

Equalizer 2K Shutoff Bracket Assembly Installation Instructions

Introduction

These instructions explain how to install the Equalizer™ 2K shutoff bracket assembly on an automated dispensing system and how to integrate the Equalizer 2K Dispensing Tool with the assembly. Once the shutoff bracket assembly is installed, material output from the mixer is deposited through a dispensing tip to provide clean cutoff at the beginning and end of each deposit.

Compatibility

- E Series: All
- EV Series: All
- PROX / PROPlus / PRO Series: All
- GVPlus / GV Series: All

OPTIONAL: Depending on total tool payload, the heavy-duty payload springs (shipped with the robot) can be installed on the Z axis head before the shutoff bracket assembly is installed. If you want to use only the shutoff bracket and Equalizer tool, the heavy-duty springs are not necessary. The procedure for installing the springs is included in these instructions.

Assumptions

- The automated dispensing system and fluid dispenser are properly installed and connected.
- The dispensing program to be used is already created and saved.

Specifications

NOTE: Specifications and technical details are subject to change without prior notification.

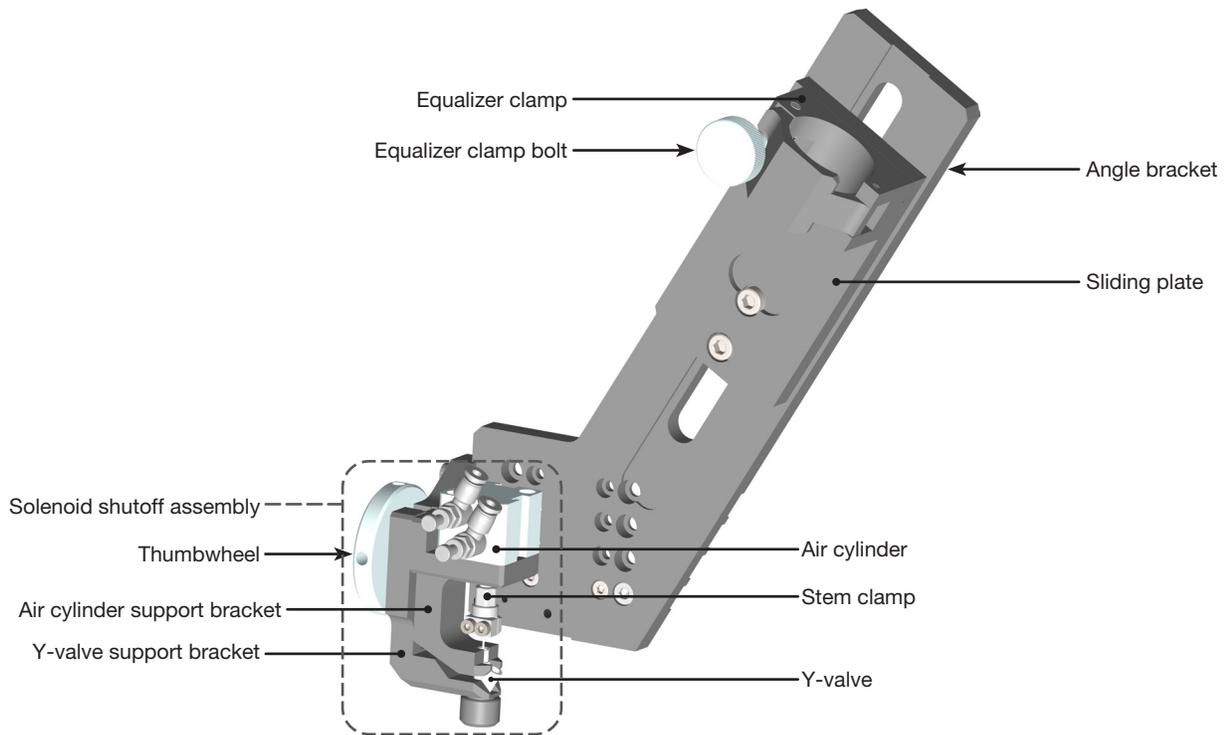
Item	Specification
Shutoff bracket dimensions	28.68H x 22.08W x 8.66D cm (11.3H x 8.7W x 3.4D") With mixer, add to height: 16.0L cm (6.0L") With 12.7 mm (0.50") dispensing tip, add to height: 4.05L cm (1.6L")
Shutoff bracket control box dimensions	4.3H x 20.0W x 17.0D cm (1.7H x 7.9W x 6.7D")
Weight (of shutoff bracket)	1.75 kg (3.9 lb)
Output voltage from robot I/O Port	24 VDC
Dispenser connection	Standard dispenser-to-robot cable (P/N 7360551)
Air inlet (to pressure regulator)	6 mm
Input air pressure	2.8–3.1 bar (40–45 psi)



Equalizer 2K Dispensing Tool installed on the shutoff bracket assembly

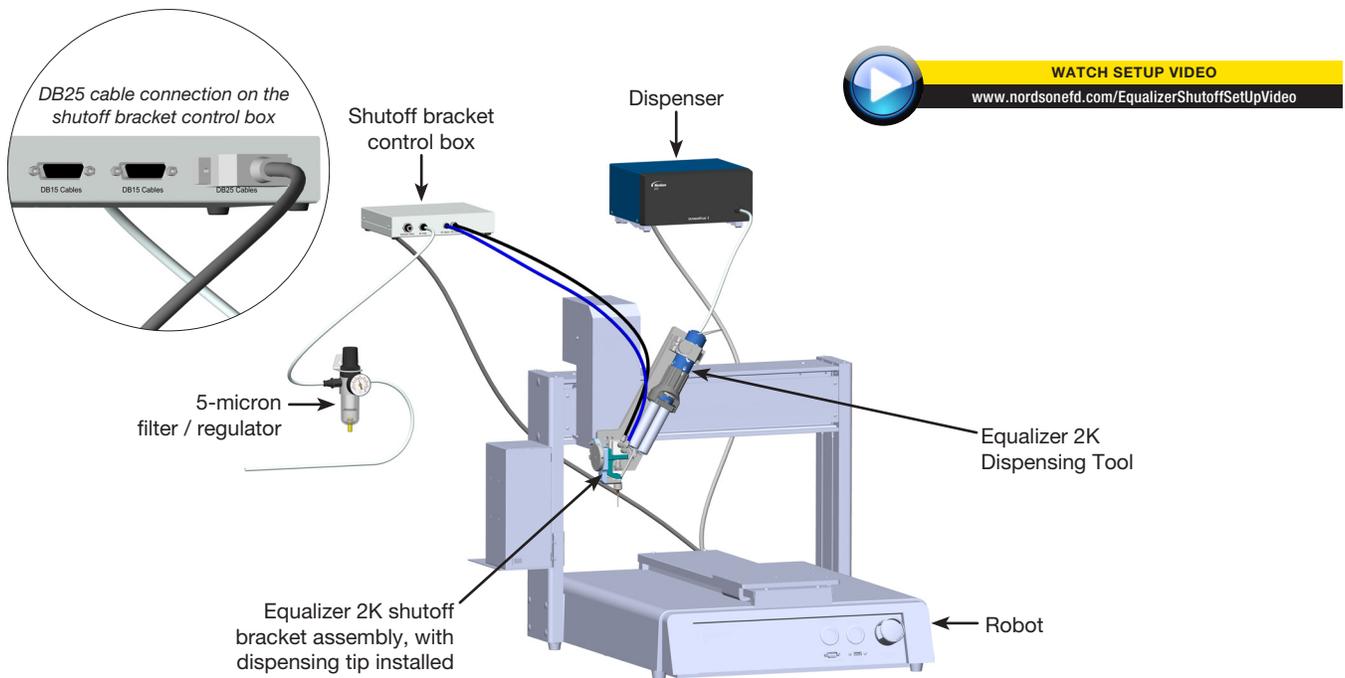
Component Identification

Refer to this section for the Equalizer 2K shutoff bracket assembly component terms used throughout these instructions.



Typical Installation

This system layout illustration is for reference purposes only, to show the components associated with the shutoff bracket assembly; it does not depict a complete automated dispensing system.



Contents of the Shutoff Bracket Kit

1. Equalizer 2K shutoff bracket assembly
2. Shutoff bracket control box
3. Y-valves (quantity of 25)
4. DB25 cable for the robot input / output (I/O) port connection, 1.8 m (6 ft)
5. 5-micron filter / regulator components
6. Urethane tubing, 4 mm OD, orange, 3 m (9.8 ft)
7. Urethane tubing, 4 mm OD, black, 5 m (16.4 ft)
8. Urethane tubing, 4 mm OD, blue, 3 m (9.8 ft)
9. Urethane tubing, 6 mm OD, clear, 3.5 m (11.5 ft)
10. 1/4 NPT x 6 mm OD push-in fittings for 6 mm tubing (quantity of 2)
11. Quick-connect female fitting with hex, male quick-connect fitting for 3/32 ID hose, and 6 mm push-in muffler
12. Optional T-bracket to mount a CCD smart camera bracket
13. Mounting bracket screws and M5 nut

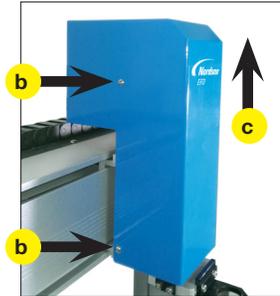
NOTE: The M5 nut is required only if you use a general purpose tip instead of a SmoothFlow™ tapered tip (TT) or rigid tapered tip (RTT). Refer to the *2K Shutoff Bracket Modification for General Purpose Tips Instructions* for details.



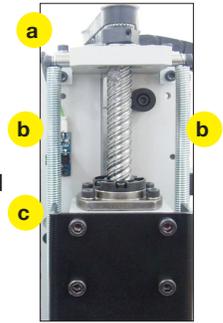
Optional: Install the Heavy-Duty Payload Springs on the Robot

NOTE: Heavy-duty payload springs are supplied with the robot.

- 1** Do the following to remove the Z axis cover:
 - a. Disconnect the AC power cord from the robot.
 - b. Remove the four (4) screws that secure the Z axis cover to the Z axis module.
 - c. Pull up vertically to remove the Z axis cover.



- 2** Remove the standard payload springs:
 - a. Before removing the hardware from a spring, make a note of the layout / position of the hardware and spring on the bolt.
 - b. Working with one spring at a time, remove the bolt, washer, spring, and spacer that attach the top of the springs to the Z axis head.
 - c. The bottom of each spring is attached to a retaining tab on the Z axis head mounting flange; manipulate the spring to disconnect it from the tab.



- 3** Install the heavy-duty payload springs by reversing the steps used to remove the standard springs.

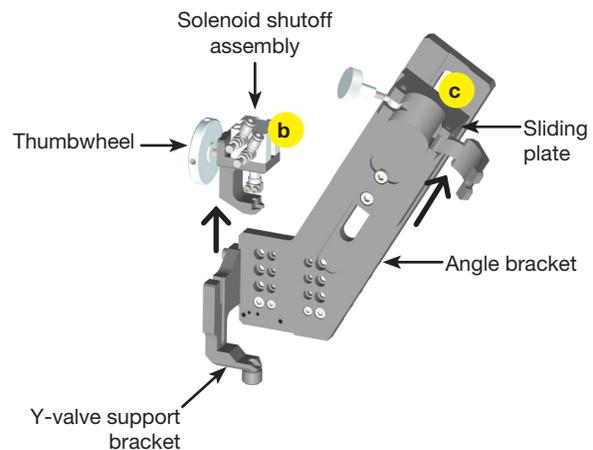
NOTE: When tightening the bolt that secures a spring, ensure that the upper spring loop is properly oriented and properly seated against the spacer and washer.

- 4** Reinstall the Z axis cover and hardware, then continue to the next procedure.

Install the Shutoff Bracket Assembly

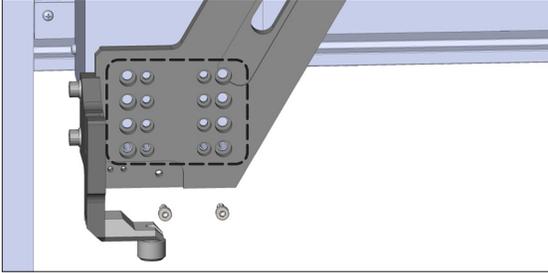
NOTE: Before securing air and cable connections or tightening screws, plan out the installation location for all the components. Route all cables and hoses onto and along the robot, providing adequate service loops, to ensure that these items will never be under tension during any robot motion.

- 1**
 - a. Disconnect the AC power cord from the robot.
 - b. Remove the solenoid shutoff assembly by turning the thumbwheel counterclockwise and pulling the assembly straight up.
 - c. Loosen the M6 x 20 bolts that secure the sliding plate to the angle bracket and slide it to the top of the bracket.



Install the Shutoff Bracket Assembly (continued)

- 2** Use two M4 screws in any of the mounting holes indicated below to attach the angle bracket to the Z axis head.



- 3** (Optional) Do the following to mount camera bracketry:

- **CCD camera:** Use two M4 screws to attach the T-bracket (included in the shutoff bracket kit) to the angle bracket; then attach the existing CCD camera bracket to the T-bracket.
- **Pencil camera bracket:** Use two M3 screws to attach the existing pencil bracket to the angle bracket.

NOTE: The camera and any additional Z-head-mounted robot components are not shown.



CCD camera: Use M4 screws in these holes to mount the T-bracket on the angle bracket



Installed T-bracket (CCD camera bracket not shown)

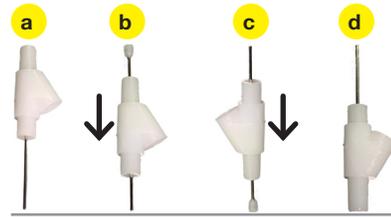


Pencil camera: Use M3 screws in these holes to mount the pencil camera bracket on the angle bracket



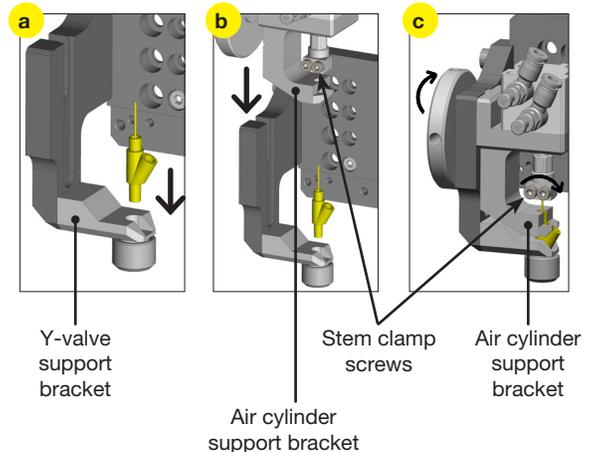
Installed pencil camera bracket

- 4** Do the following to test the Y-valve pin motion:
- Invert the Y-valve, so the pin is pointed down and is vertical.
 - Gently press the end of the pin against a hard surface to ensure that the pin moves and the Y-valve opens.
 - With the Y-valve open, invert it (so the pin is pointed up and is vertical, then press the stopper (located at the end of the pin) against a hard surface.
 - Continue pressing on the stopper until the stopper is fully seated and flush with the bottom of the Y-valve body.



- 5**
- Insert the tested Y-valve (shown in yellow for clarity) into the Y-valve support bracket.
 - Loosen the two screws on the stem clamp and then slide the solenoid shutoff assembly into the top of the slot on the Y-valve support bracket.

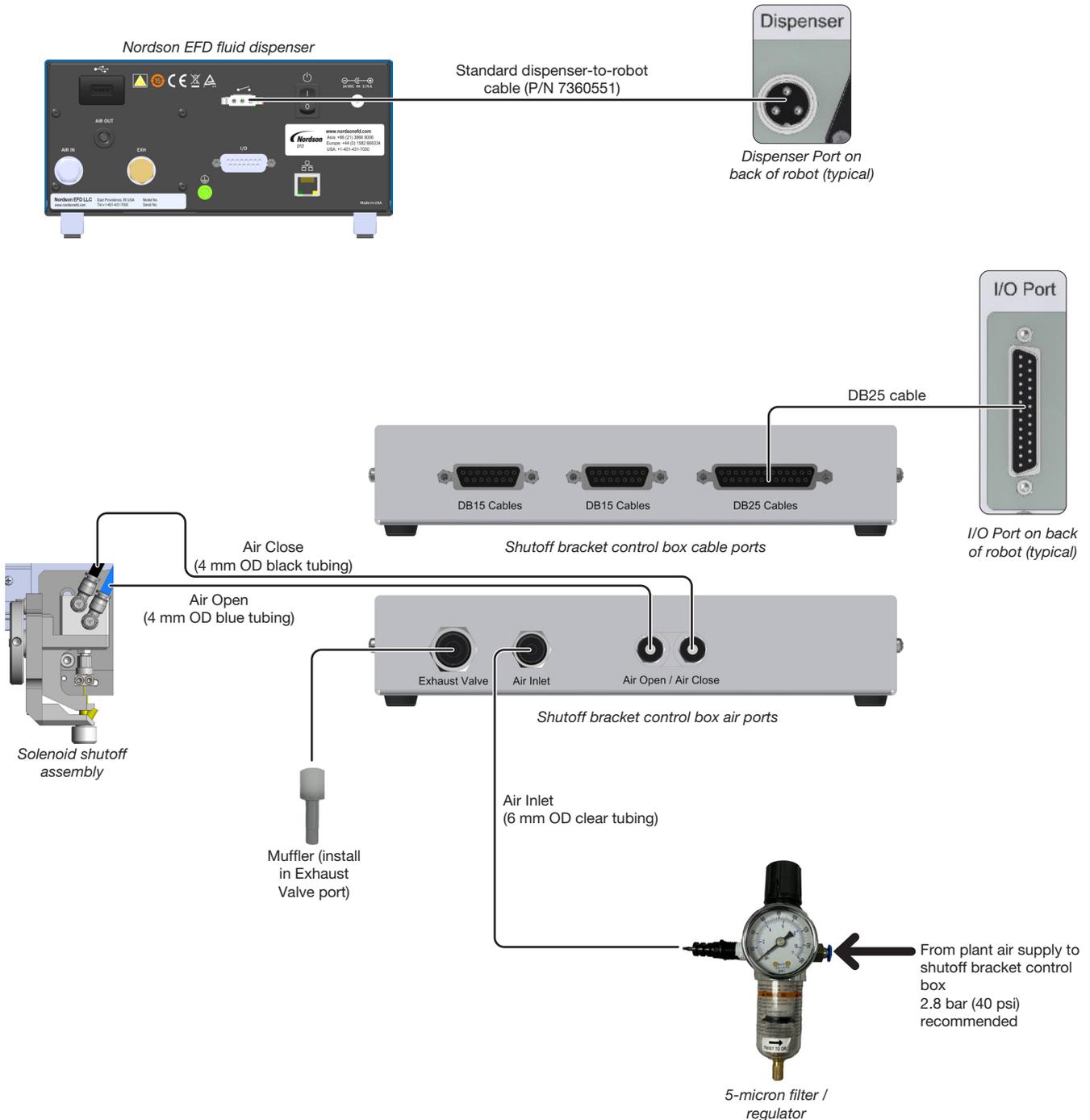
Slowly lower the solenoid shutoff assembly until the Y-valve pin enters the stem clamp and the bottom of the air cylinder support bracket firmly contacts the top of the Y-valve support bracket.
 - Tighten the thumbwheel, then tighten the two screws on the stem clamp.



Make the Pneumatic and Electrical Connections

1. Position the shutoff bracket control box away from the fluid reservoirs at a location where that the cable and air connections are easily accessible.

NOTE: Nordson EFD recommends waiting until all connections are complete before securing the control box at its installation location.
2. Ensure that the plant air supply is OFF and then install the supplied 5-micron filter / regulator in the plant air supply line.
3. Install the muffler the in the Exhaust port on the shutoff bracket control box.
4. Ensure that the robot AC power cord is still disconnected, then make the connections shown below.

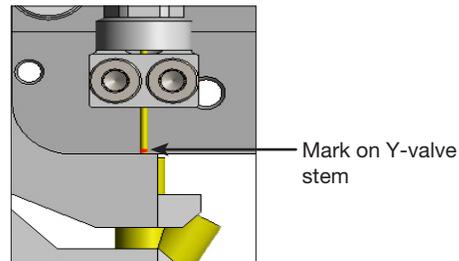
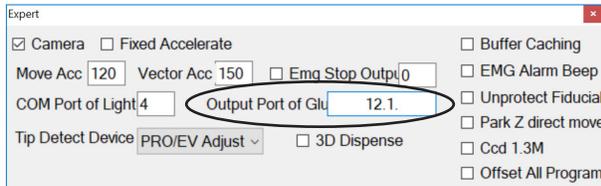


Power On and Check the Shutoff Bracket Operation

NOTE: Refer to the robot manual for robot operating procedures.

1. Use a permanent marker to make a mark at the bottom of the Y-valve.
2. Reconnect the robot AC power cord and then switch on the robot power.
3. Open the DispenseMotion software and do the following:
 - a. Click **System Setup > Open > Expert**.
 - b. Enter the password (**11111111**) and click **OK**.
 - c. Select **Control**.
 - d. Change **Output Port of Glue** to **12.1**, then click **OK > EXIT**.

NOTE: This system setup causes the robot to trigger the solenoid shutoff assembly when you press the Dispenser Purge button located on the front of the robot.



4. Turn on the air supply pressure to the shutoff bracket control box. For now, keep the air pressure supply to the dispenser OFF.
5. While observing the Y-valve pin, press and release the DISPENSER PURGE button on the robot; if the red mark on the pin disappears and reappears, then the Y-valve is properly clamped to the air cylinder and is opening and closing.
6. Jog the Z axis head to an Auto Purge location and set the purge location in the DispenseMotion software.

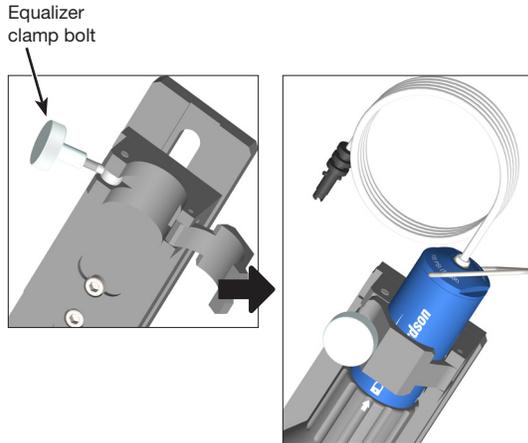


NOTE: The Auto Purge setup is in the System Setup screen.

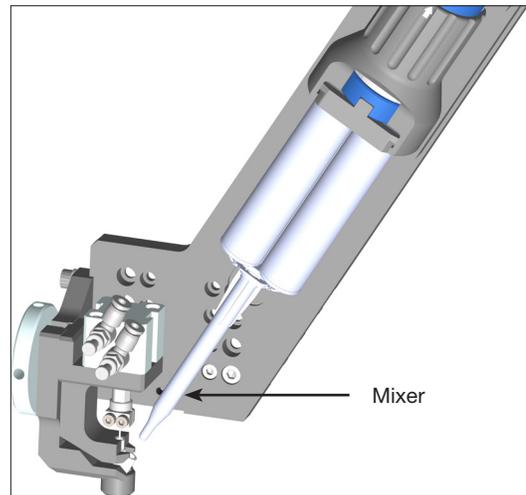
7. Power off the robot, disconnect the power cord, and continue to the next procedure to install the Equalizer tool on the shutoff bracket assembly.

Install the Equalizer 2K Dispensing Tool

- 1** Loosen the bolt to open the Equalizer clamp, then insert the Equalizer, close the clamp, and tighten the bolt.



- 2** Install the mixer on the Equalizer tool.

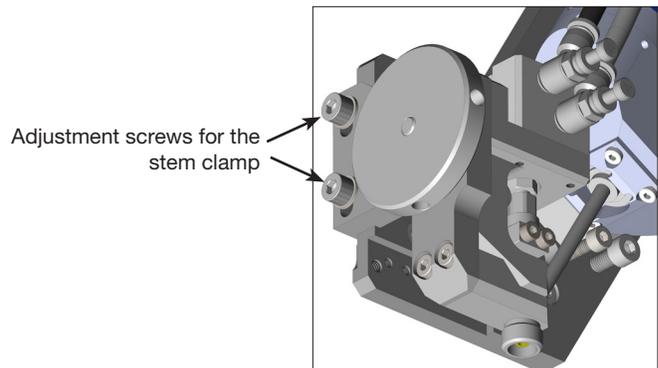
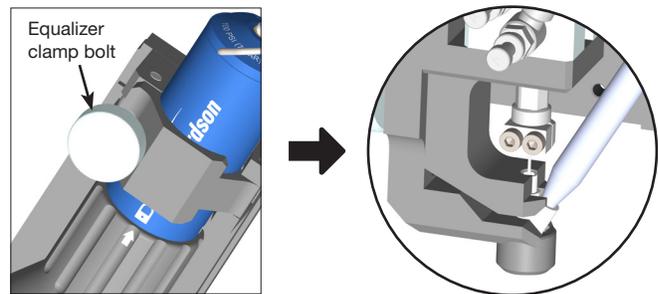


3 **CAUTION**

When sliding the mixer into the Y-valve, do not allow the mixer to bend or become misaligned. Doing so can cause poor dispensing results.

- Loosen the Equalizer clamp bolt, hold the Equalizer, and slowly slide it down until you can slip-fit the mixer straight into the Y-valve, taking care to prevent misalignment or bending of the mixer.
- Ensure that the mixer is properly aligned, then fully tighten the sliding plate bolts.

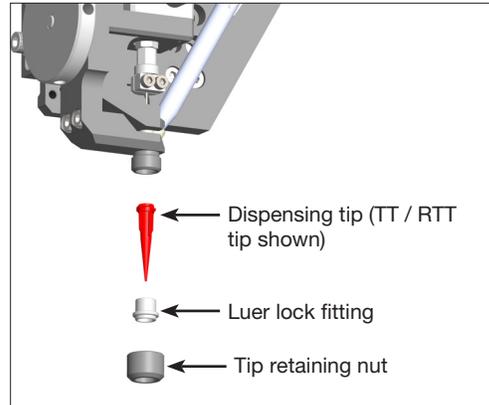
NOTE: If needed, you can adjust the vertical position of the stem clamp by loosening the two screws to the left of the thumbwheel.



Install the Dispensing Tip

Install a dispensing tip on the shutoff bracket assembly. The assembly is compatible with all Nordson EFD SmoothFlow™ tapered or rigid tapered (TT / RTT) tips.

NOTE: To use a general purpose tip, an additional M5 nut must be installed on the air cylinder. Refer to the *2K Shutoff Bracket Modification for General Purpose Tips*. Both the M5 nut and the instructions are included in the shutoff bracket kit.



Testing and Adjustment

Before placing the shutoff bracket assembly into routine operation, follow these procedures to confirm that the Y-valve is functioning as a normally closed valve and that it performs properly during dispensing.

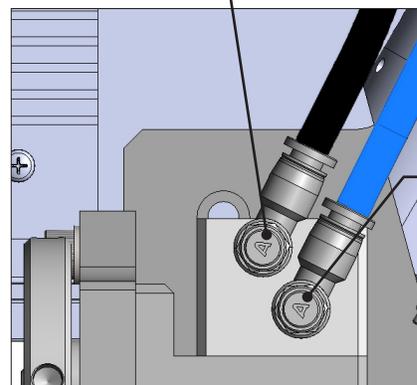
To Confirm that the Y-Valve is Normally Closed

1. Turn OFF the air supply to the shutoff bracket control box.
2. Disconnect the 4 mm air lines from the AIR OPEN and AIR CLOSE ports on the shutoff bracket control box.
3. Slowly turn ON the air supply to the shutoff bracket control box.
Air should begin escaping from the AIR OPEN port.
4. Connect the air line from the AIR OPEN FLOW CONTROL PORT (on the solenoid shutoff assembly) to the AIR OPEN port on the shutoff bracket control box (that is leaking air):
 - If the stem clamp moves up into the closed position, then the Y-valve is operating correctly.
 - If you connected the wrong air line, the stem clamp will immediately move down to the full OPEN position, which is incorrect. If this occurs, switch the air tubing connections at the solenoid shutoff assembly to ensure that the stem clamp moves up into the CLOSED position.
5. Reconnect the 4 mm air line from the AIR CLOSE FLOW CONTROL PORT (on the solenoid shutoff assembly) to the AIR CLOSE port on the shutoff bracket control box.



Air Open / Air Close ports on the shutoff bracket control box

AIR CLOSE FLOW CONTROL PORT (black tubing) on the solenoid shutoff assembly



AIR OPEN FLOW CONTROL PORT (blue tubing) on the solenoid shutoff assembly

Testing and Adjustment (continued)

To Test the Dispense Program

1. Reconnect the robot AC power cord and then switch on the robot power.
2. Set the air pressure to 2.8–3.1 bar (40–45 psi) and turn on the air supply to the control box.
3. Press and hold the DISPENSER PURGE button on the robot to purge system.

NOTE: When the fluid begins to exit the dispensing tip, Nordson EFD recommends purging for about 30 seconds to one minute to ensure that the materials are properly and completely mixed before you run the dispense program. During the initial 15–20 seconds of purging through a new mixer, you may notice materials that are visibly off-ratio.

4. Test the dispensing program and make adjustments as needed.

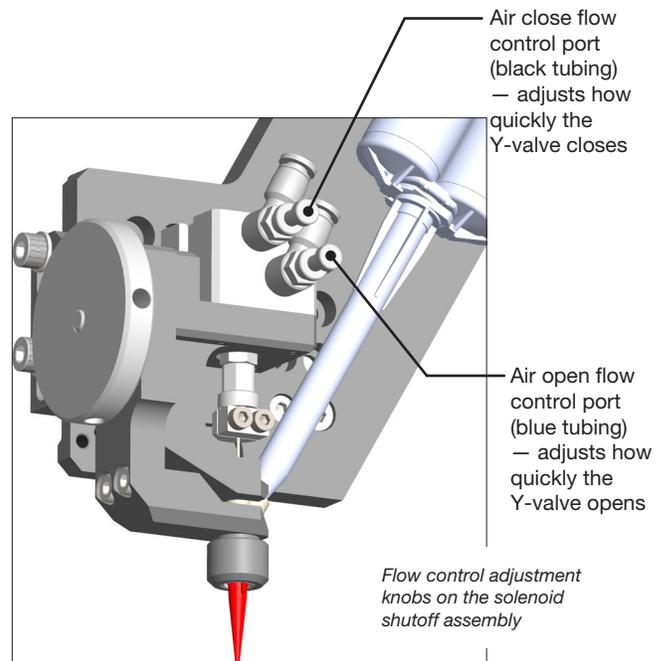


To Fine-Tune the Y-Valve Open / Close Speed

The solenoid shutoff assembly includes two flow control adjustment knobs that allow you to adjust air flow to the Y-valve.

1. To use the controls, loosen the locking nut and turn the adjustment screw to the desired setting, then tighten the locking nut.
2. Press the DISPENSER PURGE button on the robot to view the valve actuation.

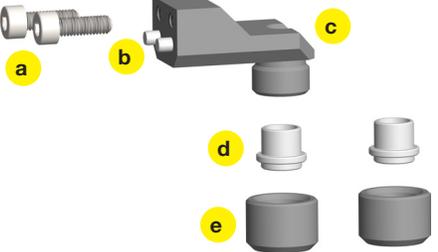
NOTE: By default, the Y-valve is normally closed when air pressure is applied.



Part Number

Part #	Description	Automated Dispensing System Compatibility
 7365933	Equalizer 2K shutoff bracket assembly (Equalizer tool not included) NOTE: Refer to “Contents of the Shutoff Bracket Kit” on page 3 for the kit contents.	<ul style="list-style-type: none"> • E Series: All • EV Series: All • PROX / PROPlus / PRO Series: All • GVPlus / GV Series: All

Replacement Parts

Item	Part #	Description
	7365019	Y-valve, quantity of 100
	7365931	Y-valve support bracket components: a. Screw, M4 x 12, socket-head, stainless steel (includes 2) b. Dowel pin, 3 x 6 mm (includes 2) c. Y-valve support bracket d. Luer lock fitting (includes 2) e. Tip retaining nut (includes 2)

NORDSON EFD ONE YEAR LIMITED WARRANTY

This Nordson EFD product is warranted for one year from the date of purchase to be free from defects in material and workmanship (but not against damage caused by misuse, abrasion, corrosion, negligence, accident, faulty installation, or by dispensing material incompatible with equipment) when the equipment is installed and operated in accordance with factory recommendations and instructions.

Nordson EFD will repair or replace free of charge any defective part upon authorized return of the part prepaid to our factory during the warranty period. The only exceptions are those parts which normally wear and must be replaced routinely, such as, but not limited to, valve diaphragms, seals, valve heads, needles, and nozzles.

In no event shall any liability or obligation of Nordson EFD arising from this warranty exceed the purchase price of the equipment.

Before operation, the user shall determine the suitability of this product for its intended use, and the user assumes all risk and liability whatsoever in connection therewith. Nordson EFD makes no warranty of merchantability or fitness for a particular purpose. In no event shall Nordson EFD be liable for incidental or consequential damages.

This warranty is valid only when oil-free, clean, dry, filtered air is used, where applicable.



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