

Pressure Transducer and Amplifier Assembly

Description

The pressure transducer and amplifier assembly measures the internal hydraulic pressure in a spray gun and converts it to an electrical signal. The electrical output signal is directly proportional to the hydraulic pressure measured by the pressure transducer.

Two pressure transducer and amplifier assemblies are available: standard and solvent-based.

Standard Pressure Transducer and Amplifier Assembly

Figure 1 shows a standard pressure transducer and amplifier assembly. The assembly is a calibrated, matched set.



Figure 1 Standard Pressure Transducer and Amplifier Assembly

1. Amplifier

3. O-ring

4. Pressure transducer and cable assembly

2. Cordset

Solvent-Based Pressure Transducer and Amplifier Assembly

See Figure 2. This figure shows a pressure transducer assembly that is used with solvent-based materials. The assembly is a calibrated, matched set consisting of the pressure transducer, amplifier, and intrinsic safety barriers (2, 3).

The solvent-based assembly provides additional protection in hazardous environment applications with intrinsically safe devices. If a short occurs, the intrinsic safety barriers open the circuit to prevent arcing that could cause an explosion.



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Figure 2 Solvent-Based Pressure Transducer and Amplifier Assembly

1. Amplifier

- 4. Fuses
- 2. Intrinsic safety barrier (signal)

- 5. Terminal block
- 3. Intrinsic safety barrier (power)

- 6. O-ring
 - 7. Pressure transducer and cable assembly

Installation



WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Amplifier Mounting Dimensions



Figure 3 Amplifier Mounting Dimensions

Gun Connections

Standard Assembly



WARNING: To prevent injury to personnel and damage to equipment, disconnect and lockout power to the system. Relieve fluid and system pressure.

CAUTION: When installing, removing, or tightening the pressure transducer and cable assembly, always rotate the pressure transducer and cable assembly together to avoid damage to internal wires.

Standard Assembly (contd)

See Figure 4.

- 1. Make sure the new pressure transducer and cable (3) has an O-ring (4).
- 2. Remove the pressure transducer plug (5) from the spray gun (6).
- 3. Thread the pressure transducer into the gun transducer port. Tighten the transducer to 5.65 N•m (50 in.-lb). Do not overtighten.
- 4. Connect the pressure transducer and cable to the amplifier (2).
- 5. Connect the cordset (1) to the amplifier.



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Figure 4 Gun Connections—Standard Pressure Transducer and Amplifier Assembly

4. O-ring

Cordset
 Amplifier

- 3. Pressure transducer and cable
- 5. Pressure transducer plug
 6. MEG II gun

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Solvent-Based Assembly

- 1. See Figure 5. Make sure the new pressure transducer and cable (4) has an O-ring (5).
- 2. Remove the pressure transducer plug (6) from the spray gun (7).
- 3. Thread the pressure transducer into the gun transducer port. Tighten the transducer to 5.65 N•m (50 in.-lb). Do not overtighten.
- 4. Connect the pressure transducer and cable to the amplifier box (3).
- 5. Route the customer-supplied power cable through the strain relief (2).
- 6. Connect one end of the ground wire (1) included with the assembly to an earth ground.
- 7. See Figure 2. Connect the other end of the ground wire to the terminal block (5).



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Figure 5 Gun Connections—Solvent-Based Gun Pressure Transducer and Amplifier Assembly

1. Ground wire

4. Pressure transducer and cable

- 2. Strain relief
- 3. Amplifier box

5. O-ring

- 6. Pressure transducer plug
- 7. MEG II gun

Spray Monitor Connections

See Figure 6. Connect the cordset wires to these inputs on the spray monitor or CanWorks junction box:

Pressure Transducer Wire Color	Spray Monitor Terminal	
White	PRESS +	
Black	PRESS -	
Red	EXC +	
Green	EXC -	
Silver (shield)	PRESS \pm h	



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Figure 6 Spray Monitor Connections

Troubleshooting



WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

	Problem	Possible Cause	Corrective Action	
1.	No power to spray gun	Blown fuse	See Figure 7. Use an ohmmeter to measure the resistance value from terminals 2-4 and 1-3. If there is no resistance, the fuse is blown. Refer to <i>Fuse Replacement</i> on page 11 for more information about changing a fuse. See Figure 8. Disconnect the pressure transducer. Use an ohmmeter to verify the following resistances:	
		Faulty pressure transducer		
			Pins A and C: 320-360 ohms	
			Pins E and F: 320-360 ohms	
			 Any pin to the connector: open circuit 	
2.	No output	Faulty amplifier	Replace the amplifier.	

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Figure 7 Checking Fuses



Figure 8 Pressure Transducer Cable End

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Repair



WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.



WARNING: To prevent injury to personnel and damage to equipment, disconnect and lockout power to the system. Relieve fluid and system pressure.

Pressure Transducer/Amplifier Replacement



CAUTION: When installing, removing, or tightening the pressure transducer and cable assembly, always rotate the pressure transducer and cable assembly together to avoid damage to internal wires.

Standard Assembly

NOTE: The pressure transducer and amplifier are calibrated as a matched set and must be changed together.

- 1. Disconnect power at the spray monitor or CanWorks junction box.
- 2. See Figure 4. Disconnect the cordset (1) and old pressure transducer and cable (3) from the old amplifier (2).
- 3. Remove the old pressure transducer and cable assembly from the spray gun (6).
- 4. Thread the pressure transducer into the gun transducer port. Tighten the transducer to 5.65 N•m (50 in.-lb). Do not overtighten.
- 5. Connect the cordset and new pressure transducer cable to the new amplifier.

Solvent-Based Assembly

NOTE: The pressure transducer and amplifier are calibrated as a matched set and must be changed together.

- 1. Disconnect power at the spray monitor or CanWorks junction box.
- 2. See Figure 5. Disconnect the old pressure transducer and cable (4) from the amplifier box (3).
- 3. Remove the old pressure transducer and cable from the spray gun (7).
- 4. Thread the new pressure transducer into the gun transducer port. Tighten the transducer to 5.65 N•m (50 in.-lb). Do not overtighten.
- 5. Connect the new pressure transducer and cable to the amplifier box.
- 6. See Figure 9. Disconnect the cables (1, 5) on either side of the amplifier.

NOTE: Do not remove the ground screws (4).

- 7. Unscrew the four pan-head screws (3), and remove the cover (2).
- 8. Unscrew the two mounting screws from the base of the panel.
- 9. Replace the old amplifier.
- 10. Calibrate the new amplifier. Refer to *Calibrating the Amplifier* on page 10.



Figure 9 Amplifier Replacement and Calibration

- 1. Cable
- 2. Cover

3. Pan-head screws (4)

- 4. Ground screw
 - 5. Cable
 - 6. Gain potentiometer
- 7. Fine zero potentiometer

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8. Coarse zero potentiometer

Calibrating the Amplifier



WARNING: To avoid electrical shorts, do not damage or touch any components with a screwdriver other than the two potentiometers being adjusted.

- 1. Before calibrating the new amplifier, make sure that no pressure is applied to the assembly.
- 2. See Figure 5. If you have not already done so, connect the 10-AWG isolated ground wire (1) to the terminal block (Figure 2 (5)).
- 3. Attach meter leads to the white wire at the terminal block + lead and the black wire at the terminal block lead on the meter.
- 4. See Figure 9. If you have not already done so, remove the cover (2) from the amplifier.
- 5. Turn on the power to the CanWorks module.

NOTE: Do not adjust the gain potentiometer (6).

- 6. Adjust only the coarse zero (8) and fine zero (7) potentiometers to obtain a reading between 0.97-1 Vdc.
- 7. Install the cover on the amplifier.

O-Ring Replacement

CAUTION: When installing, removing, or tightening the pressure transducer and connector assembly, always rotate the pressure transducer and connector assembly together to avoid damage to internal wires.

- 1. See Figure 10. Unscrew the pressure transducer (1) from the spray gun (3).
- 2. Remove and discard the old O-ring (2).



CAUTION: When installing the new O-ring, be careful not to damage the pressure transducer face (diaphragm).

- 3. Roll the new O-ring onto the pressure transducer, then into the groove.
- 4. Thread the pressure transducer into the gun's transducer port. Tighten the transducer to 5.65 N•m (50 in.-lb). Do not overtighten.



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Figure 10 O-Ring Replacement

- 1. Pressure transducer
- 2. O-ring

3. MEG II gun

Fuse Replacement

See Figure 11. Each intrinsic safety barrier contains two fuses. Remove the fuses, check each one, and replace if necessary.



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Figure 11 Fuse Replacement

Parts

Standard Pressure Transducer and Amplifier Assemblies

ltem	Part	Description	Quantity	Note
_	771220	0-600-psi TRANSDUCER WITH AMPLIFIER	1	
	333055	300–1500-psi TRANSDUCER WITH AMPLIFIER	1	
1	945020	 O-RING, hot paint, ³/₁₆-in. tube 	1	
2		CORDSET, transducer with amplifier	1	
3		TRANSDUCER/CONNECTOR assembly	1	А
4		AMPLIFIER	1	A
NOTE A: The transducer and amplifier are calibrated as a matched set and cannot be ordered individually.				





Figure 12 Standard Pressure Transducer and Amplifier Assembly

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Solvent-Based Pressure Transducer and Amplifier Assemblies



WARNING: To prevent hazards, use solvent-based assemblies only with solvent-based coatings.

0-600-psi Solvent-Based Assembly

See Figure 13.

Item	Part	Description	Quantity	Note
—	1007430	0-600-psi TRANSDUCER WITH AMPLIFIER, solvent based	1	
1	771220	 TRANSDUCER WITH AMPLIFIER, 0-600 psi 	1	A
2	945020	 O-RING, hot paint, ³/₁₆-in. tube 	1	
3	1007432	INTRINSIC SAFETY BARRIER, supply, 5 Vdc	1	
4	320795	INTRINSIC SAFETY BARRIER, signal	1	
5	1007953	 FUSE assembly, 160 mA, 5 x 20 mm 	4	
NOTE A: The transducer and amplifier are calibrated as a matched set and cannot be ordered individually.				

300-1500 psi Solvent-Based Assembly

See Figure 13.

ltem	Part	Description	Quantity	Note
—	1007431	300-1500-psi TRANSDUCER WITH AMPLIFIER, solvent based	1	
1	333055	TRANSDUCER WITH AMPLIFIER, 300-1500 psi	1	A
2	945020	 O-RING, hot paint, ³/₁₆-in. tube 	1	
3	1007432	 INTRINSIC SAFETY BARRIER, supply, 5 Vdc 	1	
4	320795	 INTRINSIC SAFETY BARRIER, signal 	1	
5	1007953	 FUSE assembly, 160 mA, 5 x 20 mm 	4	
NOTE A: The transducer and amplifier are calibrated as a matched set and cannot be ordered individually.				

Solvent-Based Pressure Transducer and Amplifier Assemblies (contd)



Figure 13 Solvent-Based Pressure Transducer and Amplifier Assembly

Specifications

	0-600 psi	300-1500 psi
Nonlinearity	+/-1.0% F.S.	+/-1.0% F.S.
Hysteresis	+/-1.0% F.S.	+/-1.0% F.S.
Temperature Compensation of Pressure Transducer	15-71 °C (60-160 °F)	15-71 °C (60-160 °F)
Temperature Effect:		
• Zero	+/-0 .01% F.S./ °F	+/-0.01% F.S./ °F
• Span	+/-0.02% RDG./ °F	+/-0.02% RDG./ °F
Material	17-4 stainless steel	17-4 stainless steel
Amplifier Operating Voltage	18-28 Vdc	11-28 Vdc
Amplifier Operating Temperature	-29-82 °C (-20-180 °F)	-29-82 °C (-20-180 °F)
Output Voltage	1-4 Vdc (2.5 mA max) @ 600 psi with 2.5 Vdc Common Mode Offset	0-5 Vdc (2.5 mA max) @ 1500 psi with 2.5 Vdc Common Mode Offset
Shunt Call	Shorting pins E & F gives approximately 40% full scale output	Shorting pins E & F gives approximately 40% full scale output

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