RV10-20 Relief, Direct-Acting Poppet

DESCRIPTION
A screw-in, cartridge-style, direct-acting, poppet-type, hydraulic relief valve intended for use as a pressure limiting device for common hydraulic circuit protection.

OPERATION
The RV10-20 blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the poppet from its seat. The cartridge offers fast response to load changes in typical hydraulic circuits requiring low internal leakage.

NOTE: The RV10-20 may be used in cross-over relief applications (back pressure on 2) with the use of the “C” double back-up ring seal option. See Ordering Table.

FEATURES
• Adjustments cannot be backed out of the valve.
• Adjustment options A, B, and C: positive stops prevent springs from going solid.
• Hardened poppet and cage for long life.
• Optional spring ranges to 228 bar (3300 psi).
• Rapid response to pressure surges.
• Industry common cavity.

RATINGS
Operating Pressure: 228 bar (3300 psi)
Proof Pressure: 517 bar (7500 psi)
Burst Pressure: 1038 bar (15,000 psi)
Flow Rating: 113.6 lpm (30 gpm) at maximum pressure.

NOTE: The Performance Chart illustrates flow handling capacity at maximum setting for each spring range option. Pressure rise will vary with spring (range) and with setting within range due to flow forces. Consult factory for specific flow characteristic values.

Internal Leakage: 0.25 cc/minute (5 drops/minute) max. to 80% of nominal setting
Crack (Set) Pressure Defined: bar (psi) evident at 0.95 lpm (0.25 gpm) attained
Reseat Pressure: Nominal 85% of crack pressure

Standard Spring Ranges: 3.4 to 227.5 bar (50 to 3300 psi) Shown in To Order section on next page. Due to manufacturing tolerances, it may be possible to adjust the valve either lower or higher than the nominal ratings shown below. If the valve is adjusted beyond the recommended maximum pressure range for F and H style adjuster options, the valve may not open to relieve pressure.

<table>
<thead>
<tr>
<th>Pressure/Turn</th>
<th>Options F and H</th>
</tr>
</thead>
<tbody>
<tr>
<td>-6</td>
<td>4.5 bar/65 psi</td>
</tr>
<tr>
<td>-12</td>
<td>9 bar/130 psi</td>
</tr>
<tr>
<td>-23</td>
<td>16.6 bar/241 psi</td>
</tr>
<tr>
<td>-33</td>
<td>24.8 bar/359 psi</td>
</tr>
</tbody>
</table>

Temperature: -40 to 120°C (-40 to 250°F) for Buna N seals; -35 to 204°C (-31 to 400°F) for fluorocarbon seals; -54 to 107°C (-65 to 225°F) for polyurethane seals.

Filtration: See page 9.010.1
Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1
Installation: No restrictions; See page 9.020.1
Cavity: VC10-2; See page 9.110.1
Cavity Tool: CT10-2XX; See page 8.600.1
Seal Kit: SK10-2X-B; See page 8.650.1; SK10-2X-M (for cross-over relief application)
DIMENSIONS

**Cartridge:**  Weight: Depending on adjustment option, ranges from 0.22 to 0.28 kg. (0.49 to 0.61 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-up standard; Anodized aluminum knobs.

**Standard Ported Body:**  Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**Materials**

**TO ORDER**

**RV10-20**

- **Adjustment Option**
  - 1/4 in. Hex Allen Head A
  - 1-1/2 in. Dia. Alum. Knob B
  - Option A w/ Cover Cap C
  - Factory Preset Non-Adj. F*
  - Factory Preset Hidden Adj. H*
  - Option C w/ Lockwire Holes L

  * If the valve is adjusted beyond the recommended maximum pressure range for the F and H style adjuster options, the valve may not open to relieve system pressure.

- **Seals**
  - Pressure on P Only:
    - N Buna N (Std.)
    - V Fluorocarbon
    - P Polyurethane

- **Bidirectional Pressure**
  - NC Buna N
  - VC Fluorocarbon
  - PC Polyurethane

**Porting**

- Cartridge Only 0
- SAE 6 6T
- SAE 8 8T
- 1/4 in. BSP* 2B
- 3/8 in. BSP* 3B
- 1/2 in. BSP* 4B

*BSP Body; U.K. Mfr. Only

**Setting in bar**

(Blank)† for Adjustable, or Specify, for example:
- M25 25 bar
- M100 100 bar

**Setting in psi**

(Blank)† for Adjustable, or Specify, for example:
- 9.0 900 psi
- 23.5 2350 psi

†Adjustable valves will be preset to approx. 50% of spring max.

**Spring Range**

- 6 3.4 to 41.3 bar (50 to 600 psi)
- 12 10.34 to 82.7 bar (150 to 1200 psi)
- 23 17.2 to 158.6 bar (250 to 2300 psi)
- 33 17.2 to 227.5 bar (250 to 3300 psi)

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