# Priority Flow Control Valves

## BYPASS / RESTRICTIVE, FIXED ORIFICE

### Cartridge Dimensions

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Typical Cartridge Model Code</th>
<th>Cavity</th>
<th>a</th>
<th>b</th>
<th>X</th>
<th>L</th>
<th>K</th>
<th>Installation Torque (lb. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1-3 GPM</td>
<td>FRBA – LAN</td>
<td>T - 163A</td>
<td>1.22</td>
<td>3/4&quot;</td>
<td>1.25</td>
<td>2.55</td>
<td>2.77</td>
<td>25/30</td>
</tr>
<tr>
<td>.1-6.0 GPM</td>
<td>FRCA – LAN</td>
<td>T - 11A</td>
<td>1.38</td>
<td>7/8&quot;</td>
<td>1.19</td>
<td>2.50</td>
<td>2.75</td>
<td>30/35</td>
</tr>
<tr>
<td>.1-12.0 GPM</td>
<td>FRDA – LAN</td>
<td>T - 2A</td>
<td>1.38</td>
<td>1 1/8&quot;</td>
<td>1.38</td>
<td>2.81</td>
<td>3.06</td>
<td>45/50</td>
</tr>
<tr>
<td>.2-25 GPM</td>
<td>FREA – LAN</td>
<td>T - 17A</td>
<td>1.81</td>
<td>1 1/4&quot;</td>
<td>1.81</td>
<td>3.28</td>
<td>3.53</td>
<td>150/160</td>
</tr>
<tr>
<td>.2-50 GPM</td>
<td>FRFA – LAN</td>
<td>T - 19A</td>
<td>2.50</td>
<td>1 5/8&quot;</td>
<td>2.75</td>
<td>3.94</td>
<td>4.19</td>
<td>350/375</td>
</tr>
</tbody>
</table>

### Nominal Flow Ranges

- Maximum Inlet Flow: FRBA: 7.5 GPM
- FRCA: 15 GPM
- FRDA: 30 GPM
- FREA: 90 GPM
- FREA: 120 GPM

### Option Ordering Information

**FR A – A**

- **Nominal Capacity**
  - B: .1-3 GPM
  - C: .1-6.0 GPM
  - D: .1-12.0 GPM
  - E: .2-25 GPM
  - F: .2-50 GPM

- **Control**
  - X: Non-adjustable
  - L: Tuning Adjustment
  - K: Handknob for L control

- **Adjustment Range**
  - ±25% of customer specified flow

- **Seal**
  - A: Fixed Orifice
  - N: Buna-N
  - V: Viton

- **Customer must specify flow**

- **Priority Flow ranges:**
  - FRBA: .1-3 GPM
  - FRCA: .1-6.0 GPM
  - FRDA: .1-12.0 GPM
  - FREA: .2-25 GPM
  - FRFA: .2-50 GPM

**See page 244 for information on Control Options**
Applications

These combination priority and bypass flow control valves may be used to establish the flow to the priority or controlled flow circuit, and either bypass the remaining flow to tank at the load induced pressure of the system or use it in a secondary system.

Application Notes

- Valve will not bypass unless priority flow is satisfied.
- Bypass pressure may exceed priority pressure.
- Blocking the controlled flow path will also block the bypass flow path.
- Note factory set point conditions.

Design Concepts and Features

- Customer specified, fixed orifice for priority flow. (Flow setting accuracy ± 10%).
- Tunable control option to provide ± 25% variation of the customer specified flow at factory preset conditions.

Note: Tunable adjustment range follows performance curve profile.

Performance Curves

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Flow Rate (GPM)</th>
<th>Priority Pressure</th>
<th>Bypass Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRBA-LAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRCA-LAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRDA-LAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREA-LAN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRFA-LAN</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

General Application Requirements

- Operating Temperature Range: Buna-N seals -50°F to 200°F, Viton seals 0°F to 250°F.
- Viscosity Range: 60-3000 SUS.
- Fluid Contamination Level: ISO 4406 18/15 or better; Recommend $\beta_1>75$ to achieve ISO 18/15 or better in most systems.