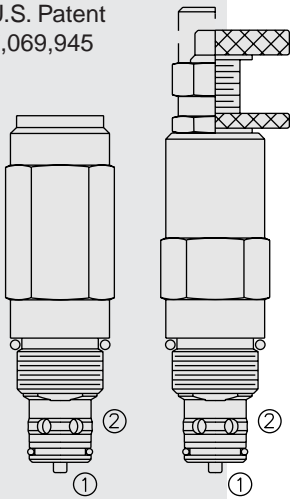


# RV10-28 Relief, Pilot-Operated w/Reverse Check

U.S. Patent  
7,069,945



## DESCRIPTION

A screw-in, cartridge-style, pilot-operated, two-stage, hydraulic relief valve with reverse flow check valve. It is intended for use as a pressure limiting device in demanding hydraulic circuits which require fast response, low hysteresis, low leakage, low pressure overshoot and reverse free flow features.

## OPERATION

The **RV10-28** blocks flow from ① to ② until sufficient pressure is present at ① to force the pilot stage open, allowing the main stage to shift, opening ① to ②.

The relief flow path is from ① to ②. Reverse flow, from ② to ①, occurs when the pressure at ② is at least 2.1 bar (30 psi) higher than at port ①.

## FEATURES

- Adjustments cannot be backed out of the valve.
- Hardened spool and cage for long life.
- Fast response.
- Industry common cavity.

## RATINGS: Relief Valve Mode

**Operating Pressure Range:** 240 bar (3500 psi)

**Flow:** 7.6 to 113.6 lpm (2 to 30 gpm)

**Internal Leakage:** 0.5 ml/minute (10 drops/minute) max. to 80% of nominal setting

**Crack Pressure Defined:** bar (psi) evident at 7.6 lpm (2.0 gpm) attained

**Reseat Pressure:** Nominal 90% of crack pressure

**Pressure Rise:** at 240 bar (3500 psi): 0.15 bar/lpm (8 psi/gpm)

**Response Time:** Relief to Check switch under 250 bar/53 lpm (3500 psi/14 gpm)  
condition: 0.6 seconds

## RATINGS: Check Valve Mode

**Crack Pressure:** 2.1 bar (30 psi)

**Response Time:** Check to Relief switch under 250 bar/53 lpm (3500 psi/14 gpm)  
condition: 0.3 seconds

## RATINGS: Overall

**Operating Temperature:** with Buna N seals: -54 to 135°C (-65 to 275°F)

**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

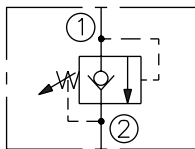
**Cavity:** VC10-2, Variation "A"; See page 9.110.1

**Cavity Tool:** CT10-2XX; See page 8.600.1

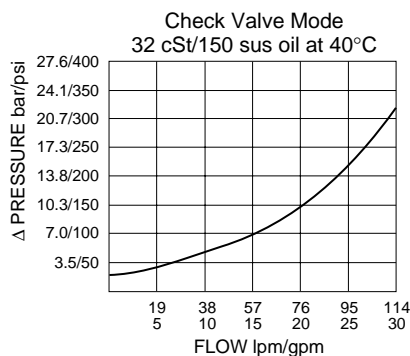
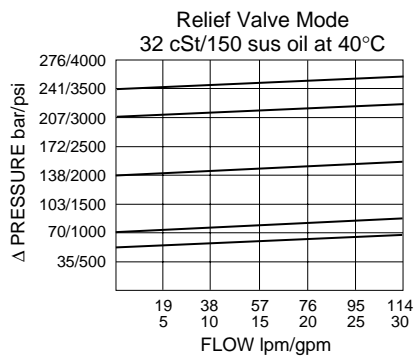
**Seal Kit:** SK10-2X-M; See page 8.650.1

## SYMBOLS

### USAS/ISO:



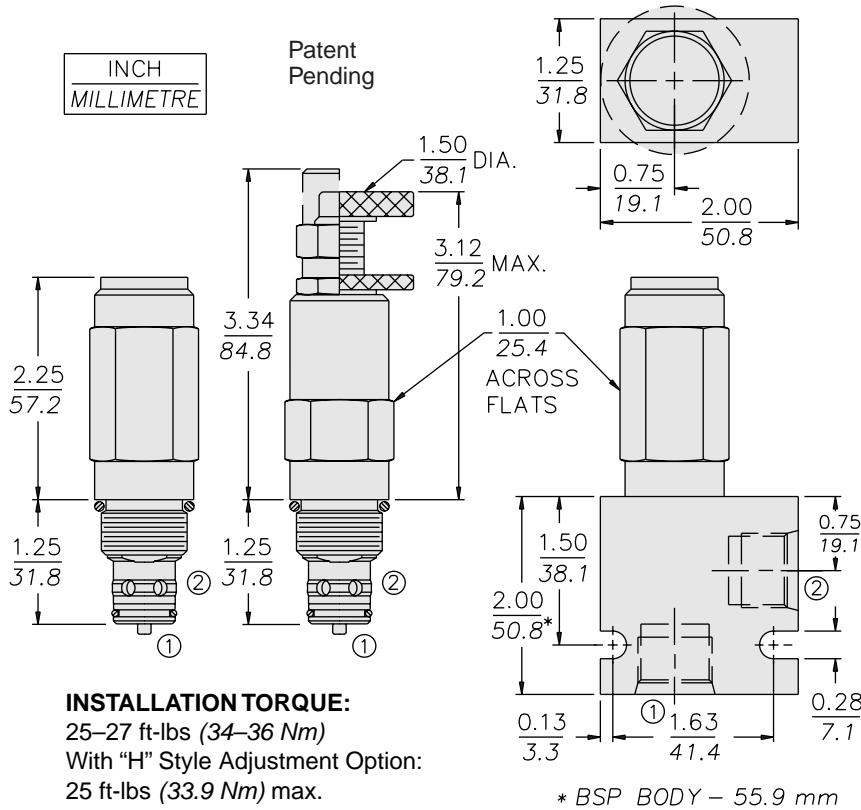
## PERFORMANCE (Cartridge Only)



Note: This new model RV10-28 should be used instead of the older model RV10-24 (page 6.062.1) which is being discontinued. For applications that do not require low-overshoot and reverse free-flow features, see model RV10-23 (page 6.060.1).

**DIMENSIONS**

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**INSTALLATION TORQUE:**  
 25–27 ft-lbs (34–36 Nm)  
 With "H" Style Adjustment Option:  
 25 ft-lbs (33.9 Nm) max.

**MATERIALS**

**Cartridge:** Weight: 0.25 kg. (0.55 lbs.)  
 Steel with hardened work surfaces.  
 Zinc-plated exposed surfaces.  
 Buna N O-rings and polyester elastomer back-ups standard.  
 Anodized aluminum knobs.  
 Optional polyurethane seals with Fluorocarbon back-up recommended for pressures over 240 bar (3500 psi).

**Standard Ported Body:** Weight: 0.16 kg. (0.35 lbs.) Anodized high-strength 6061 T6 aluminum alloy, rated to 207 bar (3000 psi). Ductile iron bodies available; dimensions may differ. See page 8.010.1

**TO ORDER**

RV10-28 - - - /

- 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**

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

\*BSP Body; U.K. Mfr. Only

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

- Setting in bar<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**M52** 52 bar (Minimum)  
**M100** 100 bar  
**Setting in psi<sup>†</sup>**  
 (Blank) for Adjustable, or Specify, for example:  
**7.5** 750 psi (Minimum)  
**23.5** 2350 psi

- Spring Range**  
**35** 51.7 to 241.4 bar (750 to 3500 psi)

<sup>†</sup>Adjustable valves will be preset to approx. 50% of spring max. potential, or 52 bar (750 psi), whichever is less.