



# V200 STROKE RATE CONTROLLER

## INSTALLATION & OPERATING TIPS

- CONTROL FUNCTION:** The FMI stroke rate controller, V200 used with Models QV, Q2V, QVG50, and RHV pumps has four switches to control its functions: a) A two position power on-off switch. b) A two position direction switch. c) A Digital Potentiometer for control of percent of flow. A setting of 99.9 yields approximately 100% of maximum flow. d) A two position control method switch. In the up or manual position it allows for direct control of percent of flow by setting the Digital Potentiometer. In the down or 4-20 mA position, control is switched to the 4-20 mA terminal strip inputs and the Digital Potentiometer is disabled. Stroke rate is then controlled via a customer supplied DC current source with an input impedance of approximately 500 Ohms.
- FUSING:** The motor and its control are protected against overloads by a current limit circuit and additional protection is provided by a .75 amp fuse on input line (hot side). Replacement fuses must be .75 amp Slo Blow.
- TRIM POT ADJUSTMENTS:** The V200 trim pots are factory set and should not be adjusted. 0 = minimum and 1800 = maximum strokes per minute. If other than standard settings are desired please note Trim Pot Adjustment Methods.
- TRIM POT ADJUSTMENT METHODS:** Before adjusting control unit, carefully check that all connections are correct. Upon removal of V200 cover,

use a non-metallic screwdriver to avoid shorting of the control circuit. After adjustment and before replacing the cover, be sure no foreign materials are on the circuit board.

**A) Minimum Speed Adjustment-** The MIN. SPD adjustment sets the speed that the motor will attain when the Digital Potentiometer is set to 0% of flow which is the factory preset. To adjust minimum speed, set the Digital Potentiometer to 0% flow (00.0) and advance the MIN. SPD adjustment until the desired speed is achieved. The range is 0% to approximately 50% of the control rated output voltage (90 VDC). This adjustment should be made before setting the MAX. SPD adjustment. There is some interaction between settings.

**B) Maximum Speed Adjustment -** This sets the speed that the motor will attain when the Digital Potentiometer is set to 99.9% flow (99.9). Maximum speed is set at the factory to 1800 spm. The setting of the MAX. SPD adjustment has no effect when operating in the SIGNAL mode. To set a different maximum speed, turn the Digital Potentiometer to 99.9% of flow and adjust the MAX. SPD adjustment. The maximum speed may be set as low as 50% of the control rated output voltage (90 VDC).

**C) Input Signal Scaling-** Two adjustments may be made to calibrate the V200 to follow its

signal source. First, apply the 20 mA signal into the control and adjust the SIG ADJ. trimpot to bring the motor to 1800 spm. Then apply a 4 mA signal to the control and adjust the LINEARITY trim pot to bring the motor to the speed desired at that low signal. In SIGNAL mode, verify that the input signal is at 4 mA. In MANUAL mode, verify that the Digital Potentiometer is set to 0% of flow (00.0). Slowly increase the signal input, or slowly increase the percent of flow setting. The motor must start slowly and increase its speed in approximate proportion to the increasing speed setting. If the motor rotates opposite to the intended direction, shut down the control and reverse the connections made to terminals A1 and A2, located on the edge of the circuit board nearest the digital potentiometer. Restore power to the control.

**D) IR Comp Adjustment-** This controls the degree to which the V200 compensates for changes in motor load to maintain essentially constant motor speed over the load range. It is factory set with the rated horsepower motor.

**5. POWER REQUIREMENTS:** The V200 stroke rate controller requires a 115 VAC, 50/60 Hz power source in order to function. For usage at 230 VAC @ 50 Hz FMI recommends the use of a step-down transformer rated at 150 VA minimum.

### MANUAL CONTROL RESPONSE CURVES

### INPUT SIGNAL RESPONSE CURVES

