Installation & Maintenance Instructions

PULSE WIDTH MODULATING PROPORTIONAL CONTROL UNIT

SERIES

8908

Form No.V6961R2

NOTICE: See separate valve and solenoid installation and maintenance instructions for information on: Operation, Positioning, Mounting, Piping, Wiring, Cleaning, Preventive Maintenance, Causes of Improper Operation, Solenoid Replacement, and Disassembly and Reassembly of basic valve.

DESCRIPTION

Series 8908 are IP−65 spade plug connectors to ISO 4400 containing an electronic amplifier to modify and amplify an input control signal (setpoint) to a modulating output voltage to provide stepless control for ASCO Proportional Solenoid Valves as Series 8202.

OPERATION

- Input control signals 0−10V DC (U_c), 0−20 mA (I_c) or 4−20 mA (I_{cx}) can be selected by dipswitches.
- Flow rate at required input control signal is adjustable by means of two potentiometers.
- Automatic switch−off function, at less than 2% of the maximum control signal.
- A ramp control function (up and down) can be activated by a dipswitch and is adjustable by means of a potentiometer.
- The switching frequency is adjustable by means of a potentiometer.

⚠ WARNING: To prevent the possibility of personal injury or property damage, be sure solenoid valve and pulse width modulating proportional control unit can be installed and adjusted without affecting other equipment.

INSTALLATION

Check nameplate for correct catalog number and voltage.

1. Install valve and apply line pressure.
2. Remove center screw and cover with gasket from plug connector.

⚠ CAUTION: Improper wiring of the control and supply circuits will result in permanent damage to control unit. See wiring schematic.

3. Position connector gasket between solenoid and connector and install plug connector.

Set up and Wiring

Supply Voltage

4. Apply 24V DC − ± 10% supply voltage to pin 1 (+) and 2 (0), common.

Control Signal Selection

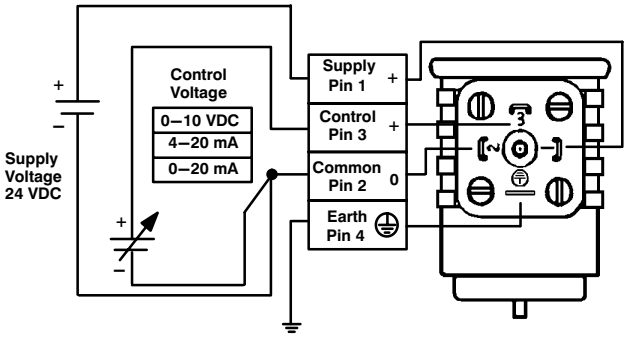
5. Select required input control signal (U_c/I_c/I_{cx}) by adjusting dipswitches S1, S3 and S4. The factory default is 0−10V DC.

S1	S2	S3	S4	Control Signal
off	Ramp see step 10	on	off	0−10V DC U_c (default)
on	Ramp see step 10	off	on	4−20 mA I_c
on	Ramp see step 10	on	off	0−20 mA I_{cx}

Control Signal

6. Apply control signal (Uc/lc/lcx) to pin 3 (+).

NOTE: Pin #2 is common to both control signal and supply voltage.



Wiring Schematic

⚠ CAUTION: Common supply and control wires in DIN connector. Connect common wires together as close to electronic control unit as possible. Failure to do so will result in ground loop problems, which will create instability in the electronic control unit.

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Adjustment

Minimum Flow

7. Increase control signal to 2% of minimum value and adjust potentiometer P1 until the required minimum flow is reached.

Maximum Flow

8. Increase control signal to maximum input value and adjust potentiometer P3 until the required maximum flow is reached.

Notes:

a. Adjusting the maximum flow will slightly influence the minimum flow. For accurate adjustment, repeat step 7 and 8 until the required values are reached.

b. Minimum and maximum flow at the chosen settings are dependent on the pressure differential (ΔP) over the valve.

   If valve has to operate at several ΔP, adjust minimum flow (step 7) at the highest ΔP and the maximum flow (step 8) at the lowest ΔP.

Switch – Off

9. To ensure that the valve will close at minimum control signal, the solenoid current will switch–off at less than 2% of the maximum selected input control signal (non adjustable).

10. To set the flow for ramp up and down input control signal changes, a ramp control function can be activated by dipswitch S2. The factory default is ***no ramp***.

S1	S2	S3	S4	Ramp Function
	off			yes
	on			no (default)

The ramp time can be adjusted between 0,1 and 3 seconds by means of potentiometer P2.

Switch Frequency

11. The electronic amplifier is equipped with a device which switches the voltage rapidly ***on*** and ***off***. The switching frequency (number of ***on/off*** times per second) will influence the flow regulation characteristics like hysteresis, sensitivity etc.

    In addition it influences core vibration. The frequency is factory set to 300 Hz. For air/gas service use 300Hz. For fluid/water service use 200 Hz.

    Depending on operation requirements, the frequency can be adjusted between 40 and 700 Hz by means of potentiometer P4.

12. Under certain installation circumstances, undesirable vibration might occur. In than case, increase frequency and/or ramp time.

Close Unit

13. Position cover with gasket and tighten the central screw to 5 in–lbs [0,6 Nm] to ensure proper gasket compression.

Electrical Specifications				Pin
U_n	24 VDC ⎓ ± 10% Max. ripple 10%		Supply Voltage (Nom.)	2 (com) 1 (+)
U_c	0 – 10 VDC ⎓		Control Voltage (IN)	2 (com) 3 (+)
U_{co}	≤ 0,2 VDC ⎓ (U_c 0–10 VDC)		Switch–Off Voltage (IN)	
I_c	4 – 20 mA		Control Current (IN)	
I_{co}	≤ 4, 4 mA (I_c 4–20 mA)		Switch – Off Current (IN)	
I_{cx}	0 – 20 mA		Control Current (IN)	
I_{cxo}	≤ 0,4 mA (I_{cx} 0–20 mA)		Switch – Off Current (IN)	
I_o		U_{pw} 15–50% E.D.	Off–Set Current (OUT)	
I_{fl}	≤ 1100 mA	U_{pw} 30–100% E.D.	Full Load Current (OUT)	
t_r	0 sec.		Ramp Time	
	0,1 – 3 sec.			
f	40 – 700 Hz		Switching Frequency	
Um	0–10 VDC ⎓ (10 mV=1 mA)		Monitor Signal	
Pn	0,8 Watt		Watt Rating Electronic	

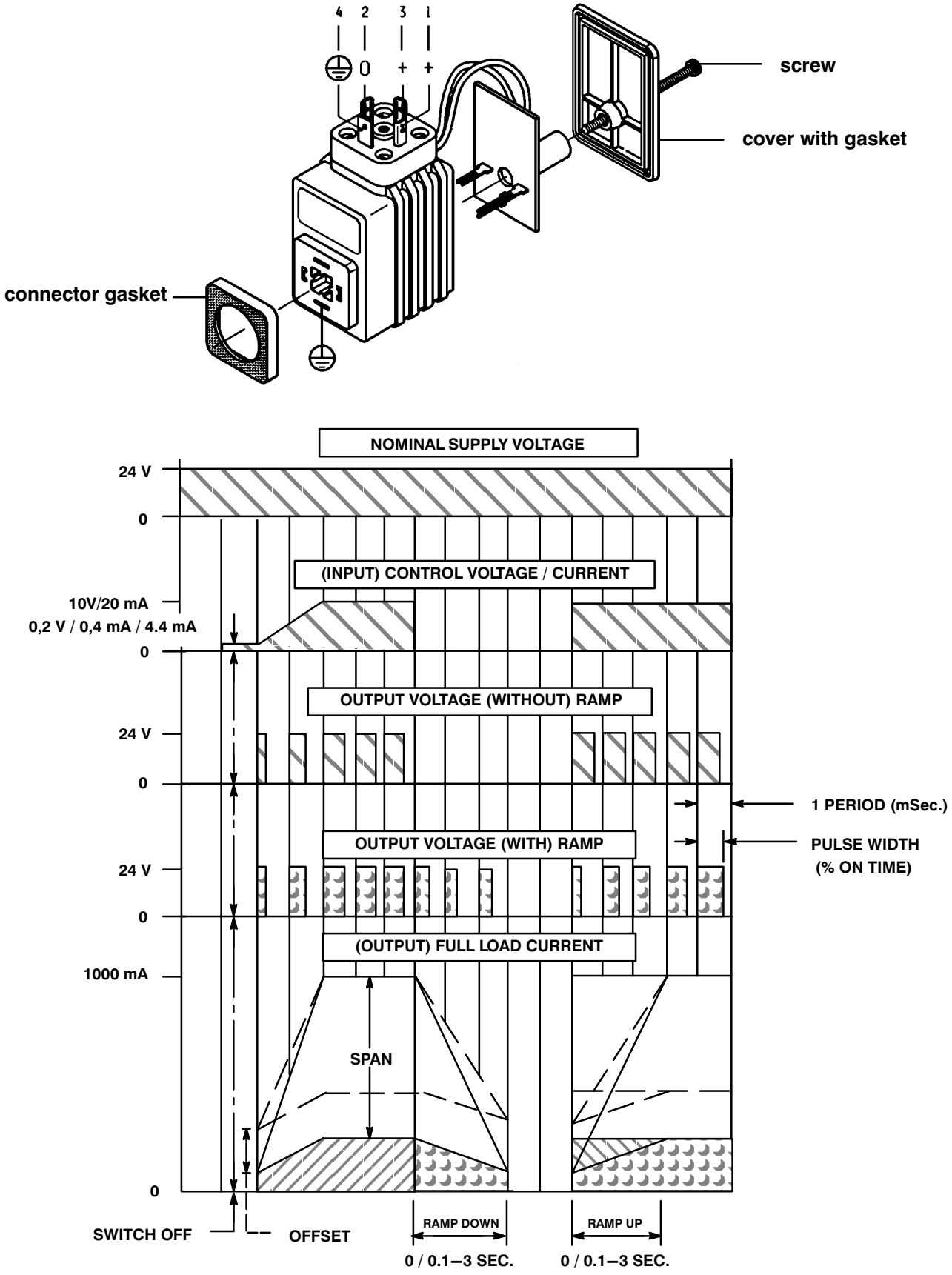

Figure 1. Voltage – Current / Time Diagram

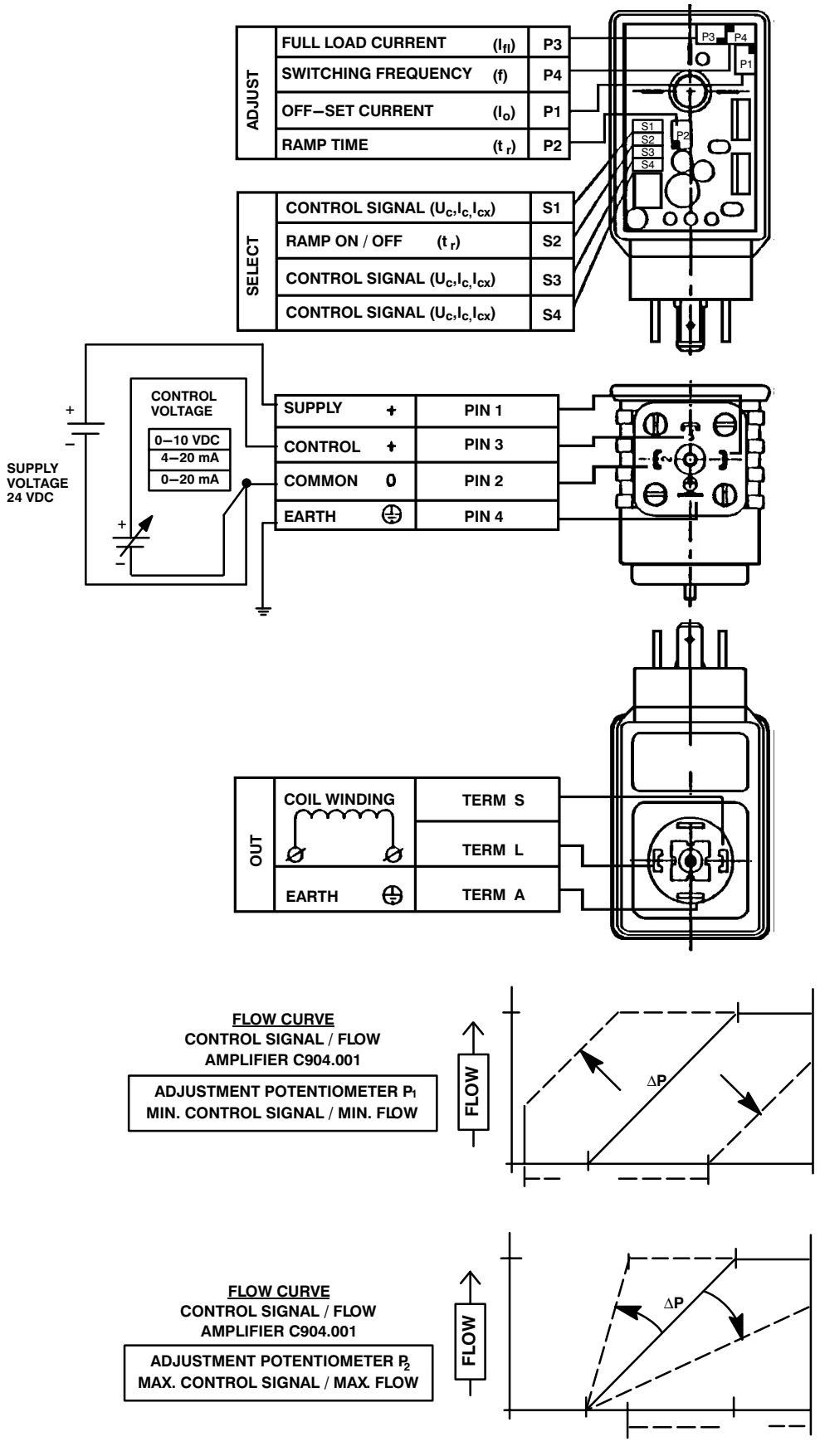

Figure 2. Electrical Connection and Adjustment

ASCO Valves Automatic Switch Co. 50–60 Hanover Road, Florham Park, New Jersey 07932