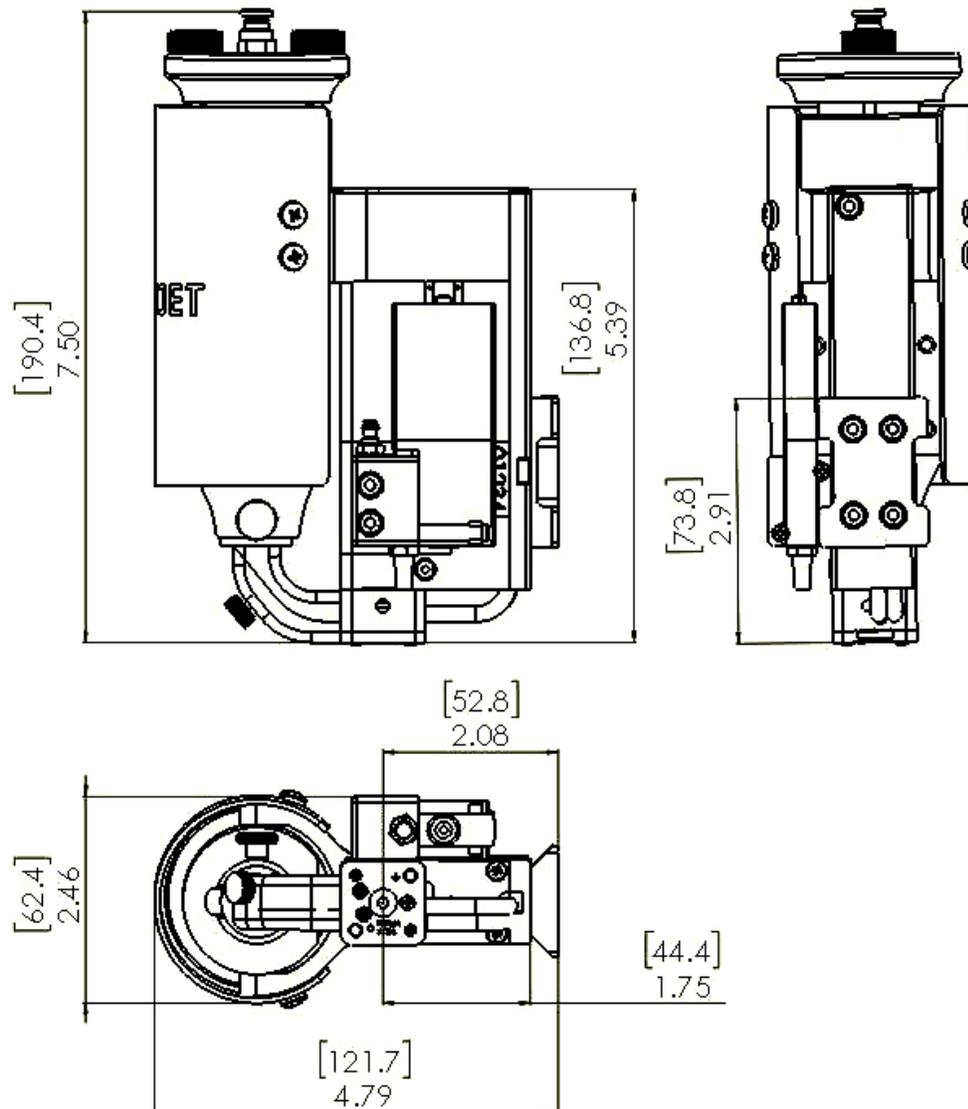
Advanjet
926 Andreasen Dr. # 108
Escondido, CA 92029
USA

Phone: +1 800 333 4877
Web: www.advanjet.com
E-mail: info@advanjet.com

1.3 HM-2600 Jet Dimensions

Shown below are the mechanical dimensions of the HM-2600. Units are in millimeters [inches].

- The HM-2600 can be mounted to a variety of robots when X-Y-Z motion is desired. It can also be mounted rigidly over a transporting mechanism like a conveyor belt or shuttle table.
- The HM-26000 provides a dovetail rear mounting plate for rigid attachment to a robot's XYZ stage. An optional mating dovetail mount is available from Advanjet (P/N 03-2312).
- The dispense tip relative to the mounting holes and the rear mounting plate dimensions are shown in the figure below. It is highly recommended that any mounting scheme allow for vertical adjustment so the dispensing tip position relative to the dispensing surface can be easily adjusted.



2. Installation and Setup

2.1 Dispensing Components

The HM-2600 has three essential components that contact the fluid: the nozzle plate, the diaphragm, and the feed tube. The feed tube is disposable; the other components can be disassembled, cleaned and reused. Cleaning procedures are in Section 4 - Cleaning the HM-2600 Jet.

The diaphragm should be inspected each time the nozzle plate is removed. If there are signs of wear, cracks, or deformation, the diaphragm should be replaced. Consideration should be made of dispensing and cleaning fluids that could damage the jet's wetted parts. The materials of these components are listed in Section 1.1 - Technical Specifications. In particular, cyanoacrylates or pre-mixed two-part adhesives with a short pot life are not recommended, as these materials can harden in the nozzle plate. See Section 4.3 - Solvent and Diaphragm Compatibility for details.

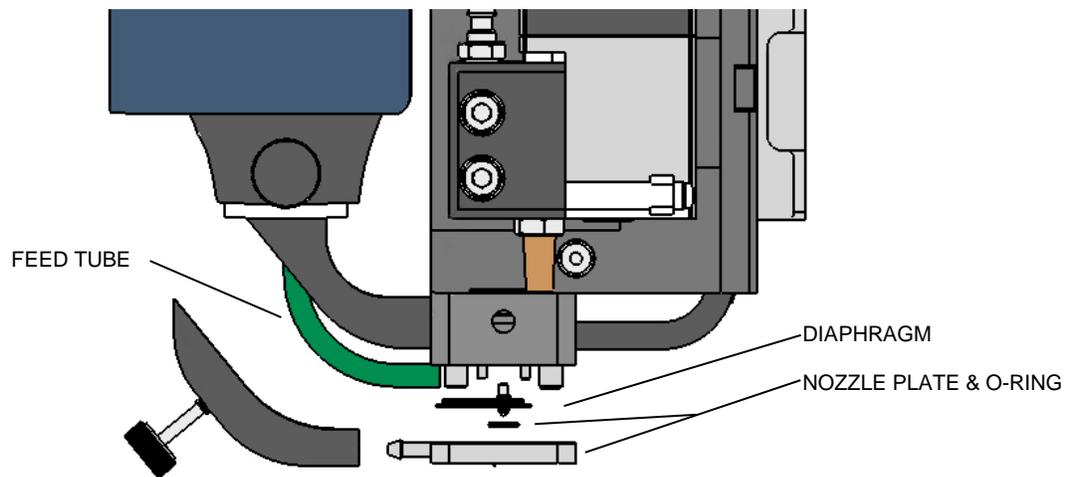


Figure 2-1: HM-2600 Feed Tube, Diaphragm, and Nozzle Plate with O-Ring

2.2 Pneumatic Connections

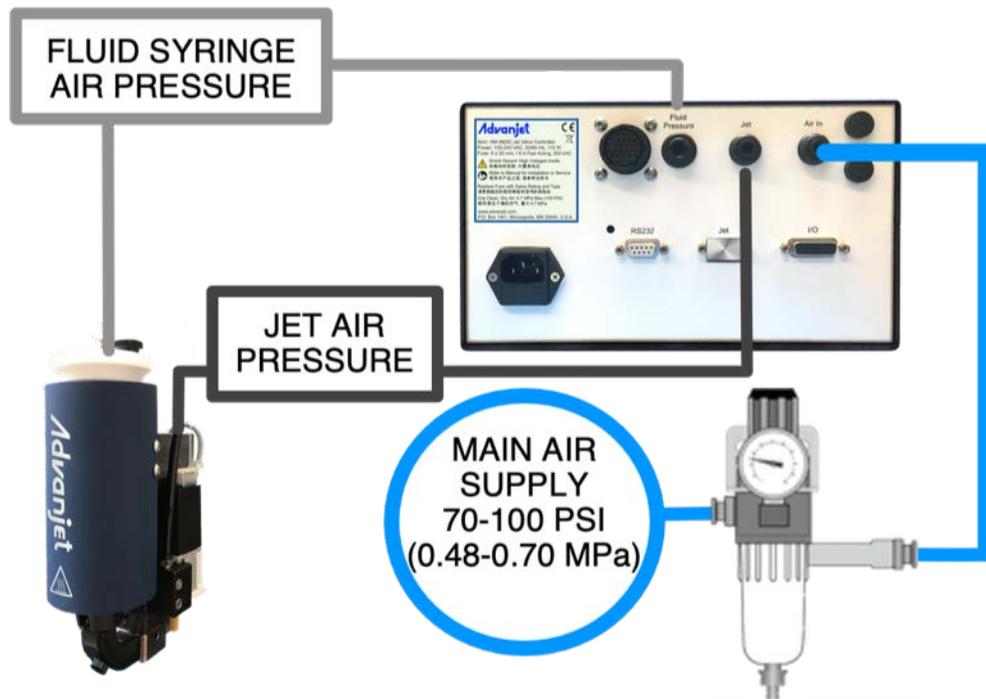


Figure 2-2: HM-2600 Pneumatic Connections

Main Air Supply: Connect a filtered (40-micron filter or better) and independently regulated main air source to the jet. It is highly recommended to place a drying system or desiccant dryer in line with the main air line. Most PUR materials are highly reactive with moisture and if the air is not dry, the material can cure in the syringe. A 6mm OD air tube with a slip connect coupler is supplied to connect the HM-2600C to the main air supply. The main air supply pressure should be between 70 and 100 psi (0.48 and 0.70 MPa).

Fluid Syringe Air Pressure: The HM-2600C delivers fluid syringe air pressure through clear 4 mm OD tubing that is attached to the receiver head and has a twist-lock connector to the controller. The fluid syringe air supply should be at maximum 60 psi (0.41 MPa); normal fluid pressure is usually between 10 and 50 psi (0.06 and 0.34 MPa). Variations in the air pressure source can adversely affect the consistency of the drop size.

Jet Air Pressure: The HM-2600C delivers jet air pressure through black 6 mm OD tubing with a quick-connect coupler to the controller and an air fitting for the jet. The jet air supply must be clean and dry and at a maximum pressure of 75 psi (0.51 MPa); normal jet air operation is usually between 35 and 75 psi (0.24 and 0.51 MPa).

NOTICE

It is imperative that the air supplied to the HM-2600 is clean, dry, and free from debris and water. A 40-micron filter is highly recommended. If the air is not clean and dry, serious damage can occur to the air solenoid valves.

2.3 Cable Connections

The cable connections for a typical dispensing system are illustrated below. To assure proper connections, each of the component cables supplied by Advanjet has a distinct connector. Be sure that all power is off when connecting and disconnecting any cable to the Advanjet controller.

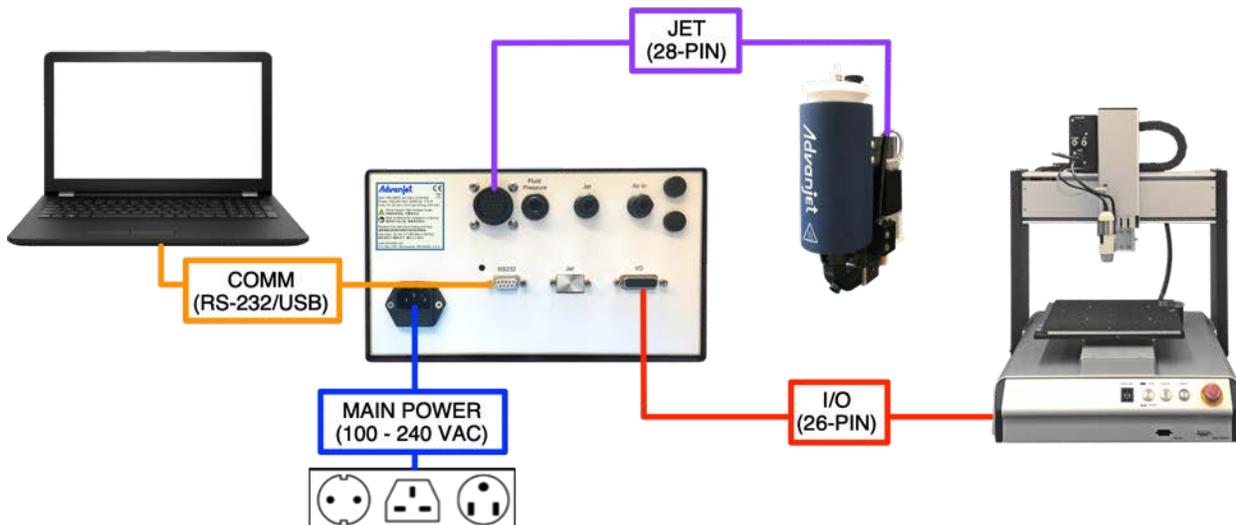


Figure 2-3: Cable Connections for the HM-2600 in a Typical Dispensing System

Jet: A 28-pin cable (P/N 06-1095-00) mates with the HM-2600 jet cable to connect it to the HM-2600C controller. Section 2.4 provides HM-2600 Jet Cable pin assignments.

I/O: When using the HM-2600 jet with the HM-2600C controller and a robot, six TTL trigger lines control jet operations through a 26-pin cable (P/N CB26-005).

COMM: A PC can be connected to the controller via RS-232C/USB to operate the HM-2600 using software instead of the front panel touch screen.

2.4 Jet Cable Pin Assignments

A CPC-28 cable is supplied with the HM-2600 Jet. The table below describes the jet cable pin assignments.



Figure 2-4: 28-Pin Jet Cable

CPC-28 JET CABLE PIN ASSIGNMENTS	
PIN	
1-2	Jet Solenoid
3	--
4-5	Jet Heater
6-7	Jet RTD
8	--
9-10	Hot Melt Heater A
11-12	Melter RTD
13-14	--
15-16	Hot Melt Heater B
17-28	--

3. Assembling the HM-2600 Jet

The HM-2600 is shipped fully assembled except for the diaphragm and nozzle plate. A specific diaphragm material and nozzle plate orifice diameter should be chosen based on the application and dispensing fluid. The steps required to correctly assemble the diaphragm and nozzle plate on the jet body are listed below.

Before assembling the jet, complete the necessary pneumatic and cable connections to the jet controller as described in Sections 2.2 and 2.3.

3.1 Jet Assembly Overview

Figure 3-1 shows the alignment of the HM-2600 heater block, diaphragm, O-ring, and nozzle plate.

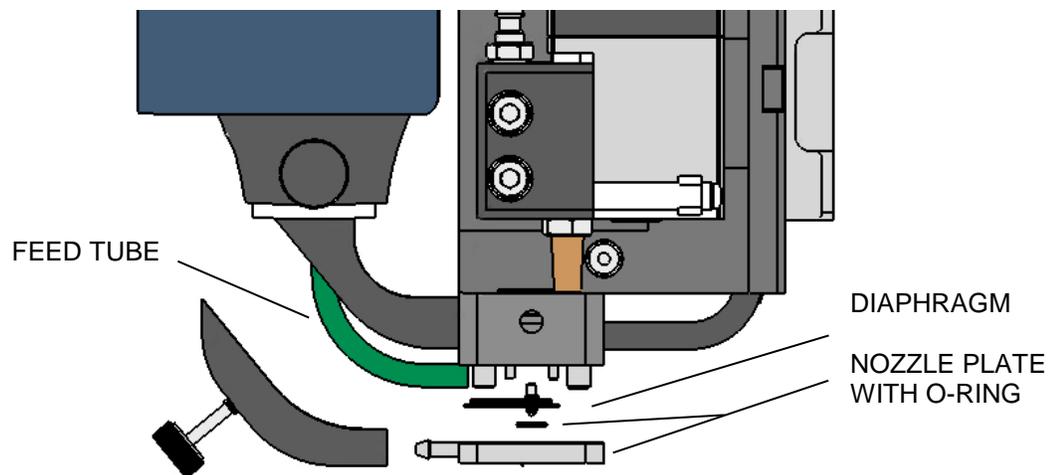


Figure 3-1: HM-2600 Feed Tube, Diaphragm, and Nozzle Plate with O-Ring

- There is a grooved pattern on the bottom face of the heater block that matches the raised embossments on the diaphragm. The grooves position the diaphragm correctly on the heater block.
- The diaphragm also has a metal insert with a post that must be inserted into the central hole on the heater block.
- Although a diaphragm can be inserted without the jet connected to an air source, it will not sit flat on the heater. It is recommended to connect the jet to a controller and set the jet to OPEN before assembling the diaphragm. Detailed instructions are in Section 3.

3.2 Inspect the Nozzle Plate for Cleanliness

It is important to inspect the jet nozzle plate for debris before mounting it onto the Jet. A clean nozzle looks like this:

If the nozzle plate is not clean, it could affect the dispensing quality. These dispensing



Figure 3-2: A Clean Nozzle

problems are symptoms of a contaminated jet:

- Unclean or uneven dispensing
- Drops become irregular or vary in size
- Residual flow or drooling out of the tip when the jet is in the closed position
- Interrupted dispensing (places where fluid no longer is dispensed)
- Splatter or satellites

For best results, Advanjet cleaning kits contain tools appropriately sized to the nozzle plate. For example, if you are using the 125 μm nozzle plate, order the 125 μm cleaning kit (Advanjet P/N CL-125).

Refer to Section 4 for complete instructions on cleaning the jet.

NOTICE

Never submerge the diaphragm in solvents as it might result in damage.

Diaphragms can be cleaned successfully with a small amount of solvent and a soft brush and cotton swab.

Do not submerge the diaphragm into the ultrasonic cleaner because it will deteriorate the diaphragm and shorten its life.

3.3 Install the Nozzle Insert

When the nozzle becomes damaged or plugged, a new nozzle insert and O-ring may be required. Installation is simple, but correct and careful assembly is important.

NOZZLE INSERT O-RING P/N		NOZZLE PLATE O-RING P/N	
SILICONE	FKM	SILICONE	FKM
NP09-2830	NP09-2851	NP09-2820	NP09-2850

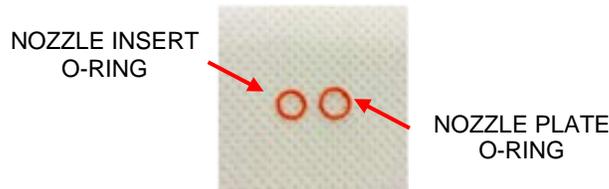


Figure 3-3: Nozzle Insert O-Ring (left) Compared to Nozzle Plate O-ring (right)

<ol style="list-style-type: none"> 1. Disassemble the nozzle plate by removing the three screws from the nozzle plate bottom. 2. Flip over and remove the nozzle plate top and the nozzle insert. Save the O-ring. 3. Clean as needed. The nozzle should be cleaned <u>inside the nozzle plate</u>. 	
<ol style="list-style-type: none"> 4. Set the nozzle insert with the O-ring facing up in the groove of bottom plate as shown below. 	<ol style="list-style-type: none"> 5. Replace the nozzle plate top. Holding the top and bottom plates together, flip the nozzle over. Replace the three screws.
<ol style="list-style-type: none"> 6. Flip the nozzle top side up and set the nozzle plate O-ring in the groove. Note: When installing the nozzle, the O-ring must face up. 	

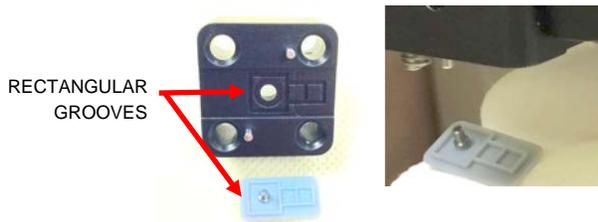
3.4 Install the Diaphragm and Nozzle Plate



Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.

1. Turn the main power ON.
2. Set the jet pressure to 40 psi (.28 MPa).
3. On the HM-2600C home screen, tap **Jet** to OPEN the jet.

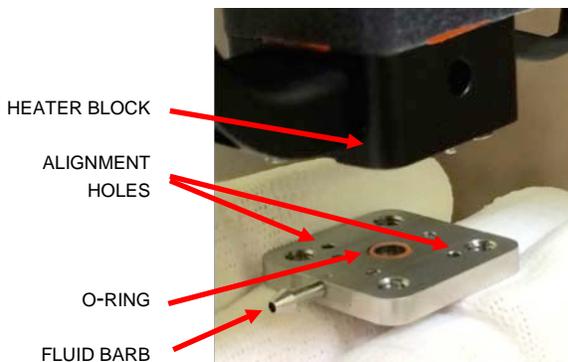
4. Align the rectangular grooves in the heater block with the rectangular embossments on the diaphragm as shown below.



5. Gently press the diaphragm into the heater block until the diaphragm pin is inserted in the center and the rectangular grooves are firmly in place.



6. Align the Nozzle Plate to the alignment pins on the Heater Block. Make sure the O-ring faces up and the fluid barb faces the melter.



7. Use the 3 mm T-wrench supplied with the jet to tighten the two screws until the nozzle plate is secure.



A torque tool sized to reach the nozzle plate screws is available from Advanjet (P/N 60-2264).

3.5 Attach, Connect, and Enclose the Feed Tube

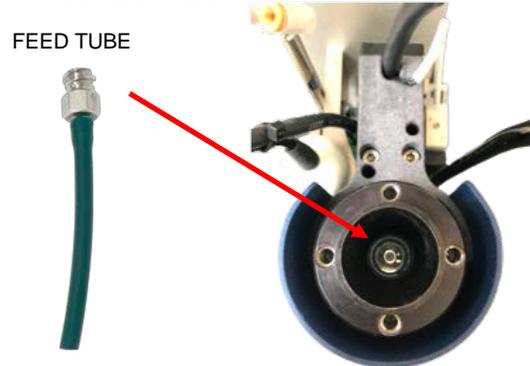


Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.

1. Use the front panel switch to turn **Fluid Air OFF**. Loosen the receiver head thumbscrews and remove the receiver head (top air supply).



2. Lower the hot melt feed tube down into the melter so it extends out of the bottom.



3. Pull down the end of the feed tube and jostle as needed until the luer is engaged in the bottom of the melter.



Look down the melter to verify that the luer is in position.

Tighten the luer lock thumbscrew.

4. Attach the feed tube to the fluid barb on the nozzle.



5. After the feed tube is in place, install the bottom half of the feed tube enclosure and tighten the setscrew.



3.6 Install a PUR Syringe



Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.

1. Turn ON the heaters:

- Press  (INDEX) until Run-Stop (r-S) is displayed on the Present Value (PV) line.
- Use the   arrows to select the **rUn** setting on the Set Value (SV) line.
- Press  (ENTER) to save the change. Heater is ON.
- Press  again to return to the main screen.



PRESS  UNTIL R-S IS DISPLAYED

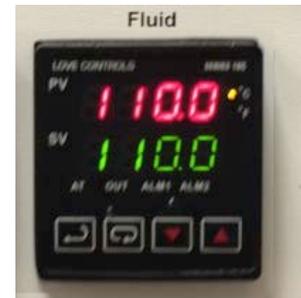
PRESS   TO SELECT RUN

PRESS  TO SAVE THE CHANGE

2. To preheat the PUR, enter the **Jet** Set Value and **Fluid** Set Value by pressing   on the corresponding **Temp Control** panel. For most materials, the following values can be used:

Jet (nozzle): 130 °C (266 °F)

Fluid (melter): 110 °C (230 °F)



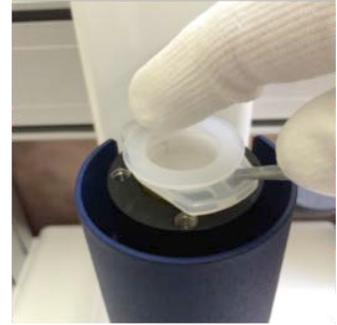
3. Keep the top cap and tip cover ON a fresh syringe of PUR, and insert it into the melter.

Wait approximately 10 minutes to allow the PUR material to liquefy.

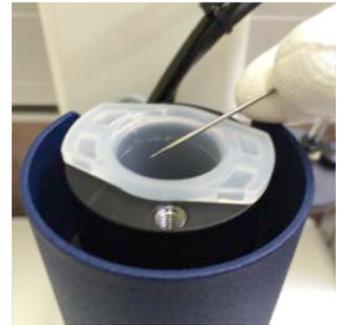


3.6 Install a PUR Syringe, continued

4. Remove the syringe top cap (save it to seal the used syringe for disposal).

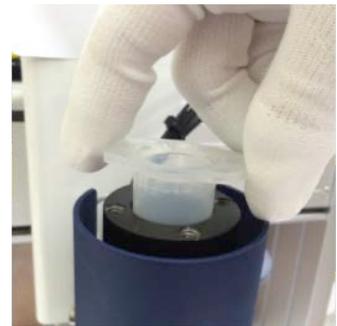


5. Use a clean probe tool to remove the layer of cured material from the top of the melted PUR.



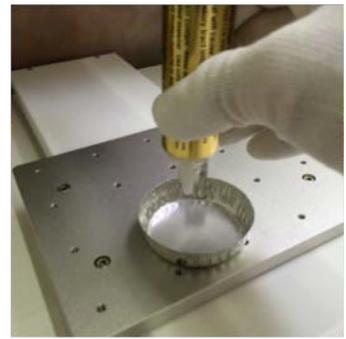
6. Make sure that appropriate hand protection is in place, and have a purge container handy. Use a probe to lift the syringe and remove it from the melter.

Note: Hold the syringe as upright as possible to prevent hot melted PUR from spilling out.



3.6 Install a PUR Syringe, continued

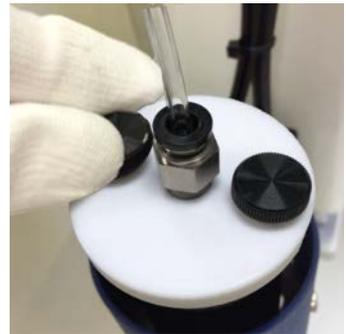
7. Hold the syringe over the purge container and remove the tip cap, allowing the liquefied material to drip out. If the material does not flow freely, gently squeeze the syringe until material extrudes from the nozzle tip, allowing the liquefied material to flow freely. If the material still does not flow, poke a probe into the tip and clear it out.



8. Put the warmed syringe back in the melter. Push it down firmly to position the syringe tip in the feed tube, and turn it clockwise to engage the luer lock.
- Do not over-tighten.



9. Replace the receiver head (top air supply) and tighten the thumbscrews.



3.7 Prime the Jet

Note: HM-2600C Controller shown for illustrative purposes.

1. Prior to dispensing, it is necessary to prime the jet in order to purge residual air from the system. In order to do this, the fluid must be brought to dispensing temperature.

From the HM-2600C front panel, use the following procedure to turn on the heaters.

- Press  (INDEX) until Run-Stop (r-S) is displayed on the Present Value (PV) line.
- Use the   arrows to select the **rUn** setting on the Set Value (SV) line.
- Press  (ENTER) to save the change. Heater is ON.
- Press  again to return to the main screen
- Use the   arrows to change Set Value (SV) to the dispensing temperature for the fluid (melter) and for the jet based on the fluid being used.
- Wait ten minutes for the temperatures to be stable.

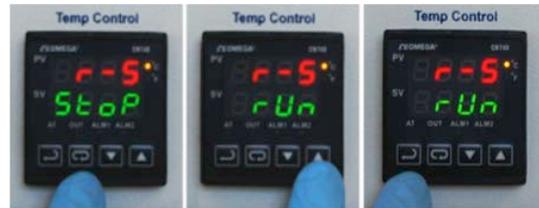


Figure 3-4: Turn the Heaters ON

2. Position a purge cup under the jet nozzle.
3. Turn the **Fluid Air** OFF (“O” on **Air** switch).
4. On the controller touch panel:

- Tap on **Fluid Pressure** and set to **0**.
- Tap on **Jet** to OPEN.

5. Turn the **Fluid Air** ON (“I” on **Air** switch).
6. Allow fluid to flow freely into the cup.
7. Tap on **Jet** to CLOSE.

8. Tap on **Jet Pressure** and set to 45 psi.

9. It is useful to designate a recipe on the HM-2600C controller for the priming process. Use these parameters:

- Refill = 3.4 ms
- Dwell = 2.5 ms
- Refill+ = 0.0 ms
- Drops = 1000

This recipe allows most fluids to flow through the jet easily.

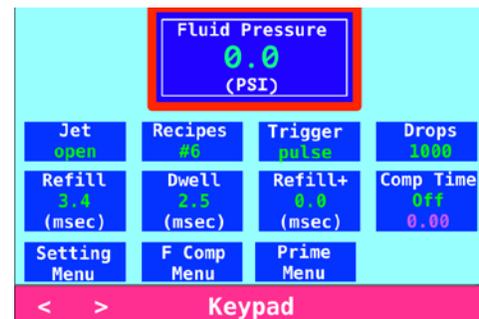


Figure 3-5: Fluid Pressure 0, Jet OPEN

3.7 Prime the Jet, continued

10. Remove the purge cup and place a glass slide or piece of substrate under the nozzle.
 - Press the **Trigger** button to run the recipe once.
 - Observe the quality of the drops.
 - Repeat this several times to ensure adequate priming.
11. Wipe the nozzle tip of any accumulation. The jet is ready to operate with the appropriate recipe settings for dispensing.



Figure 3-6:
Trigger Button

3.8 Check for Fluid Leaks

Before running a program, it is important to check for fluid leaks. Fluid should not drip through the orifice. If fluid is leaking through the nozzle tip when the Jet Valve is closed, check to see if the jet pressure is set to at least 35 psi (0.24 MPa). Increase the pressure to 60 psi (0.42 MPa) and check to see if the leak stops.

There are several areas to check for fluid leaks. Fluid leaks as described below will require a major cleaning and repeat of the setup process.

- Check to see if fluid leaks out of the weep hole in the heater block shown in Figure 3-7. If fluid is leaking, the diaphragm is either missing or damaged and should be replaced. The heater block will need to be removed and the leaking fluid should be cleaned.
- Fluid can leak out of the Luer fitting that attaches the syringe to the feed tube. Sometimes the Luer fitting is a little snug and hard to twist in completely. If fluid is leaking, give the syringe an extra turn to seat it completely. If this does not solve the leaking, change the feed tube and/or the syringe and check again.
- Fluid can leak at the junction between the feed tube and the nozzle plate inlet fitting. The feed tube is connected using a standard barb to the inlet fitting. If fluid is leaking at the barb end of the fitting, replace the feed tube.
- Check for leaks between the diaphragm and the nozzle plate. The nozzle plate must be attached correctly with screws well tightened. Make sure the Jet valve is closed. If fluid can be seen leaking under the diaphragm, then the Jet has not been assembled correctly. Disassemble the dispensing components and inspect, clean, and/or replace the diaphragm as required. If the leak continues, the diaphragm or nozzle plate is most likely damaged or dirty, and it should be cleaned or replaced.



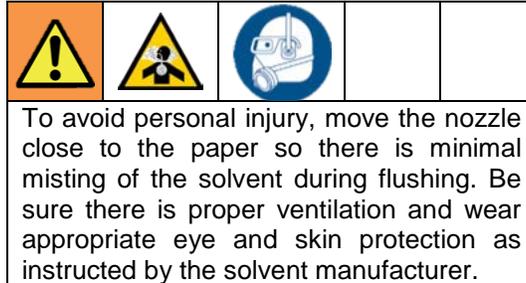
Figure 3-7:
Fluid Can Leak at Weep
Hole or Feed Tube/Nozzle

If fluid leaks between the diaphragm and the nozzle plate, the jet will not function correctly. Dispensing should be discontinued, and the components should be cleaned or replaced as required.

4. Cleaning the HM-2600 Jet

4.1 Cleaning the Exterior of the Jet

To clean the exterior of the jet, use a soft cotton or cellulose cloth. If the jet exterior is extremely dirty, a small amount of alcohol can be used.



NOTICE

To prevent damage to the jet, do not use a dripping wet cloth or pour solvents, alcohol, water, or other liquids directly on the jet. Do not submerge the jet in the cleaning agent.

4.2 Interior Cleaning

The Advanjet HM-2600 is a high precision jet for dispensing heated fluid. The operation can become blocked or clogged by the smallest contaminates, which will adversely affect dispensing results. These are symptoms of a contaminated jet:

- Unclean or uneven dispensing
- Drops or lines become irregular or vary in size
- Residual flow or drooling out of the tip when the jet is in the closed position
- Interrupted dispensing (places where fluid no longer is dispensed)
- Splatter or satellites

When dispensing shows these signs of blockage or accumulation, it is time to clean the jet. Also, unless the new syringe is being “hot-swapped,” the jet must be cleaned each time a new PUR syringe is installed.

Have the following supplies on hand:

- Appropriate PUR cleaning solution
- Cotton swabs
- Aluminum foil dish for purging
- Clean empty 30cc syringe
- Clean hot melt feed tube
- Probe
- Inspection mirror
- 3 mm torque wrench (Advanjet P/N 60-2264)
- Ultrasonic Cleaner
- Cleaning wires, micro drills
- Agitating brush (optional)
- Microscope or eye loupe

4.3 Solvent and Diaphragm Compatibility

Advanjet uses four different diaphragm materials: FKM (fluoroelastomers), silicone, FFKM (perfluoroelastomers), and EPDM (ethylene propylene diene terpolymer). In general, if the diaphragm material is incompatible with a solvent, the diaphragm will exhibit slight swelling around the metal insert. If swelling occurs, the performance of the jet will be adversely affected.

Use this table as a guide for selecting an appropriate cleaning solvent.

	FKM	Silicone	FFKM	EPDM
Chemical				
Acetone	X	X	✓	✓
Ethanol	X	✓	✓	✓
Isopropanol	✓	✓	✓	✓
Methyl Ethyl Ketone	X	X	✓	✓
Toluene	✓	X	✓	X
Xylene	✓	X	✓	X

✓ = Compatible; X = DO NOT USE

4.4 Remove PUR Syringe for Valve Cleaning



Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.

1. Turn the **Fluid Air** OFF ("0").

Note: It is important to first turn off the air before cleaning the jet. If not, the fluid from the syringe will make a mess if the feed tube is dismantled under pressure.



2. Turn the **Fluid** (melter) heat OFF:

- Press  (INDEX) until the Run-Stop (r-S) screen is displayed.
- Use the   arrows to select the **Stop** setting. Now the heater is turned OFF.
- Press  (ENTER) to save the change.
- Press  again to return to the main screen.



PRESS  UNTIL
R-S IS DISPLAYED



PRESS   TO
SELECT **STOP**



PRESS  TO SAVE
THE CHANGE

3. Loosen the setscrew to remove the bottom half of Feed Tube enclosure.
4. Disconnect the feed tube from the nozzle fluid barb.

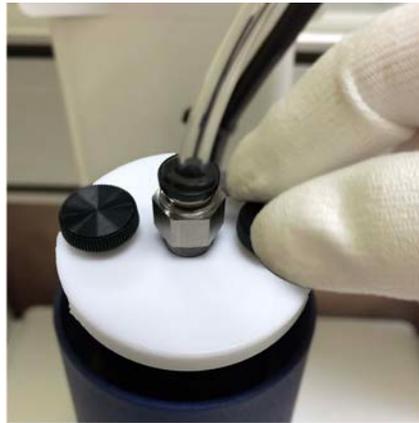


4.4 Remove PUR Syringe for Valve Cleaning, continued

5. Loosen the feed tube luer lock set screw.



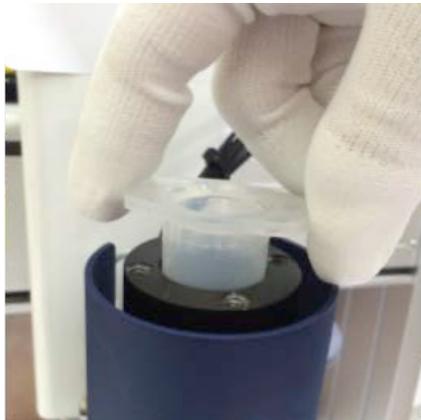
6. Loosen the receiver head thumbscrews and remove the receiver head (top air supply).



7. Have a syringe cap and tip cover ready.



8. Use a probe to pry up the syringe of melted PUR material. Remove the syringe and feed tube. Discard the feed tube. Replace the tip cap and top cap before discarding the syringe.



4.5 Purge PUR Jet and Nozzle

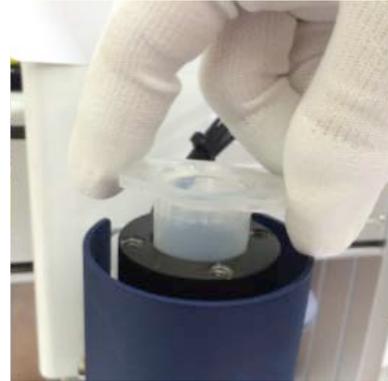


Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.

1. Insert a clean empty syringe with a feed tube attached into the melter. Press down, allowing the feedtube to pass through the hole in the upper feedtube enclosure.

Connect the feed tube to the nozzle.

Do not engage the lower feedtube enclosure!



NOTE: After turning the **Jet** (nozzle) heat OFF (Step 2), Steps 3 through 9 must be completed within 1 to 2 minutes.

2. Turn the **Jet** (nozzle) heat OFF.

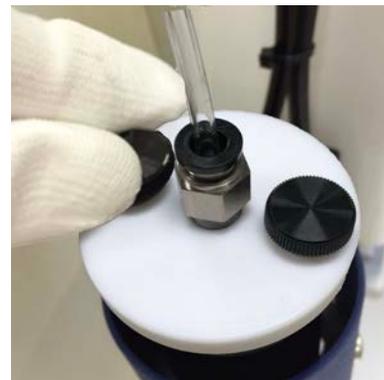


PRESS  UNTIL
R-S IS DISPLAYED

PRESS   TO SELECT
STOP

PRESS  TO
SAVE THE CHANGE

3. Pour approximately 2cc of appropriate cleaning solution into the syringe.
4. Replace the receiver head (top air supply) and tighten the thumbscrews

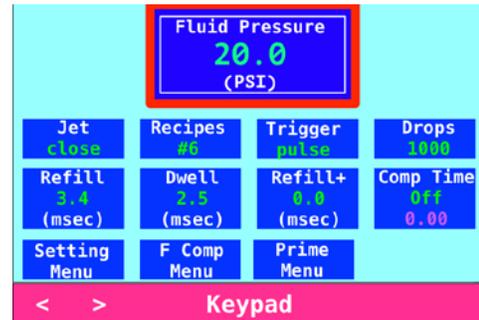


4.5 Purge PUR Jet and Nozzle, continued

5. Program this dispensing recipe:

Fluid Pressure = 20 psi
Trigger = PULSE
Refill = 3.4
Dwell = 2.5
Refill+ = 0
Drops = 1000

NOTE: It is helpful to store a recipe for a purge/cleaning utility function.



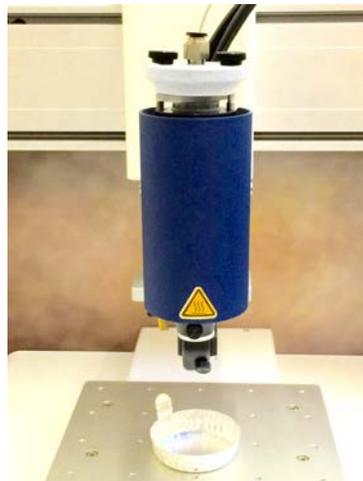
6. Turn **Air ON**.
7. Start with **Fluid Pressure** set to 20 psi.
8. Once the jet is purged of PUR material and mostly solvent is exiting the nozzle, adjust **Fluid Pressure** down to (as low as) 6 psi.

9. Place an aluminum-foil dish under the nozzle to catch the purged PUR material.

Press the **Trigger** button to fire the jet and purge the nozzle.



Repeat until the output from the nozzle is mostly solvent or until syringe is empty.



10. Turn **Air OFF**.
11. Loosen the receiver head thumbscrews and remove the receiver head.
12. Disconnect the feed tube from nozzle.
13. Remove the luer from the feed tube. If necessary, set the luer aside for cleaning with a cleaning solution appropriate for the dispensing material.
14. Remove the cleaning syringe and save it for the next time.

4.6 Disassemble and Clean the Nozzle and Diaphragm

The nozzle plate and diaphragm must be clean and free of debris before installing onto the jet. If the nozzle plate is not clean, it could affect the dispensing quality, or in the worst case, could plug the nozzle orifice.

			
Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.			



1. With appropriate hand protection in place, remove the nozzle plate using a 3 mm torque allen wrench. If the diaphragm has become stuck to the heater block, use a probe or an appropriate tool to carefully remove it.
2. Remove the diaphragm from the nozzle.
3. Manually clean the diaphragm with a cotton swab or an agitating brush that has been saturated with 91% isopropyl alcohol.

4. When the nozzle has cooled, set it in a container filled with PUR cleaning solution and place into an ultrasonic cleaner for 30 minutes.
5. Remove the nozzle from the ultrasonic cleaner and hand clean using appropriately sized nozzle cleaning wires and micro drills. Using a microscope or eye loupe, visually inspect the nozzle to verify cleanliness. To assure process success, using a CLEAN NOZZLE is a top priority.

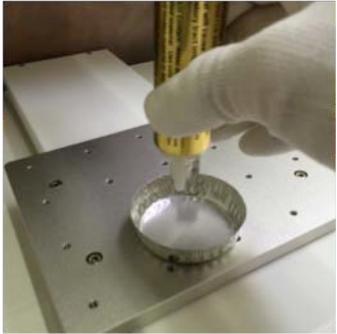


Appendix 1: “Hot-Swap” a PUR Syringe

For uninterrupted dispensing, the “hot-swap” procedure replaces an empty PUR syringe with an **externally preheated one**. The HM-2600’s locking feed tube facilitates the swift syringe replacement required for a successful hot-swap.

It is important to note that the hot-swap procedure requires special syringe preheating equipment made expressly for this purpose.

			
Material inside the applicator can be near setpoint temperature. To avoid severe burns, wear protective gloves.			

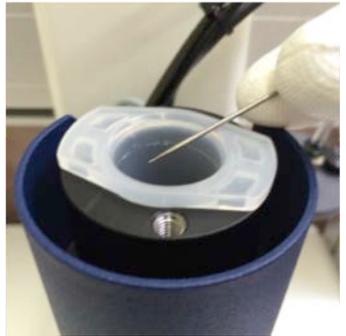
<ol style="list-style-type: none">1. Prepare replacement syringe in an off-line preheater – preheat to 100 °C (212 °F) and remove cured material from the syringe top.2. Turn the Fluid Air OFF .3. Loosen the receiver head thumbscrews and remove the receiver head (top air supply).	
<ol style="list-style-type: none">4. Turn the empty syringe counter-clockwise to disengage from feedtube luer lock, then pull it up and out. Feed tube will remain in place.	
<ol style="list-style-type: none">5. Have tools and supplies ready. Remove the syringe from the preheater. Hold it over the purge container and remove the tip cap, allowing the liquefied material to drip out. If the material does not flow freely, gently squeeze the syringe until material extrudes from the nozzle tip, allowing the liquefied material to flow freely. If the material still does not flow, poke a probe into the tip and clear it out.	

Appendix 1: “Hot-Swap” a PUR Syringe, continued

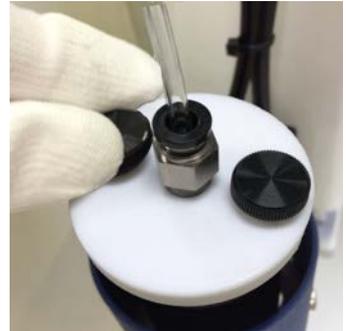
6. Put the preheated syringe in the melter. Push it down firmly to position the syringe tip in the feed tube, and turn it clockwise to engage the luer lock.
- Do not over-tighten.



7. Use a clean probe tool to remove the layer of cured material from the top of the melted PUR.



8. Replace the receiver head (top air supply), tighten the thumbscrews, and turn the **Fluid Air ON**.



9. Replace the tip cap and top cap and discard the empty syringe.



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