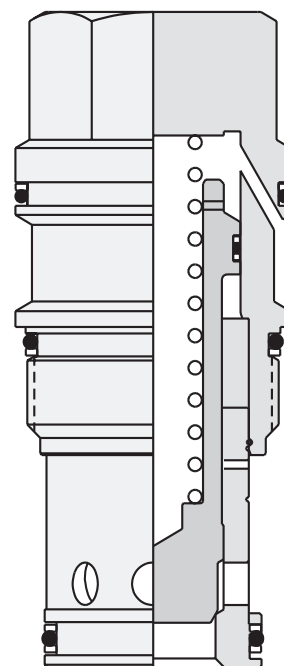


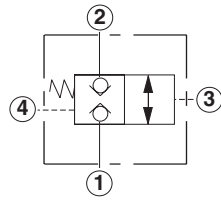
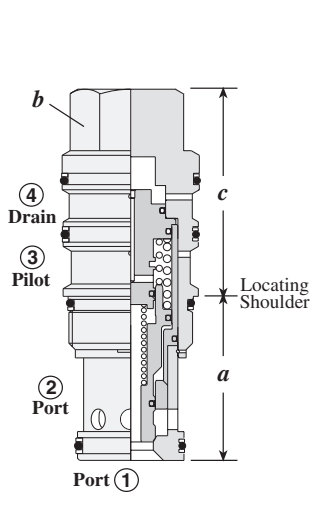
Logic Elements

Cartridge Type

	<i>Page</i>		<i>Page</i>
	100		109
	101		110
	102		111
	103		112
	104		113
	105		114
	106		115
	107		116
	108		



BALANCED POPPET, NORMALLY CLOSED, DIRECT OPERATED, PILOT-TO-OPEN



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DKDS – XHN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DKFS – XHN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DKHS – XHN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DKJS – XHN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves

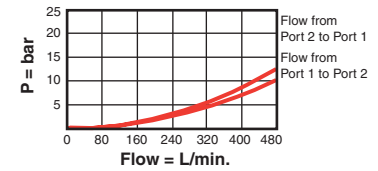
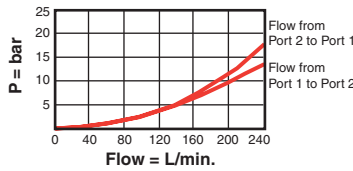
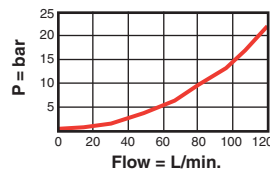
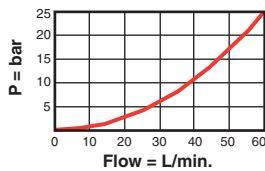
DKDS

DKFS

DKHS

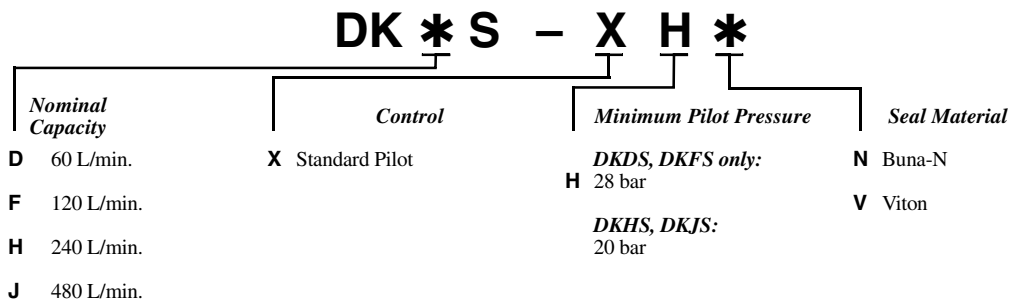
DKJS

Piloted Open Pressure Differential vs. Flow



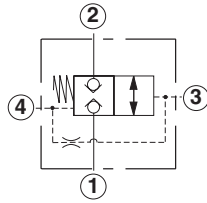
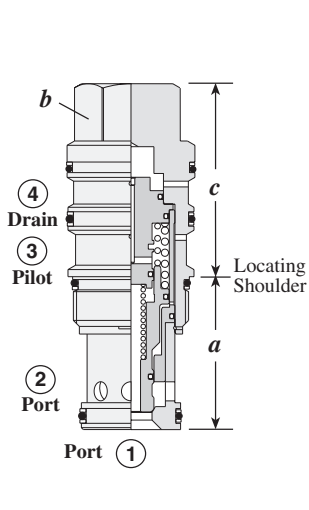
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DKDS, DKFS: 28 bar; DKHS, DKJS: 20 bar.
- Pilot passage into valve = DKDS, DKFS: 0,8 mm; DKHS, DKJS: 1,19 mm.
- Pilot volume displacement = DKDS: 0,16 cc; DKFS: 0,33 cc; DKHS: 0,82 cc; DKJS: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both ports 1 and 2, with the external drain open and minimum pilot pressure at port 3.
- These valves are hydraulically balanced between port 1 and port 2.
- Port 1 and port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Valve will reseal when the pilot pressure falls below 10 bar.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Any back pressure at the drain port is directly additive to the required pilot pressure for reliable operation.

OPTION ORDERING INFORMATION



Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.

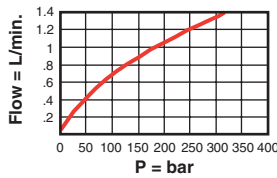
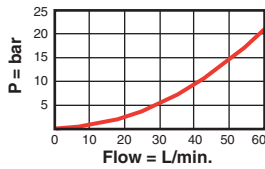
BALANCED POPPET, NORMALLY CLOSED, VENT-TO-OPERATE



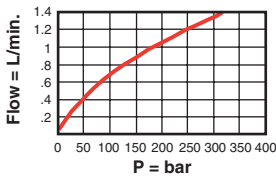
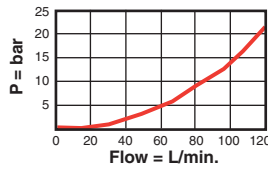
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DKDR – XHN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DKFR – XHN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DKHR – XHN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DKJR – XHN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves

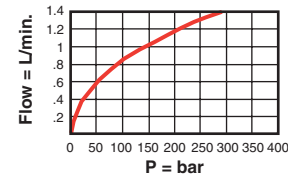
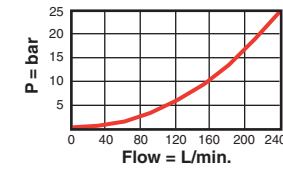
DKDR



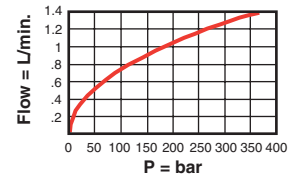
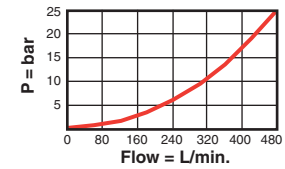
DKFR



DKHR

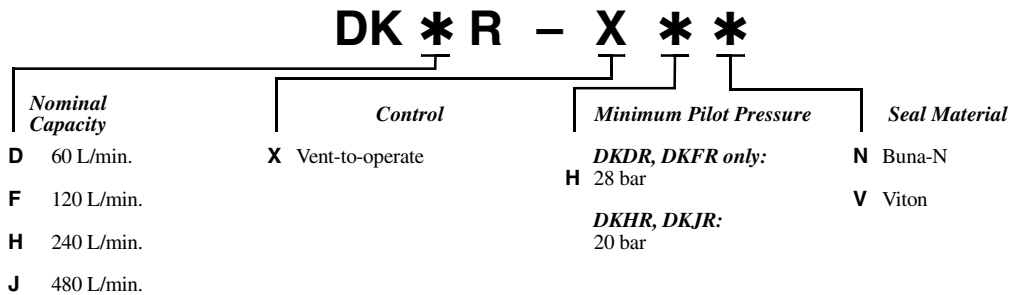


DKJR



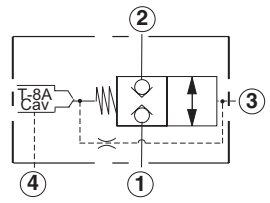
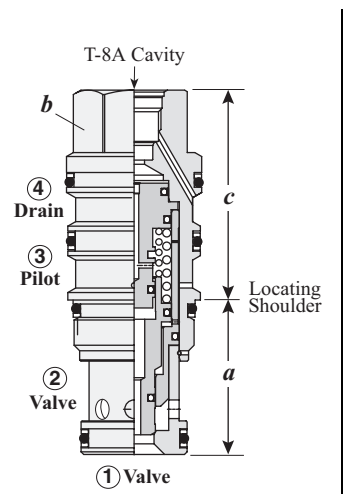
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DKDR, DKFR: 28 bar; DKHR, DKJR: 20 bar.
- Pilot passage into valve = DKDR, DKFR: 0,8 mm; DKHR, DKJR: 1,19 mm.
- Pilot volume displacement = DKDR: 0,16 cc; DKFR: 0,33 cc; DKHR: 0,82 cc; DKJR: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both ports 1 and 2, with the vent (port 4) open and minimum pilot pressure at port 3.
- These valves are hydraulically balanced between port 1 and port 2.
- Valve will reseal when the pilot pressure falls below 10 bar.
- Port 1 and Port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Port 4 may be externally connected to a pilot switching valve. The pilot valve should have a leakage rate of less than 10 drops/min. and be able to satisfy the pilot flow requirements. Sun model DA*-*-* solenoid pilot valve is ideal for this application.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.

OPTION ORDERING INFORMATION



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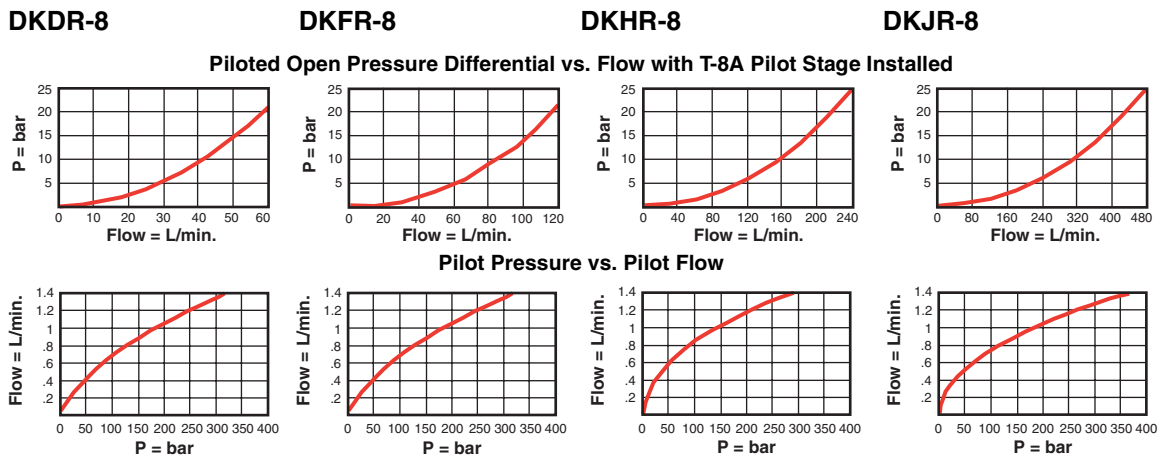
BALANCED POPPET, NORMALLY CLOSED, VENT-TO-OPERATE, WITH INTEGRAL T-8A CONTROL CAVITY



The -8 control option allows a pilot control valve to be incorporated directly into the end of the 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.

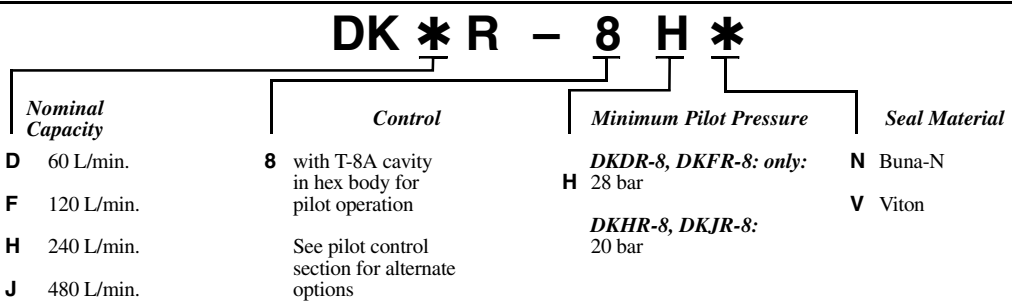
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DKDR - 8HN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DKFR - 8HN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DKHR - 8HN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DKJR - 8HN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DKDR-8, DKFR-8: 28 bar; DKHR-8, DKJR-8: 20 bar.
- Pilot passage into valve = DKDR-8, DKFR-8: 0,8 mm; DKHR-8, DKJR-8: 1,19 mm.
- Pilot volume displacement = DKDR-8: 0,16 cc; DKFR-8: 0,33 cc; DKHR-8: 0,82 cc; DKJR-8: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at port 1 and port 2. Switching will only occur when both minimum pilot pressure at port 3 is present and pilot control is open.
- The valves are hydraulically balanced between port 1 and port 2.
- Port 1 and port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Valve will reseat when the pilot pressure falls below 10 bar.
- Any back pressure at the drain port is directly additive to the required pilot pressure for reliable operation.
- 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 of 35-40 Nm.

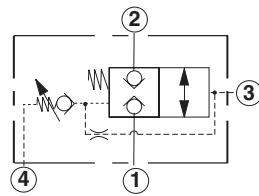
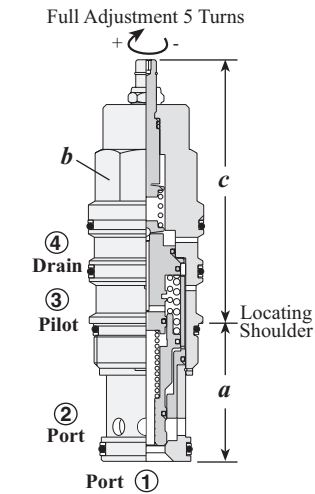
OPTION ORDERING INFORMATION



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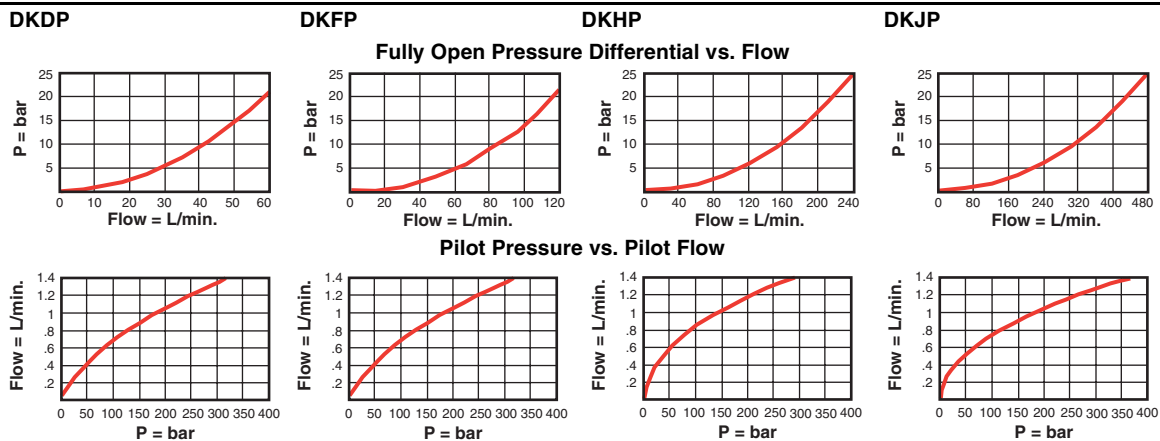


BALANCED POPPET, NORMALLY CLOSED, PRESSURE ADJUSTABLE



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions					Installation Torque (Nm)
			a	b	c			
					L	C	K	
60 L/min.	DKDP – LAN	T - 21A	35,0	22,2	79,0	82,6	84,8	45 - 50
120 L/min.	DKFP – LAN	T - 22A	35,0	28,6	87,4	89,0	94,0	60 - 70
240 L/min.	DKHP – LAN	T - 23A	46,2	31,8	100,1	101,1	105,9	200 - 215
480 L/min.	DKJP – LAN	T - 24A	63,5	41,3	121,5	125,0	128,0	465 - 500

Performance Curves



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DKDP, DKFP: 28 bar; DKHP, DKJP: 20 bar.
- Pilot passage into valve = DKDP, DKFP: 0,8 mm; DKHP, DKJP: 1,19 mm.
- Pilot volume displacement = DKDP: 0,16 cc; DKFP: 0,33 cc; DKHP: 0,82 cc; DKJP: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both port 1 and port 2. When the remote pressure signal at port 3 exceeds the internal valve setting, the valve shifts to the open position.
- Port 1 and port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Any back pressure at the drain port is directly additive to the valve setting.
- Valve will reseal when the pilot pressure falls to 85% of the cracking value.

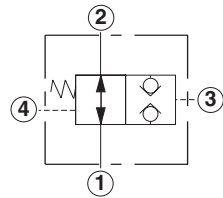
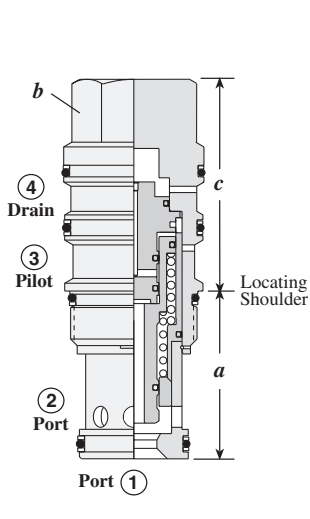
OPTION ORDERING INFORMATION

DK * P - * * *

<p>Nominal Capacity</p> <p>D 60 L/min.</p> <p>F 120 L/min.</p> <p>H 240 L/min.</p> <p>J 480 L/min.</p>	<p>Control**</p> <p>L Standard Screw Adjustment</p> <p>C* Tamper Resistant Factory Set</p> <p>K Handknob with Lock Knob</p> <p><i>* Special setting required. Specify at time of order.</i></p> <p><i>** See page 178 for information on Control Options</i></p> <p><i>Customer specified special setting stamped on hex.</i></p>	<p>Adjustment Range</p> <p>DKDP, DKFP only:</p> <p>A 28 - 210 bar Standard set at 70 bar</p> <p>B 28 - 105 bar Standard set at 70 bar</p> <p>W 28 - 315 bar Standard set at 70 bar</p> <p>DKHP, DKJP:</p> <p>A 20 - 210 bar Standard set at 70 bar</p> <p>B 20 - 105 bar Standard set at 70 bar</p> <p>W 20 - 315 bar Standard set at 70 bar</p>	<p>Seal Material</p> <p>N Buna-N</p> <p>V Viton</p>
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BALANCED POPPET, NORMALLY OPEN, PILOT-TO-CLOSE



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DODS – XHN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DOFS – XHN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DOHS – XHN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DOJS – XHN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves

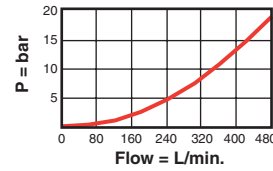
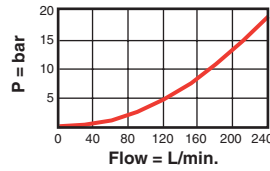
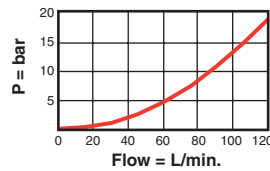
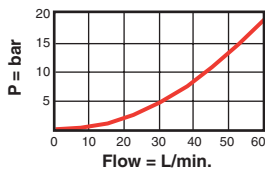
DODS

DOFS

DOHS

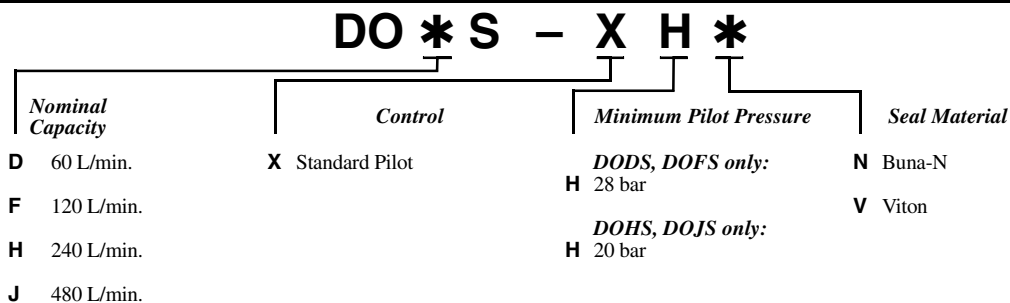
DOJS

Fully Open Pressure Differential vs. Flow



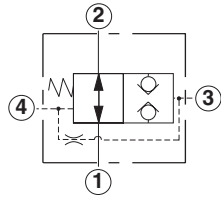
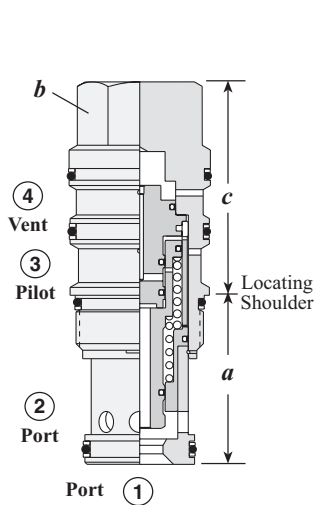
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DODS, DOFS: 28 bar; DOHS, DOJS: 20 bar.
- Pilot passage into valve = DODS, DOFS: 0,8 mm; DOHS, DOJS: 1,19 mm.
- Pilot volume displacement = DODS: 0,16 cc; DOFS: 0,33 cc; DOHS: 0,82 cc; DOJS: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both ports 1 and 2, with the external drain open and minimum pilot pressure at port 3.
- These valves are hydraulically balanced between port 1 and port 2.
- Port 1 and Port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Valve will open when the pilot pressure falls below 10 bar.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Any back pressure at the drain port is directly additive to the required pilot pressure for reliable operation.

OPTION ORDERING INFORMATION



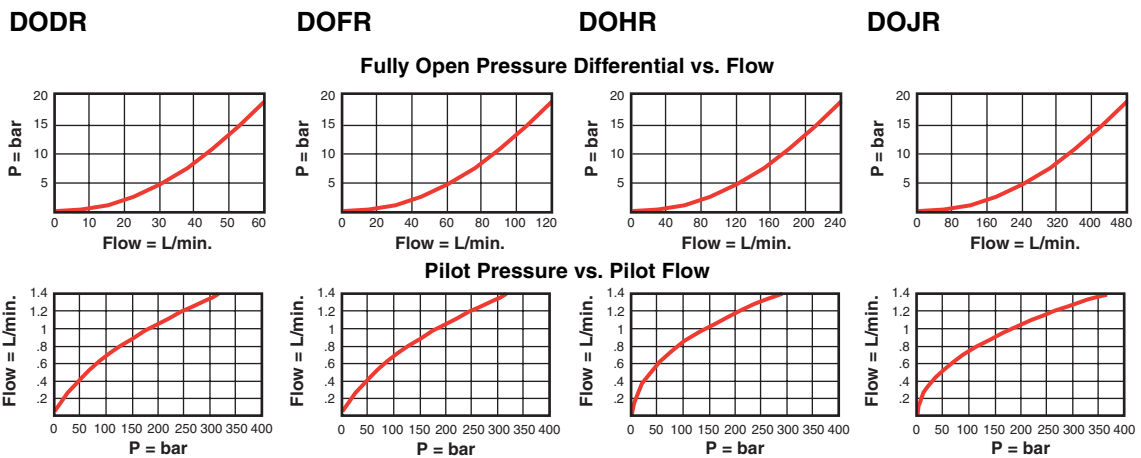
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BALANCED POPPET, NORMALLY OPEN, VENT-TO-OPERATE



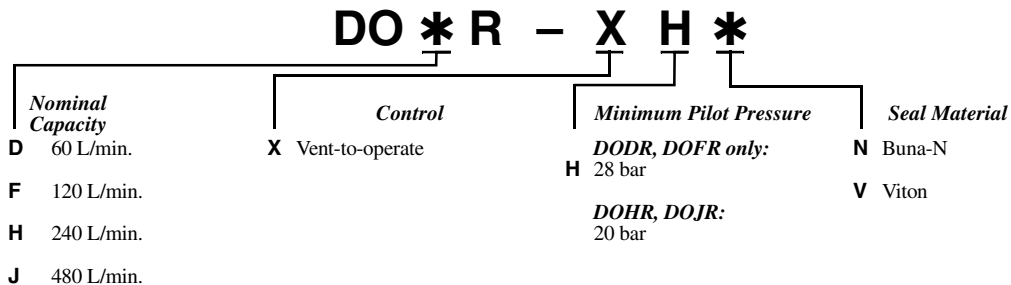
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DODR – XHN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DOFR – XHN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DOHR – XHN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DOJR – XHN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves



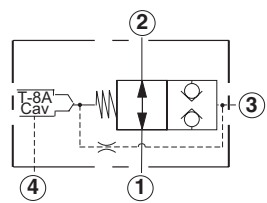
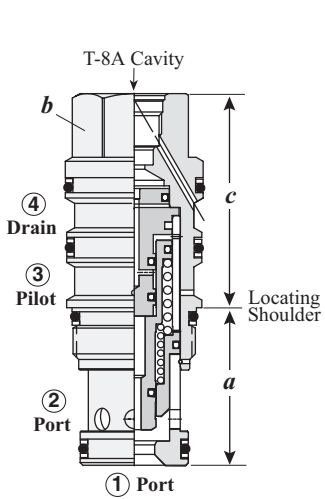
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DODR, DOFR: 28 bar; DOHR, DOJR: 20 bar.
- Pilot passage into valve = DODR, DOFR: 0,8 mm; DOHR, DOJR: 1,19 mm.
- Pilot volume displacement = DODR: 0,16 cc; DOFR: 0,33 cc; DOHR: 0,82 cc; DOJR: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both ports 1 and 2, with the vent (port 4) open and minimum pilot pressure at port 3.
- These valves are hydraulically balanced between port 1 and port 2.
- Port 1 and Port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Valve will open when the pilot pressure falls below 10 bar or with port 4 blocked.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Port 4 may be externally connected to a pilot switching valve. the pilot valve should have a leakage rate of less than 0,6 cc/min. and be able to satisfy the pilot flow requirements. Sun model DAA*-*** solenoid pilot valve is ideal for this application.

OPTION ORDERING INFORMATION



Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.

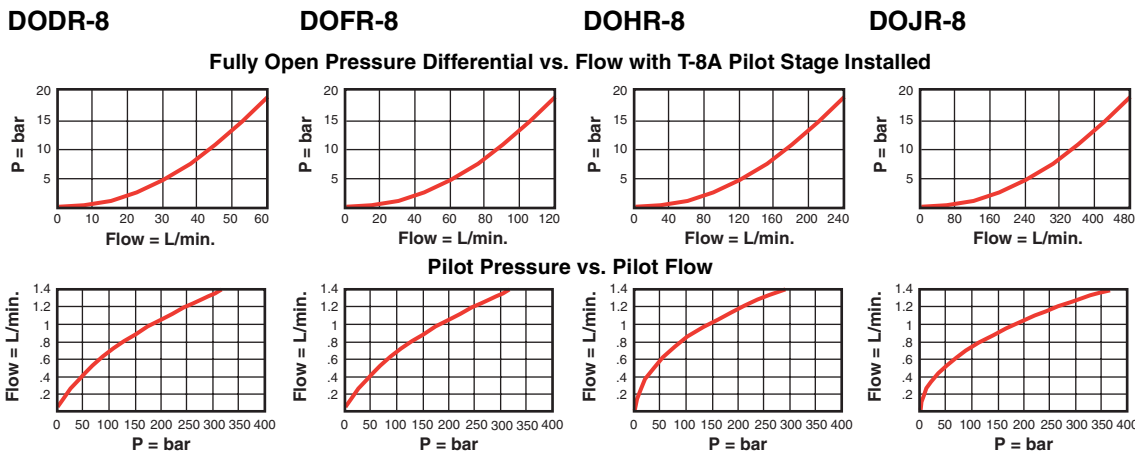
BALANCED POPPET, NORMALLY OPEN, VENT-TO-OPERATE WITH INTEGRAL T-8A CONTROL CAVITY



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

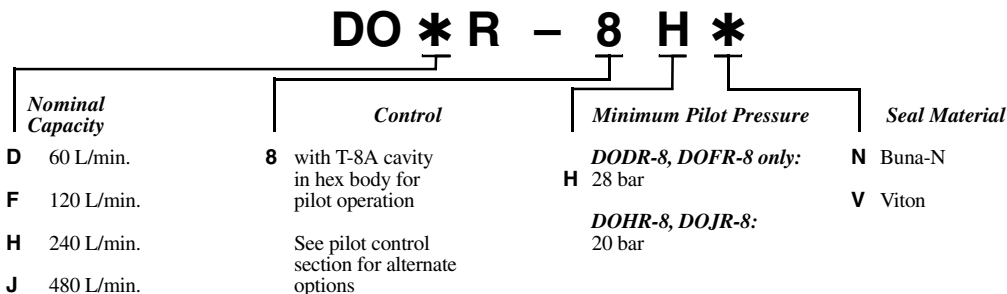
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	DODR - 8HN	T - 21A	35,0	22,2	45,2	45 - 50
120 L/min.	DOFR - 8HN	T - 22A	35,0	28,6	50,8	60 - 70
240 L/min.	DOHR - 8HN	T - 23A	46,2	31,8	62,7	200 - 215
480 L/min.	DOJR - 8HN	T - 24A	63,5	41,3	80,3	465 - 500

Performance Curves



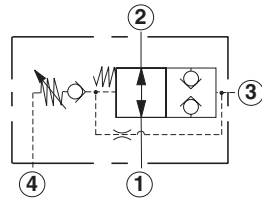
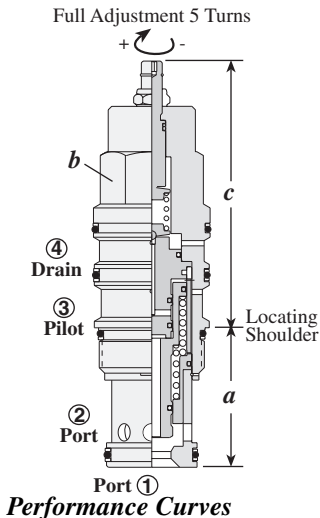
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DODR-8, DOFR-8: 28 bar; DOHR-8, DOJR-8: 20 bar.
- Pilot passage into valve = DODR-8, DOFR-8: 0,8 mm; DOHR-8, DOJR-8: 1,19 mm.
- Pilot volume displacement = DODR-8: 0,16 cc; DOFR-8: 0,33 cc; DOHR-8: 0,82 cc; DOJR-8: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at port 1 and 2. Switching will only occur when both minimum pilot pressure at port 3 is present and pilot control valve is open.
- These valves are hydraulically balanced between port 1 and port 2.
- Port 1 and Port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Valve will open when the pilot pressure falls below 10 bar.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Any back pressure at the drain port is directly additive to the required pilot pressure.
- 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 of 35-40 Nm.

OPTION ORDERING INFORMATION



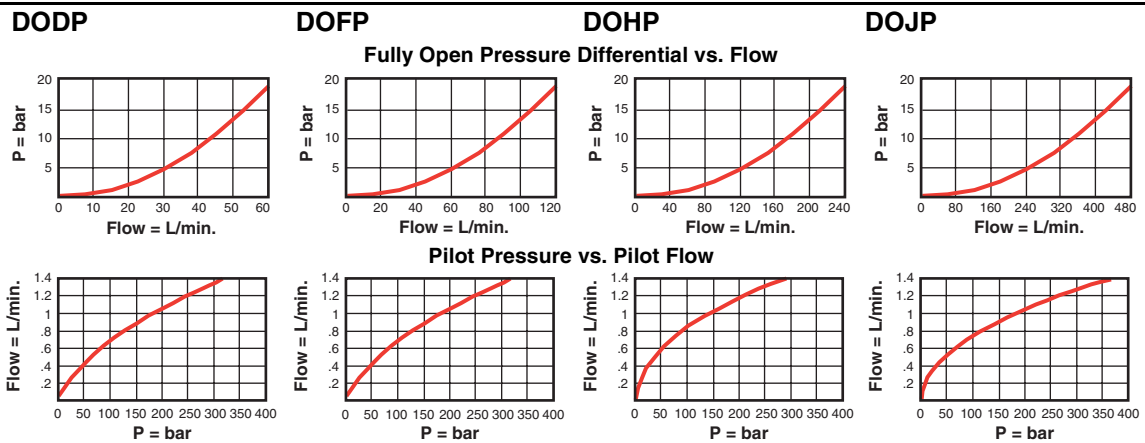
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BALANCED POPPET, NORMALLY OPEN, PRESSURE ADJUSTABLE



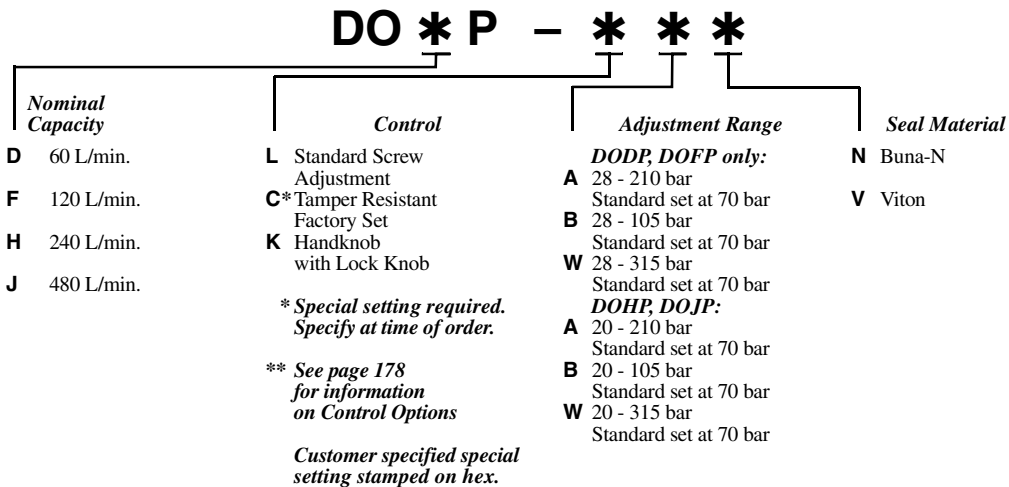
Nominal Capacity	Typical Cartridge Model Code	Cavity	a	b	Cartridge Dimensions			Installation Torque (Nm)
					L	C	K	
60 L/min.	DODP – LAN	T - 21A	35,0	22,2	79,0	82,6	84,8	45 - 50
120 L/min.	DOFP – LAN	T - 22A	35,0	28,6	87,9	89,0	94,0	60 - 70
240 L/min.	DOHP – LAN	T - 23A	46,2	31,8	100,1	101,1	105,9	200 - 215
480 L/min.	DOJP – LAN	T - 24A	63,5	41,3	121,4	125,0	128,0	465 - 500

Performance Curves



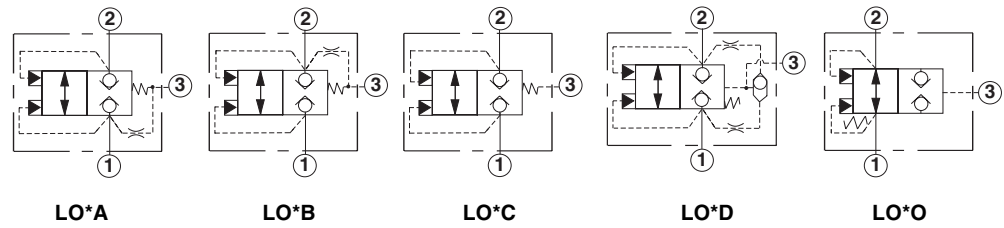
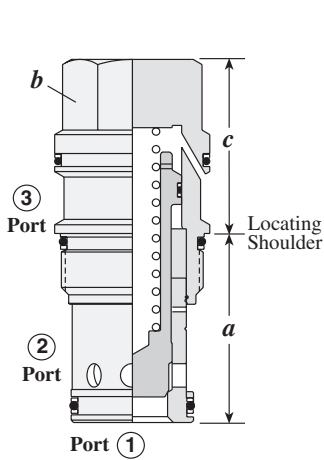
- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,3 cc/min.
- Minimum pilot pressure required to shift valve = DODP, DOFP: 28 bar; DOHP, DOJP: 20 bar.
- Pilot passage into valve = DODP, DOFP: 0,8 mm; DOHP, DOJP: 1,19 mm.
- Pilot volume displacement = DODP: 0,16 cc; DOFP: 0,33 cc; DOHP: 0,82 cc; DOJP: 2,8 cc.
- Unique balanced construction provides predictable switching with 350 bar at both port 1 and port 2. When the remote pressure signal at port 3 exceeds the internal valve setting, the valve shifts to the closed position.
- These valves are hydraulically balanced between port 1 and port 2.
- Port 1 and port 2 are fully sealed from port 3 and port 4. Ports 3 and 4 are positively sealed.
- Valve will open when the pilot pressure falls below 10 bar.
- Leakage rate between port 1 and port 2 is less than 0,3 cc/min. at 350 bar.
- Any back pressure at the drain port is directly additive to the valve setting.

OPTION ORDERING INFORMATION



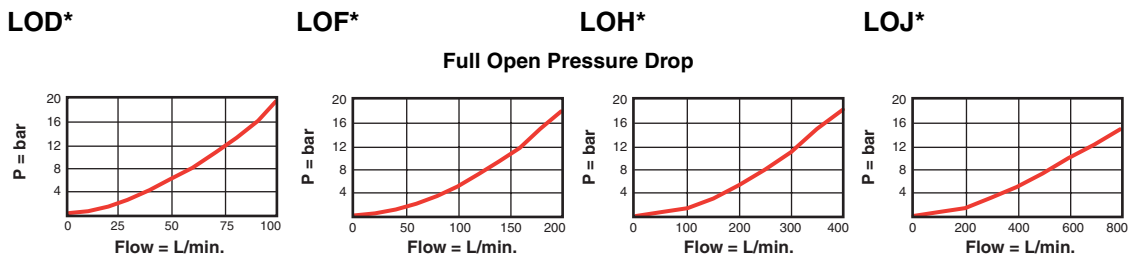
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UNBALANCED POPPET, PILOT-TO-CLOSE AND VENT-TO-OPEN



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	X	E	
95 L/min.	LODC – XDN	T - 11A	35,0	22,2	30,2	30,2	45 - 50
200 L/min.	LOFC – XDN	T - 2A	35,0	28,6	35,1	35,1	60 - 70
380 L/min.	LOHC – XDN	T - 17A	46,0	31,8	46,0	46,0	200 - 215
760 L/min.	LOJC – XDN	T - 19A	63,8	41,3	58,7	58,7	465 - 500

Performance Curves



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,6 cc/min.
- Area ratio: A3 to A1 = 1.8:1; A3 to A2 = 2.25:1.
- Control orifice diameter = LOFA, LODB, LOFB, LODD, LOFD: 0,53 mm; LOHA, LOHB, LOHD: 0,8 mm; LOJA, LOJB, LOJD: 0,9 mm.
- Pilot passage into valve = LOD*: 0,8 mm; LOF*: 0,9 mm; LOH*: 1,50 mm; LOJ*: 2,3 mm.
- Pilot volume displacement = LOD*: 0,66 cc; LOF*: 1,1 cc; LOH*: 4,1 cc; LOJ*: 6,9 cc.
- These valves are pressure responsive at all three ports, therefore it is essential to consider all aspects of system operation through a complete cycle. Pressure changes at any one port may cause a valve to switch from a closed to an open position, or vice versa. All possible pressure changes in the complete circuit must be considered to assure a safe, functional system design.

OPTION ORDERING INFORMATION

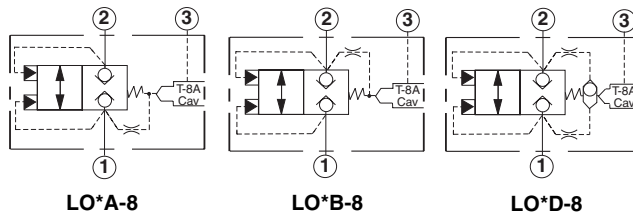
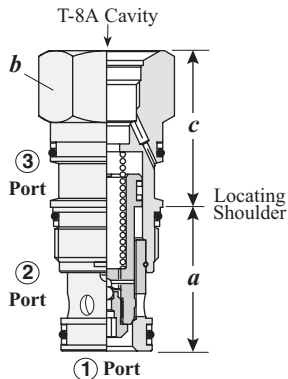
Nominal Capacity	Version	Control**	Minimum Pilot Pressure	Seal Material
D 95 L/min.	A Spring biased closed, Pilot source from Port 1, Vent-to-open	X Not Adjustable	D 3,5 bar	N Buna-N
F 200 L/min.	B Spring biased closed, Pilot source from Port 2, Vent-to-open	LODA, LOHA, LO*C, LOHD, LODD, LOHO, LOFO only:		V Viton
H 380 L/min.	C Spring biased closed, Port 3 pilot source, Pilot-to-close	E External SAE-4 Pilot, Port 3 blocked		
J 760 L/min.	D Spring biased closed, higher of Ports 1 or 2 pilot source, Vent-to-open	LODA, LOFA, LODB, LOFB, LODC, LOFC, LODD, LOFD, LOFO only:		
	O Spring biased open, Port 3 pilot source, Pilot-to-close	L Stroke Adjustment		

** See page 178 for information on Control Options

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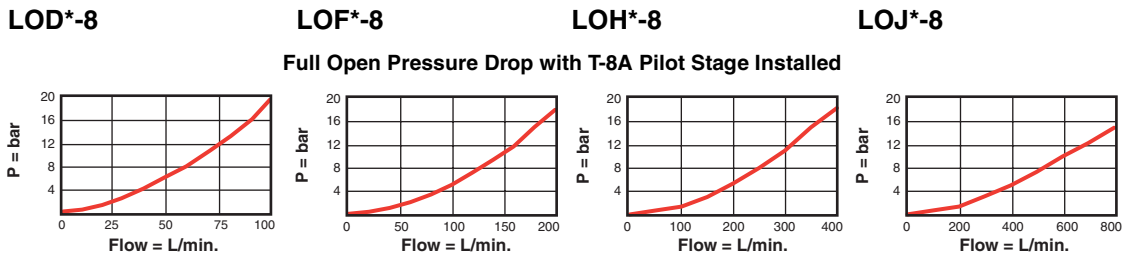
UNBALANCED POPPET, VENT-TO-OPEN, WITH INTEGRAL T-8A CONTROL CAVITY



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

Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
95 L/min.	LODA – 8DN	T - 11A	35,0	22,2	30,2	45 - 50
200 L/min.	LOFA – 8DN	T - 2A	35,0	28,6	35,1	60 - 70
380 L/min.	LOHA – 8DN	T - 17A	46,0	31,8	46,0	200 - 215
760 L/min.	LOJA – 8DN	T - 19A	63,5	41,3	58,7	465 - 500

Performance Curves



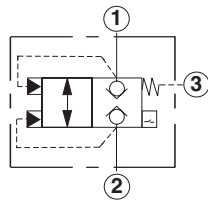
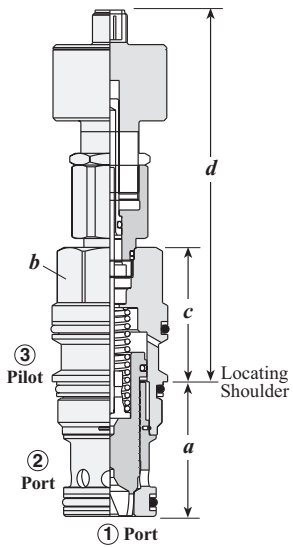
- Maximum operating pressure = 350 bar.
- Area ratio: A3 to A1 = 1.8:1; A3 to A2 = 2.25:1.
- Control orifice diameter = LOD*-8, LOF*-8: 0,53 mm, LOH*-8: 0,8 mm, LOJ*-8: 0,9 mm.
- Pilot volume displacement = LOD*-8: 0,66 cc; LOF*-8: 1,1 cc; LOH*-8: 4,1 cc.; LOJ*-8: 6,9 cc.
- These valves are pressure responsive at all three ports, therefore it is essential to consider all aspects of system operation through a complete cycle. Pressure changes at any one port may cause a valve to switch from a closed to an open position, or vice versa. All possible pressure changes in the complete circuit must be considered to assure a safe, functional system design.
- 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.

OPTION ORDERING INFORMATION

Nominal Capacity	Version	Control	Cracking Pressure	Seal Material
D 95 L/min.	A Spring biased closed, Pilot source from Port 1	8 T-8A Cavity in hex body for pilot operation	D 3,5 bar	N Buna-N
F 200 L/min.	B Spring biased closed, Pilot source from Port 2	Pilot valve to be ordered separately		V Viton
H 380 L/min.	D Spring biased closed, with pilot source from Ports 1 or 2			
J 760 L/min.				

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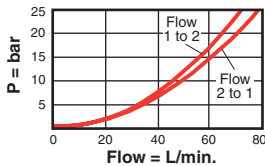
UNBALANCED POPPET, PILOT-TO-CLOSE, SPRING BIASED OPEN WITH POSITION INDICATING SWITCH



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	c	d	
45 L/min.	LOEC – ZDN	T - 2A	35,1	28,6	35,1	116,8	60 - 70
200 L/min.	LOFC – ZDN	T - 2A	35,1	28,6	35,1	116,8	60 - 70
160 L/min.	LOGC – ZDN	T - 17A	45,8	31,8	45,8	127,3	200 - 215
380 L/min.	LOHC – ZDN	T - 17A	45,8	31,8	45,8	127,3	200 - 215

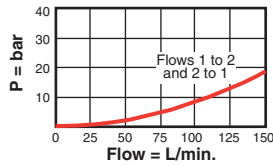
Performance Curves

LOEC-Z

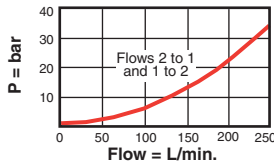


LOFC-Z

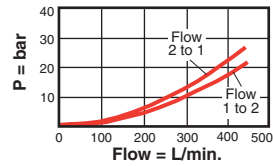
Pressure Differential vs. Flow Sequenced Open



LOGC-Z

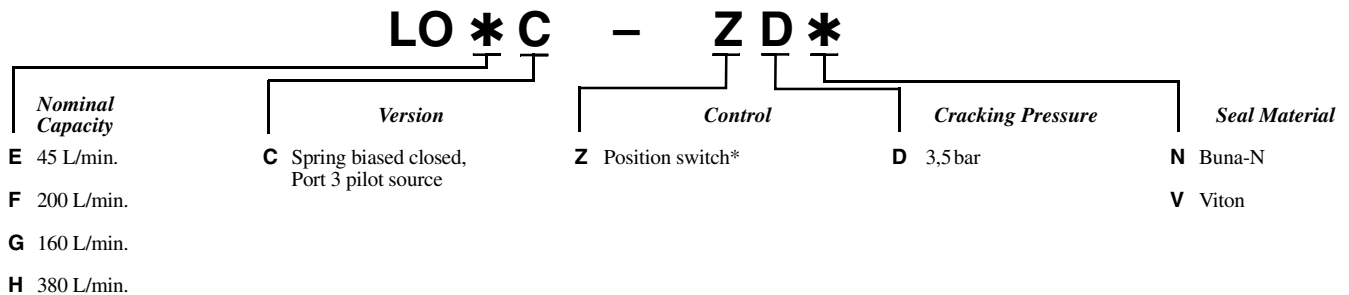


LOHC-Z



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,07 cc/min.
- Area Ratio: A3 to A1 = 1.8:1; A3 to A2 = 2.25:1.
- Pilot passage into valve = LOEC-Z, LOFC-Z: 0,9 mm; LOGC-Z, LOHC-Z: 1,50 mm.
- Pilot volume displacement = LOEC-Z, LOFC-Z: 1,1 cc; LOGC-Z, LOHC-Z: 4,1 cc.
- The position switch confirms that poppet is in the spring biased closed position.
- Switch specifications: supply voltage: 20-32 V DC; Maximum output load: ≤ 400 mA, duty ratio 100%. Turn on time: ≤ 25 ms.; Operating temperature range: -25 to 80° C. See the Sun website for complete switch specifications.

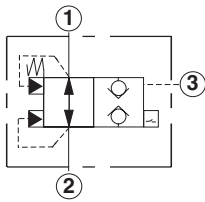
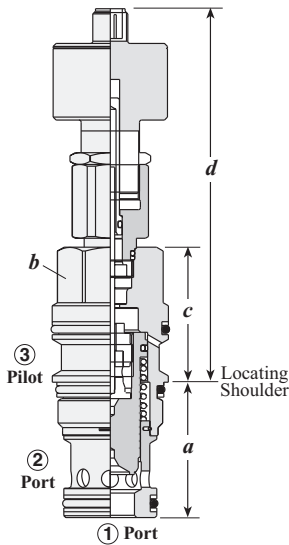
OPTION ORDERING INFORMATION



* See Sun website for complete Switch Specifications.

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UNBALANCED POPPET, PILOT-TO-CLOSE, SPRING BIASED CLOSED WITH POSITION INDICATING SWITCH



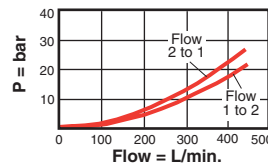
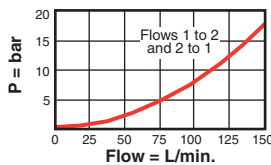
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	c	d	
200 L/min.	LOFO - ZDN	T - 2A	35,0	28,6	35,1	116,8	60 - 70
380 L/min.	LOHO - ZDN	T - 17A	46,0	31,8	46,0	127,3	200 - 215

Performance Curves

LOFO-Z

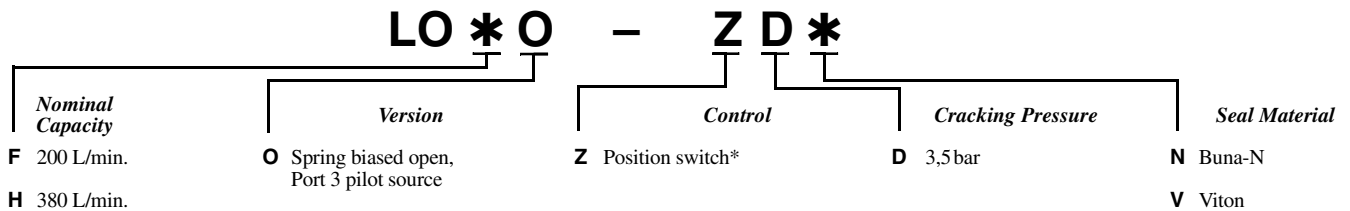
LOHO-Z

Pressure Differential vs. Flow Sequenced Open



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,07 cc/min.
- Area Ratio: A3 to A1 = 1.8:1; A3 to A2 = 2.25:1.
- Pilot passage into valve = LOFO-Z: 0,9 mm LOHO-Z: 1,50 mm.
- Pilot volume displacement = LOFO-Z: 1,1 cc; LOHO-Z: 4,1 cc.
- The position switch confirms that the valve is in the open position.
- Switch specifications: supply voltage: 20-32 V DC; Maximum output load: ≤ 400 mA, duty ratio 100%. Turn on time: ≤ 25 ms.; operating temperature range: -25 to 80° C. See the Sun website for complete switch specifications.

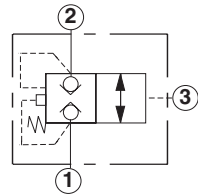
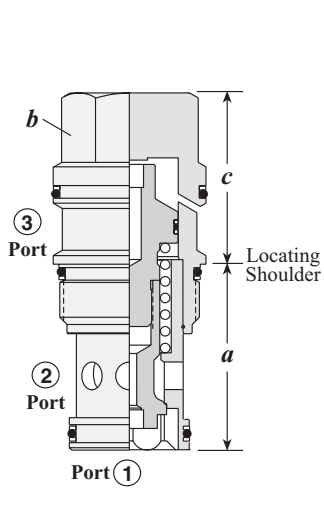
OPTION ORDERING INFORMATION



* See Sun website for complete Switch Specifications.

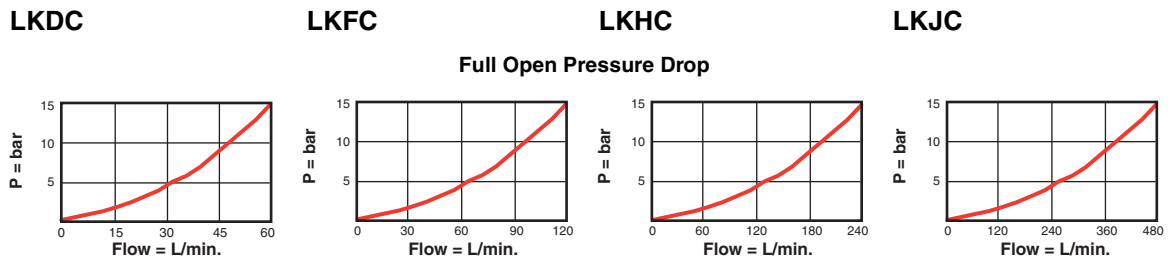
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UNBALANCED POPPET, PILOT-TO-OPEN, SPRING BIASED CLOSED



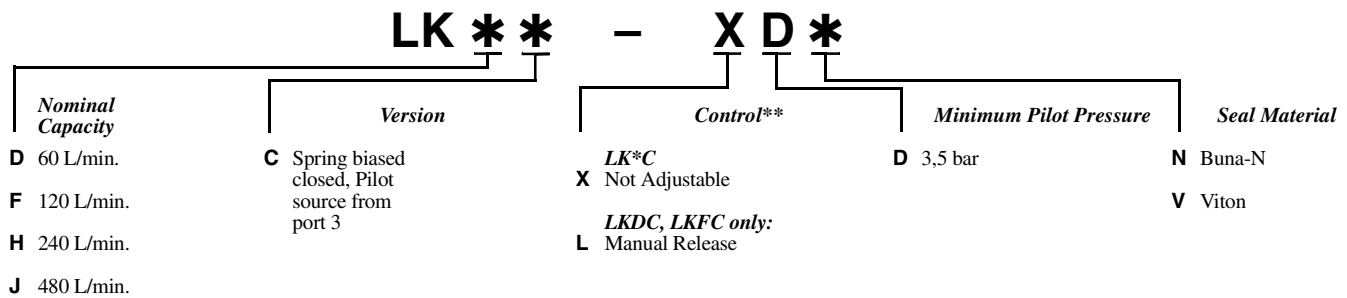
Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	X	L	
60 L/min.	LKDC – XDN	T - 11A	35,0	22,2	29,0	63,0	45 - 50
120 L/min.	LKFC – XDN	T - 2A	35,0	28,6	35,0	71,6	60 - 70
240 L/min.	LKHC – XDN	T - 17A	46,0	31,8	46,0	—	200 - 215
480 L/min.	LKJC – XDN	T - 19A	63,8	41,3	58,7	—	465 - 500

Performance Curves



- Maximum operating pressure = 350 bar.
- Maximum valve leakage at 24 cSt = 0,6 cc/min. at 70 bar.
- Area ratio: A3 to A1 = 1.8:1; A3 to A2 = 2.25:1.
- Pilot passage into valve = LKDC: 0,8 mm; LKFC: 0,9 mm; LKHC: 1,50 mm; LKJC: 2,3 mm.
- Pilot volume displacement = LKDC: 0,33 cc; LKFC: 0,98 cc; LKHC: 2,5 cc; LKJC: 4,9 cc.
- These valves are pressure responsive at all three ports, therefore it is essential to consider all aspects of system operation through a complete cycle. Pressure changes at any one port may cause a valve to switch from a closed to an open position, or vice versa. All possible pressure changes in the complete circuit must be considered to assure a safe, functional system design.

OPTION ORDERING INFORMATION



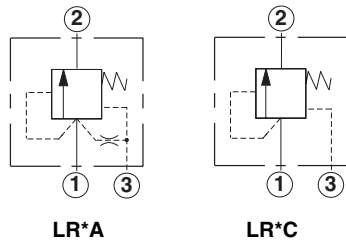
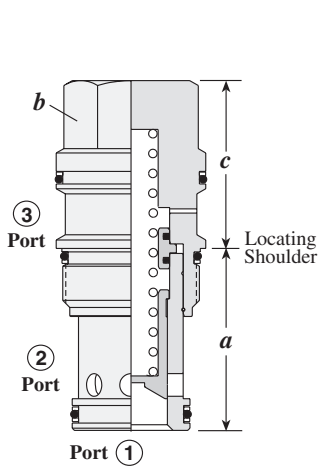
** See page 178 for information on Control Options

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U.S. Patent # 4,795,129

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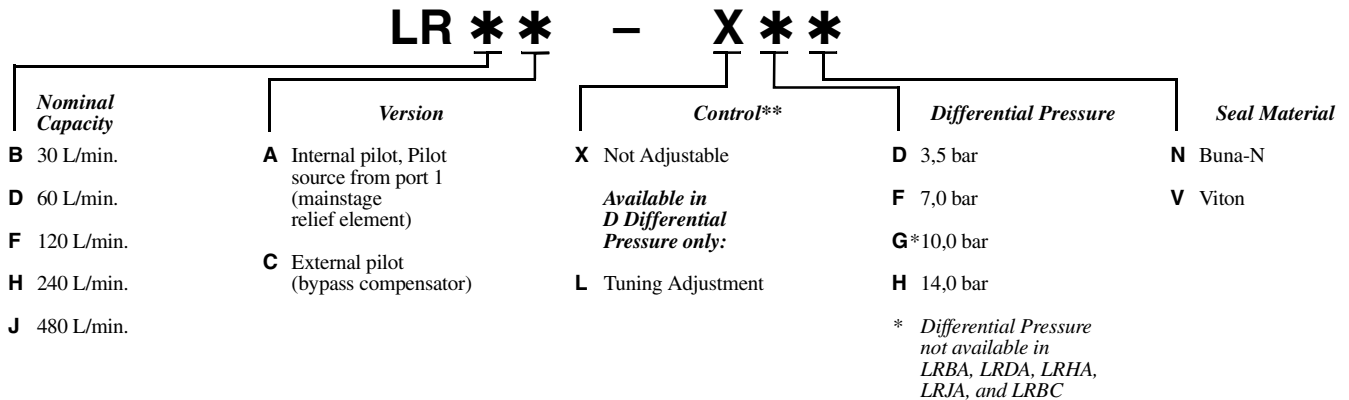
NORMALLY CLOSED, MODULATING ELEMENT



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	X	L	
30 L/min.	LRBC – XHN	T - 163A	31,8	19,1	31,8	64,8	35 - 40
60 L/min.	LRDC – XHN	T - 11A	35,0	22,2	30,2	63,5	45 - 50
120 L/min.	LRFC – XHN	T - 2A	35,0	28,6	35,0	83,1	60 - 70
240 L/min.	LRHC – XHN	T - 17A	46,0	31,8	46,0	84,0	200 - 215
480 L/min.	LRJC – XHN	T - 19A	63,8	41,3	58,7	100,1	465 - 500

- Maximum operating pressure = 350 bar.
- Control orifice diameter = LRBA, LRDA, LRFA: 0,4 mm; LRHA, LRJA: 0,53 mm.
- Control Pilot Flow = LRBA, LRDA, LRFA: 0,16 - 0,25 L/min.; LRHA, LRJA: 0,25 - 0,50 L/min.
- An optional tuning adjustment (L control) is offered to vary the pressure drop across the compensator to increase or decrease the flow. **This option is only available with the D differential pressure range.**

OPTION ORDERING INFORMATION

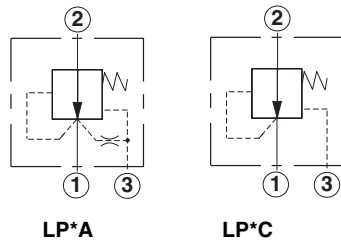
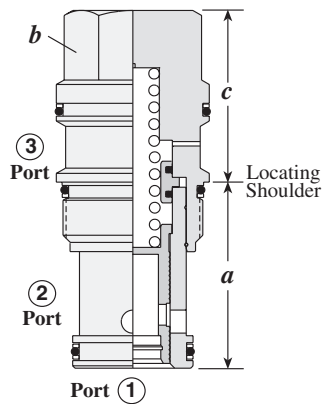


** See page 178 for information on Control Options

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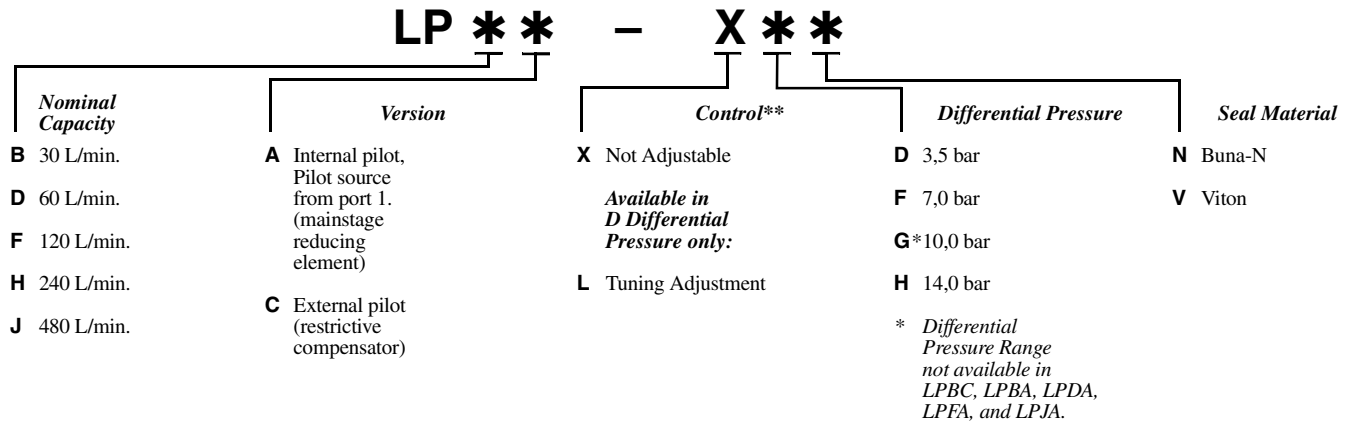
NORMALLY OPEN, MODULATING ELEMENT



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions				Installation Torque (Nm)
			a	b	X	L	
30 L/min.	LPBC – XHN	T - 163A	31,0	19,1	31,8	64,8	35 - 40
60 L/min.	LPDC – XHN	T - 11A	35,0	22,2	30,2	63,5	45 - 50
120 L/min.	LPFC – XHN	T - 2A	35,0	28,6	35,0	71,6	60 - 70
240 L/min.	LPHC – XHN	T - 17A	46,0	31,8	46,0	83,1	200 - 215
480 L/min.	LPJC – XHN	T - 19A	63,5	41,3	58,7	100,0	465 - 500

- Maximum operating pressure = 350 bar.
- Control Pilot Flow = LPBA, LPDA, LPFA: 0,16 - 0,25 L/min.; LPHA, LPJA: 0,25 - 0,50 L/min.
- Control Orifice Diameter = LPBA, LPDA, LPFA: 0,4 mm; LPHA, LPJA: 0,53 mm.
- An optional tuning adjustment (L control) is offered to vary the pressure drop across the compensator to increase or decrease the flow. **This option is only available with the D differential pressure range.**

OPTION ORDERING INFORMATION

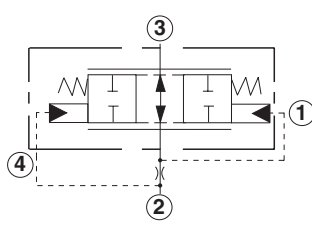
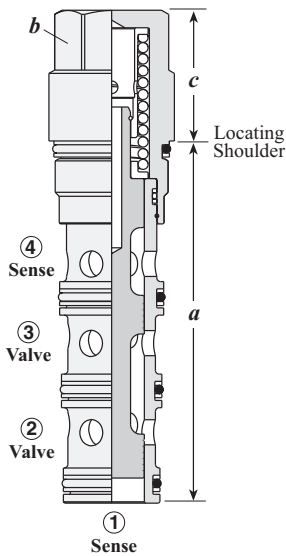


** See page 178 for information on Control Options

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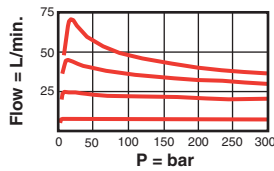
BI-DIRECTIONAL, MODULATING ELEMENT, NORMALLY OPEN



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	LHDT - XFN	T - 31A	84,8	22,2	30,2	45 - 50
120 L/min.	LHFT - XFN	T - 32A	92,2	28,6	33,3	60 - 70
240 L/min.	LHHT - XFN	T - 33A	114,3	31,8	41,3	200 - 215

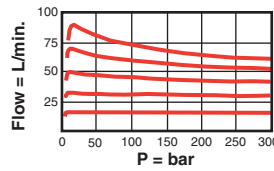
Performance Curves

LHDT

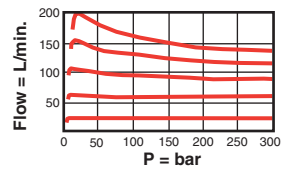


LHFT

Pressure Differential vs. Flow

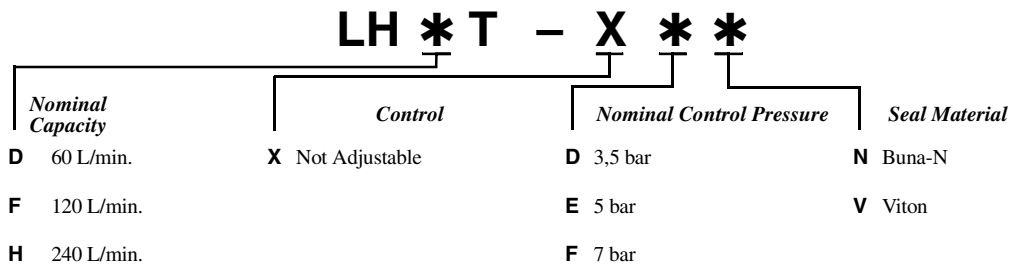


LHHT



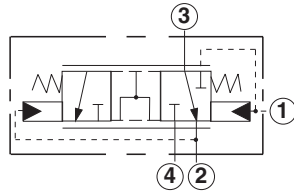
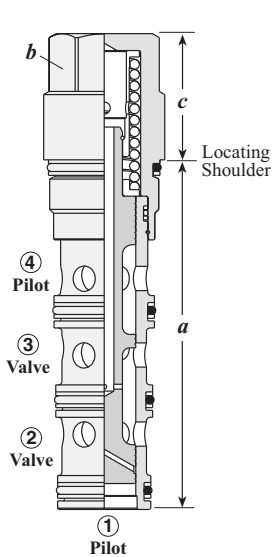
- Maximum operating pressure = 350 bar.
- All ports will accept 350 bar.
- These bi-directional, normally open, modulating elements, used with an external orifice, create a bi-directional, pressure compensated flow control.

OPTION ORDERING INFORMATION



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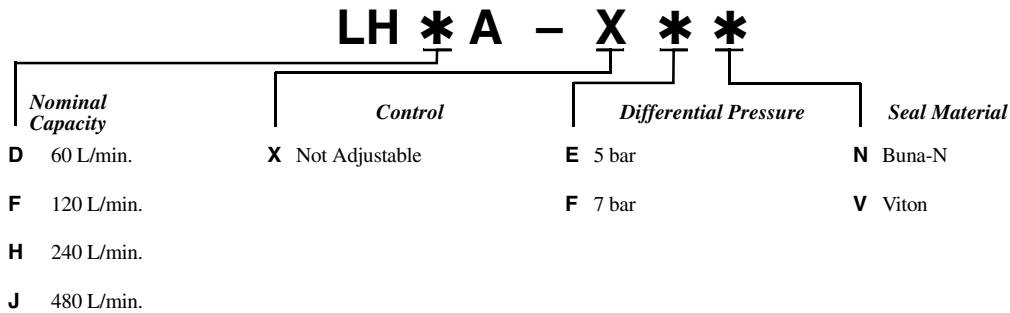
BYPASS/RESTRICTIVE, PRIORITY MODULATING ELEMENT



Nominal Capacity	Typical Cartridge Model Code	Cavity	Cartridge Dimensions			Installation Torque (Nm)
			a	b	c	
60 L/min.	LHDA - XFN	T - 31A	84,8	22,2	30,1	45 - 50
120 L/min.	LHFA - XFN	T - 32A	92,2	28,6	33,3	60 - 70
240 L/min.	LHHA - XFN	T - 33A	114,3	31,8	41,3	200 - 215
480 L/min.	LHJA - XFN	T - 34A	139,7	41,3	54,0	465 - 500

- Maximum operating pressure = 350 bar.
- Bypass flow is not available until priority flow requirements are satisfied.
- Bypass pressure at port 4 can be higher than pressure at control port 2.
- Priority flow can be turned off with a pilot sized solenoid valve on port 1.

OPTION ORDERING INFORMATION



Visit www.sunhydraulics.com for current list pricing and complete technical information on all Sun products.