CV

Check Valves







Check Valves Application Notes

Basic Operation

Check valves allow free flow in one direction and prevent flow in the other. The valve can be of poppet or ball design with various cracking pressures.





Standard Flow Path

The standard flow path allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1. They are spring biased closed until sufficient pressure is applied at port 1. As the pressure increases the valve will open allowing a flow to take place from port 1 to port 2.

These are more cost effective and the preferred choice when designing an HIC.



There are other alternatives that include an orifice through the poppet allowing a controlled amount of leakage from port 2 to port 1







Reverse Flow Path

The reverse flow path design allows free flow from port 2 to port 1 and blocks flow from port 1 to port 2. The spring biases the valve closed by pulling the poppet against the seat. These valves provide flexibility to the HIC designer allowing the most compact solution for the customer.



Typical Applications

Check valves are used in a variety of applications where oil is required to travel in one direction only. In the other direction the oil cannot pass, and the valve will hold pressure based on minimal leakage past the poppet.

The various cracking pressures allow the valves to be used as back pressure devices or in anti-cavitation circuits where minimal cracking pressure is required.



Multi pump circuits



Accumulator circuits





Pilot Operated Check Valves Application Notes

Basic Operation: Pilot to Open Check Valve

Pilot operated or pilot to open check valves can be opened by applying pressure to a pilot port acting on a larger area than the main seat of the valve. The ratio of the two areas is called the pilot ratio. These valves will hold a cylinder in position with minimal leakage.

Dual Pilot Operated Check Valve

In many cylinder applications it is necessary to lock the actuator, preventing movement in both directions. This requires either two separate pilot operated check valves or a single cartridge as shown below. Thermal relief valves can also be necessary. These can be incorporated into a single cartridge dual valve ideal for direct mounting into cylinders.



Vented Pilot Operated Check Valves

Vented pilot operated check valves have an extra port that is referenced to tank. This prevents back pressure from increasing the pilot pressure required to keep the valve open. These are often used when flow metering takes place downstream of the valve.

De-Compression Pilot Operated Check Valves

De-compression pilot operated check valves are used when there is a large amount of oil under pressure that must be released before the actuator is allowed to move. They also reduce the hydraulic bang caused by rapid decay of pressure in a system.

The valve benefits from a very high pilot ratio on the central portion of the valve [25:1], which allows the pressure held by the valve to fall in a controlled manner until the 3:1 pilot ratio can open the larger seat.

Basic Operation: Pilot to Close Check Valve

Pilot to close check valves allow free flow through the valve until pressure is applied to the pilot port. They can be used in regenerative circuits or as circuit selection devices. Generally, the pilot ratio will be around 2:1, allowing the valve to close off when the pilot pressure is half of the load pressure.

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Check Valves Application Notes



Application Recommendations

- Pilot operated check valves should not be used to control the lowering of a load without suitable orifices to make sure the pilot pressure is always sufficient to keep the valve wide open [see circuit below].
- A pilot operated check valve with a pilot ratio lower than the cylinder ratio should not be placed on the rod side of the cylinder.
- When using pilot to open check valves, an open center or motor spool directional valve is preferred, as locked in pressure may keep the valve open.
- Where the sealed pilot piston option is required, the cracking pressure of the check valve will typically be above 4.5 bar [65 psi].

Typical Applications



▲ Regenerative Circuit



Stabilizer Circuit





Clamping Circuit

Check Valves Quick Reference



Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CV3-4	C-4-2	Check Valve, Standard Direction	7.6 l/min [2 US gpm]	350 bar [5000 psi]	7
	CV08-NP	SDC08-2	Check Valve, Standard Direction	38 l/min [10 US gpm]	350 bar [5000 psi]	8
	CV10-NP	SDC10-2	Check Valve, Standard Direction	80 l/min [21 US gpm]	350 bar [5000 psi]	9
12	CV11-12	C-12-2 / C-12-2-U	Check Valve, Standard Direction	114 l/min [30 US gpm]	350 bar [5000 psi]	10
· ·	CV11-16	SDC16-2	Check Valve, Standard Direction	151 l/min [40 US gpm]	350 bar [5000 psi]	11
	3CA300	SDC20-2	Check Valve, Standard Direction	300 l/min [80 US gpm]	350 bar [5000 psi]	12
	CV2-20	SDC20-2	Check Valve, Standard Direction	227 l/min [60 US gpm]	210 bar [3000 psi]	13
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	RS 06	N/A	Check Valve, In-line, Female Port	30 l/min [8 US gpm]	350 bar [5000 psi]	14
	RS 10	N/A	Check Valve, In-line, Female Port	60 l/min [16 US gpm]	350 bar [5000 psi]	15
	RS 13	N/A	Check Valve, In-line, Female Port	100 l/min [26 US gpm]	315 bar [4600 psi]	16
1 - 4	RS 19	N/A	Check Valve, In-line, Female Port	140 l/min [37 US gpm]	280 bar [4000 psi]	17
	RS 25	N/A	Check Valve, In-line, Female Port	200 l/min [53 US gpm]	240 bar [3500 psi]	18
	FPR11/4	N/A	Check Valve, In-line, Female Port	220 l/min [58 US gpm]	250 bar [3600 psi]	19
	FPR11/2	N/A	Check Valve, In-line, Female Port	310 l/min [82 US gpm]	210 bar [3000 psi]	20
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP104-2	CP04-2	Check Valve, Reverse Direction	4.5 l/min [1.2 US gpm]	350 bar [5000 psi]	21
	CP108-2	SDC08-2	Check Valve, Reverse Direction	20 l/min [5 US gpm]	350 bar [5000 psi]	22
1 1 2	CP100-2	SDC10-2	Check Valve, Reverse Direction	50 l/min [13 US gpm]	350 bar [5000 psi]	23
	CP101-2	CP12-2	Check Valve, Reverse Direction	76 l/min [20 US gpm]	350 bar [5000 psi]	24
	CP102-2	SDC16-2	Check Valve, Reverse Direction	150 l/min [40 US gpm]	350 bar [5000 psi]	25
	CP103-2	SDC20-2	Check Valve, Reverse Direction	265 l/min [70 US gpm]	350 bar [5000 psi]	26
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CV6-4	C-4-2	Check valve, Standard Direction with Bypass Orifice	7.6 l/min [2 US gpm]	350 bar [5000 psi]	27
$1 \rightarrow 0 \rightarrow 1^2$	CV6-10	SDC10-2	Check valve, Standard Direction with Bypass Orifice	76 l/min [20 US gpm]	350 bar [5000 psi]	28
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	RV4-10	SDC10-2	Check Valve, Standard Direction with Thermal Relief	45 l/min [12 US gpm]	350 bar [5000 psi]	29

*Flow ratings are for reference only. Refer to individual product page for performance information.

Check Valves



Quick Reference						
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	RPC 04	NCS04/3	Pilot Operated Check Valve, Port 1 Pilot to Open	21 l/min [5.5 US gpm]	350 bar [5000 psi]	30
23	SPC2-8	SDC08-3	Pilot Operated Check Valve, Port 1 Pilot to Open	19 l/min [5 US gpm]	240 bar [3500psi]	31
,	SPC2-10	SDC10-3	Pilot Operated Check Valve, Port 1 Pilot to Open	23 l/min [6 US gpm]	210 bar [3000 psi]	32
1	RPC 06	NCS06/3	Pilot Operated Check Valve, Port 1 Pilot to Open	35 l/min [9 US gpm]	350 bar [5000 psi]	33
	RPC 12	NCS12/3	Pilot Operated Check Valve, Port 1 Pilot to Open	90 l/min [24 US gpm]	315 bar [4600 psi]	34
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	4CK30	A6610	Pilot Operated Check Valve, Port 3 Pilot to Open	30 l/min [8 US gpm]	350 bar [5000 psi]	35
	4SK30	A20090-T11A	Pilot Operated Check Valve, Port 3 Pilot to Open	30 l/min [8 US gpm]	350 bar [5000 psi]	36
	4CK90	A12336	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	350 bar [5000 psi]	37
1 1 2	POC1-10	SDC10-3S	Pilot Operated Check Valve, Port 3 Pilot to Open	57 l/min [15 US gpm]	350 bar [5000 psi]	38
	4SK90	A20092-T2A	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	350 bar [5000 psi]	39
3	4CKD90	A12336	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	420 bar [6000 psi]	40
	4CK120	A877	Pilot Operated Check Valve, Port 3 Pilot to Open	120 l/min [32 US gpm]	350 bar [5000 psi]	41
	4SK140	A20094-T17A	Pilot Operated Check Valve, Port 3 Pilot to Open	140 l/min [37 US gpm]	350 bar [5000 psi]	42
	4CK300	A6935	Pilot Operated Check Valve, Port 3 Pilot to Open	300 l/min [80 US gpm]	350 bar [5000 psi]	43
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
3 1	RPV 06	NCS06/4	Pilot Operated Check Valve, Port 1 Pilot to open with Drain	30 l/min [8 US gpm]	315 bar [4600 psi]	44
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
12	5CK30	A6610	Pilot Operated Check Valve, Port 3 Pilot to Close	30 l/min [8 US gpm]	350 bar [5000 psi]	45
	5CK120	A877	Pilot Operated Check Valve, Port 3 Pilot to Close	120 l/min [32 US gpm]	350 bar [5000 psi]	46
į 3	5CK300	A6935	Pilot Operated Check Valve, Port 3 Pilot to Close	250 l/min [65 US gpm]	350 bar [5000 psi]	47
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	DPC2-8	SDC08-4	Dual Pilot Operated Check Valve	19 l/min [5 US gpm]	240 bar [3500 psi]	48
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	4CKKT50	A12744	Dual Pilot Operated Check Valve, with Thermal Relief	25 l/min [7 US gpm]	300 bar [4300 psi]	49
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page

CP410-1 Catalog H	Dual Pilot Operated Check Valves, Line Mounted	80 l/min [21 US gpm]	210 bar [3000 psi]	50
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*Flow ratings are for reference only. Refer to individual product page for performance information. BC332375208102en-000202 6

Check Valves CV3-4

Check Valve, Standard Direction 350 bar [5000 psi] • 7.6 l/min [2 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.



PERFORMANCE DATA

Rated flow at 7 bar [100psi]

Rated pressure

Leakage

Weight

Cavity



PERFORMANCE CURVES



Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style P-Poppet type Code Ports 000 No Housing	Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 05 0.34 50 60 4.1	
Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style Housing P-Poppet type Code Ports Out No Housing	Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 05 0.34 C0 4.1	
Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style Housing P-Poppet type Code Ports Out No Housing	Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 Seal Option 05 O.34 [5] Code 4.1	
Seal Option Code Seal kit Code Bar Psi Omit-Buna-N 9900174-000 05 0.34 [5] 60 4.1 [60] Style P-Poppet type Code Par Ports Option Popopet type Option Notice Popopet type Option Popopet type Option Notice Popopet type Option Notice Popopet type Option Notice Popopet type Option Popopet type Option Notice Popopet type Option Notice Popopet type Option Notice Popopet type Option Notice Popopet type Option Popopet type Option Notice Popopet type Option Popopet type <	Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 05 0.34 [5] Col 4.1 [60]	
Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style Housing P-Poppet type Code Ports Oo0 No Housing	Seal Option Crack Pressure Code Seal kit Omit-Buna-N 9900174-000 Omit-Buna-N 9900174-000	
Code Seal kit Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style	Code Seal kit Code Bar Psi Omit-Buna-N 9900174-000 05 0.34 [5]	
Omit-Buna-N 9900174-000 V-Viton 9900175-000 Style Housing P-Poppet type Code Ports Odd No Housing	Omit-Buna-N 9900174-000 60 4.1	
V-Viton 9900175-000 60 4.1 [60] Style Housing Code Ports OOO No Housing	60 41 [60]	
Style Housing P-Poppet type Code Ports 000 No Housing	V-Viton 9900175-000	
P-Poppet type Code Ports 000 No Housing	Style Housing	
000 No Housing	P-Poppet type Code Ports	
	000 No Housing	





Check Valves CV08-NP

Check Valve, Standard Direction 350 bar [5000 psi] • 38 l/min [10 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100psi]	38 l/min [10 US gpm]
Leakage	6 drops/min @ Rated pressure
Weight	0.05 kg [0.11 lb]
Cavity	SDC08-2

*Rated pressure based on NFPA fatigue test standard [at 1 million cycles]

PERFORMANCE CURVES

Pressure drop 26 cSt [121 SUS] hyd oil at 50 C [122 °F] psi bar 150 10 1-2 8 100 6 4 50 2 0 -0 15 30 45 l/min 0 4 1 8 12 US gal/min

Crack Pressu	re					
Code	Bar Psi					
0.3	0.3 [5]					
1	1.0 [15]					
2	2.0 [30]	<u> </u>		Housing		
5	5.0 [73]	<u> </u>		Code	Ports & Material	Housing Model Co
7	7.0 [10	0]		00	No Housing	No Housing
				DG2B	AL, 1/4 BSP	SDC08-2-DG-2B
Seal Option				DG3B	AI, 3/8 BSP	SDC08-2-DG-3B
Code	Seal kit			4S	AL, #4 SAE	CP08-2-4S
B- Buna-N	120221			6S	AL, #6 SAE	CP08-2-65
V-Viton	120222			* Aluminu	um hadias ara ta ha usad faru	araccurac lace than 210 har [

Check Valves

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Danfoss

CV10-NP Check Valve, Standard Direction

350 bar [5000 psi] • 80 l/min [21 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100psi]	80 l/min [21 US gpm]
Leakage	6 drops/min @ Rated pressure
Weight	0.08 kg [0.18 lb]
Cavity	SDC10-2

*Rated pressure based on NFPA fatigue test standard [at 1 million cycles]

PERFORMANCE CURVES



MODEL CODE

			<u>)</u>		
Crack Pressu	re				
Code	Bar	Psi			
0.3	0.3	[5]			
1	1.0	[15]			
2	2.0	[30]	Housina		
5	5.0	[73]	Code	Ports & Material	Housing Model
7	7.0	[100]	00	No Housing	No Housing
10	10	[150]	65	AL #6 SAF	SDC10-2-65
15	15	[217]	85	AL, #8 SAE	SDC10-2-85
Seal Option			3B	AL, 3/8 BSP	SDC10-2-3B
Code	Seal	kit	4B	AL, 1/2 BSP	SDC10-2-4B
B- Buna-N	1200	15	* Alumini	um hodies are to be used for n	ressures less than 210 hav
V-Viton	1200	6	Addition *	nal housings available	10330103 1033 (11011 Z 10 Dai

BC332375208102en-000202



Check Valves CV11-12

Check Valve, Standard Direction 350 bar [5000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

SCHEMATIC

1 2



PERFORMANCE DATA

Rated pressure 350 bar [5000 psi] **Rated flow** 114 l/min [30 US gpm] Leakage 5 drops/min. maximum @ 350 bar [5000 psi] Weight 0,24 kg [0.54 lbs.] Cavity C-12-2 or C-12-2U



MODEL CODE

			CVI	1 - 12 -	V - P	- # -	- U	- 4	<u></u>		
Seal O	ption										
Code	9	ieal Kit									
Omit-	Buna-N C	02-165889									
V -Vitor	n (02-165888									
Style											
P- Popp	pet type								Crack Pres	sure	
Housir	ng Material								Code	Bar	Psi
Omit-	No Housing								2.5	0.17	[2.5]
A-Alun	ninum I								5.0	0.35	[5]
Housin									10	0.69	[10]
Codo	Porte	Housing Model	Cada						20	1.38	[20]
coue	FULS	C 12 20	(12.2	(12 20	(12.2				40	2.75	[40]
		Aluminum	C-12-2 Aluminum	Steel	Steel				80	5.50	[80]
		standard duty	heavy duty	heavy duty	heavy duty				160	11.0	[160]
0	No Housing										
10T	#10 SAE	02-160641	02-160640	02-169817	02-169744						
12T	#12 SAE	02-160645	02-160644	02-168790	02-169782			Cowity			
4G	1/2" BSP	02-161116	02-161118	02-172512	02-172062		L	Omit-Ca	vity without u	indercut	
				02 1(2022	03 100005			unit ca	ing milliout t	macreat	

r [3 10 psi].

* Additional housings available



Check Valves CV11-16

Check Valve, Standard Direction 350 bar [5000 psi] • 151 l/min [40 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	151 l/min [40 US gpm]
Leakage	5 drops/min. maximum @ 210 bar [3000 psi]
Weight	0,26 kg [0.58 lbs.]
Cavity	SDC16-2

DIMENSIONS



PERFORMANCE CURVES





MODEL CODE

			CVII	- 16 - <u>V</u> - <u>P</u> -	$\frac{0}{1} - \frac{5}{2} - \frac{1}{2}$	<u>)</u>	
Seal O Code Omit-I V-Vitor Style	<mark>ption Seal Ki</mark> Buna-N 565810 1 889609	t				Housing Mat Omit - no ho A - Aluminun S - Steel	terial using 1
P- Popp	oet type				Crack P	ressure	
					Code	Bar	Psi
Housir	ıg				5	0.34	[5]
Code	Ports		Housing Model C	ode	20	1.34	[20]
		Aluminum standard duty	Aluminum heavy duty	Steel heavy duty	30	2.07	[30]
0	No Housing				40	2,67	[40]
6R	3/4" RSP	02-175463			50	3.45	[50]
10T	#10 SAF	-		02-175104	100	6.90	[100]
121	#10 SAE	5661/0		02-175105			
121	1/2" DCD	JUU1 1 7	076716	02-175105			
40	2/4″ DCD	-	076710	02-1/3100			
101	3/4 B3P	-	07(717	02-1/510/			
IUH	# IU SAE	-	8/6/1/				
12H	#12 SAE	-	566113				

* Additional housings available

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Check Valves 3CA300

Check Valve, Standard Direction 350 bar [5000 psi] • 300 l/min [80 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

SCHEMATIC



DIMENSIONS

mm [in]



Installation torque 150 Nm [110 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Leakage	0.2 ml/min nomina
Weight	0.48 kg [1.06 lbs.]
Cavity	SDC20-2

PERFORMANCE CURVES

Pressure drop



Function						H	ousing Material
300-No H	lousing					0	mit-Aluminum/No housing
350-Cart	ridge and Housing					3	77-Steel
						Seal Option	
						Code	Seal Kit
Housing						S -Buna-N	SK1341
Code	Ports	Housing Model	Code			SV-Viton	SK1341V
		Aluminum	Steel				
0mit	No Housing						
10W	1 1/4" BSP	C24005	C24006	_	Crack P	ressure	
20T	1 1/4″ SAE	C24011	C24012	_	Code	Bar	Psi
* Alumini	um hadias ara ta hausad	for processor loss than 210	har [2000 pci]	_	0.3	0.3	[4.4]
AluIIIIIU * Addition	nii bouies are to be useu	tot pressures less triait 210	uai (2000 þsij.		1.0	1.0	[14.5]
Auuitioi	iai nousings available				2.0	2.0	[29]
						4.0	[50]
					4.0	4,0	[58]



Check Valves CV2-20

Check Valve, Standard Direction 210 bar [3000 psi] • 227 I/min [60 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

SCHEMATIC



PERFORMANCE DATA



PERFORMANCE CURVES

Rated pressure	210 bar [3000 psi]
Rated flow	227 l/min [60 US gpm]
Leakage	5 drops/min. maximum @ 210 bar [3000 psi]
Weight	0,49 kg [1.09 lbs.]
Cavity	SDC20-2



	Crack Pressure	
seal Option	Code Bar Psi	
Code Seal Kit	5 0.34 [5]	
Dmit-Buna-N 889615	15 1.03 [15]	
-Viton 889619	30 2.07 [30]	
	60 4.14 [60]	
ityle	100 6.90 [100]	
P-Poppet type	Housing	
	Code Ports Housin	g Model Code
	Aluminum standard duty	Aluminum heavy duty
	0 No Housing	
	8B 1" BSP 02-175464	-
	16T #16 SAE 566409	-
	6G 3/4" BSP -	876732
	8G 1" BSP -	876734
	12H #12 SAE -	876733



Check Valves RS 06

Check Valve, In-line, Female Port 350 bar [5000 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2

2 1

DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Weight	0.08 kg [0.18 lb]

PERFORMANCE CURVES







Check Valves RS 10

Check Valve, In-line, Female Port 350 bar [5000 psi] • 60 l/min [16 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

1 2

DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi	
Rated flow at 7 bar [100 psi]	60 l/min [16 US gpm]	
Weight	0.13 kg [0.29 lb]	

PERFORMANCE CURVES





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Check Valves RS 13

Check Valve, In-line, Female Port 315 bar [4600 psi] • 100 l/min [26 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.



DIMENSIONS

PERFORMANCE CURVES

mm [in]



PERFORMANCE DATA

Rated pressure	315 bar [4600 psi]
Rated flow at 7 bar [100 psi]	100 l/min [26 US gpm]
Weight	0.26 kg [0.46 lb]





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Check Valves RS 19

Check Valve, In-line, Female Port 280 bar [4000 psi] • 140 l/min [37 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.



DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	280 bar [4000 psi]	
Rated flow at 7 bar [100 psi]	140 l/min [37 US gpm]	
Weight	0.43 kg [0.95 lb	

Pressure drop

PERFORMANCE CURVES





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Check Valves RS 25

Check Valve, In-line, Female Port 240 bar [3500 psi] • 200 l/min [53 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

1 2

DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	240 bar [3500 psi]
Rated flow at 7 bar [100 psi]	200 l/min [53 US gpm]
Weight	0.88 kg [1.94 lb]

Pressure drop

PERFORMANCE CURVES







Check Valves FPR11/4

Check Valve, In-line, Female Port 250 bar [3600psi] • 220 l/min [58 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.



DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	250 bar [3600psi]
Rated flow	220 l/min [58 US gpm]
Weight	1.75 kg [3.85 lbs]







Check Valves FPR11/2

Check Valve, In-line, Female Port 210 bar [3000psi] • 310 l/min [82 US gpm]

DESCRIPTION AND OPERATION

This is an in-line check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

SCHEMATIC

 $1 \longrightarrow 2$

DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	210 bar [3000p	
Rated flow	310 l/min [82 US gpm]	
Weight	2.10 kg [4.63 lbs]	





Check Valves

Index



CP104-2 Check Valve, Reverse Direction 350 bar [5000 psi] • 4.5 l/min [1.2 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

SCHEMATIC



DIMENSIONS



PERFORMANCE DATA

Rated pressure*	350 bar [5000 psi 4.5 l/min [1.2 US gpm]	
Rated flow at 7 bar [100 psi]		
Leakage	6 drops/min @ Rated pressure	
Weight	0.01 kg [0.022 lb]	
Cavity	CP04-2	

*Rated pressure based on NFPA fatigue test standard [at 1 million cycles]

PERFORMANCE CURVES

Pressure drop





Danfoss

Check Valves CP108-2

Check Valve, Reverse Direction 350 bar [5000 psi] • 20 l/min [5 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gpm]
Leakage	6 drops/min @ 210 bar [3000 psi]
Weight	0.05 kg [0.11 lb]
Cavity	SDC08-2

PERFORMANCE CURVES

Pressure drop 154 SUS (33 cSt) hyd. oil @ 100° F (38° C) bar psi 203 14 12 174 10 145 습 116 ৮ 8 Pressure 87 6 58 4 29 2 0 _ L/min 8 24 32 16 Flow US gal/min 2.1 6.3 8.5 4.2

			-	
			Crack Pressure	
		Psi	ode	
al Ontion		[5])05	_
ode	Seal kit	[15])15	_
Buna-N	120221	[30])30	_
-Viton	120222	[50])50	-
		[65])65	-
		[100]	100	_
			Ports & N	Housing Model Code
			No Housin	No Housing
			AI, 1/4 BSF	SDC08-2-DG-2B
			AI, 3/8 BSI	SDC08-2-DG-3B
			AI,#4 SAE	CP8-2-4S
			AI, #6 SAE	CP8-2-6S

Danfoss

Check Valves CP100-2

Check Valve, Reverse Direction 350 bar [5000 psi] • 50 l/min [13 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gpm]
Leakage	6 drops/min @ 210 bar [3000 psi]
Weight	0.08 kg [0.17 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



			_	
			Crack Pressur	
		Psi	Code	_
		[5]	005	_
eal Option		[15]	015	_
Code	Seal kit	[30]	030	_
B- Buna-N	120015	[50]	050	_
V -Viton	120016	[65]	065	_
		[100]	100	-
			Ports &	Housing Model Code
			No Housi	No Housing
			AI, 3/8 BS	SDC10-2-DG-3B
			AI, 1/2 BS	SDC10-2-DG-4B
			AI,#6 SAE	CP10-2-6S
			AL #8 24	CP10-2-85

Danfoss

Check Valves CP101-2

Check Valve, Reverse Direction 350 bar [5000 psi] • 76 l/min [20 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	76 l/min [20 US gpm]
Leakage	6 drops/min @ 210 bar [3000 psi]
Weight	0.18 kg [0.40 lb]
Cavity	CP12-2

PERFORMANCE CURVES



MODEL CODE

Seal Option			
Code	Seal kit	Bar Psi	Psi
B- Buna-N	120017	0.34 [5]	[5]
V -Viton	120018	1.0 [15]	[15]
		4.5 [65]	[65]
		rial Housi	Housing Model Code
		No Ho	No Housing
		CP12-2	CP12-2-4B
		CP12-2	CP12-2-6B
		CP12-2	CP12-2-10S

BC332375208102en-000202



Check Valves CP102-2

Check valve, Reverse Direction with Bypass Orifice 350 bar [5000 psi] • 150 l/min [40 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi
Rated flow at 7 bar [100 psi]	150 l/min [40 US gpm]
Leakage	6 drops/min @ 210 bar [3000 psi]
Weight	0.26 kg [0.57 lb]
Cavity	SDC16-2

PERFORMANCE CURVES

Pressure drop



		Crack Pressure	r Dei
		005 03	4 [5]
eal Option			[15]
Code	Seal kit	013 1.0 030 21	[30]
B- Buna-N	120019	050 2.1	[50]
V -Viton	120020	065 4.5	[65]
		100 6.9	[100]
		Housing	
		Code Ports & Materia	Housing Model Code
		0 No Housing	No Housing
		HG-6B AI, 3/4 BSP	SDC16-2-HG-6B
		HG-88 AI, 1 BSP	SDC16-2-HG-8B
		125 Al,#12 SAE	CP16-2-12S
		16S AI, #16 SAE	(P16-2-16S



Check Valves CP103-2

Check Valve, Reverse Direction 350 bar [5000 psi] • 265 l/min [70 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gpm]
Leakage	6 drops/min @ 210 bar [3000 psi]
Weight	0.54 kg [1.20 lb]
Cavity	SDC20-2

PERFORMANCE CURVES

Pressure drop 154 SUS (33 cSt) hyd. oil @ 100° F (38° C) psi bar 203 14 174 12 145 10 습 116 ৮ 8 Pressure 87 6 58 4 29 2 0 L/min 80 240 320 400 160 Flow US gal/min 21.1 42.3 63.4 84.5 105.7

			Crack Press	ure	
			Code	Bar	Psi
Coal Oution			005	0.34	[5]
Sear option	Seal kit		015	1.0	[15]
B-Buna-N	120011		030	2.1	[30]
V -Viton	120012		050	3.4	[50]
			065	4.5	[65]
			100	6.9	[100]
		Housing			
		Code	Ports &	Material	Housing Model Code
		0	No Hous	ing	No Housing
		8B	AI,1 BSP		CP20-2-8B
		10B	Al,1-1/4	BSP	CP20-2-10B
		16S	AI,#16 S	AE	CP20-2-16S
		205	AI,#20 S	AE	CP20-2-20S

Check Valves CV6-4

Check valve, Standard Direction with Bypass Orifice

350 bar [5000 psi] • 7.6 l/min [2 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is restricted by an internal orifice from port 2 to 1.





PERFORMANCE DATA

350 bar [5000 psi
7.6 l/min [2 US gpm]
0.04 kg [0.09 lbs.]
(-4-2

PERFORMANCE CURVES



		CV6 - 4 - <u>B</u> - <u>P</u> - <u>000</u> - <u>5</u> -	015
Seal Option Code Omit-Buna-N V-Viton	Seal kit 9900174-000 9900175-000		Orifice size Specify in thousandths of an inch 015015" min
Style			020020 max
P -Poppet type			
Housing		Crack	Pressure
nousing		Code	Bar Psi
		05	0.34 [5]



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Check Valves CV6-10

Check valve, Standard Direction with Bypass Orifice

350 bar [5000 psi] • 76 l/min [20 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is restricted by an internal orifice from port 2 to 1.







PERFORMANCE DATA

76 l/min [20 IIS anm]
/ 0 // mm [20 05 gpm]
0.04 kg [0.09 lbs.]
SDC10-2

A-CV6 10*P 000 210 00 • **B**-CV6 10*P 000 040 00 • **C**-CV6 10*P 000 003 00

			CV6 -	10 -	<u>B - P - 0</u>	- 003	- <u>3B</u>	- <u>015</u>
Seal O	ption				ΤΤΤ			
Code	Sea	al Kit						Orifice size
N-Buna	a-N 889	9615 Stul						Specify in thousandths of an inch
V-Vitor	n 889	9619 P- Po	opet type					013 015" min 050 050" max
Housir	ng Material							
0- No H	lousing	Cond	Descripto					
A -Alum	ninum	Code	Rar	Pci				
S -Steel	I	003	0.21	[3]				
		010	0.21	[10]				
		035	2 41	[35]				
		035	2.71	[40]				
		040	4.48	[65]				
		100	69	[100]				
		180	12.4	[180]				
		210	14.5	[210]				
Housir	ng		L.F.	[210]				
Code	Ports	Housing Model Code						
		Aluminum standard du	ty Aluminum I	neavy duty	Steel heavy duty			
0mit	-No Housing							
3B	3/8" BSP	02-175462	-		-			
6T	#6 SAE	566151	-		02-175100			
8T	#8 SAE	-	-		02-175101			
2G	1/4" BSP	-	876702		02-175102			
3G	3/8" BSP	-	876703		02-175103			
6H	#6 SAE	-	876700		-		*Aluminum bo	dias are to be used for prossures lass than 210 bar [3000 psi]
8H	#8 SAE	-	876701		-		* Additional ho	usings available

Danfoss

Check Valves RV4-10

Check Valve, Standard Direction with Thermal Relief

350 bar [5000 psi] • 45 l/min [12 US gpm]

DESCRIPTION AND OPERATION

This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1. This valve has the addition of a thermal relief that will open from port 2 to 1 when the pre-set pressure is reached. This valve can be used in conjunction with a separate pilot piston and used on cylinder applications where thermal expansion of the oil could be an issue.

SCHEMATIC



DIMENSIONS

Installation torque A-47-54 Nm [35-40 ft. lbs] S-68-75 Nm [50-55 ft. lbs]



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi
Rated flow	45 l/min [12 US gpm
Leakage	0.3 ml/min [5 drops/min
Weight	0.11 kg [0.25 lb
Cavity	SDC10-2



PERFORMANCE CURVES

Seal	Option							Pressure Sett	ting	
Code	<u> </u>	Seal Kit						Code-x100-Pre	essure setting in p	si (100 psi
0mit	t-Buna-N S	565803	Adjustm	ent Option				increments wit XXX-Standard s	hin specified Press setting (see Pressu	sure Range) Ire Range
V -Vit	on 5	566086	F-Fixed		lousing Material			for value)	5.	5
				Ģ	Dmit-Aluminum/No housing			Code	Bar	Psi
Hous	ing			2	-51661			10	70	[1000]
Code	Ports	Housin	ng Model Cod	e				25	175	[2500]
		Alumin Standa	ium ird Duty	Aluminum Heavy Duty	Steel Heavy Duty					
0	No Housing						Pressure	Range		
	3/8″ BSP	02-1754	162	-	-		Code	Bar	Psi	
3B	1/4″ BSP	-		876702	02-175102		50	28-350	[400-5000]	
3B 2G		-		876703	02-175103	_				
3B 2G 3G	3/8″ BSP			876700	-					
3B 2G 3G 6H	3/8" BSP #6 SAE	-		07(701	-					
3B 2G 3G 6H 8H	3/8″ BSP #6 SAE #8 SAE	-		8/6/01						
3B 2G 3G 6H 8H 6T	3/8″ BSP #6 SAE #8 SAE #6 SAE	- - 566151		-	02-175100					

Danfoss

Check Valves RPC 04

Pilot Operated Check Valve, Port 1 Pilot to Open 350 bar [5000 psi] • 21 l/min [5.5 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

SCHEMATIC



PERFORMANCE DATA



PERFORMANCE CURVES

Pressure drop



*Rated Pressure based on NFPA fatigue test standard [at 1 million cycles] Note: A piston seal requires a 5 bar [72.5 psi] or greater return spring.



Crack Pres	sure							
Code	Bar	Psi						
0.5	0.5	[7.3]				Seal Option		
2.5	2.5	[36]				Code	Seal kit	_
5	5	[73]				Omit-Buna-N	230000160	_
8	8	[116]				V-Viton	230000450	_
15	15	[218]						
					Housin	g		
Pilot Seal	Option				Code	Ports & Ma	nterial	Housing Model Code
Omit -No	seals				00	No Housing		No Housing
OR -Sea	ls				SE1/4	AL, 1/4 BSP		NCS04/3-SE-1/4
					SE4S	AL, #4 SAE		NCS04/3-SE-4S
					SE6S	AL #6 SAF		NCS04/3-SE-6S



Check Valves SPC2-8

Pilot Operated Check Valve, Port 1 Pilot to Open

240 bar [3500 psi] • 19 l/min [5 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.



DIMENSIONS



PERFORMANCE DATA

Rated pressure	240 bar [3500 psi]
Rated flow	19 l/min [5 US gpm]
Weight	0.07 kg [0.15 lbs.]
Pilot Ratio	3:1
Internal leakage [all leak rates @ 240 bar [3500 psi]	
Port 3 to 2	5 drops/min. maximum
Port 2 to 1 unsealed piston	140 ml/min. maximum
•	zero leakage with sealed piston
Cavity	SDC08-3

Note: A piston seal requires a 2.4 bar [35 psi] or greater return spring

PERFORMANCE CURVES



eal Option				Crack Pres	sure	
Code	Seal Kit			Code	Bar Psi	
i t -Buna-N	02-173326			15	1.0 [15]	
/iton	02-173327			35	2.4 [35]	
J-Buna-N with no pilot seals	02-173326			65	4.5 [65]	
W -Viton with no pilot seals	02-173327					
			Hous	ing		
			Code	Ports	Aluminum heavy duty	Steel heavy duty
			Omit	No Housing		
			4T	#4 SAE	02-160741	02-160745
nousing Material			6T	#6 SAE	02-160742	02-160744
A-Aluminum			2G	1/4" BSP	02-160739	02-160743
-Steel			3G	3/8" BSP	02-160740	02-160746



Check Valves SPC2-10

Pilot Operated Check Valve, Port 1 Pilot to Open 210 bar [3000 psi] • 23 l/min [6 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

SCHEMATIC





PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	23 l/min [6 US gpm]
Leakage	5 drops/min. maximum @ 210 bar [3000 psi]
Weight	0.08 kg [0.18 lb]
Pilot Ratio	4:1
Cavity	SDC10-3

PERFORMANCE CURVES



		Crack Pressure	
		Code Bar F	Psi
		25 1.7 [[25]
		50 3.5 [[50]
		100 6.9 [[100]
Seal Option		Housing	
Code	Seal Kit	Cada Darta Aluminu	ım Aluminum
Omit-Buna-N	02-153267	code Ports standard	d duty heavy duty
V -Viton	02-173666	0 No Housing	
U -Buna-N with no pilot seals	02-153267	3B 3/8″BSP 02-17335	58
W -Viton with no pilot seals	02-173666	6T #6 SAE 566162	
		2G 1/4" BSP	876705
		3G 3/8″ BSP	876714
		6H #6 SAE	876704
		8H #8 SVE	876711



Check Valves RPC 06

Pilot Operated Check Valve, Port 1 Pilot to Open 350 bar [5000 psi] • 35 l/min [9 US qpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

SCHEMATIC



DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure*	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gpm]
Weight	0.10 kg [0.22 lb]
Pilot Ratio	3.4:1
Cavity	NCS06/3

*Rated pressure based on NFPA fatigue test standard [at 1 million cycles] Note: A piston seal requires a 5 bar [72.5 psi] or greater return spring.

PERFORMANCE CURVES

Pressure drop



Crack Pre	rack Pressure									
Code	Bar	Psi								
0.5	0.5	[7]						Seal Option		
2	2	[30]						Code	Seal kit	
5	5	[73]						Omit-Buna-N	230000070	_
10	10	[145]						V -Viton	230000110	_
Pilot Seal	Option						Housing	1		
Omit -N	o seals						Code	Ports & Ma	terial	Housing Model Code
OR -Se	eals						00	No Housing		No Housing
							SE3/8	AL, 3/8 BSP		NCS06/3-SE-3/8
							SE1/2	AL, 1/2 BSP		NCS06/3-SE-1/2
							SE6S	AL, #6 SAE		NCSO6/3-SE-6S

Danfoss

Check Valves RPC 12

Pilot Operated Check Valve, Port 1 Pilot to Open 315 bar [4600 psi] • 90 l/min [24 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

SCHEMATIC



PERFORMANCE DATA



PERFORMANCE CURVES

Pressure drop



Note: A piston seal requires a 5 bar [72.5 psi] or greater return spring.



Crack Pres	sure						
Code	Bar	Psi					
0.5	0.5	[7]			Seal Option		
2.5	2.5	[36]			Code	Seal kit	
5	5	[73]			Omit-Buna-N	230000130	
10	10	[145]			V-Viton	230000360	
				Housi	ıg		
	•			Code	Port & Materia	l Housing Model Code	
Pliot Seal	Uption			00	No Housing	No Housing	
	eals			SE1/2	AL, 1/2 BSP	NCS12/3-SE-1/2	
Omit-No se				SE3/4	AL, 3/4 BSP	NCS12/3-SE-3/4	
Omit- No se OR- Seals				SE8S	AL, #8 SAE	NCS12/3-SE-8S	
Omit- No se OR- Seals							



Check Valves 4CK30

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

SCHEMATIC





Installation torque 45 Nm [33 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Weight	0.08 kg [0.18 lbs]
Pilot Ratio	3:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A6610

PERFORMANCE CURVES



Pressure - bar

Basic (ode					
4CK30 4CK35 4CKK3 Pilot P	-No Housing -Cartridge and Housing 4 -Cartridges and Dual Housing					Housing Material Omit-Aluminum/No housing 377-Steel
1-Inter	nal					
Housin	g					
Code	Ports		Housing I	Model Code		Pilot Seal Option
		Aluminium single	Steel single	Aluminium double	Steel double	Omit -No seals
	No Housing					3 -3eals
0mit			D12022	B6836	B13803	
Omit 3W	3/8" BSP. 1/4" BSP Pilot Port	B6743	DIZOZJ			
Omit 3W 6T	3/8" BSP. 1/4" BSP Pilot Port 3/8" SAE. 1/4" SAE Pilot Port	B6743 B10536	D12023	B10805		
Omit 3W 6T 8T	3/8" BSP. 1/4" BSP Pilot Port 3/8" SAE. 1/4" SAE Pilot Port 1/2" SAE. 1/4" SAE Pilot Port	B6743 B10536 B7884	84811	B10805 B30237	B11812	Seal Option
Omit 3W 6T 8T *Alumi	3/8" BSP. 1/4" BSP Pilot Port 3/8" SAE. 1/4" SAE Pilot Port 1/2" SAE. 1/4" SAE Pilot Port num bodies are to be used for pre	B6743 B10536 B7884 essures less than	84811 210 bar [3000	B10805 B30237	B11812	Seal Option Code Seal kit
Omit 3W 6T 8T *Alumi * Addit	3/8" BSP. 1/4" BSP Pilot Port 3/8" SAE. 1/4" SAE Pilot Port 1/2" SAE. 1/4" SAE Pilot Port num bodies are to be used for pre ional housings available	B6743 B10536 B7884 essures less than	84811 210 bar [3000	B10805 B30237 psi]	B11812	Seal Option Code Seal kit S-Nitrile SK430



Check Valves 4SK30

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Weight	0.18 kg [0.39 lbs]
Pilot Ratio	3:1 and 5:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A20090-T11A

PERFORMANCE CURVES



MODEL CODE



DIMENSIONS



Check Valves 4CK90

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 90 l/min [24 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

SCHEMATIC



DIMENSIONS



Installation torque 90 Nm [66 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Weight	0.27 kg [0.61 lbs]
Pilot Ratio	4:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A12336

PERFORMANCE CURVES



Basic Code					T	T	Γ		
4CK90-No I 4CK95-Cari 4CKK95-Ca	Housing tridge and Housing rtridges and Dual Housing							Housing Material Omit Aluminum/No housing	
Pilot Optio	n							377-steel	
1 -Interna	l						Pilot S	Seal Option	
Housing							Omit	-No seals	
Code	Ports	Housing Model Code					3	-Seals	
		Aluminium	Steel	Aluminium	Steel	Seal O	otion		
		single	single	double	double	Code		Seal kit	
0mit	No Housing					S-Nitril	e	SK832	
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628	SV-Vito	n	SK832V	
		D1000C	P10022	C10007	(11561				



Check Valves POC1-10

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 57 l/min [15 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

SCHEMATIC







PERFORMANCE CURVES

DIMENSIONS

mm [in]

PERFORMANCE DATA

350 bar [5000 psi]
57 l/min [15 US gpm]
0.17 kg [0.36 lbs]
(without override): 0.10 kg [0.23 lbs]
3:1
< 5 drops/min @ 350 bar [5000 psi]
SDC10-3S



A-100 • B-075 • C-030 • D-005 • E-Full Pilot

		POC1	- 10 ·	- <u>v</u> -	F - !	ļ- A	- <u>6</u>	<u> </u>	005
									Cr.
									00
Seal Option									
Code	Seal kit								03
Omit-Buna-N	889650								07
V-Viton	889652								10
								Housing	
Override Optio	n							Ports	
F-Fixed							-	0105	
S-External Over	ride								F S
							i	No Housir	ng
Housing Option	n						-	#6 SAF	6
O -No housing							-	40 CAE	
I-Cartridge and	housing						7	F8 SAE	
							1	#10 SAE	
Housing Mater	lai						1	1/4" BSP	
Omit-No housir	ng						-	3/8″ BSP	3
A-Aluminum S-Steel								1/2″ BSP	-
							- 9 4	* Aluminu * Addition	m bodi Ial hou:

	сгаск Р	ressure			
	Code	Bar	[Psi]		
	005	0.3	[5]		
	030	2.0	[30]		
	075	5.0	[75]		
	100	7.0	[100]		
Housing					
Ports				Code	
	Alum Stand	inum lard du	Alur ty Hea	ninum vy duty	Steel
No Housing			0mi	t	
#6 SAE	6T		6H		6T
#8 SAE			8H		8T
#10 SAE					10T
1/4" BSP			2G		
3/8″ BSP	3B		3G		3G
5/0 051					



Check Valves 4SK90

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 90 l/min [24 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Weight	0.39 kg [0.86 lbs.]
Pilot Ratio	4:1
Leakage	0.3 m l/min nominal [5 dpm]
Cavity	A20092-T2A

PERFORMANCE CURVES









Check Valves 4CKD90

Pilot Operated Check Valve, Port 3 Pilot to Open

420 bar [6000 psi] • 90 l/min [24 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3. At this point, pressure in port 3 opens the de-compression part of the valve at a low pressure. Once the pressure has fallen far enough the main section of the valve opens.





mm [in]



Installation torque 90 Nm [66 ft. lbs]

PERFORMANCE DATA

Rated pressure	420 bar [6000 psi]
Rated flow	90 l/min [24 US gpm]
Weight	0.243 kg [0.54 lbs]
Dilot Patio	25:1 decompression stage
	3:1 main stage
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A12336

PERFORMANCE CURVES



MODEL CODE

Basic Code	E Constanting and the second se						
4CKD90-No 4CKD95-Ca 4CKKD95-C	o Housing irtridge and Housing Cartridges and Dual Housing						Housing Material Omit-Aluminum/No housing
Pilot Ports							377 -Steel
1 -Internal						Pilo	nt Seal Option
Housing						0m	it -No seals
Code	Ports		Housing	Model Code		5	-Seals
		Aluminium single	Steel single	Aluminium double	Steel double	Seal Option	
Omit	No Housing					Code	Seal kit
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628	S -Buna-N	SK986
81	1/2" SAF 1/4" SAF Pilot Port	B10806	B10922	C10807	(11561	SV-Viton	SK986V

*Aluminum bodies are to be used for pressures less than 210 bar [3000 psi] * Additional housings available

350 bar [5000 psi]

0.28 kg [0.62 lbs]

3:1

A877

120 l/min [32 US gpm]

0.3 ml/min nominal [5 dpm]

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Check Valves 4CK120

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 120 l/min [32 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.



PERFORMANCE DATA

Rated pressure Rated flow

<u>Weight</u> Pilot Ratio

Leakage

Cavity

DIMENSIONS

mm [in]



Installation torque 100 Nm [74 ft. lbs]

PERFORMANCE CURVES



CK125-C	artridge and Housing						Housing Materia Omit-Aluminum/	n /No housin
CKK125	-Cartridges and Dual Housing						377-Steel	5
ilot Opti	ion					Pi	ilot Seal Option	
Internal	I					0	mit -No seals	
						3	-Seals	
ousing								
Code	Ports		Housing M	odel Code				
		Aluminium sinale	Steel single	Aluminium double	Steel double	Seal Option	1 Saal kit	
Omit	No Housing					S-Nitrile	SK381	
6W	3/4" BSP 1/4" BSP Pilot Port	B6898	B5544	C2543	C1200	SV-Viton	SK381V	
12T	3/4" SAE 1/4" SAE Pilot Port	B8200		C10629	C16434			
16T	1" SAE 1/4" SAE Pilot Port	B10708	B11814					
12T 16T Aluminu Additior	3/4" SAE 1/4" SAE Pilot Port 1" SAE 1/4" SAE Pilot Port m bodies are to be used for pres ral housings available	B8200 B10708 sures less than 2°	B11814 10 bar [3000 p	C10629	C16434			



Free flow

30

Piloted open

35

2 01 Pressure - bar

40

Check Valves 4SK140

Pilot Operated Check Valve, Port 3 Pilot to Open 350 bar [5000 psi] • 140 l/min [37 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.



225

150

75

0

10

5

15

Flow - US gpm

20

25

Pressure - psi

A20094-T17A

MODEL CODE

Cavity





Check Valves 4CK300

Pilot Operated Check Valve, Port 3 Pilot to Open

350 bar [5000 psi] • 300 l/min [80 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.



DIMENSIONS

mm [in]



Installation torque 150 Nm [110 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Weight	0.86 kg [1.89 lbs]
Pilot Ratio	3:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A6935

PERFORMANCE CURVES



				4CK30	00 - 1	- <u>10W</u> - <u>S</u> - <u>3</u> - <u>377</u>
Basic Co	de				— T	
4CK300	-No Housing					Housing Material
4CK350 4CKK35	-Cartridge and Housing 0 -Cartridges and Dual Housing					Omit-Aluminum/No housing 377-Steel
Pilot Op	tion					Pilot Seal Option
-Inter	nal					Omit -No seals
						3 -Seals
lousing	l					
ode	Ports		Housi	ng Model Code		
		Aluminium	Steel	Aluminium	Steel	Seal Option
		single	single	double	double	Code Seal kit
Omit	No Housing					S-Nitrile SK683
10W	1 1/4" BSP 1/4" BSP Pilot Port	B6814	B8610	C8704	C8705	SV-Viton SK683V
20T	1 1/4" SAE 1/4" SAE Pilot Port	B10630	B11474	C10811	C11564	

Quick Reference

Index



Check Valves RPV 06

Pilot Operated Check Valve, Port 1 Pilot to open with Drain

315 bar [4600 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

This is a pilot operated check valve with a separate drain. Free flow takes place from port 3 to 4 and is blocked from port 4 to 3 until pilot pressure is applied to port 1. Port 2 is drained to tank to remove any effect of pressure in port 3 affecting the pilot pressure required to keep the valve open.





PERFORMANCE DATA

Rated pressure	315 bar [4600 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gpm]
Weight	0.13 kg [0.29 lb]
Pilot Ratio	3.4:1
Cavity	NCS06/4

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

PERFORMANCE CURVES



MODEL CODE

V		
T		
Seal Option	l	
Code	Seal kit	
V-Viton	Consult factory	
Omit-Buna-	N 23000080	

BC332375208102en-000202

Danfoss

Check Valves 5CK30

Pilot Operated Check Valve, Port 3 Pilot to Close

350 bar [5000 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.

SCHEMATIC



DIMENSIONS

mm [in]



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gpm]
Weight	0.08 kg [0.18 lbs]
Pilot Ratio	2:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A6610

Pressure - psi

PERFORMANCE CURVES Pressure drop



Basic Co	de		<u>5CK3</u>	<u>0</u> - <u>1</u> - <u>3'</u>	<u>w</u> - s	<u>s</u> - <u>2</u>	2 - <u>377</u>
5CK30-N 5CK35-C	o Housing artridge and housing						Housing Material Omit-Aluminum/No housing
Pilot							377-Steel
1-Interna	1						
Housing							Pilot Ratio
Code	Ports	Housing Mo	odel Code		-		2- 2:1
		Aluminum	Steel				
Omit	No Housing						
3W	3/8" BSP 1/4" BSP Pilot Port	B6743	B12823			Seal Op	tion
6T	3/8" SAE 1/4" SAE Pilot Port	B10536				Code	Seal kit
8T	1/2" SAE 1/4" Pilot Port		B11811			S -Nitrile	e SK829
*Aluminu * Additior	m bodies are to be used for pressur 1al housings available	es less than 210 bar [3	000 psi]			SV-Vitor	n SK829V



Check Valves 5CK120

Pilot Operated Check Valve, Port 3 Pilot to Close

350 bar [5000 psi] • 120 l/min [32 US gpm]

DESCRIPTION AND OPERATION

This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	120 l/min [32 US gpm]
Weight	0.28 kg [0.62 lbs]
Pilot Ratio	2:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A877

PERFORMANCE CURVES



MODEL CODE

Basic Code						
5 CK120 -No H 5 CK125 -Carti	lousing ridge and Housing				Housing Material Omit-Aluminum/No housing 373 Steel	
Pilot Option					377-steel	
1 -Internal					Pilot Ratio	
Housing			Ļ	2.7.1		
Code	Ports	Housing Mode	l Code		£ 2.1	
		Aluminum	Steel			
Omit	No Housing			Seal Opt	tion	
6W	3/4" BSP 1/4" BSP/SAE Pilot Port	B6898	B5544	Code	Seal kit	
12T	3/4" SAE 1/4" SAE Pilot Port	B8200		S -Nitrile	SK833	
	1" SAE 1/A" SAE Dilat Dart	R10708	R11814	SV-Viton	skassv	

BC332375208102en-000202



Check Valves 5CK300

Pilot Operated Check Valve, Port 3 Pilot to Close

350 bar [5000 psi] • 250 l/min [65 US gpm]

DESCRIPTION AND OPERATION

This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.

SCHEMATIC





PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	250 l/min [65 US gpm]
Weight	0.73 kg [1.61 lbs]
Pilot Ratio	2:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A6935

304.5 261.0 217.5 Pressure - psi 174.0 130.5 87.0

PERFORMANCE CURVES



Basic Co	de			T T T	
5CK300- 5CK350-	No Housing Cartridge and housing				Housing Material Omit-Aluminum/No housing 377.5taol
Pilot Opt	ion				
1-Interna					Pilot Ratio
Housing					2-2:1
Code	Ports	Housing Mode	Code		
Omit	No Housing	Aluminum	Steel	Soal Ontic	
10W	1 1/4" BSP 1/4" BSP/SAE Pilot Port	B6814	B8610	Code	Soal kit
20T	1 1/4" SAE 1/4" BSP/SAE Pilot Port	B10630	B11474	S-Nitrile	SK834
*Aluminu * Addition	m bodies are to be used for pressures less al housings available	han 210 bar [3000	osi]	SV-Viton	5K834V

DIMENSIONS

mm [in]

Check Valves DPC2-8

Dual Pilot Operated Check Valve

240 bar [3500 psi] • 19 l/min [5 US gpm]

DESCRIPTION AND OPERATION

This is a dual pilot operated check valve where free flow takes place from port 2 to 1 and port 3 to 4. Flow is blocked from port 1 to 2 until pressure is applied to port 3 and blocked from port 4 to 3 until pressure is applied to port 2.

SCHEMATIC





PERFORMANCE DATA

Rated pressure	240 bar [3500 psi]
Rated flow	19 l/min [5 US gpm]
Weight	0,08 kg [0.18 lbs.]
Pilot Ratio	3:1
Leakage	
Ports 2 to 3 and 3 to 2:	140 cc/min. [8.5 in ³ /min.] @ 240 bar [3500 psi]
Ports 4 to 3 and 1 to 2:	5 drops/min. @ 240 bar [3500 psi]
Cavity	SDC08-4

Pressure drop Flow - L/min (21,8 cSt oil @ 49°C) 300 0 5 10

PERFORMANCE CURVES

22.2 (0.875) Hex



			DFC2 - 8 -	<u>y</u> - A	- <u>25</u> - <u>A</u>				
						Housir	ng		
eal Optio	n					Code	Ports	Housing Mode	l Code
U-Urethan Pilot Leak	2							Aluminum heavy duty	Steel heavy duty
Standard	.yc					0	No Housing		
H- Stanuaru						2G	1/4" BSP	02-160747	02-160753
rack Press	ure					3G	3/8" BSP	02-160748	02-160754
ode	Bar	Psi				4T	#4 SAE	02-160749	02-160751
25	1.7	[25]				6T	#6 SAE	02-160750	02-160752
l ousing M I mit -No Ho A-Aluminur	aterial ousing n					*Alumi than 2 * Addit	num bodies are † 210 bar [3000 ps ional housings a	to be used for pressu i] vailable	res less





. 18.00 (0.71)

68.00 (2.68)

Check Valves 4CKKT50

Dual Pilot Operated Check Valve, with Thermal Relief

300 bar [4300 psi] • 25 l/min [7 US gpm]

DESCRIPTION AND OPERATION

This is a dual pilot operated check valve where free flow takes place from port 2 to 1 and port 3 to 4. Flow is blocked from port 1 to 2 until pressure is applied to port 3 and blocked from port 4 to 3 until pressure is applied to port 2. This valve has the addition of a thermal relief valve that will open from port 4 to 3 if the pressure exceeds the setting.

SCHEMATIC





DIMENSIONS

25.40 A/F (1"A/F)

7/8"-14-UNF

4(C1)

3(V1)

2(V2)

000

Φ

1((2)

φC

mm [in]

PERFORMANCE DATA

Rated pressure	300 bar [4300 psi]
Rated flow	25 l/min [7 US gpm]
Weight	0.08 kg [0.18 lbs]
Pilot Ratio	3:1
Leakage	C1-V1 1.0 ml/min nominal [15 dpm] C2-V2 0.3 ml/min nominal [5 dpm]
Cavity	A12744

PERFORMANCE CURVES



MODEL CODE

				4CKK	Г <u>50</u> - З	<u> 3</u> - 3	- <u>s</u> -	3 - 2	28			
Basic C	ode					I T						
4CKKT5	i0- No Housing								Pressure Sett	ting		
4CKKT5	5-Cartridges and	Dual Housing							Code	Bar	Psi	
Housin	g								24	240	[3500]	
Code	Ports	Housing Model Code							28	280	[4000]	
		Aluminium dual							35	350	[5000]	
Omit	No Housing							Dilato				
3W	3/8" BSP	B19240						Pilot S	eal Option			
6T	3/8" SAE	B19241						3 ·	-Seals No cools			
4W	1/2" BSP	B19228						VIIII	-INU SEGIS			
8T	1/2" SAE	B19229					See 0					
*Aluminum bodies are to be used for pressures less than 210 bar [3000 psi] *Additional housings available						Code	ption S	eal kit				
Dilat D	atio						S-Nitr	le S	iK1120			
Pilot Ratio							SV-Vit	on S	K1120V			

BC332375208102en-000202

Danfoss

Check Valves CP410-1

Dual Pilot Operated Check Valves, Line Mounted

210 bar [3000 psi] • 80 l/min [21 US gpm]

DESCRIPTION AND OPERATION

This is a line mounted, dual pilot operated check valve, which uses two CV10-NP check valves. Free flow takes place from ports V1 to C1 and ports V2 to C2. Flow is blocked from port C1 to V1 until pressure is applied to port V2 and blocked from port C2 to V2 until pressure is applied to port V1.



PERFORMANCE DATA

DIMENSIONS



PERFORMANCE CURVES

Pressure drop



Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.



Seal Opt	ion							
Code	Seal kit	W/Pilot Seal Option			Crack Pro			
B -Buna-	N 120072	120176			Code	Bar	Psi	-
V -Viton	120161	120177			065	4 5	[65]	
Housina				Pil	nt Seal Ontion			
Code	Ports	Housing Model Code		 1-0	lo seals			-
6S	AI, #6 SAE	220099		s -s	eals			
85	AI, #8 SAE	220100						
3B	AI, 3/8 BSP	221794						
	AL 1/2 RSP	221652						

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