Air Spray Proportioning Valve

1. Installation

The air spray proportioning valve provides close regulation of air spray characteristics for air spray versions of the Pro-Flo dispensing gun. This proportioning valve uses a voltage signal from the Pro-Flo II digital controller to raise or lower air pressure to the air spray portion of the dispensing gun. Install the proportioning valve using the following procedures:

1. See Figure 1. Mount the proportioning valve (1) on or near the robot. The valve body has two mounting holes for mounting to a bracket on the robot arm or shoulder.

2. See Figure 2. Wire the proportioning valve using the following procedure:

   a. Connect the proportioning valve cable (3) to the controller (1) by removing one of the round plastic plugs (2) to expose a hole for an auxiliary cable.

   b. Install a strain relief (4) into the hole. Route the proportioning valve cable (3) through the strain relief.

   c. If the proportioning valve is to be controlled by the robot controller's second analog output, connect the signal wires of terminals 24 and 79 on terminal strip 3 (5). Connect the power wires to any terminal 13 and ground the terminal on terminal strip 3.

   d. If the proportioning valve is to be controlled by the Pro-Flo II controller, connect the signal wires to terminals 35 and 36 on terminal strip 3 (5). Connect the power wires to any terminal 13 and ground the terminal on terminal strip 3.

3. See Figure 1. Make sure the air circuit before the proportioning valve (1) contains a filter (9), regulator (10), and tee (11).

NOTE: The air supply to the inlet must be at least 7 bar (100 psi).

4. Connect a hose (13) from the outlet (14) of the proportioning valve to the air spray fitting (6) of the dispensing gun (7).

5. Turn on the air supply to the inlet (8).

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1. Installation (contd.)

6. Check the dispensing gun (7) for proper operation and air spray characteristics. If when using the Pro-Flo II controller you cannot precisely adjust the air spray characteristics, perform steps 7, and 8, and 9.

7. Turn off the air supply to the inlet (8).

8. Remove the proportioning valve cable (3) from the proportioning valve connector (2).

9. Remove the tube (12) from the tee (11), and perform the calibration procedure.

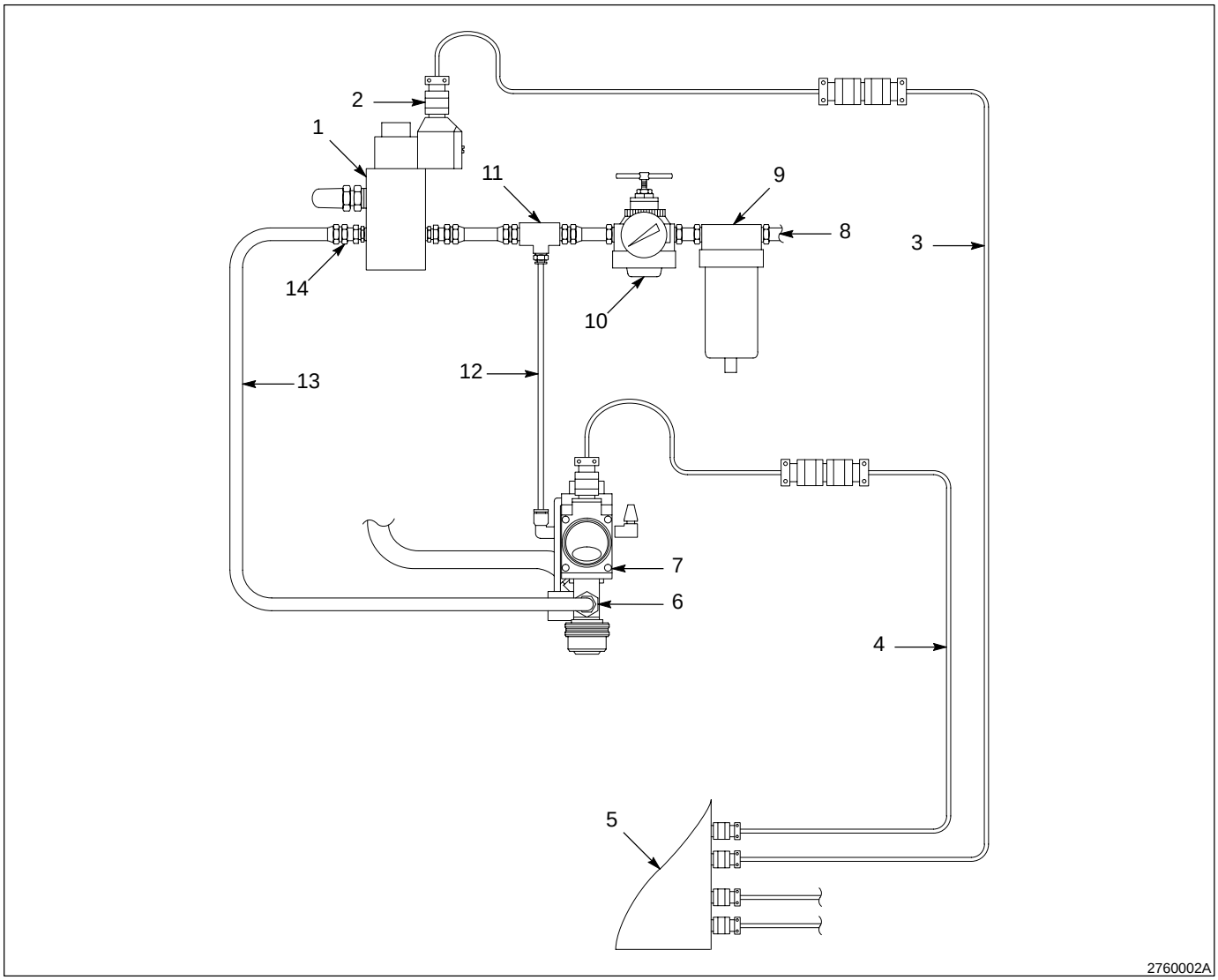

Fig. 1 Installing the proportioning valve

1. Proportioning valve
2. Proportioning valve connector
3. Proportioning valve cable
4. Gun control cable
5. Pro-Flo II digital controller
6. Air spray fitting
7. Dispensing gun
8. Inlet
9. Filter
10. Regulator
11. Tee
12. Tube
13. Hose
14. Outlet

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1. Installation (contd.)

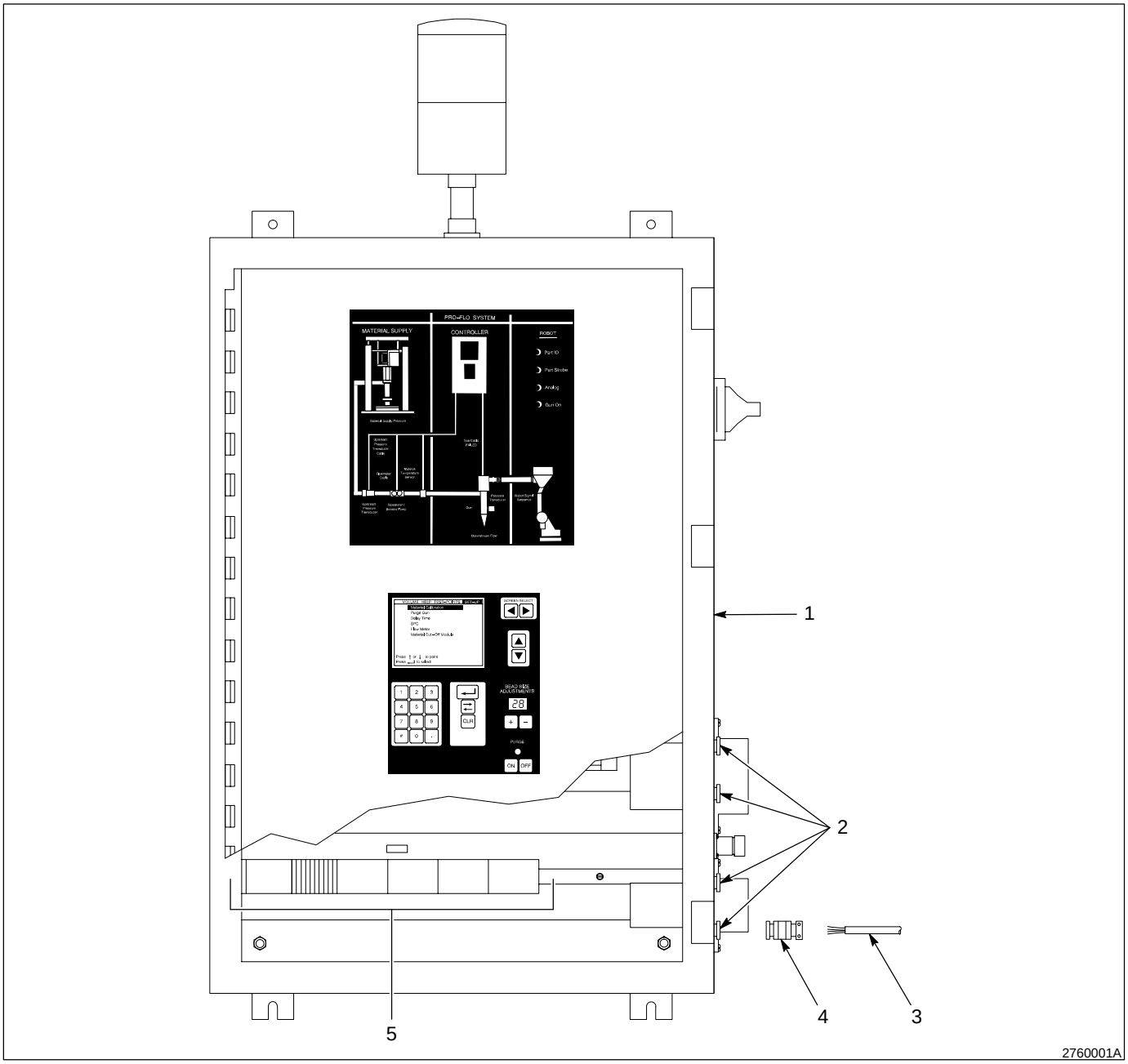

Fig. 2 Wiring the proportioning valve

1. Pro-Flo II controller
2. Plastic plugs
3. Proportioning valve cable
4. Strain relief
5. Terminal strip

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2. Calibration

The proportioning valve is factory-calibrated by Nordson Corporation, but you may need to calibrate the valve again if it does not function properly after installation. For this procedure, you will need a 0- to +10-Vdc power supply with common, and a separate +24-Vdc power supply with common. To calibrate the proportioning valve, perform the following procedure:

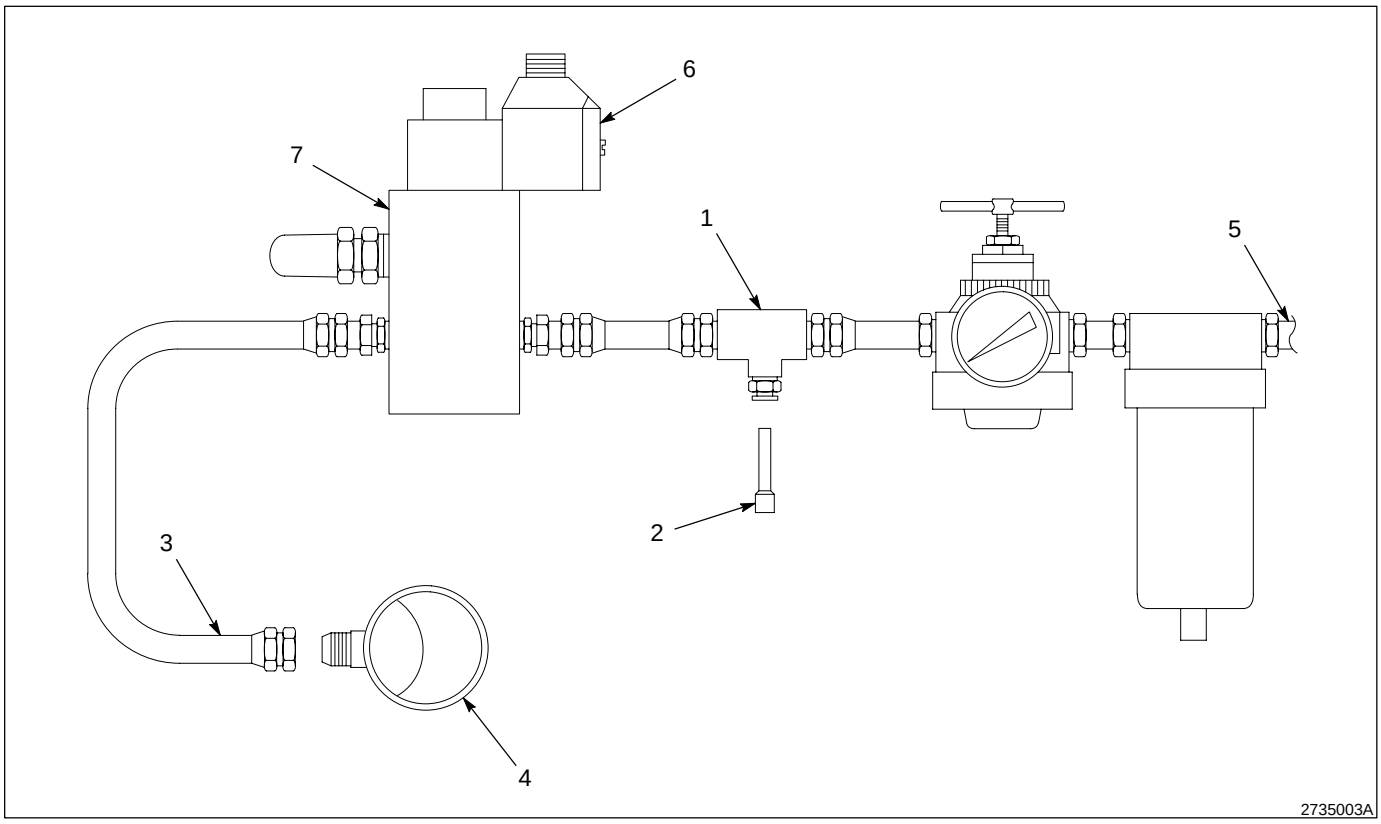

Fig. 3 Setting up the calibration pneumatics

1. Tee
2. Plug
3. Hose
4. Gauge
5. Inlet
6. Cover
7. Proportioning valve

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Setup

Use the following procedure to prepare the air spray proportioning valve for calibration:

1. See Figure 3. Remove the tube from the tee (1) and install a plug (2).
2. Disconnect the hose (3) from the gun. Install a 0- to 8.6-bar (0- to 125-psi) gauge (4) at the end of the hose (3).
3. Turn on the air supply to the inlet (5).
4. Remove the cover (6) from the proportioning valve (7).

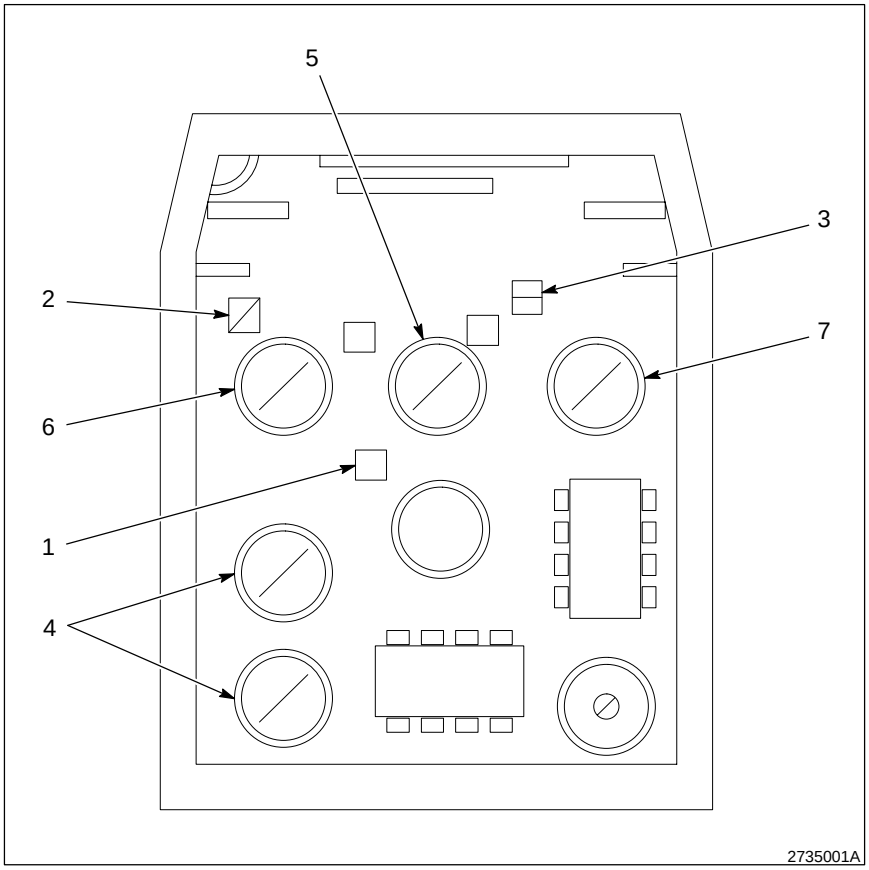

Fig. 4 Panel of the proportioning valve

1. Terminal
2. Terminal
3. Terminal
4. Ramping potentiometers
5. Potentiometer
6. Potentiometer
7. Potentiometer

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Setup (contd)

5. See Figure 4. Connect the (+) lead of the 0- to +10-Vdc power supply to the terminal (1).
6. Connect the common lead of the 0- to +10-Vdc power supply to the terminal (2).
7. Connect the (+) lead of the +24-Vdc power supply to the terminal (3).
8. Connect the common lead of the +24-Vdc power supply to the terminal (2).
9. Turn the two ramping potentiometers (4) counterclockwise to the minimum position.

Calibration

Calibrate the air spray proportioning valve using the following procedure:

1. Turn on the +24-Vdc power supply.
2. Use the 0- to +10-Vdc power supply to send +1 Vdc to the valve. Adjust the potentiometer (5) until the gauge (See Figure 3, (4)) shows 0.4 bar (5.0 psi).
3. Use the 0- to +10-Vdc power supply to send +10 Vdc to the valve. Adjust the potentiometer (See Figure 4, (6)) until the gauge (See Figure 3, (4)) shows 3.5 bar (50 psi).
4. Repeat steps 2 and 3 until the valve maintains the correct voltage/pressure relationship.
5. Use the 0- to +10-Vdc power supply to send +5 Vdc to the valve. Check the gauge (See Figure 3, (4)) pressure. It should read 1.7 bar (25 psi). If it does not, adjust the potentiometers as noted in steps 2 and 3.
6. Turn the potentiometer (See Figure 4, (7)) clockwise until the needle of the gauge (See Figure 3, (4)) bounces (dithers). Back off the potentiometer until you see minimal or acceptable dither.
7. Turn off both of the power supplies. Remove all power supply leads from the panel of the proportioning valve.

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Connection

Connect the calibrated proportioning valve to the Pro-Flo II system using the following procedure:

1. See Figure 3. Turn off the air supply to the inlet (5). Install the cover (6) on the proportioning valve (7). Remove the plug (2) from the tee (1), and the gauge (4) from the hose (3).

2. See Figure 5. Connect the tube (7) to the tee (8). Connect the hose (4) to the air spray fitting (5).

3. Connect the proportioning valve cable (2) to the proportioning valve connector (1).

4. Turn on the air supply to the inlet (9).

5. Check the dispensing gun (6) for proper operation and air spray characteristics. If using the Pro-Flo II digital controller (3) you cannot precisely adjust the air spray characteristics, perform Steps 6,7, and 8.

6. Turn off the air supply to the inlet (9).

7. Remove the proportioning valve cable (2) from the proportioning valve connector (1).

8. Perform the calibration procedure again. If the second calibration attempt is not satisfactory, contact Nordson Corporation for assistance.

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Connection *(contd.)*

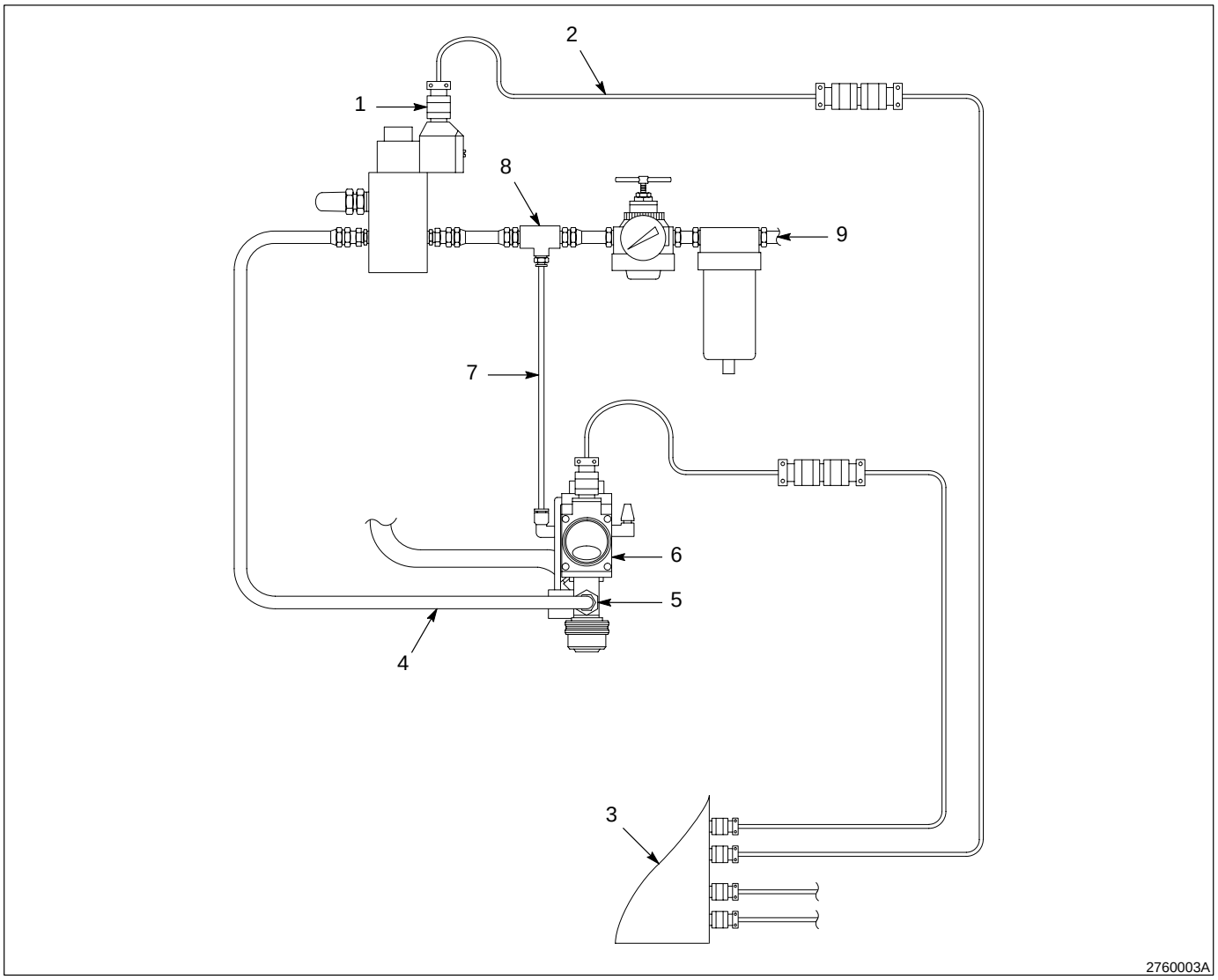

Fig. 5 Connecting the proportioning valve

1. Proportioning valve connector
2. Proportioning valve cable
3. Pro-Flo II digital controller
4. Hose
5. Air spray fitting
6. Dispensing gun
7. Tube
8. Tee
9. Inlet

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