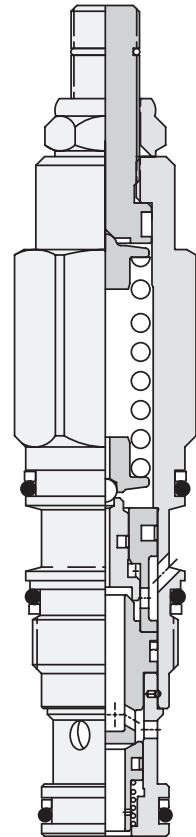
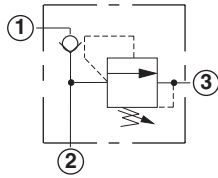
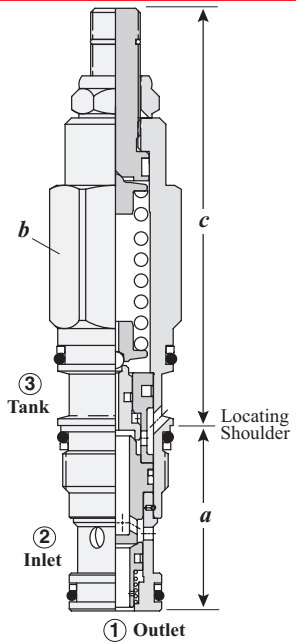


# Hybrid Relief Valves

<i>Cartridge Type</i>	<i>Page</i>
	Direct Acting Relief, Before Check 172
	Direct Acting Relief, After Check 173
	Pilot Operated, Balanced Piston, Ventable, Relief, Before Check 174
	Pilot Operated, Balanced Piston, Ventable, Relief, Before Check, with Integral Pilot Control Cavity 175

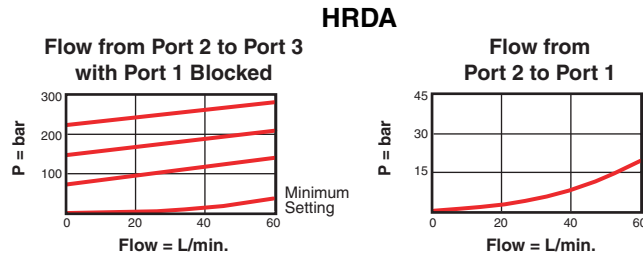


**DIRECT ACTING RELIEF, BEFORE CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (Nm)
			a	b	L	C	K	
40 L/min.	HRDA – LAN	T - 11A	35,0	22,2	78,5	82,6	84,8	45 - 50

**Performance Curves**



- Maximum operating pressure = 350 bar.
- Maximum relief valve leakage at reseal = 0,3 cc/min.
- Maximum check valve leakage = less than 0,07 cc/min.
- Check cracking pressure = 1,7 bar.
- Typical response time = 10 ms.
- The seals on the adjust screw are exposed to system pressure which means this valve can only be adjusted when the pressure is removed. The setting procedure is: check the setting, remove the pressure, adjust the valve, check the new setting.
- Select a spring range where the desired relief setting is approximately mid-range between the minimum and maximum pressure to ensure maximum valve repeatability.
- One purpose of this dual function cartridge is to offer pump isolation and relief protection in single and/or multiple pump circuits.
- The direct acting relief exhibits rapid response characteristics that minimize pressure overshoot and also provides low reseal leakage (less than 0,3 cc/min. at 85% of cracking pressure).
- This valve deviates from Sun's normal flow path for relief valves. It is probably not useable in existing standard Sun relief manifolds.

**OPTION ORDERING INFORMATION**

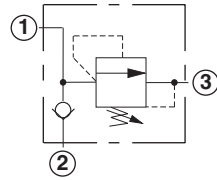
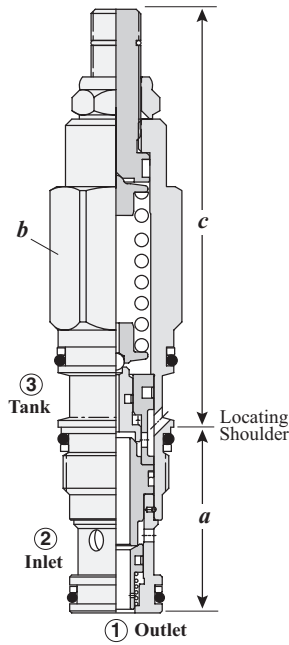
**HRDA - \* \* \***

<p><b>Nominal Capacity</b></p> <p><b>D</b> 40 L/min.</p>	<p><b>Control</b></p> <p><b>L</b> Standard Screw Adjustment</p> <p><b>C*</b> Tamper Resistant Factory Set</p> <p><b>K</b> Handknob with Lock Knob</p>	<p><b>Adjustment Range</b></p> <p><b>A</b> 35 - 210 bar Standard Set at 70 bar</p> <p><b>W</b> 55 - 315 bar Standard Set at 70 bar</p> <p><b>D</b> 14 - 50 bar Standard Set at 28 bar</p>	<p><b>Seal Material</b></p> <p><b>N</b> Buna-N</p> <p><b>V</b> Viton</p>
--	---	---	--

\* Special setting is required. Specify at time of order.

Visit [www.sunhydraulics.com](http://www.sunhydraulics.com) for current list pricing and complete technical information on all Sun products.

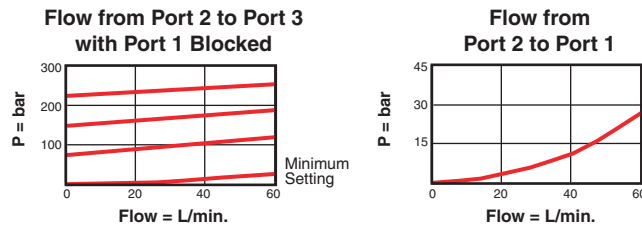
**DIRECT ACTING RELIEF, AFTER CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (Nm)
			a	b	L	C	K	
40 L/min.	HRDB - LA*	T - 11A	35,0	22,2	78,5	82,6	84,8	45 - 50

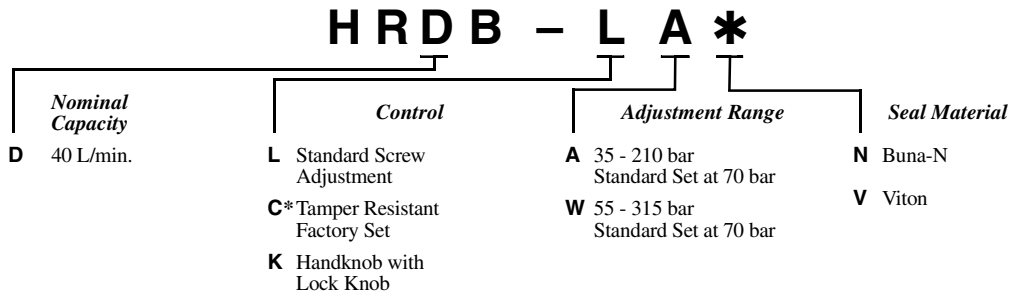
Performance Curves

HRDB



- Maximum operating pressure = 350 bar.
- Maximum relief valve leakage at reseal = 0,3 cc/min.
- Maximum check valve leakage = less than 0,07 cc/min.
- Check cracking pressure = 1,7 bar.
- Typical response time = 10 ms.
- This cartridge can be used to provide relief protection on the system side of the circuit.
- The seals on the adjust screw are exposed to system pressure which means this valve can only be adjusted when the pressure is removed. The setting procedure is: check the setting, remove the pressure, adjust the valve, check the new setting.
- Select a spring range where the desired relief setting is approximately mid-range between the minimum and maximum pressure to ensure maximum valve repeatability.
- The direct acting relief exhibits rapid response characteristics that minimize pressure overshoot and also provides low reseal leakage (less than 0,3 cc/min. at 85% of cracking pressure).
- This valve deviates from Sun's normal flow path for relief valves. It is probably not useable in existing standard Sun relief manifolds.

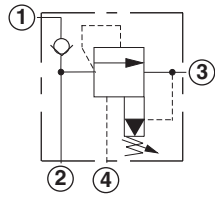
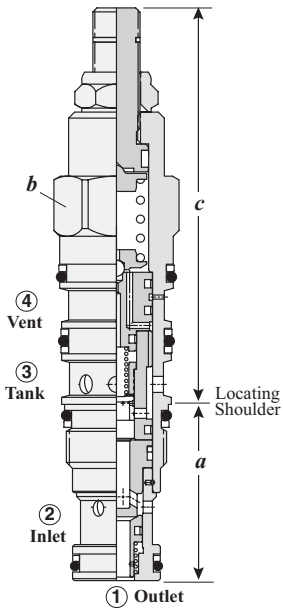
OPTION ORDERING INFORMATION



\* Special setting is required. Specify at time of order.

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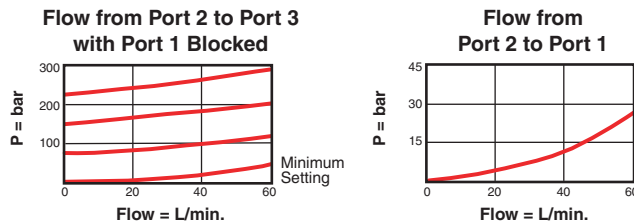
**PILOT OPERATED, BALANCED PISTON, VENTABLE, RELIEF, BEFORE CHECK**



Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (Nm)
			a	b	c			
					L	C	K	
40 L/min.	<b>HVCA - LAN</b>	T - 21A	35,0	22,2	78,5	82,6	84,8	45 - 50

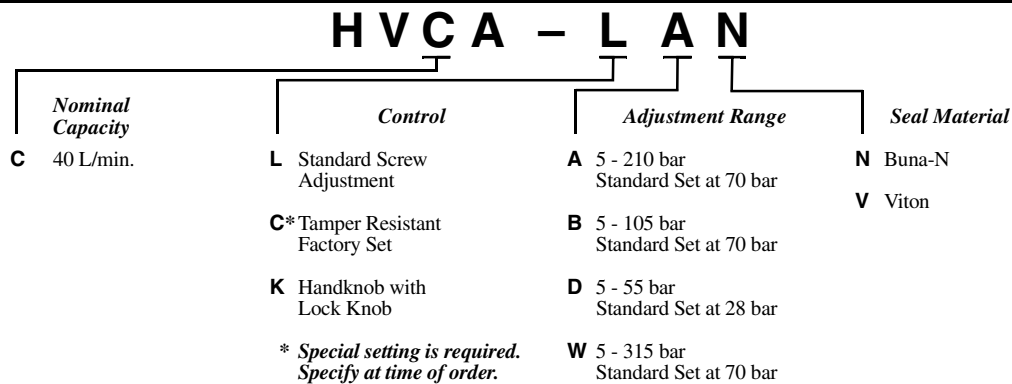
Performance Curves

**HVCA**



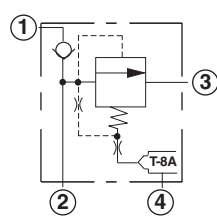
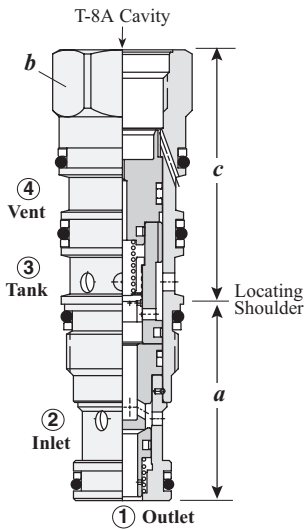
- Maximum operating pressure = 350 bar.
- Maximum relief valve leakage at reseat = 0,3 cc/min.
- Maximum check valve leakage = less than 0,07 cc/min.
- Check cracking pressure = 1,7 bar.
- Typical response time = 10 ms.
- Minimum setting is 5 bar for all spring ranges.
- Back pressure at port 3 (tank) is directly additive to the valve setting at a 1:1 ratio.
- A remote pilot relief on port 4 (vent) will control the valve below its setting.
- One purpose of this dual function cartridge is to offer pump isolation and relief protection in single and/or multiple pump circuits. Another purpose is to act as a main stage in an accumulator sense, pump unload circuit.
- This valve deviates from Sun's normal flow path for relief valves. It is probably not useable in existing standard Sun relief manifolds.

**OPTION ORDERING INFORMATION**



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**PILOT OPERATED, BALANCED PISTON, VENTABLE, RELIEF, BEFORE CHECK, WITH INTEGRAL PILOT CONTROL CAVITY**

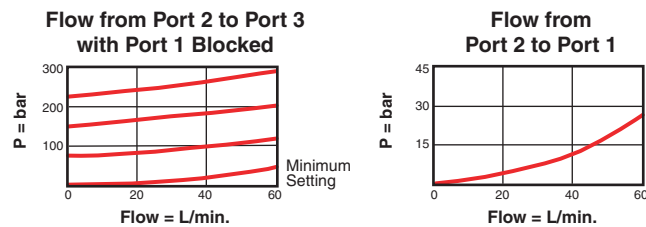


The -8 control option allows the pilot control valve to be incorporated directly into the end of the relief cartridge via the T-8A cavity. These pilot control cartridges are sold separately and include electro-proportional, solenoid, air pilot, and hydraulic pilot operation. See Pilot Control Cartridges on page 141.

Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
40 L/min.	<b>HVCA - 8D*</b>	T - 21A	35,0	22,2	45,2	45 - 50

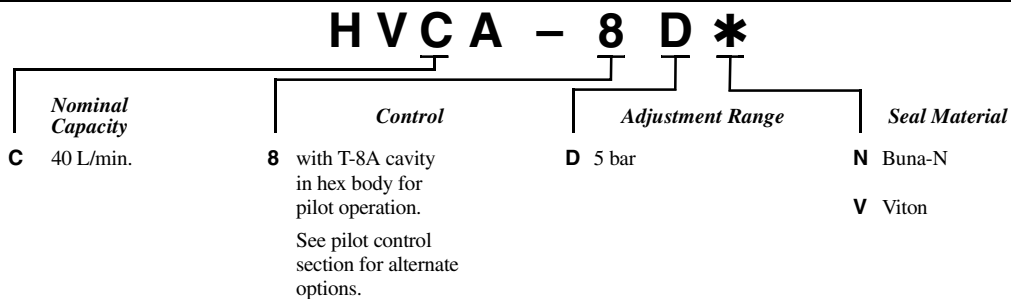
Performance Curves

**HVCA-8**



- Maximum operating pressure = 350 bar.
- Maximum relief valve leakage at reseal = 0,3 cc/min.
- Maximum check valve leakage = less than 0,07 cc/min.
- Typical response time = 10 ms.
- Check cracking pressure = 1,7 bar.
- The main stage orifice is protected against contamination.
- One purpose of this dual function cartridge is to offer pump isolation and relief protection in single and/or multiple pump circuits. Another purpose is to act as a main stage in an accumulator sense, pump unload circuit.
- With the -8 control option, the main stage valve should first be installed to the correct torque value. The T-8A pilot control valve should then be installed into the main stage valve to its required torque value.
- This valve deviates from Sun's normal flow path for relief valves. It is probably not useable in existing standard Sun relief manifolds.

**OPTION ORDERING INFORMATION**



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