**Mechanical Characteristics**

**Standard Materials of Construction**
- Body–Zinc
- Seals–NBR
- Sleeve–Stainless Steel (304)
- Plunger–Stainless Steel (430FR)
- Shading Ring–Copper (AC & DC only)
- Stop–Stainless Steel (430FR)
- Springs–Stainless Steel (18-8)
- Orifice–Stainless Steel (303)

**Compatible Fluids**
- Lubricated Air, Non-Lubricated Air, Inert Gases, Hydraulic Fluids, and additional fluids compatible with materials of construction.

**Electrical Characteristics**

**Voltages**
- DC–12, 24, 120
- AC–24/60, 120/60, 240/60 (other voltages available upon request)

**Power Consumption**
- 10 watts per coil (2 coils)

**Agency Approvals**
- UL and CSA approvals are generally available on valves with applicable coil/enclosure combinations. For details, please consult Skinner Valve.

**Miscellaneous**

**Operating Speed**
- Up to 600 cycles per minute.

**Response Time**
- AC–Approximately 4-8 milliseconds to open or close.
- DC–Approximately 10-15 milliseconds to open, 6-12 milliseconds to close.

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**V933 Four-Way Normally Closed—Normally Closed Valves**

When de-energized, both inlet ports are closed by the two plungers preventing flow from the common inlet through both of the valves. The cylinder port in each valve is open to the common exhaust, permitting flow from the cylinders to the exhaust. When the coils are energized, both valve plungers rise, opening the inlet orifices, and at the same time closing the orifices in the sleeves. This stops flow from the cylinder ports to the exhaust, and permits flow from the inlet to the cylinder ports.

**Typical Cylinder Operation with V933 Valves.**

Both coils de-energized—The inlet pressure is closed to both sides of a double-acting cylinder. Side #1 and side #2 of the cylinder are open to exhaust through cylinder ports #C1 and #C2. The piston can be shifted manually.

Coil of valve #1 energized; coil of valve #2 de-energized—The inlet pressure is open to side #1 of the double-acting cylinder through cylinder port #C1. Side #2 of the cylinder is closed to exhaust and open to inlet pressure through cylinder port #C2. The piston moves to the left.

Coil of valve #1 de-energized; coil of valve #2 energized—The inlet pressure is closed off to side #1 of the double-acting cylinder; the exhaust is open through cylinder port #C1. Side #2 of the cylinder is closed to the exhaust and open to inlet pressure through cylinder port #C2. The piston moves to the right.
V935 Four-Way Normally Closed-Normally Open Valves

The plungers of the two valves are at opposite positions in both the energized and de-energized conditions - one normally open while the other is normally closed. When de-energized, fluid flows from the inlet of the valve through the inlet port of the normally open valve, through the sleeve, and out the cylinder port of the valve. At the same time, the normally closed valve inlet orifice is closed, but the orifice in the sleeve is opened, permitting flow from its cylinder port to the common exhaust. Therefore, fluid flows from the inlet of the valve to the cylinder port of the normally open valve and from the cylinder port of the normally closed valve to the exhaust. When energized, the two valves reverse in position.

V955 Four-Way Normally Open-Normally Open Valves

Both plungers are in the same position when the coils are de-energized. In this condition, fluid flows through the common inlet of the body, up through the sleeves of both valves, and out the cylinder ports of the valves. Both orifices in the sleeve stops are closed to the exhaust ports by the plunger. In the energized position, both valve plungers operate together to close the inlet ports, stopping flow into the valve. At the same time, the orifices in the sleeves are opened, permitting flow from the cylinder ports to the common exhaust port in the body.
**Four-Way Pilot Operated Valves**

Coil of valve #1 de-energized; coil of valve #2 energized—The inlet pressure is open to side #1 of the cylinder through cylinder port #C1 and the exhaust is closed off by the plunger insert. Side #2 of the cylinder is open to exhaust through the cylinder port #C2 and the plunger insert closes off the inlet pressure. The piston moves to the right.

### V933 Pilot Operated Zinc Valves—Normally Closed-Normally Closed Neutral Position, NBR Seals

<table>
<thead>
<tr>
<th>NPT Pipe Size</th>
<th>Orifice Diameters</th>
<th>Valve #1 (NC)</th>
<th>Valve #2 (NC)</th>
<th>Operating Class B</th>
<th>Maximum Operating Pressure Diff. (PSI)</th>
<th>Class B</th>
<th>Leaded Coil</th>
<th>Const. Ref.</th>
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<tr>
<td></td>
<td></td>
<td>Inlet Port Cv Factor</td>
<td>Exhaust Port Cv Factor</td>
<td>Inlet Port Cv Factor</td>
<td>Exhaust Port Cv Factor</td>
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<td>1/16 0.095</td>
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<td>3/32 0.14</td>
<td>75 (90)</td>
<td>V933LB2075</td>
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</tr>
</tbody>
</table>

* Figures in parentheses indicate higher than standard pressure ratings available with slight modifications.

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### References

- Courtesy of Steven Engineering, Inc.
- 230 Ryan Way, South San Francisco, CA 94080-6370
- Main Office: (650) 588-9200
- Outside Local Area: (800) 258-9200
- www.stevenengineering.com
### V935 Pilot Operated Zinc Valves—Normally Closed—Normally Open

<table>
<thead>
<tr>
<th>NPT Pipe Size</th>
<th>Valve #1 (NC)</th>
<th>Valve #2 (NO)</th>
<th>Operating Pressure</th>
<th>Adjustable Flow At Both Inlets</th>
<th>Adjustable Flow At Both Exhausts &amp; Inlets</th>
<th>Full Adjustable Flow At Both Inlets &amp; Exhausts</th>
<th>Const. Ref.</th>
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<td>3/64 0.052</td>
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* Figures in parentheses indicate higher than standard pressure ratings available with slight modifications.

### V955 Pilot Operated Zinc Valves—Normally Open—Normally Open Neutral Position—With Adjustable Flow Option, NBR Seals

<table>
<thead>
<tr>
<th>NPT Pipe Size</th>
<th>Valve #1 (NO)</th>
<th>Valve #2 (NO)</th>
<th>Operating Pressure</th>
<th>Adjustable Flow At Both Inlets</th>
<th>Adjustable Flow At Both Exhausts &amp; Inlets</th>
<th>Full Adjustable Flow At Both Inlets &amp; Exhausts</th>
<th>Const. Ref.</th>
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<td>59</td>
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<table>
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<th>Optional Features</th>
<th>Option Code</th>
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</table>

For ordering instructions see Ordering Information section on page 10.