Electric Stroke Control

Purpose

The Neptune Electric Stroke Control allows the capacity of any Neptune Series 500 or Series 600 “dia-PUMP” to be automatically controlled in response to a standard 4-20 mA process signal. Also accepts 0-5 VDC/0-10 VDC signal or digital pulse train inputs. One-piece controller-positioner mounts directly to the pump. No machining or any special drillings or tappings needed to retrofit pump. Ideal for water/wastewater, power and process industry applications...anywhere that pump flow must be automatically proportioned or varied.

Features/Benefits

• Stroke position indicator on controller. (Also on optional remote control module.) Permits fast, easy visual check of pump stroke length.

• Remote control unit (optional). Allows manual override and monitoring from remote location.

• Switch reversible. Allows direct or indirect response to signal.

• Separate signal and power entrance connections to terminal blocks.

• Adjustable ratio. Great control flexibility.

• Signal interruption “memory.” If process signal is lost, unit can remain in its last position or move to a preset position.

• Adjustable travel time: 15 seconds minimum

• Input signal optically isolated from the line voltage. Eliminates inexact positioning which could be caused by extraneous electrical interference.

• Alarm function relay monitors: 1) movement to max/min preset limits; 2) movement to adjustable upper/lower limits. Gives early warning to malfunctions or process upsets, allows for quick corrective actions.

Specifications

• NEMA 4 or Explosion-Proof (Class I, Division 1, Groups C & D; dust & ignition-proof rated Class II, Division 1, Groups E, F & G)

• Power supply: single phase 120/240 VAC 60 Hz or 110/220 VAC 50 Hz

• Operating temperature: 0°F to 150°F*

• Adjustable ratio: 2:1 or 1:2

• Input signal: 4-20 mA or 0-5 VDC or 0-10 VDC switch selectable; load 200 ohms. Also accepts digital pulse input direct from PLC (dry contacts).

• Output: isolated 4-20 mA; loop-powered, up to 600 ohms at 24V

• Precise pump stroke positioning accurate to ±0.5%

*Limited by temperature at which chemical thickens or freezes.
**Electric Stroke Control for Series 500/600 Pumps**

Controller-Positioner fits all Series 500 pumps:
- **EC5004** (NEMA 4 Enclosure)
- **EC5000** (Explosion-Proof)

*NOTE: Can be mounted on only one head of a duplex pump.

Controller-Positioner fits all Series 600 pumps:
- **EC6004** (NEMA 4 enclosure)
- **EC6000** (Explosion-Proof)

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**ER1000 Remote Control Station**

The optional ER1000 Remote Control Station allows manual override and monitoring of pump stroke from a remote location. The ER1000 includes an ON/OFF switch, auto/manual switch, digital stroke length indicator and stroke adjustment thumbwheel on the front panel. NEMA-1 enclosure, Power 115 VAC. For use with any controller-positioner above.

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**Reversing Feature**

Allows selection between direct or indirect response to increasing or decreasing signal.

**EXAMPLE:** Normal operation is "Forward" or "Direct" where increasing signal results in increased flow. A simple instrument may have a 4-20 mA linear signal output corresponding to a pH of 1 to 14. Using the reversing feature allows greater pump flow as pH (mA signal) decreases.

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**Ratio Control**

Allows precise adjustment of pump response.

**EXAMPLE:** A pump flow of 0 to 15 gph is required in response to a 4-20 mA signal. The Neptune pump available is rated at 18 gph. Calculating that 15 gph is 83% of the maximum pump flow shows that the pump should be positioned at 83% of stroke length when a 20 mA signal is received. To calibrate, provide a 20 mA signal, thus causing the pump to move to 100% stroke length. Turn the ratio adjustment until the pump stroke moves to 83%. The pump will now provide 0 to 15 gph in response to a 4-20 mA signal.

Ratio control allows the full 4-20 mA signal range to be used over one half of the available pump stroke length, either 0 to 50% or 50 to 100%. Conversely, half of the 4-20 mA signal (4-12 or 12-20 mA) can drive the pump over the full stroke length.

**Ratio and reversing features may be used in combination for nearly limitless control flexibility.**