Series EPC-30 Current-to-Pressure (I/P) Transducer

WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

Introduction

This instruction sheet contains the procedure for installing the current-to-pressure (I/P) transducer (kit P/N 772033).

If the Eclipse™ EPC-30 pattern control is equipped with an optional input/output (I/O) board, the I/P transducer can be installed to provide run-up control for the system. Refer to the Eclipse EPC-30 pattern control manual for setting the run-up control.

Specifications

The following table lists specifications for the I/P transducer.

Item	Specification	Note
Air supply input pressure	8.6 – 10.3 bar (125 – 150 psi)	A
Air supply output pressure	0.2 – 8.3 bar (1 – 120 psi)	A
Input impedance	260 ohms (nominal)	
Input signal	4 – 20 mA VDC	B

NOTE A: The transducer was calibrated using a 6.6–6.9 bar (95–100 psi) air supply.

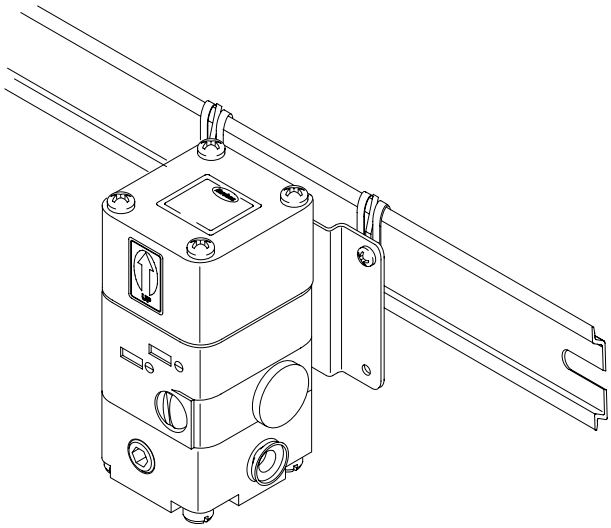
B: With a 6.6–6.9 bar (95–100 psi) air supply, the output should be 0–0.3 bar (0–5 psi) with a 4 mA signal or 6.0–6.4 bar (87–93 psi) with a 20 mA signal.

I/P Transducer Installation

Use this procedure to install the I/P transducer.

CAUTION! Mount the transducer with the UP arrow pointing directly up. Mounting the transducer in any other position will change the current-to-pressure ratio.

1. Use one of the following methods to mount the transducer-and-bracket assembly within 30 feet of the hot melt unit's pump. For the best performance, mount the transducer as close to the pump as possible. Make sure the UP arrow is pointing directly up.
   - If you are mounting the transducer on a wall or similar location, use the mounting bracket.
   - See Figure 1. If you are mounting the transducer on a DIN rail, install the two mounting clips in the top two bracket holes and attach the clips to the DIN rail.



5742120A

Figure 1 Mounting the transducer on a DIN rail

1. DIN rail
2. Mounting clips
3. Bracket

2. See Figure 2. Install the two $^1/_4$ NPT elbows from the kit in the transducer's air inlet and outlet ports.

3. Use $^{5}/_{16}$-in. diameter (minimum) air line tubing to connect a clean, dry air supply to the transducer air inlet port.
4. Connect $^{5}/_{16}$-in. diameter (minimum) air line tubing between the transducer's air outlet port and the hot melt unit.
5. Set the hot melt unit's air pressure regulator at the maximum setting (turn the regulator fully clockwise).
6. Route the transducer cable to the Eclipse EPC-30 pattern control. Refer to the Eclipse EPC-30 pattern control manual for instructions on:
   A. Connecting the transducer cable to the pattern control unit

      The transducer cable wire color code information:

      - natural lead wire is common or negative
      - black lead wire is positive

   B. Setting up and using the run-up control

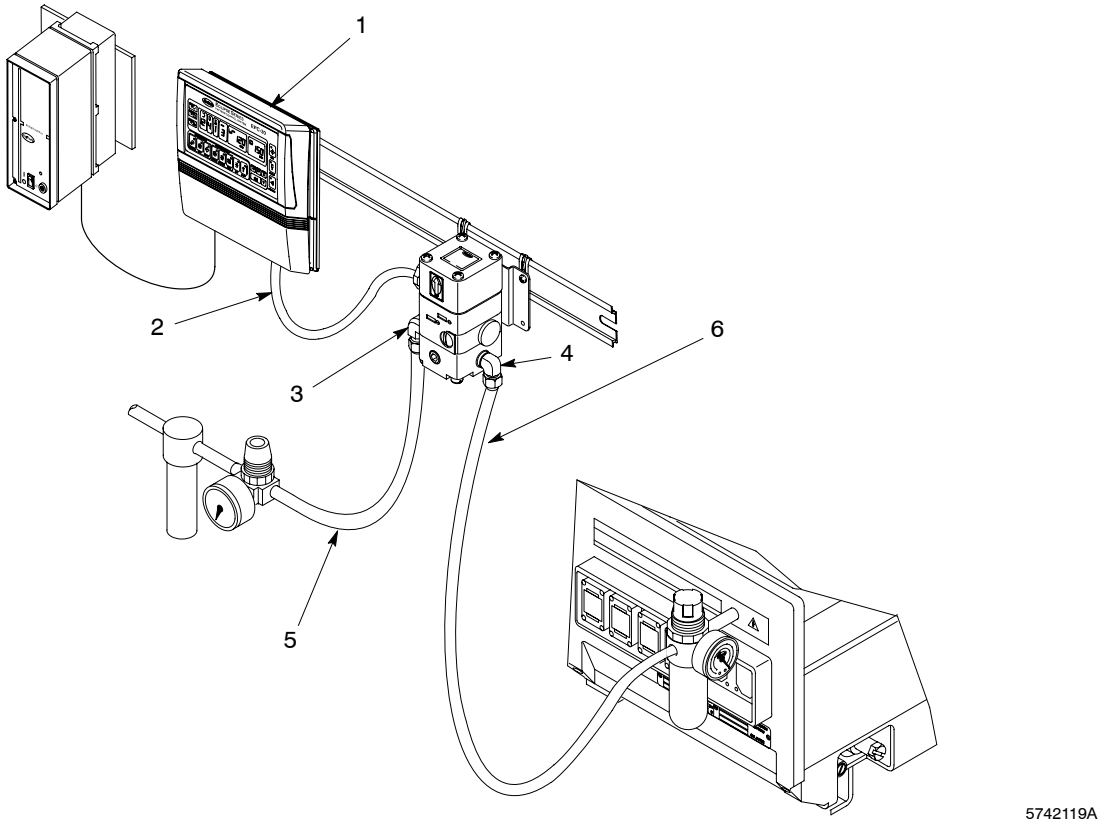


Figure 2 Transducer connections

1. Eclipse EPC-30 pattern control
2. Transducer cable
3. Elbow (air inlet port)
4. Elbow (air outlet port)
5. Air line tubing (air supply to transducer)
6. Air line tubing (transducer to unit)

Troubleshooting

The following troubleshooting guide allows for a quick check in the field to help reduce down time. For additional troubleshooting information, refer to the manuals provided with the other equipment used in the hot melt system. If you cannot solve a problem with the information given here, contact your local Nordson representative for help.

Pneumatic Section

The pneumatic section of the transducer consists of three basic parts. See Figure 3.

A. Pilot section

B. Diaphragm set

C. Inlet

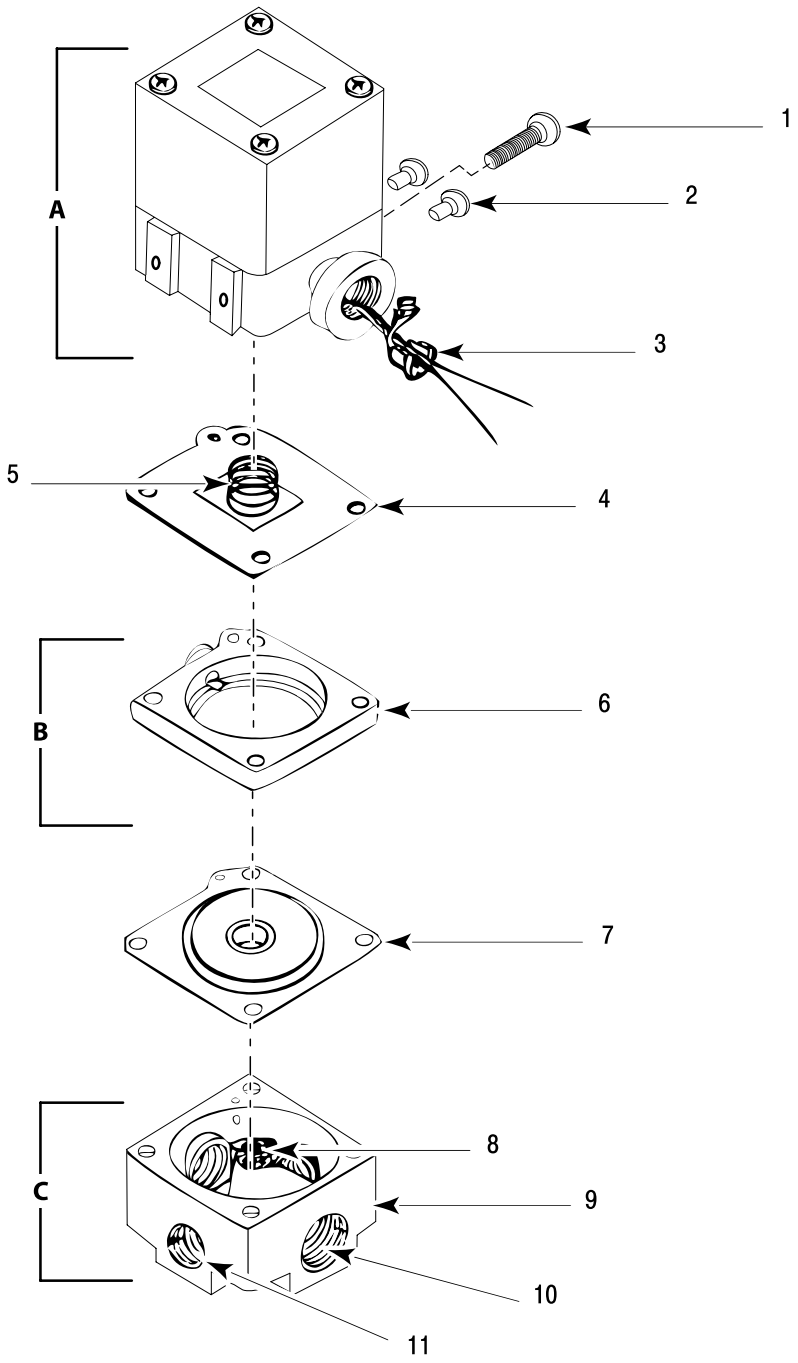


Figure 3 Pneumatic components of the transducer

1. Orifice assembly
2. Zero and span protector assembly
3. Strain relief
4. Protector diaphragm assembly
5. Spring
6. Spacer
7. Control diaphragm assembly
8. Half ball
9. Body assembly
10. In port
11. Gauge port

Troubleshooting the Pneumatic Section

NOTE: If the diaphragm fails, the transducer will leak internally.

Problem	Possible Cause	Corrective Action
Diaphragm failure	Supply air on and the signal is set to 4 mA	• Make sure that the air supply is clean and oil free • Unplug the bleed orifice screw • Unblock the bleed orifice screw
	No output regardless of the input signal	
	Sluggish response to an input signal	
	Bleed orifice screw may be plugged or partially blocked	

Electronic Section

The electronic section of the transducer consists of three basic parts. See Figure 4.

A. Magnet

B. Coil/flexure assembly

C. Circuit board

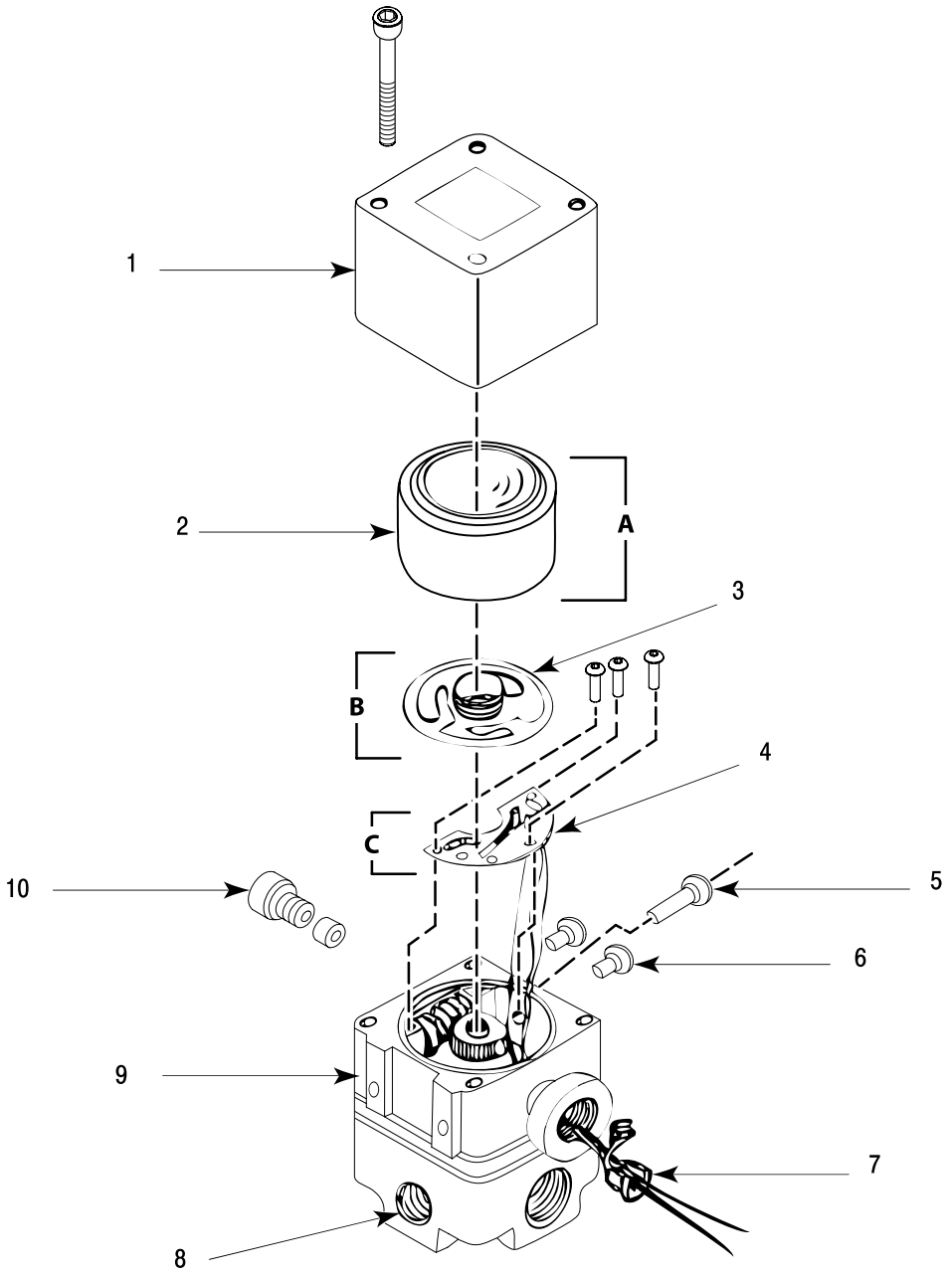


Figure 4 Electrical components of the transducer

1. Bonnet
2. Magnet
3. Coil/spring assembly
4. Circuit board assembly
5. Orifice assembly
6. Zero and span protector assembly
7. Strain relief
8. Gauge port
9. Housing assembly
10. Rain sheild assembly

Troubleshooting the Electronic Section

Use a multi-meter with both continuity and resistance to troubleshoot the transducer's electronic section. Follow the sequence below:

1. Connect the test leads to the black and white leads on the transducer and check for continuity.
2. Check the initial resistance, then turn the **SPAN** potentiometer either clockwise (CW) or counter clockwise (CCW). The resistance will change and should be in the range of 150–250 ohms.

NOTE: If you have continuity and the resistance changes when you turn the **SPAN** potentiometer, the electronic section of the transducer is in good working order.

Basic Calibration

ZERO Adjustment

The **ZERO** adjustment potentiometer is located on the front of the transducer. For mechanical adjustment of the nozzle, adjust the **ZERO** potentiometer settings.

For forward acting transducers:

- turning the settings CW decreases the output pressure on the **ZERO** and **SPAN** adjustments.
- turning the settings CCW increases the output pressure on the **ZERO** and **SPAN** adjustments.

NOTE: If the **ZERO** potentiometer is turned CCW, the nozzle moves closer to the coil/flexure assembly via a worm and pinion gear assembly. If the nozzle contacts the coil/flexure damage may occur. If the pitch on the zero assembly is okay it does not need any adjustment.

SPAN Adjustment

The **SPAN** adjustment potentiometer is located on the front of the transducer. It is used to set the maximum pressure output. The minimum and maximum pressure outputs must be checked each time an adjustment is made. Follow these steps to calibrate the transducer:

1. Set the input signal to 4 mA.
2. Adjust the **ZERO** potentiometer until a proper setting is attained.
3. Set the input signal to 20 mA.
4. Adjust the **SPAN** potentiometer until a proper setting is attained.
5. Repeat steps 1–4 until the transducer is calibrated.

Field Troubleshooting

1. Verify that the supply air pressure is higher than the maximum output pressure and the supply air is free to flow to the transducer.
2. Cycle the transducer from 4–20 mA several times and observe the pressure output.
3. Apply 4 mA to the transducer and disconnect one or both of the leads. After reconnecting the leads, make sure that there is a slight metallic sound. This sound is caused when the coil jumps in the magnet, and it indicates that the transducer has continuity.
4. Examine the **SPAN** potentiometer. If it does not show signs of damage, then the electronic portion of the transducer is in good working condition.
5. Apply 4 mA to the transducer and turn the **ZERO** potentiometer either CW or CCW until the output pressure is 2 psi. The total deflection of the coil from 4–20 mA is about .002”.

   NOTE: If the **ZERO** potentiometer is turned CW (causing the nozzle to move away from the flexure) to a point where the nozzle bottoms out (approximately 1.00” away from the coil/flexure), it will take 30–50 turns in the CCW direction before the pressure starts to climb.

Parts

To order parts, contact the Nordson Customer Service Center or your local Nordson representative. Use the following parts lists to describe and locate parts correctly. See Figure 5.

Item	Part	Description	Quantity	Note
—	772033	Service kit, transducer, current-to-pressure	—	
1	326947	• Mounting clip, 35 mm DIN rail	2	
2	101695	• Transducer, current-to-pressure, 4–20 mA, 3–90 psi	1	A
3	332747	• Screw, hex-head, slotted, w/lock washer, M4 x 8 mm	2	
4	334875	• Elbow, male, $^{5}/_{16}$ in. tube x $^{1}/_{4}$ NPT	2	
5	900739	• Bushing, strain relief, $^{1}/_{2}$ NPT	1	B
6	155197	• Cable, 2-conductor, shielded, 30 ft	1	B

NOTE A: This transducer includes a preassembled mounting bracket.
B: The cable and strain relief bushing are preassembled on the transducer.

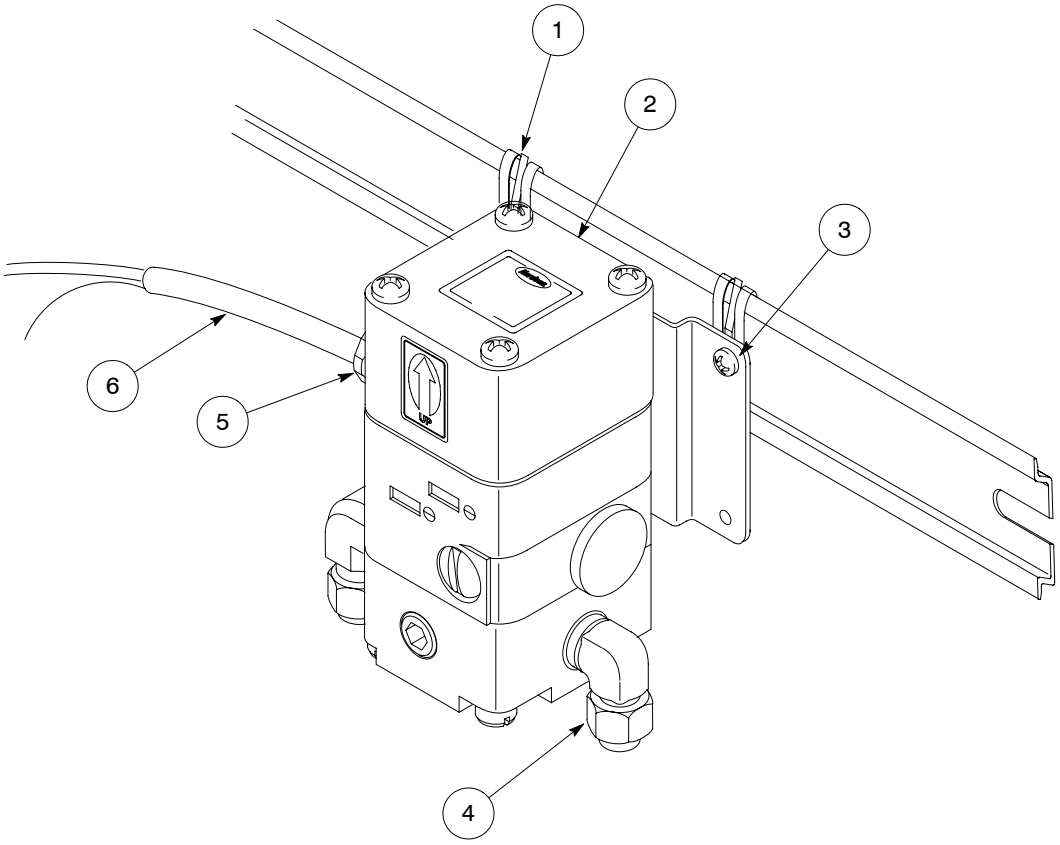


Figure 5 Transducer service kit parts

Issued 08/10