**SPECIFICATIONS**

**Electrical Input:**
- Solenoid mode: \( \pm \text{Vin} \) (Vin = 10 to 28 VDC)
- Proportional mode: -10 to +10 VDC (0 VDC is null)

**Input Impedance:** \( > 50 \text{ k}\Omega \)

**Electrical Output:**
- Spool position, \( \pm 1.5 \text{ VDC equals } \pm 100\% \) spool stroke

**Adjustments:**
- Flow* (max): 0 to 100%
- Slew time from null to max.
- Flow* (accel.): 0.09 to 5 sec
- Slew time from max. flow to null
- Flow* (decel.): 0.06 to 5 sec

* Ports A & B are independently adjustable
  *(CW increases flow and rates)*

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**APPLICATIONS**

**Open Loop Velocity Control**

This application illustrates a Series 641-100 valve, a cylinder, two limit switches and controls used for programmed point-to-point velocity control with adjustable acceleration/deceleration.

The control is designed to extend the cylinder from LS2 to LS1 at a programmed velocity, decelerate after reaching LS1, accelerate to a velocity which is maintained from LS1 to LS2, decelerate, accelerate to a programmed velocity and continue this cycle.

Equal velocities are desired in both extend and retract directions. Since the load is equivalent in both directions and a single ended cylinder is used, the extend and retract velocities would be different for equal displacement of the valve spool. By adjusting the max flow of Port A, the extend and retract velocities can be matched.

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**Position Control with Creep**

This application, illustrated below, shows how a Series 641-100 valve, limit switches and a PC are used to position a cylinder.

CR5 is used for enabling (start) and disabling (stop) CR1, CR2, CR3, and CR4. Once enabled, the operator can press the extend, extend slow, retract or retract slow push-buttons. When extending, the cylinder accelerates to a constant velocity and remains at that velocity until it reaches LS3. At LS3, CR2 is switched out and CR1 is switched in. This reduces the command to the 641-100 proportional valve which decelerates the cylinder at an adjustable rate to the creep speed. The cylinder continues to creep until LS1 is contacted at which time CR1 is opened. Without a command signal, the cylinder will decelerate to a stop. It is important to note that deceleration from max velocity to creep and from creep to stop is the same.

Operation in the retract direction is similar to that in the extend direction except in nomenclature.

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**ADJUSTABLE PARAMETERS**

**Port A Adjustments**
1. Acceleration
2. Max. Flow
3. Deceleration

**Port B Adjustments**
4. Acceleration
5. Max. Flow
6. Deceleration

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**641-100 Series Proportional Valves**

**Rated Flow**

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Flow (150 psi, 4-way)</th>
<th>Rated Flow (1,000 psi, 4-way)</th>
<th>Spool Configuration (4-way)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>gpm</td>
<td>lpm</td>
<td>gpm</td>
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<tr>
<td>641-100C</td>
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<td>16</td>
<td>10.8</td>
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<td>17</td>
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<tr>
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<td>13</td>
<td>50</td>
<td>33.6</td>
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<tr>
<td>641-103C</td>
<td>13</td>
<td>50</td>
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