

CV

# Check Valves



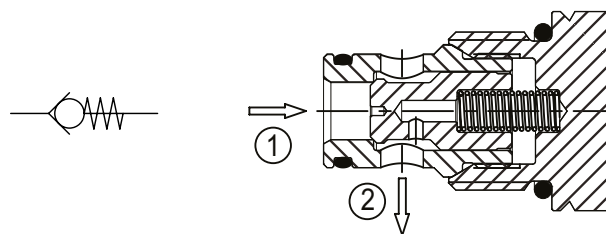
*Danfoss*

# Check Valves

## Application Notes

### Basic Operation

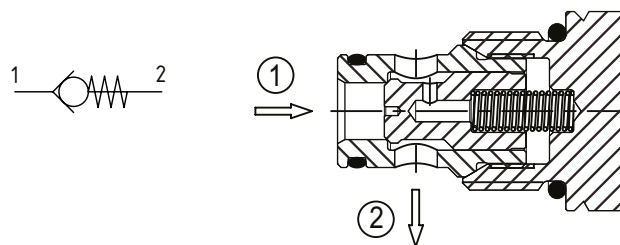
Check valves allow free flow in one direction and prevent flow in the other. The valve can be of poppet or ball design with various cracking pressures.



### Standard Flow Path

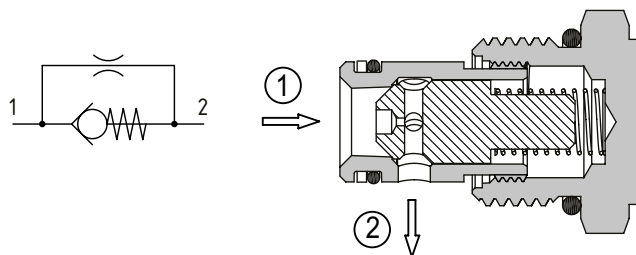
The standard flow path allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1. They are spring biased closed until sufficient pressure is applied at port 1. As the pressure increases the valve will open allowing a flow to take place from port 1 to port 2.

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



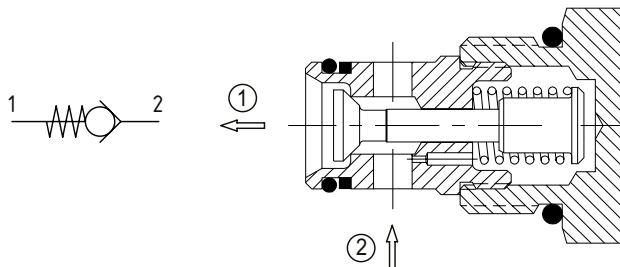
### Check Valve with Bypass Orifice

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

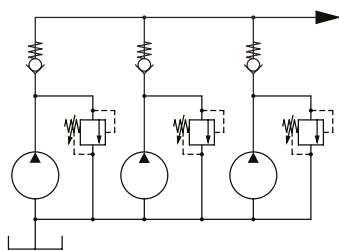
The reverse flow path design allows free flow from port 2 to port 1 and blocks flow from port 1 to port 2. The spring biases the valve closed by pulling the poppet against the seat. These valves provide flexibility to the HIC designer allowing the most compact solution for the customer.



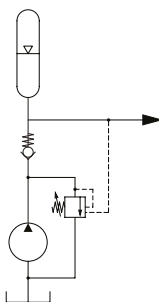
### Typical Applications

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.

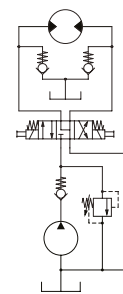
The various cracking pressures allow the valves to be used as back pressure devices or in anti-cavitation circuits where minimal cracking pressure is required.



▲ Multi pump circuits



▲ Accumulator circuits



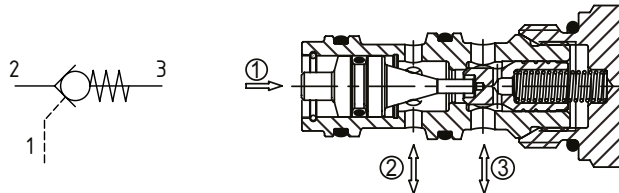
▲ Anti-Cavitation

# Pilot Operated Check Valves

## Application Notes

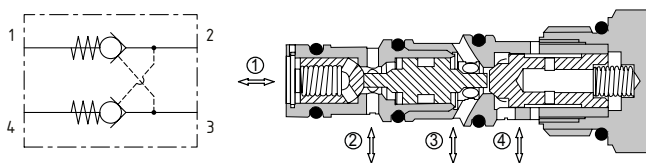
### Basic Operation: Pilot to Open Check Valve

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.



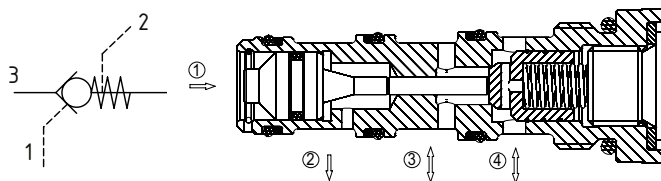
### Dual Pilot Operated Check Valve

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

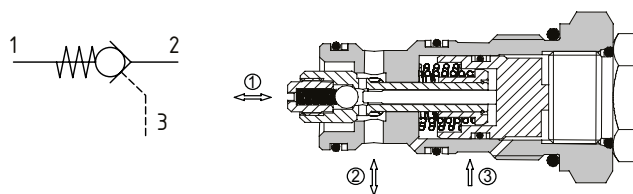
Vented pilot operated check valves have an extra port that is referenced to tank. This prevents back pressure from increasing the pilot pressure required to keep the valve open. These are often used when flow metering takes place downstream of the valve.



### De-Compression Pilot Operated Check Valves

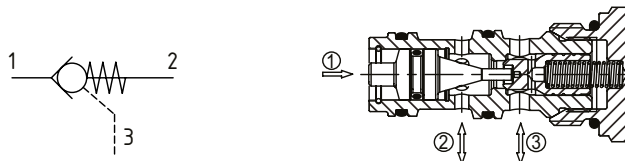
De-compression pilot operated check valves are used when there is a large amount of oil under pressure that must be released before the actuator is allowed to move. They also reduce the hydraulic bang caused by rapid decay of pressure in a system.

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.



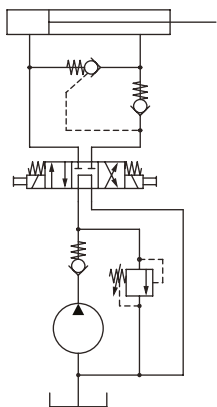
# Check Valves

## Application Notes

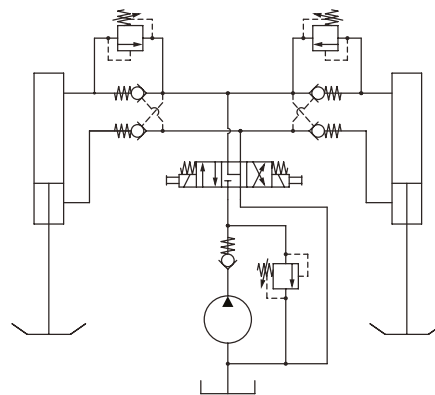
### Application Recommendations

- 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].

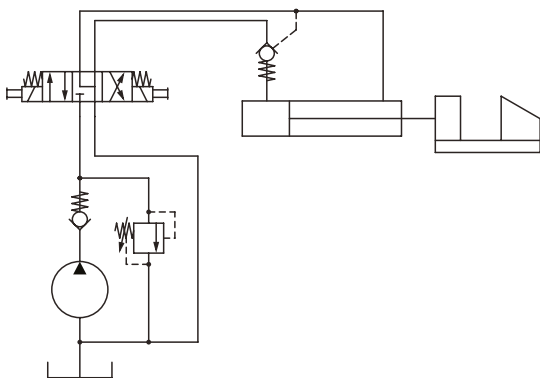
### Typical Applications



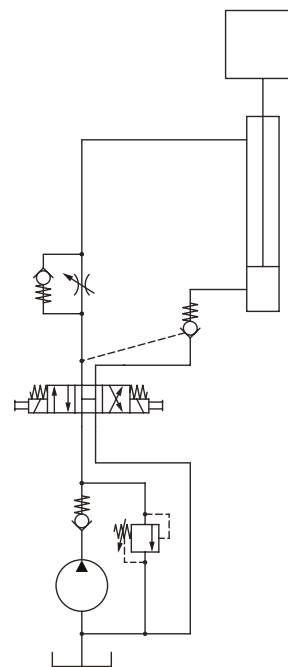
▲ Regenerative Circuit



▲ Stabilizer Circuit



▲ Clamping Circuit



▲ Lowering Circuit

## Check Valves

### Quick Reference

Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>CV3-4</b>	<b>C-4-2</b>	Check Valve, Standard Direction	7.6 l/min [2 US gpm]	350 bar [5000 psi]	<b>7</b>
	<b>CV08-NP</b>	<b>SDC08-2</b>	Check Valve, Standard Direction	38 l/min [10 US gpm]	350 bar [5000 psi]	<b>8</b>
	<b>CV10-NP</b>	<b>SDC10-2</b>	Check Valve, Standard Direction	80 l/min [21 US gpm]	350 bar [5000 psi]	<b>9</b>
	<b>CV11-12</b>	<b>C-12-2 / C-12-2U</b>	Check Valve, Standard Direction	114 l/min [30 US gpm]	350 bar [5000 psi]	<b>10</b>
	<b>CV11-16</b>	<b>SDC16-2</b>	Check Valve, Standard Direction	151 l/min [40 US gpm]	350 bar [5000 psi]	<b>11</b>
	<b>3CA300</b>	<b>SDC20-2</b>	Check Valve, Standard Direction	300 l/min [80 US gpm]	350 bar [5000 psi]	<b>12</b>
	<b>CV2-20</b>	<b>SDC20-2</b>	Check Valve, Standard Direction	227 l/min [60 US gpm]	210 bar [3000 psi]	<b>13</b>
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>CP104-2</b>	<b>CP04-2</b>	Check Valve, Reverse Direction	4.5 l/min [1.2 US gpm]	350 bar [5000 psi]	<b>14</b>
	<b>CP108-2</b>	<b>SDC08-2</b>	Check Valve, Reverse Direction	20 l/min [5 US gpm]	350 bar [5000 psi]	<b>15</b>
	<b>CP100-2</b>	<b>SDC10-2</b>	Check Valve, Reverse Direction	50 l/min [13 US gpm]	350 bar [5000 psi]	<b>16</b>
	<b>CP101-2</b>	<b>CP12-2</b>	Check Valve, Reverse Direction	76 l/min [20 US gpm]	350 bar [5000 psi]	<b>17</b>
	<b>CP102-2</b>	<b>SDC16-2</b>	Check Valve, Reverse Direction	150 l/min [40 US gpm]	350 bar [5000 psi]	<b>18</b>
	<b>CP103-2</b>	<b>SDC20-2</b>	Check Valve, Reverse Direction	265 l/min [70 US gpm]	350 bar [5000 psi]	<b>19</b>
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>CV6-4</b>	<b>C-4-2</b>	Check valve, Standard Direction with Bypass Orifice	7.6 l/min [2 US gpm]	350 bar [5000 psi]	<b>20</b>
	<b>CV6-10</b>	<b>SDC10-2</b>	Check valve, Standard Direction with Bypass Orifice	76 l/min [20 US gpm]	350 bar [5000 psi]	<b>21</b>
Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>RV4-10</b>	<b>SDC10-2</b>	Check Valve, Standard Direction with Thermal Relief	45 l/min [12 US gpm]	350 bar [5000 psi]	<b>22</b>

\*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
	<b>4CK30</b>	<b>A6610</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	30 l/min [8 US gpm]	350 bar [5000 psi]	<b>23</b>
	<b>4SK30</b>	<b>A20090-T11A</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	30 l/min [8 US gpm]	350 bar [5000 psi]	<b>24</b>
	<b>POC1-10</b>	<b>SDC10-3S</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	57 l/min [15 US gpm]	350 bar [5000 psi]	<b>25</b>
	<b>4CK90</b>	<b>A12336</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	350 bar [5000 psi]	<b>26</b>
	<b>4SK90</b>	<b>A20092-T2A</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	350 bar [5000 psi]	<b>27</b>
	<b>4CKD90</b>	<b>A12336</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	90 l/min [24 US gpm]	420 bar [6000 psi]	<b>28</b>
	<b>4CK120</b>	<b>A877</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	120 l/min [32 US gpm]	350 bar [5000 psi]	<b>29</b>
	<b>4SK140</b>	<b>A20094-T17A</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	140 l/min [37 US gpm]	350 bar [5000 psi]	<b>30</b>
	<b>4CK300</b>	<b>A6935</b>	Pilot Operated Check Valve, Port 3 Pilot to Open	300 l/min [80 US gpm]	350 bar [5000 psi]	<b>31</b>
	Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure
	<b>SPC2-8</b>	<b>SDC08-3</b>	Pilot Operated Check Valve, Port 1 Pilot to Open	19 l/min [5 US gpm]	240 bar [3500 psi]	<b>32</b>
	<b>SPC2-10</b>	<b>SDC10-3</b>	Pilot Operated Check Valve, Port 1 Pilot to Open	23 l/min [6 US gpm]	210 bar [3000 psi]	<b>33</b>
	<b>RPC 06</b> Note: "Non preferred"	<b>NCS06/3</b>	Pilot Operated Check Valve, Port 1 Pilot to Open	35 l/min [9 US gpm]	350 bar [5000 psi]	<b>34</b>
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>RPV 06</b>	<b>NCS06/4</b>	Pilot Operated Check Valve, Port 1 Pilot to open with Drain	30 l/min [8 US gpm]	315 bar [4600 psi]	<b>35</b>
Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>5CK30</b>	<b>A6610</b>	Pilot Operated Check Valve, Port 3 Pilot to Close	30 l/min [8 US gpm]	350 bar [5000 psi]	<b>36</b>
	<b>5CK120</b>	<b>A877</b>	Pilot Operated Check Valve, Port 3 Pilot to Close	120 l/min [32 US gpm]	350 bar [5000 psi]	<b>37</b>
	<b>5CK300</b>	<b>A6935</b>	Pilot Operated Check Valve, Port 3 Pilot to Close	250 l/min [65 US gpm]	350 bar [5000 psi]	<b>38</b>
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>DPC2-8</b>	<b>SDC08-4</b>	Dual Pilot Operated Check Valve	19 l/min [5 US gpm]	240 bar [3500 psi]	<b>39</b>
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>4CKKT50</b>	<b>A12744</b>	Dual Pilot Operated Check Valve, with Thermal Relief	25 l/min [7 US gpm]	210 bar [3000 psi]	<b>40</b>
Dual Pilot Operated Check Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	<b>CP410-1</b>	<b>Catalog HIC</b>	Dual Pilot Operated Check Valves, Line Mounted	80 l/min [21 US gpm]	210 bar [3000 psi]	<b>41</b>

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

## Check Valves

### CV3-4

Check Valve, Standard Direction

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

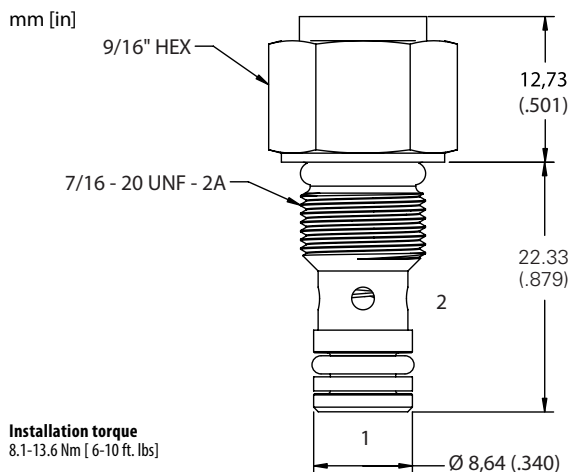
#### DESCRIPTION AND OPERATION

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

#### SCHEMATIC



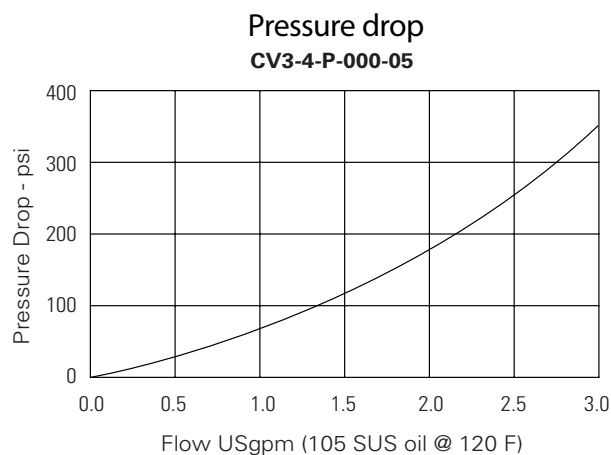
#### DIMENSIONS



#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	7.6 l/min [2 US gpm]
Leakage	5 drops/min maximum @ 210 bar [3000 psi]
Weight	0.04 kg [0.09 lb]
Cavity	C-4-2

#### PERFORMANCE CURVES



#### MODEL CODE

CV3 - 4 - V - P - 000 - 05

##### Seal Option

Code	Seal kit
Omit-Buna-N	9900174-000
V-Viton	9900175-000

##### Style

P-Poppet type

##### Crack Pressure

Code	Bar	Psi
05	0.34	[5]
60	4.1	[60]

##### Housing

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

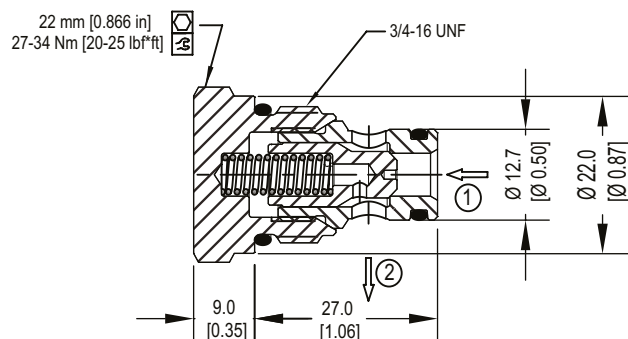
This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

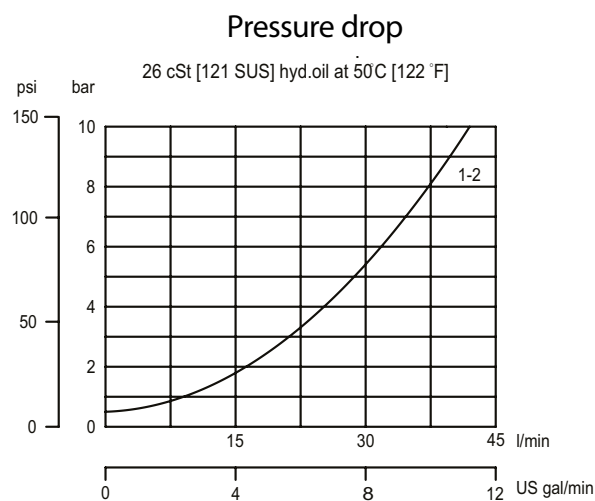


#### PERFORMANCE DATA

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



#### MODEL CODE

CV08 - NP - 0.3 - B - 00

##### Crack Pressure

Code	Bar	Psi
0.3	0.3	[5]
1	1.0	[15]
2	2.0	[30]
5	5.0	[73]
7	7.0	[100]

##### Seal Option

Code	Seal kit
B-Buna-N	120221
V-Viton	120222

##### Housing

Code	Ports & Material	Housing Model Code
00	No Housing	No Housing
DG2B	AL, 1/4 BSP	SDC08-2-DG-2B
DG3B	AL, 3/8 BSP	SDC08-2-DG-3B
4S	AL, #4 SAE	CP08-2-4S
6S	AL, #6 SAE	CP08-2-6S

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

### CV10-NP

Check Valve, Standard Direction  
**350 bar [5000 psi] • 80 l/min [21 US gpm]**

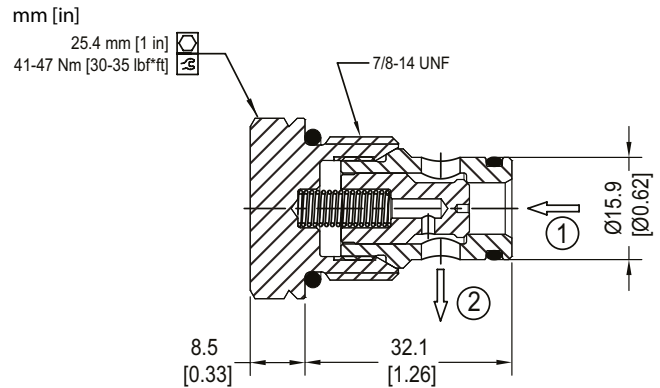
#### DESCRIPTION AND OPERATION

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

#### SCHEMATIC



#### DIMENSIONS

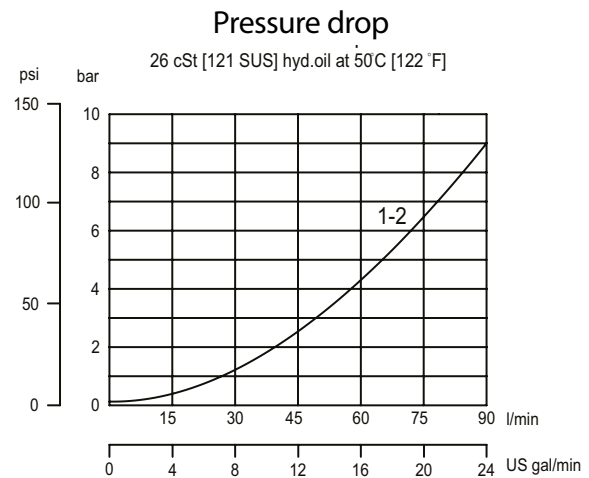


#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow at 7 bar [100psi]</b>	<b>80 l/min [21 US gpm]</b>
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

**CV10 - NP - 0.3 - B - 00**

##### Crack Pressure

Code	Bar	Psi
0.3	0.3	[5]
1	1.0	[15]
2	2.0	[30]
5	5.0	[73]
7	7.0	[100]
10	10	[150]
15	15	[217]

##### Seal Option

Code	Seal kit
B-Buna-N	120015
V-Viton	120016

##### Housing

Code	Ports & Material	Housing Model Code
00	No Housing	No Housing
6S	AL, #6 SAE	SDC10-2-6S
8S	AL, #8 SAE	SDC10-2-8S
3B	AL, 3/8 BSP	SDC10-2-3B
4B	AL, 1/2 BSP	SDC10-2-4B

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

# Check Valves

## CV11-12

Check Valve, Standard Direction

350 bar [5000 psi] • 114 l/min [30 US gpm]

### DESCRIPTION AND OPERATION

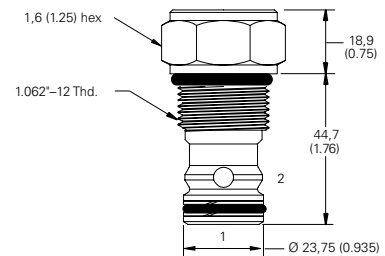
This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

### SCHEMATIC



### DIMENSIONS

mm [in]

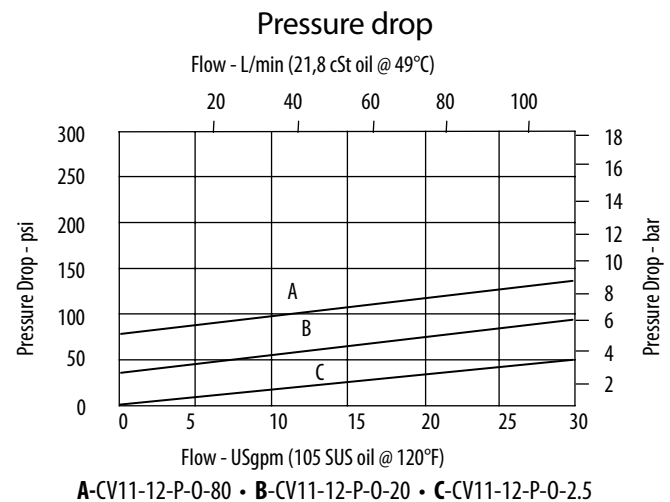


**Installation torque**  
 A-81-95 Nm [60-70 ft. lbs]  
 S-102-115 Nm [75-85 ft. lbs]

### PERFORMANCE DATA

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

### PERFORMANCE CURVES



### MODEL CODE

**CV11 - 12 - V - P - A - 0 - U - 2.5**

#### Seal Option

Code	Seal Kit
Omit-Buna-N	02-165889
V-Viton	02-165888

#### Style

P-Poppet type

#### Housing Material

Omit-No Housing  
 A-Aluminum  
 S-Steel

#### Housing

Code	Ports	Housing Model Code			
		C-12-2U Aluminum standard duty	C-12-2 Aluminum heavy duty	C-12-2U Steel heavy duty	C-12-2 Steel heavy duty
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
4G	1/2" BSP	02-161116	02-161118	02-172512	02-172062
6G	3/4" BSP	02-161115	02-161117	02-162922	02-169665

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

#### Crack Pressure

Code	Bar	Psi
2.5	0.17	[2.5]
5.0	0.35	[5]
10	0.69	[10]
20	1.38	[20]
40	2.75	[40]
80	5.50	[80]
160	11.0	[160]

#### Cavity

Omit-Cavity without undercut  
 U-Cavity with undercut

## 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

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>151 l/min [40 US gpm]</b>
<b>Leakage</b>	5 drops/min. maximum @ 210 bar [3000 psi]
<b>Weight</b>	0.26 kg [0.58 lb]
<b>Cavity</b>	SDC16-2

#### MODEL CODE

**CV11 - 16 - V - P - 0 - 5 - A**

##### Seal Option

Code	Seal Kit
Omit-Buna-N	565810
V-Viton	889609

##### Style

P-Poppet type

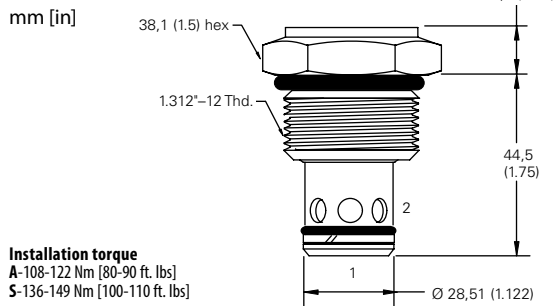
##### Housing

Code	Ports	Housing Model Code		
		Aluminum standard duty	Aluminum heavy duty	Steel heavy duty
0	No Housing			
6B	3/4" BSP	02-175463		
10T	#10 SAE			02-175104
12T	#12 SAE	566149		02-175105
4G	1/2" BSP		876716	02-175106
6G	3/4" BSP		876718	02-175107
10H	#10 SAE		876717	
12H	#12 SAE		566113	

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

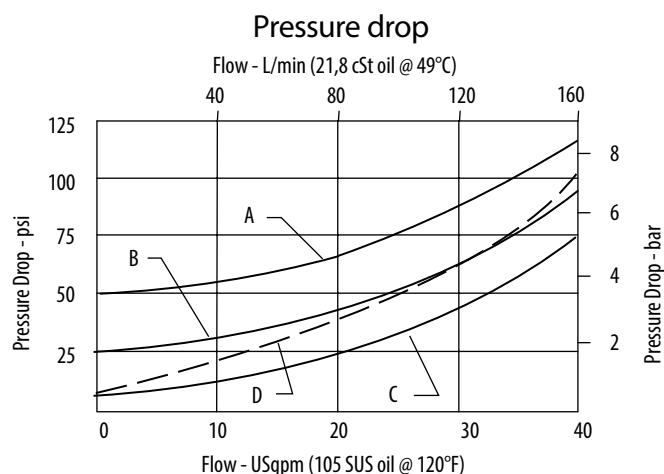
#### DIMENSIONS



##### Installation torque

A-108-122 Nm [80-90 ft. lbs]  
 S-136-149 Nm [100-110 ft. lbs]

#### PERFORMANCE CURVES



## Check Valves

### 3CA300

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

#### DESCRIPTION AND OPERATION

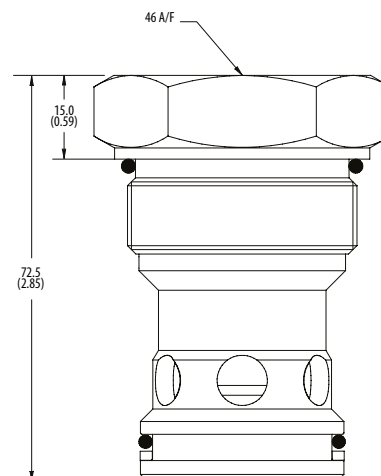
This is a check valve where free flow takes place from port 1 to 2 and is blocked from port 2 to 1.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

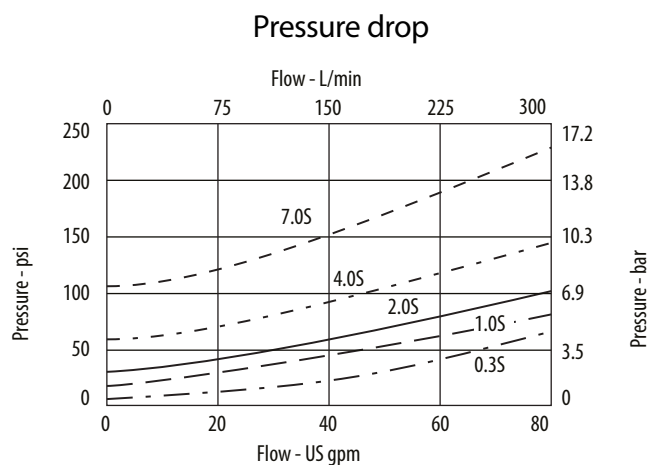


**Installation torque**  
 150 Nm [110 ft. lbs]

#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>300 l/min [80 US gpm]</b>
Leakage	0.2 ml/min nominal
Weight	0.48 kg [1.06 lb]
Cavity	SDC20-2

#### PERFORMANCE CURVES



#### MODEL CODE

**3CA355 - 10W - 1.0 - S - 377**

##### Basic Code

3CA300-No Housing  
 3CA55-Cartridge and Housing

##### Housing

Code	Ports	Housing Model Code	
		Aluminum	Steel
Omit	No Housing		
10W	1 1/4" BSP	C24005	C24006
20T	1 1/4" SAE	C24011	C24012

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

##### Housing Material

Omit-Aluminum/No housing  
 377-Steel

##### Seal Option

Code	Seal Kit
S-Buna-N	SK1341
SV-Viton	SK1341V

##### Crack Pressure

Code	Bar	Psi
0.3	0.3	[4.4]
1.0	1.0	[14.5]
2.0	2.0	[29]
4.0	4.0	[58]
7.0	7.0	[100]

## Check Valves

### CV2-20

Check Valve, Standard Direction  
**210 bar [3000 psi] • 227 l/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

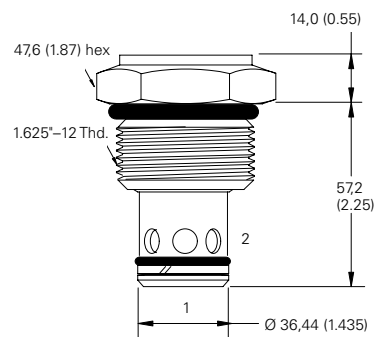


#### PERFORMANCE DATA

Rated pressure	<b>210 bar [3000 psi]</b>
Rated flow	<b>227 l/min [60 US gpm]</b>
Leakage	5 drops/min. maximum @ 210 bar [3000 psi]
Weight	0.49 kg [1.09 lb]
Cavity	SDC20-2

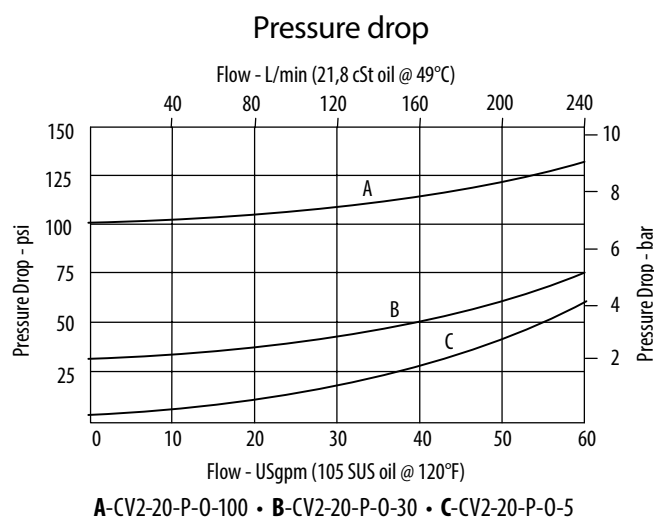
#### DIMENSIONS

mm [in]



Installation torque  
 128-155 Nm [95-115 ft. lbs]

#### PERFORMANCE CURVES



#### MODEL CODE

**CV2 - 20 - V - P - 0 - 5**

##### Seal Option

Code	Seal Kit
Omit-Buna-N	889615
V-Viton	889619

##### Style

P-Poppet type

##### Crack Pressure

Code	Bar	Psi
5	0.34	[5]
15	1.03	[15]
30	2.07	[30]
60	4.14	[60]
100	6.90	[100]

##### Housing

Code	Ports	Housing 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
16H	#16 SAE	-	876735

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

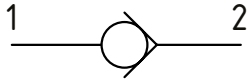
### CP104-2

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

#### DESCRIPTION AND OPERATION

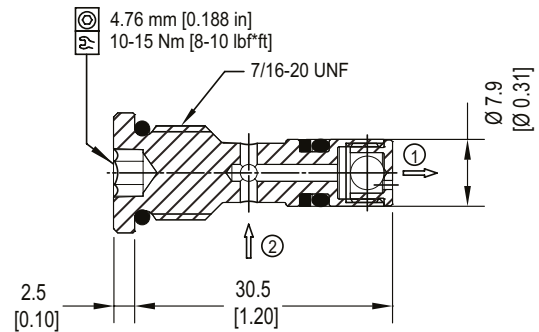
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

mm [in]



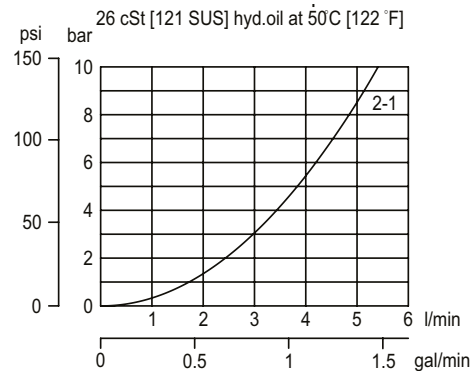
#### PERFORMANCE DATA

<b>Rated pressure*</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow at 7 bar [100 psi]</b>	<b>4.5 l/min [1.2 US gpm]</b>
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



#### MODEL CODE

**CP104 - 2 - B - 2B**

##### Seal Option

Code	Seal kit
<b>B</b> -Buna-N	120077
<b>V</b> -Viton	11019554

##### Housing

Code	Ports & Material	Housing Model Code
<b>0</b>	No Housing	
<b>2B</b>	Al, 1/4 BSP	CP04-2-2B
<b>4S</b>	Al, #4 SAE	CP04-2-4S

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

## Check Valves

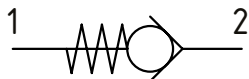
### CP108-2

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

#### DESCRIPTION AND OPERATION

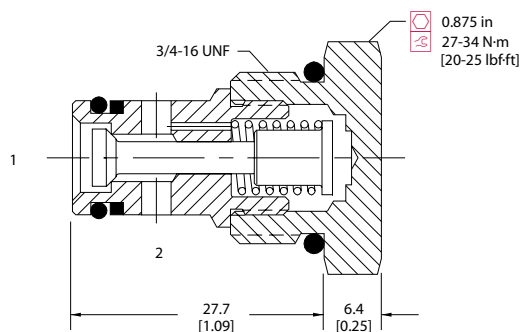
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

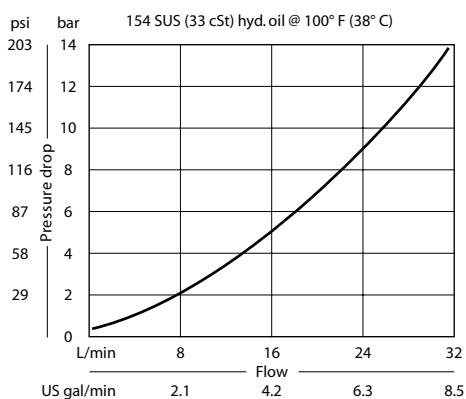


#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**CP108 - 2 - B - 6S - 005**

##### Seal Option

Code	Seal kit
B-Buna-N	120221
V-Viton	120222

##### Crack Pressure

Code	Bar	Psi
005	0.34	[5]
015	1.0	[15]
030	2.1	[30]
050	3.4	[50]
065	4.5	[65]
100	6.9	[100]

##### Housing

Code	Ports & Material	Housing Model Code
0	No Housing	
DG2B	Al, 1/4 BSP	SDC08-2-DG2B
DG3B	Al, 3/8 BSP	SDC08-2-DG3B
4S	Al, #4 SAE	CP08-2-4S
6S	Al, #6 SAE	CP08-2-6S

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

## Check Valves

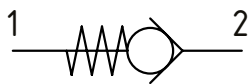
### CP100-2

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

#### DESCRIPTION AND OPERATION

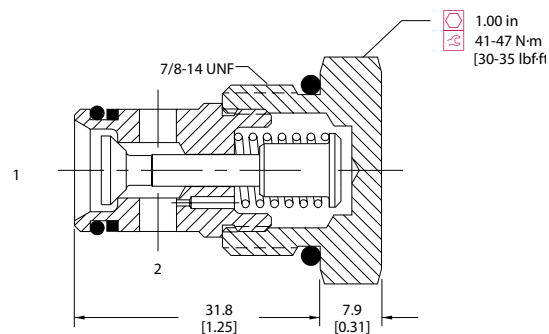
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

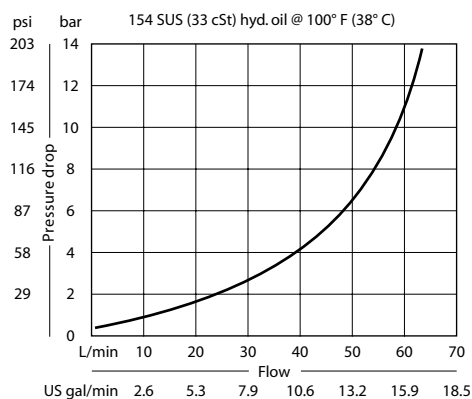


#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**CP100 - 2 - B - 8S - 005**

##### Seal Option

Code	Seal kit
B-Buna-N	120015
V-Viton	120016

##### Crack Pressure

Code	Bar	Psi
005	0.34	[5]
015	1.0	[15]
030	2.1	[30]
050	3.4	[50]
065	4.5	[65]
100	6.9	[100]

##### Housing

Code	Ports & Material	Housing Model Code
0	No Housing	
DG3B	Al, 3/8 BSP	SDC10-2-DG3B
DG4B	Al, 1/2 BSP	SDC10-2-DG4B
6S	Al, #6 SAE	CP10-2-6S
8S	Al, #8 SAE	CP10-2-8S

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

## Check Valves

### CP101-2

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

#### DESCRIPTION AND OPERATION

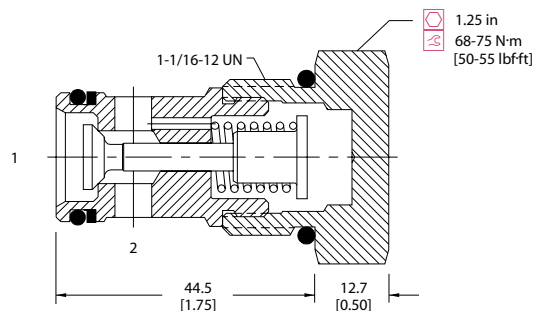
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

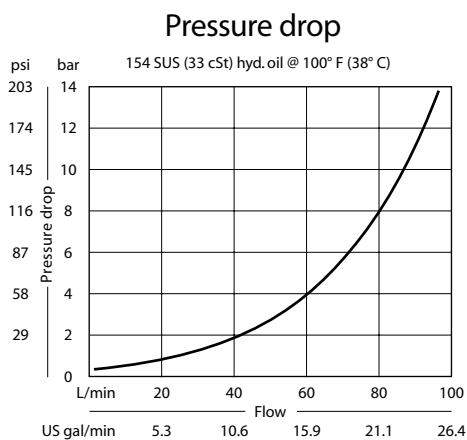
mm [in]



#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

**CP101 - 2 - B - 12S - 005**

##### Seal Option

Code	Seal kit
B-Buna-N	120017
V-Viton	120018

##### Crack Pressure

Code	Bar	Psi
005	0.34	[5]
015	1.0	[15]
065	4.5	[65]

##### Housing

Code	Ports & Material	Housing Model Code
0	No Housing	
4B	Al, 1/2 BSP	CP12-2-4B
6B	Al, 3/4 BSP	CP12-2-6B
10S	Al, #10 SAE	CP12-2-10S
12S	Al, #12 SAE	CP12-2-12S

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

## Check Valves

### CP102-2

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

#### DESCRIPTION AND OPERATION

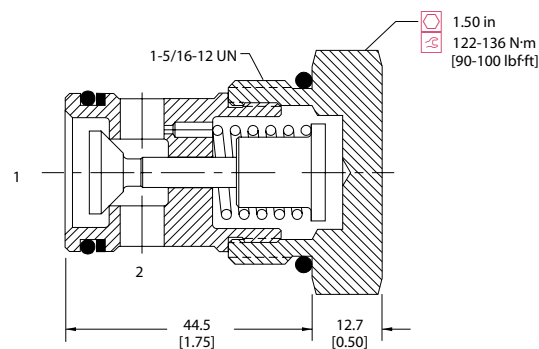
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

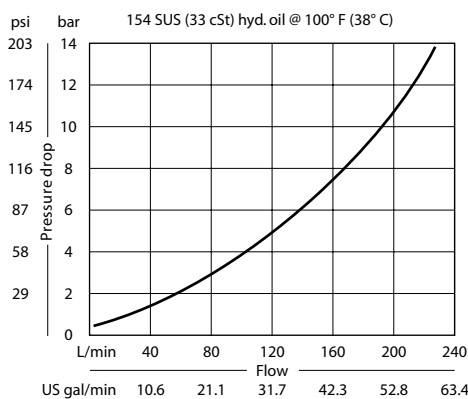


#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**CP102 - 2 - B - 16S - 005**

##### Seal Option

Code	Seal kit
B-Buna-N	120019
V-Viton	120020

##### Crack Pressure

Code	Bar	Psi
005	0.34	[5]
015	1.0	[15]
030	2.1	[30]
050	3.4	[50]
065	4.5	[65]
100	6.9	[100]

##### Housing

Code	Ports & Material	Housing Model Code
0	No Housing	
HG-6B	Al, 3/4 BSP	SDC16-2-HG-6B
HG-8B	Al, 1 BSP	SDC16-2-HG-8B
12S	Al, #12 SAE	CP16-2-12S
16S	Al, #16 SAE	CP16-2-16S

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

## Check Valves

### CP103-2

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

#### DESCRIPTION AND OPERATION

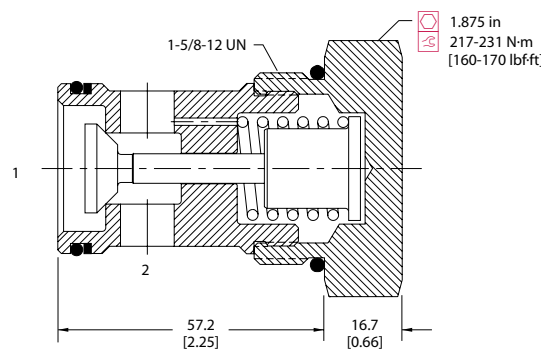
This is a check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

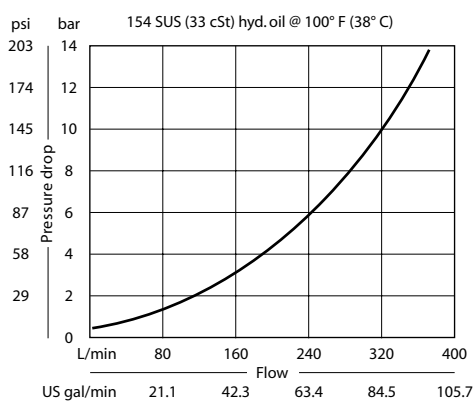


#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**CP103 - 2 - B - 16S - 005**

##### Seal Option

Code	Seal kit
B-Buna-N	120011
V-Viton	120012

##### Crack Pressure

Code	Bar	Psi
005	0.34	[5]
015	1.0	[15]
030	2.1	[30]
050	3.4	[50]
065	4.5	[65]
100	6.9	[100]

##### Housing

Code	Ports & Material	Housing Model Code
0	No Housing	
8B	Al, 1 BSP	CP20-2-8B
10B	Al, 1-1/4 BSP	CP20-2-10B
16S	Al, #16 SAE	CP20-2-16S
20S	Al, #20 SAE	CP20-2-20S

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

## Check Valves

### CV6-4

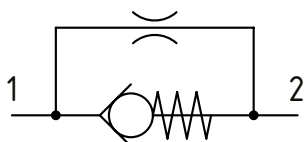
Check valve, Standard Direction with Bypass Orifice

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

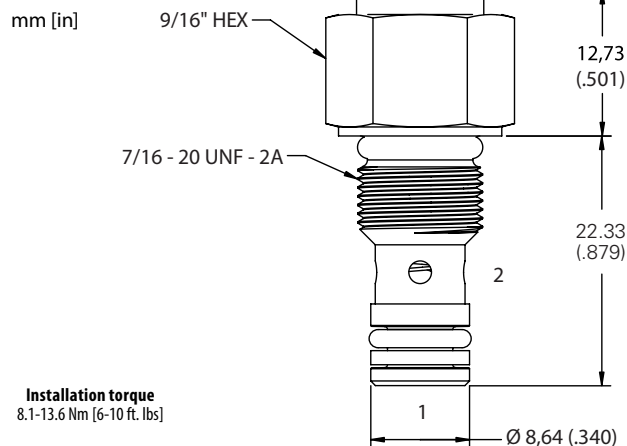
#### DESCRIPTION AND OPERATION

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.

#### SCHEMATIC



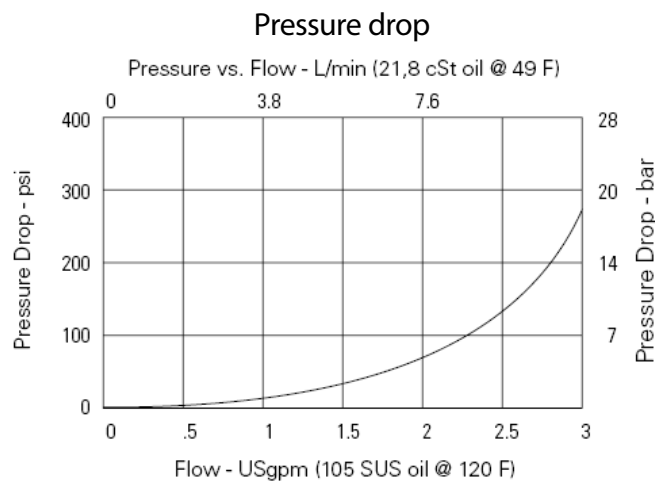
#### DIMENSIONS



#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	7.6 l/min [2 US gpm]
Weight	0.04 kg [0.09 lb]
Cavity	C-4-2

#### PERFORMANCE CURVES



#### MODEL CODE

CV6 - 4 - V - P - 000 - 5 - 015

##### Seal Option

Code	Seal kit
Omit-Buna-N	9900174-000
V-Viton	9900175-000

##### Style

P-Poppet type

##### Housing

000-No Housing

##### Orifice Size

Specify in thousandths of an inch  
015-.015" min  
050-.050" max

##### Crack Pressure

Code	Bar	Psi
05	0.34	[5]

## Check Valves

### CV6-10

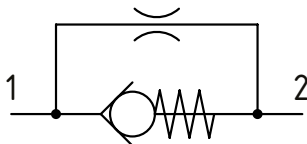
Check valve, Standard Direction with Bypass Orifice

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

#### DESCRIPTION AND OPERATION

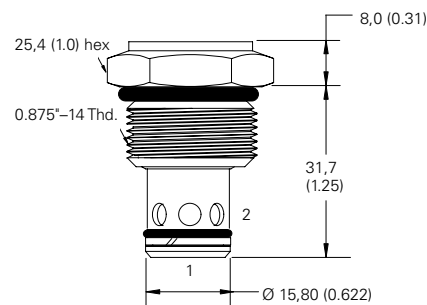
This is a check valve where free flow takes place from port 1 to 2 and is restricted by an internal orifice from port 2 to 1.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

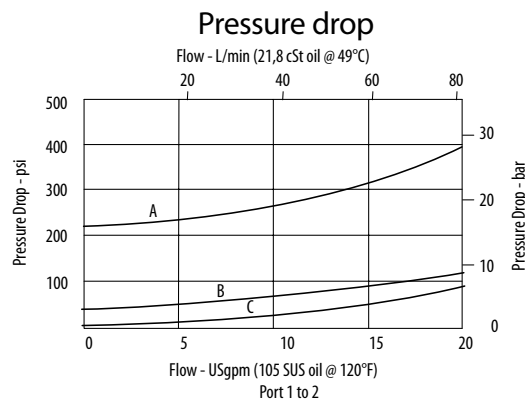


**Installation torque**  
 A-47-54 Nm [35-40 ft. lbs]  
 S-68-70 Nm [50-55 ft. lbs]

#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>76 l/min [20 US gpm]</b>
<b>Weight</b>	<b>0.04 kg [0.09 lb]</b>
<b>Cavity</b>	<b>SDC10-2</b>

#### PERFORMANCE CURVES



A-CV6-10-P-210 • B-CV6-10-P-040 • C-CV6-10-P-003

#### MODEL CODE

**CV6 - 10 - V - P - A - 3B - 003 - 015**

##### Seal Option

Code	Seal Kit
Omit-Buna-N	889615
V-Viton	889619

##### Style

P-Poppet type

##### Housing Material

0-No Housing

A-Aluminum

S-Steel

##### Housing

Code	Ports	Housing Model Code		
		Aluminum standard duty	Aluminum heavy duty	Steel heavy duty
Omit	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	
8H	#8 SAE		876701	

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

##### Orifice Size

Specify in thousandths of an inch

015-.015" min

050-.050" max

##### Crack Pressure

Code	Bar	Psi
003	0.21	[3]
010	0.69	[10]
035	2.41	[35]
040	2.76	[40]
065	4.48	[65]
100	6.9	[100]
180	12.4	[180]
210	14.5	[210]

## Check Valves

### RV4-10

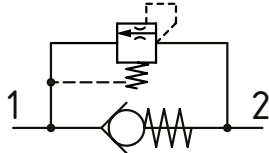
Check Valve, Standard Direction with Thermal Relief

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.

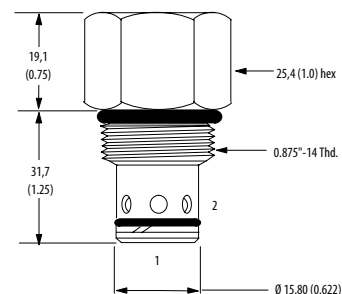
#### SCHEMATIC



#### DIMENSIONS

mm [in]

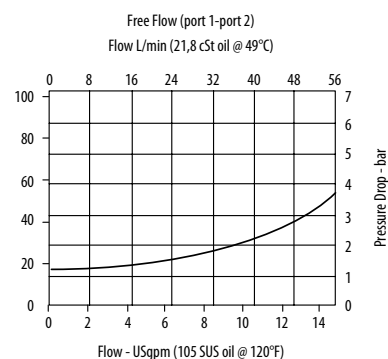
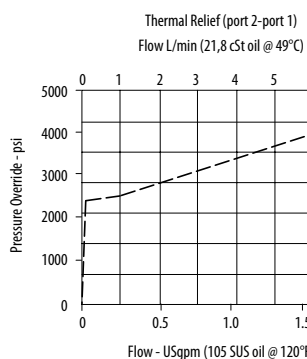
**Installation torque**  
 A-47-54 Nm [35-40 ft. lbs]  
 S-68-75 Nm [50-55 ft. lbs]



#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>45 l/min [12 US gpm]</b>
<b>Leakage</b>	0.3 ml/min [5 drops/min]
<b>Check Valve Crack Pressure</b>	1.25 bar [18 psi]
<b>Weight</b>	0.11 kg [0.25 lb]
<b>Cavity</b>	SDC10-2

#### PERFORMANCE CURVES



#### MODEL CODE

**RV4 - 10 - V - F - S - 0 - 50 - 10**

##### Seal Option

Code	Seal Kit
Omit-Buna-N	565803
V-Viton	566086

##### Adjustment Option

F-Fixed

##### Housing Material

Omit-Aluminum/No housing  
 S-Steel

##### Housing

Code	Ports	Housing Model Code		
		Aluminum Standard Duty	Aluminum Heavy Duty	Steel Heavy Duty
0	No Housing			
3B	3/8" BSP	02-175462		
2G	1/4" BSP		876702	02-175102
3G	3/8" BSP		876703	02-175103
6H	#6 SAE		876700	
8H	#8 SAE		876701	
6T	#6 SAE	566151		02-175100
8T	#8 SAE			02-175101

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

##### Pressure Setting

Code-x100-Pressure setting in psi (100 psi increments within specified Pressure Range)  
 XXX-Standard setting (see Pressure Range for value)  
 Example:

Code	Bar	Psi
10	70	[1000]
25	175	[2500]

##### Pressure Range

Code	Bar	Psi
50	28-350	[400-5000]

## Check Valves

### 4CK30

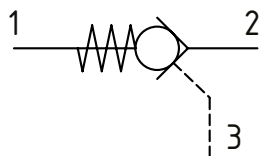
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

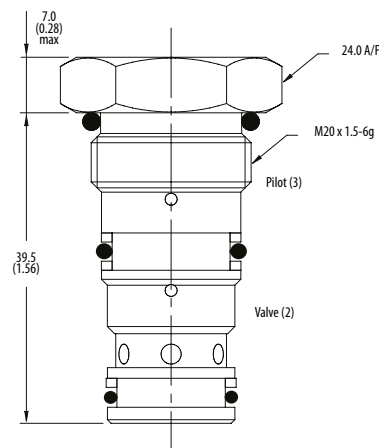
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

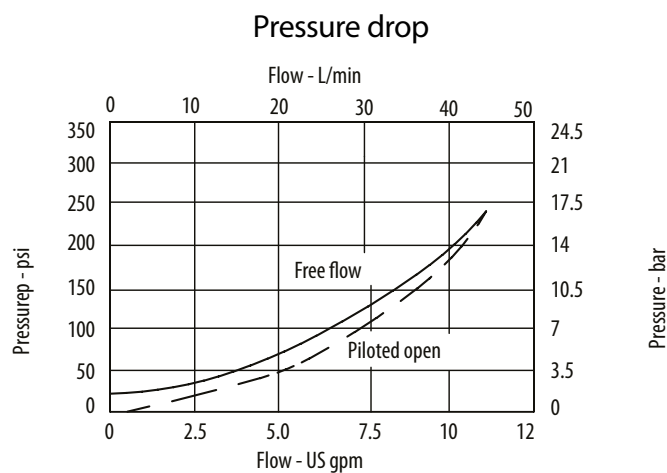


Installation torque  
45 Nm [33 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

**4CK35 - 1 - 3W - S - 3 - 377**

##### Basic Code

4CK30-No Housing  
4CK35-Cartridge and Housing  
4CKK34-Cartridges and Dual Housing

##### Pilot Port Size

1-Internal

##### Housing

Code	Ports	Housing Model Code			
		Aluminium single	Steel single	Aluminium double	Steel double
Omit	No Housing				
3W	3/8" BSP. 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803
6T	3/8" SAE. 1/4" SAE Pilot Port	B10536	B11560	B10805	B11630
8T	1/2" SAE. 1/4" SAE Pilot Port	B7884	B11811	B30237	B11812

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

##### Housing Material

Omit-Aluminum/No housing  
377-Steel

##### Pilot Seal Option

Omit - No seals  
3 - Seals

##### Seal Option

Code	Seal kit
S-Nitrile	SK430
SV-Viton	SK430V

## Check Valves

### 4SK30

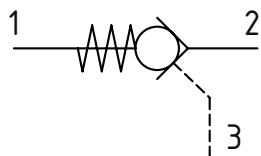
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

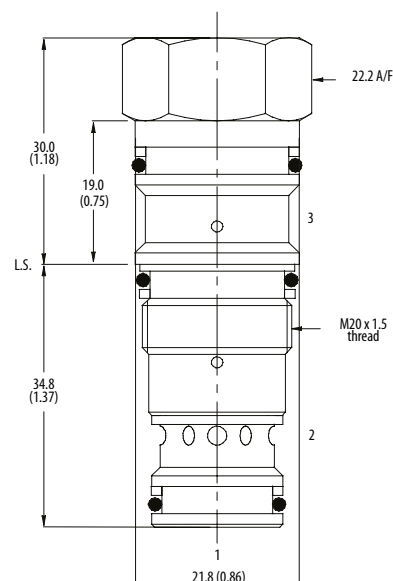
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

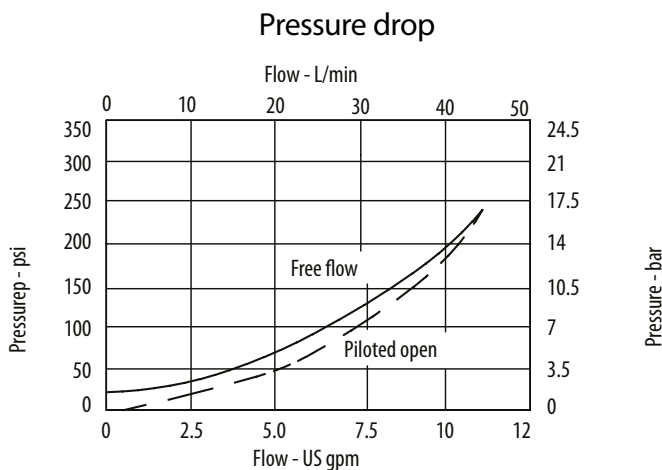


Installation torque  
45 Nm [33 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

4SK30 - 3 - S - 3

##### Pilot Ratio

3 -3:1  
5 -5:1

##### Seal Option

Code	Seal kit
S-Nitrile	SK1079
SV-Viton	SK1079V

##### Pilot Seal Option

Omit - No seals  
3 - Seals

## Check Valves

### POC1-10

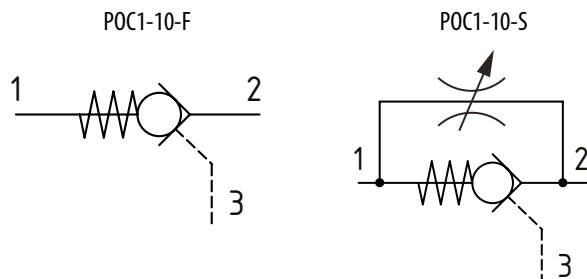
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

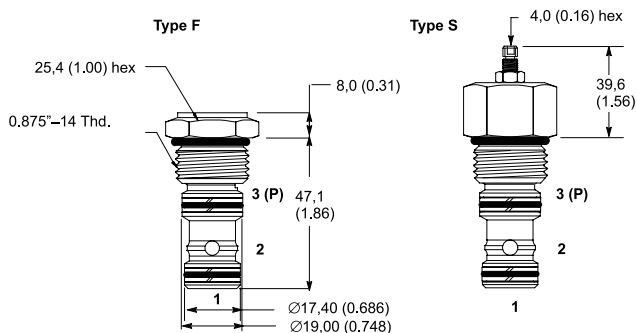
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]



#### Installation torque

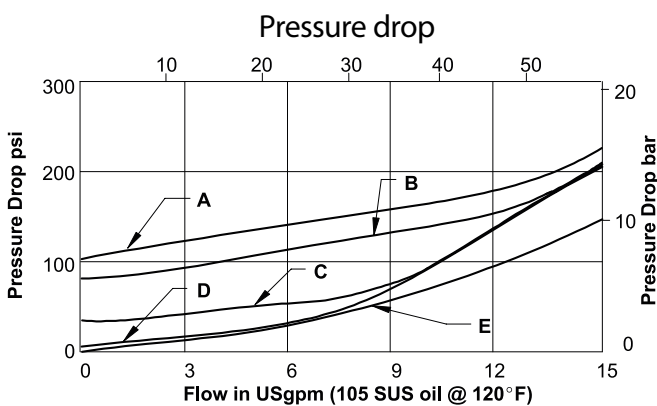
A-47-54 Nm [35-40 ft. lbs]

S-68-75 Nm [50-55 ft. lbs]

#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>57 l/min [15 US gpm]</b>
Weight	0.17 kg [0.36 lb] (without override) 0.10 kg [0.23 lb]
Pilot Ratio	3:1
Leakage	5 drops/min @ 350 bar [5000 psi]
Cavity	SDC10-3S

#### PERFORMANCE CURVES



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

#### MODEL CODE

**POC1 - 10 - V - F - I - A - 6T - 005**

#### Seal Option

Code Seal kit

Omit-Buna-N 889650

V-Viton 889652

#### Override Option

F-Fixed

S-External Override

#### Housing Option

O-No housing

I-Cartridge and housing

#### Housing Material

Omit-No housing

A-Aluminum

S-Steel

#### Crack Pressure

Code Bar [Psi]

005 0.3 [5]

030 2.0 [30]

075 5.0 [75]

100 7.0 [100]

#### Housing

#### Ports

	Code		
	Aluminum Standard duty	Aluminum Heavy duty	Steel
No Housing	Omit		
#6 SAE	6T	6H	6T
#8 SAE		8H	8T
#10 SAE			10T
1/4" BSP		2G	
3/8" BSP	3B	3G	3G
1/2" BSP			4G

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

### 4CK90

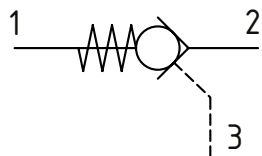
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

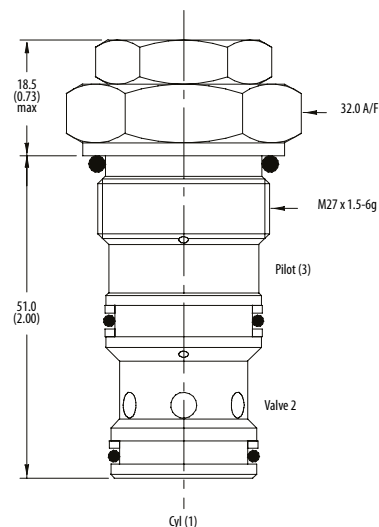
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

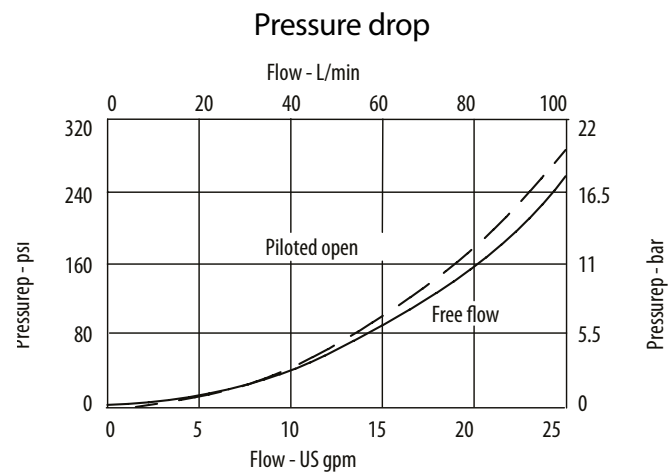


Installation torque  
90 Nm [66 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

**4CK90 - 1 - 4W - S - 3 - 377**

##### Basic Code

4CK90-No Housing  
4CK95-Cartridge and Housing  
4CKK95-Cartridges and Dual Housing

##### Pilot Option

1 -Internal

##### Housing

Code	Ports	Housing Model Code			
		Aluminium single	Steel single	Aluminium double	Steel double
Omit	No Housing				
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

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

##### Housing Material

Omit-Aluminum/No housing  
377-Steel

##### Pilot Seal Option

Omit - No seals  
3 - Seals

##### Seal Option

Code	Seal kit
S-Nitrile	SK832
SV-Viton	SK832V

## Check Valves

### 4SK90

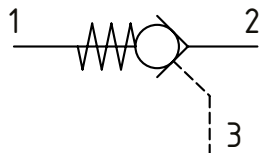
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

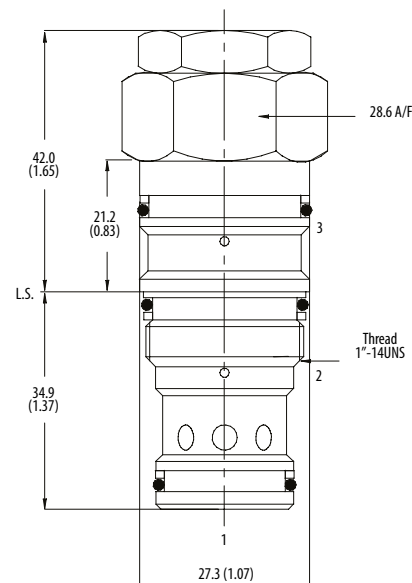
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

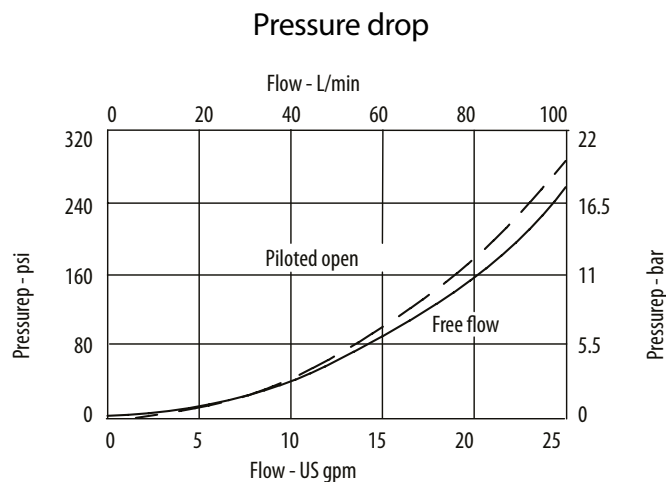


Installation torque  
60 Nm [44 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

4SK90 - 4 - S - 3

##### Pilot Ratio

4 - 4:1

##### Seal Option

Code	Seal kit
S-Nitrile	SK1093
SV-Viton	SK1093V

##### Pilot Seal Option

Omit - No seals  
3 - Seals

## Check Valves

### 4CKD90

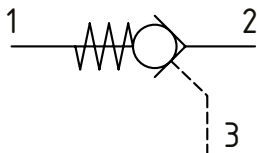
Pilot Operated Check Valve, Port 3 Pilot to Open

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.

#### SCHEMATIC

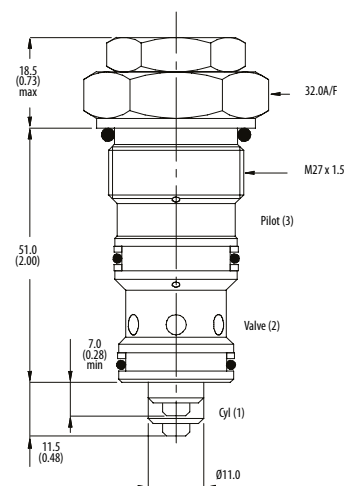


#### PERFORMANCE DATA

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

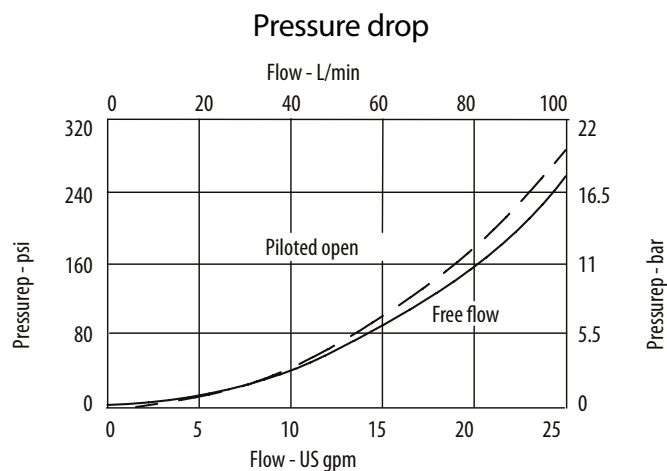
#### DIMENSIONS

mm [in]



Installation torque  
90 Nm [66 ft. lbs]

#### PERFORMANCE CURVES



#### MODEL CODE

**4CKD90 - 1 - 4W - S - 3 - 377**

##### Basic Code

4CKD90-No Housing  
4CKD95-Cartridge and Housing  
4CKKD95-Cartridges and Dual Housing

##### Pilot Ports

1 - Internal

##### Housing

Code	Ports	Housing Model Code			
		Aluminium single	Steel single	Aluminium double	Steel double
Omit	No Housing				
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

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

##### Housing Material

Omit-Aluminum/No housing  
377-Steel

##### Pilot Seal Option

Omit - No seals  
3 - Seals

##### Seal Option

Code	Seal kit
S-Buna-N	SK986
SV-Viton	SK986V

## Check Valves

### 4CK120

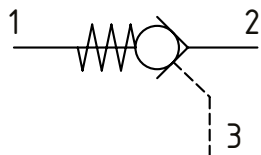
Pilot Operated Check Valve, Port 3 Pilot to Open

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.

#### SCHEMATIC



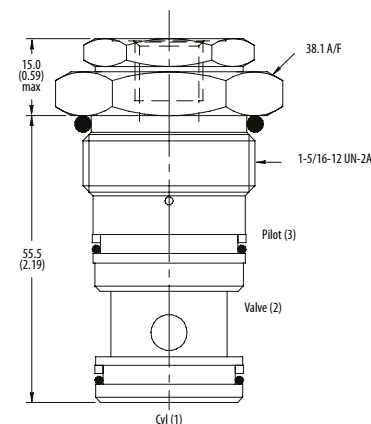
#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>350 bar [5000 psi]</b>
<b>Rated flow</b>	<b>120 l/min [32 US gpm]</b>
<b>Weight</b>	0.28 kg [0.62 lb]
<b>Pilot Ratio</b>	3:1
<b>Leakage</b>	0.3 ml/min nominal [5 drops/min]
<b>Cavity</b>	A877

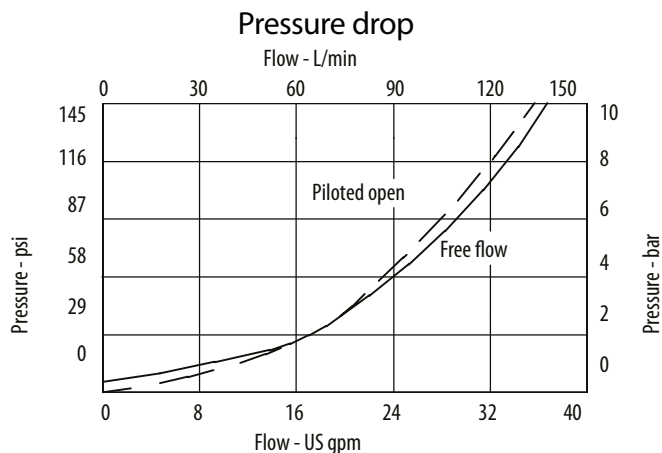
#### DIMENSIONS

mm [in]

**Installation torque**  
100 Nm [74 ft. lbs]



#### PERFORMANCE CURVES



#### MODEL CODE

**4CK120 - 1 - 6W - S - 3 - 377**

##### Basic Code

4CK120-No Housing  
4CK125-Cartridge and Housing  
4CKK125-Cartridges and Dual Housing

##### Pilot Option

1-Internal

##### Housing

Code	Ports	Housing Model Code			
		Aluminium single	Steel single	Aluminium double	Steel double
Omit	No Housing				
6W	3/4" BSP 1/4" BSP Pilot Port	B6898	B5544	C2543	C1200
12T	3/4" SAE 1/4" SAE Pilot Port	B8200		C10629	C16434
16T	1" SAE 1/4" SAE Pilot Port	B10708	B11814		

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

##### Housing Material

Omit-Aluminum/No housing  
377-Steel

##### Pilot Seal Option

Omit - No seals  
3 - Seals

##### Seal Option

Code Seal kit

S-Nitrile SK381

SV-Viton SK381V

## Check Valves

### 4SK140

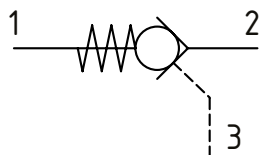
Pilot Operated Check Valve, Port 3 Pilot to Open

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.

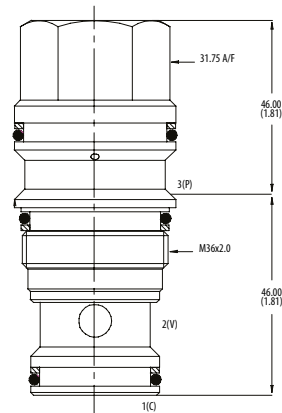
#### SCHEMATIC



#### DIMENSIONS

mm [in]

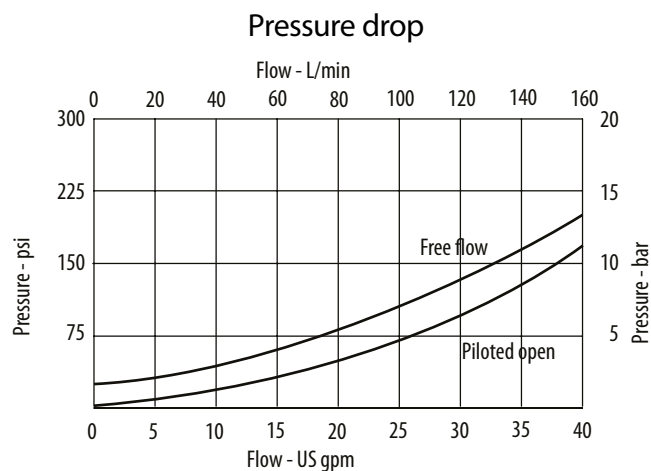
Installation torque  
200 Nm [150 ft. lbs]



#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	140 l/min [37 US gpm]
Weight	0.44 kg [0.96 lb]
Pilot Ratio	3:1
Leakage	0.3 ml/min nominal [5 drops/min]
Cavity	A20094-T17A

#### PERFORMANCE CURVES



#### MODEL CODE

4SK140 - 3 - S - 3

##### Pilot Ratio

3 - 3:1

##### Seal Option

Code	Seal kit
S-Nitrile	SK1116
SV-Viton	SK1116V

##### Pilot Seal Options

3 - Seals

## Check Valves

### 4CK300

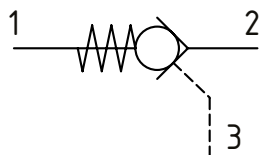
Pilot Operated Check Valve, Port 3 Pilot to Open

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

#### DESCRIPTION AND OPERATION

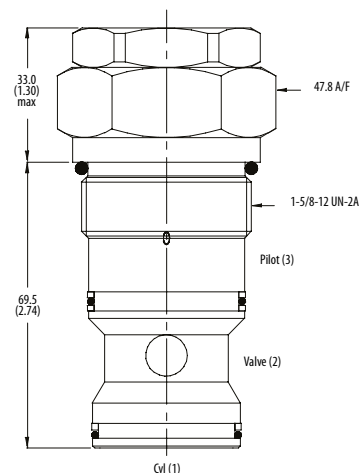
This is a pilot operated check valve where free flow takes place from port 2 to 1 and is blocked from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

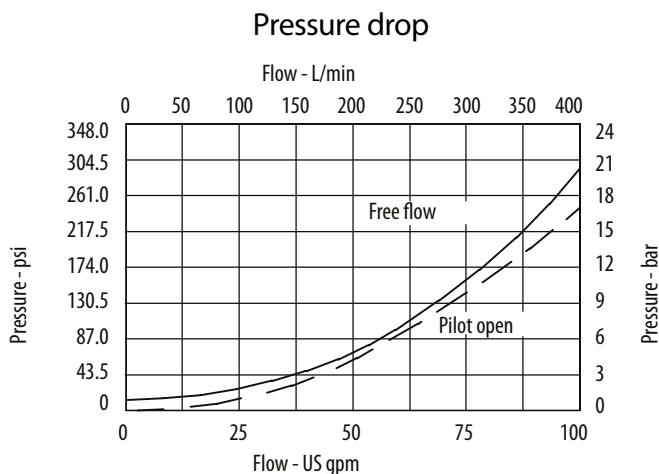


Installation torque  
150 Nm [110 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

**4CK300 - 1 - 10W - S - 3 - 377**

##### Basic Code

4CK300-No Housing  
4CK350-Cartridge and Housing  
4CKK350-Cartridges and Dual Housing

##### Pilot Option

1 -Internal

##### Housing

Code	Ports	Housing Model Code			
		Aluminium single	Steel single	Aluminium double	Steel double
Omit	No Housing				
10W	1 1/4" BSP 1/4" BSP Pilot Port	B6814	B8610	C8704	C8705
20T	1 1/4" SAE 1/4" SAE Pilot Port	B10630	B11474	C10811	C11564

##### Housing Material

Omit-Aluminum/No housing  
377-Steel

##### Pilot Seal Option

Omit - No seals  
3 - Seals

##### Seal Option

Code	Seal kit
S-Nitrile	SK683
SV-Viton	SK683V

## Check Valves

### SPC2-8

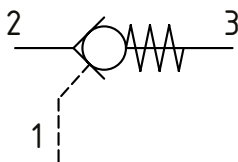
Pilot Operated Check Valve, Port 1 Pilot to Open

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

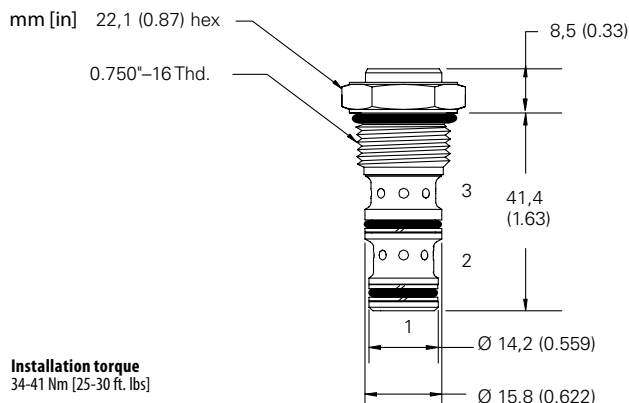
#### DESCRIPTION AND OPERATION

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.

#### SCHEMATIC



#### DIMENSIONS



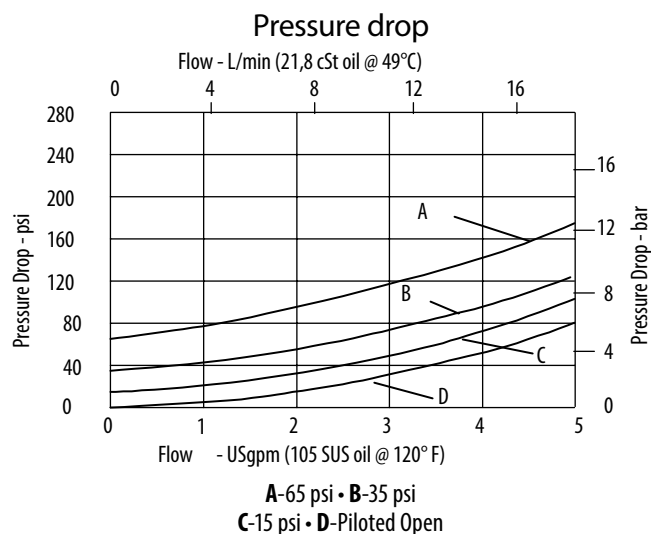
Installation torque  
34-41 Nm [25-30 ft. lbs]

#### PERFORMANCE DATA

Rated pressure	240 bar [3500 psi]
Rated flow	19 l/min [5 US gpm]
Weight	0.07 kg [0.15 lb]
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



#### MODEL CODE

SPC2 - 8 - V - P - A - 4T - 15

##### Seal Option

Code	Seal Kit
Omit-Buna-N	02-173326
V-Viton	02-173327
U-Buna-N with no pilot seals	02-173326
W-Viton with no pilot seals	02-173327

##### Housing Material

Omit-No Housing  
A-Aluminum  
S-Steel

##### Crack Pressure

Code	Bar	Psi
15	1.0	[15]
35	2.4	[35]
65	4.5	[65]

##### Housing

Code	Ports	Aluminum heavy duty	Steel heavy duty
Omit	No Housing		
4T	#4 SAE	02-160741	02-160745
6T	#6 SAE	02-160742	02-160744
2G	1/4" BSP	02-160739	02-160743
3G	3/8" BSP	02-160740	02-160746

\*Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

### SPC2-10

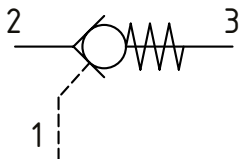
Pilot Operated Check Valve, Port 1 Pilot to Open

210 bar [3000 psi] • 23 l/min [6 US gpm]

#### DESCRIPTION AND OPERATION

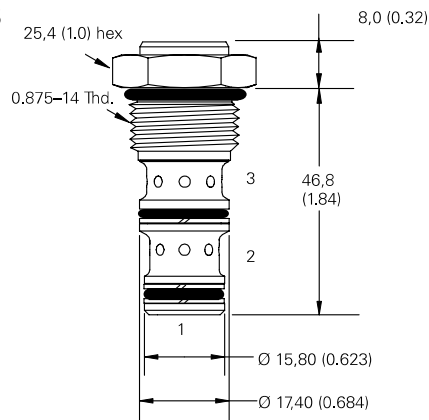
This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

#### SCHEMATIC



#### DIMENSIONS

mm [in]



#### Installation torque

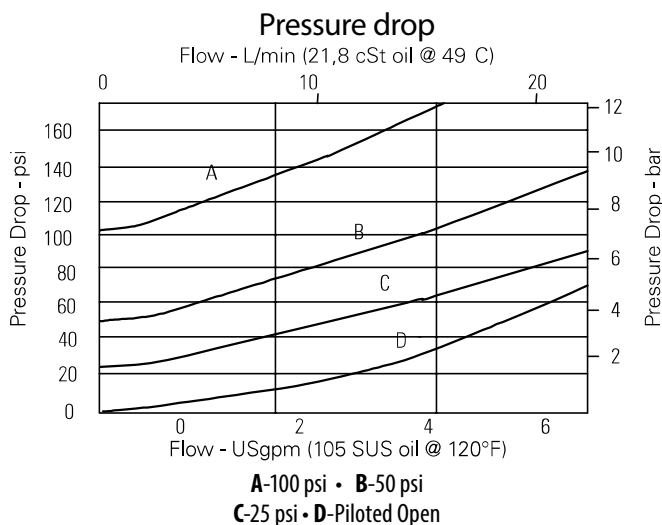
A - 47-54 Nm [35-40 ft. lbs]

S - 68-75 Nm [50-55 ft. lbs]

#### 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



#### MODEL CODE

SPC2 - 10 - V - P - 3B - 50

#### Seal Option

Code	Seal Kit
Omit-Buna-N	02-153267
V-Viton	02-173666
U-Buna-N with no pilot seals	02-153267
W-Viton with no pilot seals	02-173666

#### Crack Pressure

Code	Bar	Psi
25	1.7	[25]
50	3.5	[50]
100	6.9	[100]

#### Housing

Code	Ports	Aluminum standard duty	Aluminum heavy duty
0	No Housing		
3B	3/8" BSP	02-173358	
6T	#6 SAE	566162	
2G	1/4" BSP		876705
3G	3/8" BSP		876714
6H	#6 SAE		876704
8H	#8 SAE		876711

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

### RPC 06

Pilot Operated Check Valve, Port 1 Pilot to Open

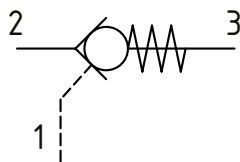
350 bar [5000 psi] • 35 l/min [9 US gpm]

#### DESCRIPTION AND OPERATION

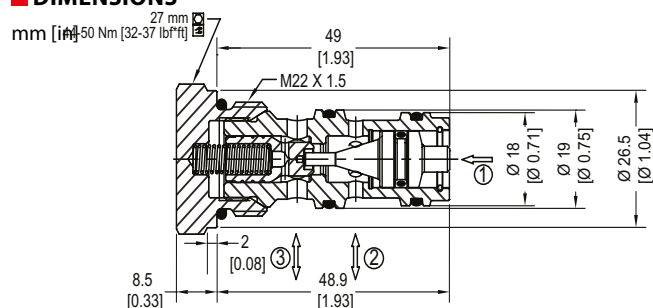
This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

Note: The RPC 06 is intended primarily for use in MVB10 modular valve assemblies. For other applications, consider valves with equivalent function, such as the 4CK30 or SPC2-10.

#### SCHEMATIC



#### DIMENSIONS



#### PERFORMANCE DATA

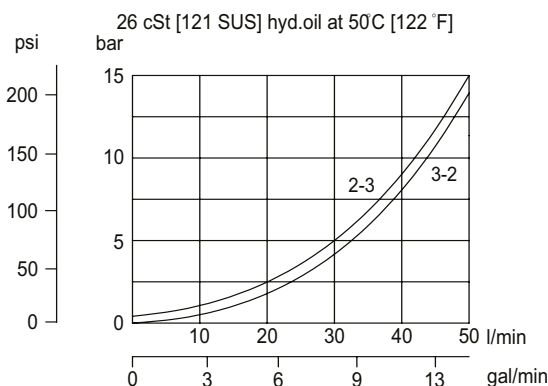
Rated pressure*	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gpm]
Weight	0.10 kg [0.22 lb]
Pilot Ratio	3.4:1
Cavity	NCS06/3

\*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



#### MODEL CODE

RPC06 - 5 - OR - 00 - V

##### Crack Pressure

Code	Bar	Psi
0.5	0.5	[7]
2	2	[30]
5	5	[73]
10	10	[145]

##### Pilot Seal Option

Omit - No seals  
OR - Seals

##### Seal Option

Code	Seal kit
Omit - Buna-N	230000070
V-Viton	230000110

##### Housing

Code	Ports & Material	Housing Model Code
00	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	NCS06/3-SE-6S
SE8S	AL, #8 SAE	NCS04/3-SE-8S

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

## Check Valves

### RPV 06

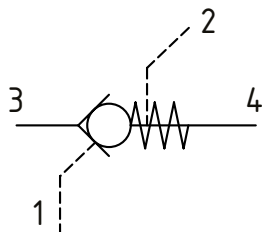
Pilot Operated Check Valve, Port 1 Pilot to open with Drain

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

#### DESCRIPTION AND OPERATION

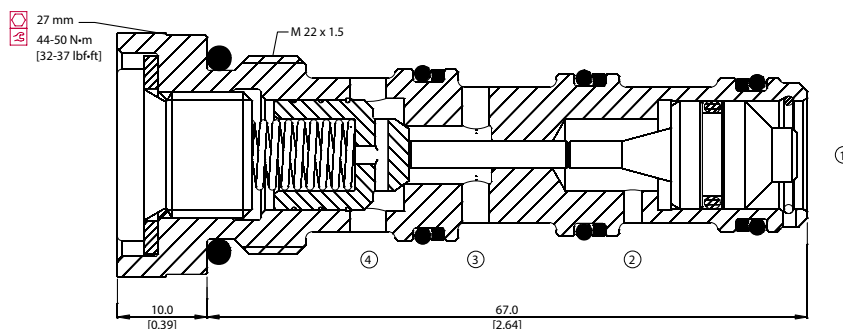
This is a pilot operated check valve with a separate drain. Free flow takes place from port 3 to 4 and is blocked from port 4 to 3 until pilot pressure is applied to port 1. Port 2 is drained to tank to remove any effect of pressure in port 3 affecting the pilot pressure required to keep the valve open.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

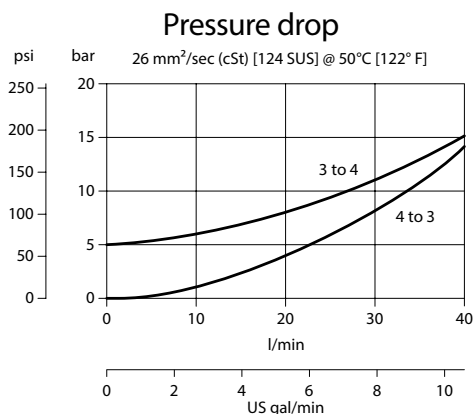


#### PERFORMANCE DATA

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

RPV 06 - 5 - OR - 00 - V

##### Pilot Seal Option

OR-Seals  
Omit-No seals

##### Housing

Code	Ports & Material	Housing Model Code
00	No Housing	
L3/8	Al, 3/8 BSP	NCS06/4-L-3/8
L1/2	Al, 1/2 BSP	NCS06/4-L-1/2
L6S	Al, #6 SAE	NCS06/4-L-6S
L8S	Al, #8 SAE	NCS06/4-L-8S

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

##### Seal Option

Code	Seal kit
V-Viton	Consult factory
Omit-Buna-N	230000080

## Check Valves

### 5CK30

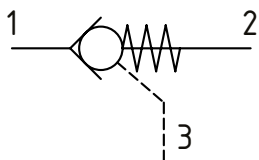
Pilot Operated Check Valve, Port 3 Pilot to Close

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

#### DESCRIPTION AND OPERATION

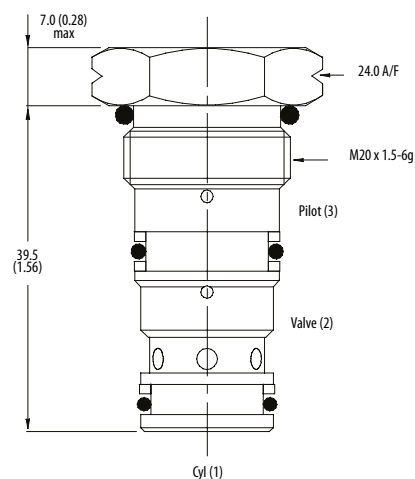
This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]



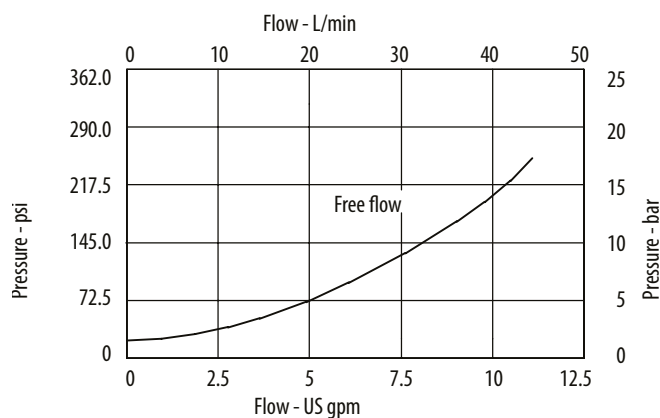
Installation torque  
45 Nm [33 ft. lbs]

#### 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 lb]
Pilot Ratio	2:1
Leakage	0.3 ml/min nominal [5 dpm]
Cavity	A6610

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

<b>Basic Code</b>		<b>5CK30 - 1 - 3W - S - 2 - 377</b>		<b>Housing Material</b>	
5CK30 - No Housing				Omit - Aluminum/No housing	
5CK35 - Cartridge and housing				377 - Steel	
<b>Pilot</b>				<b>Pilot Ratio</b>	
1 - Internal				2-2:1	
<b>Housing</b>				<b>Seal Option</b>	
<b>Code</b>	<b>Ports</b>	<b>Housing Model Code</b>		<b>Code</b>	<b>Seal kit</b>
		<b>Aluminum</b>	<b>Steel</b>		
Omit	No Housing			S - Nitrile	SK829
3W	3/8" BSP 1/4" BSP Pilot Port	B6743	B12823	SV - Viton	SK829V
6T	3/8" SAE 1/4" SAE Pilot Port	B10536			
8T	1/2" SAE 1/4" Pilot Port		B11811		

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

## Check Valves

### 5CK120

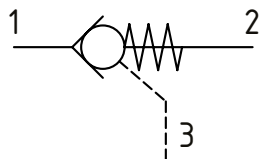
Pilot Operated Check Valve, Port 3 Pilot to Close

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

#### DESCRIPTION AND OPERATION

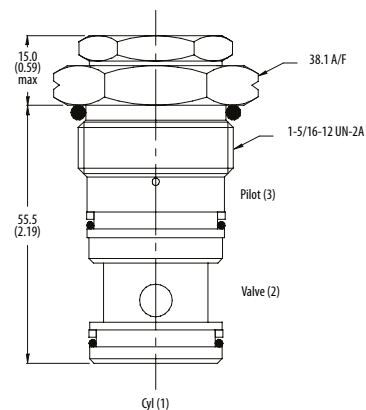
This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

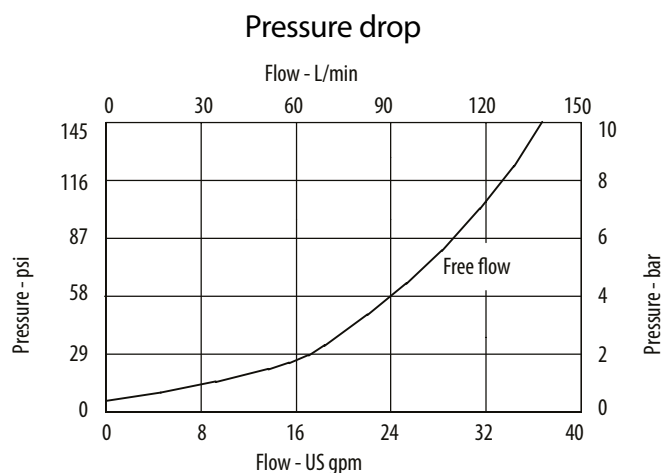


Installation torque  
100 Nm [74 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

**5CK120 - 1 - 3W - S - 2 - 377**

##### Basic Code

5CK120 - No Housing  
5CK125 - Cartridge and Housing

##### Pilot Option

1 - Internal

##### Housing

Code	Ports	Housing Model Code	
		Aluminum	Steel
Omit	No Housing		
6W	3/4" BSP 1/4" BSP/SAE Pilot Port	B6898	B5544
12T	3/4" SAE 1/4" SAE Pilot Port	B8200	
16T	1" SAE 1/4" SAE Pilot Port	B10708	B11814

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

##### Housing Material

Omit - Aluminum/No housing  
377 - Steel

##### Pilot Ratio

2-2:1

##### Seal Option

Code	Seal kit
S - Nitrile	SK833
SV - Viton	SK833V

## Check Valves

### 5CK300

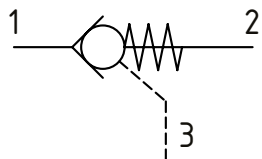
Pilot Operated Check Valve, Port 3 Pilot to Close

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

#### DESCRIPTION AND OPERATION

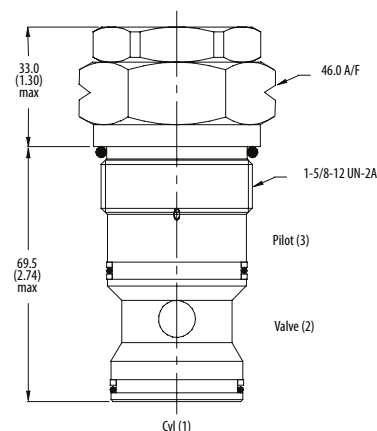
This is a pilot to close check valve where flow is blocked between port 2 and 1 and free flow takes place from port 1 to 2 until pilot pressure is applied to port 3.

#### SCHEMATIC



#### DIMENSIONS

mm [in]

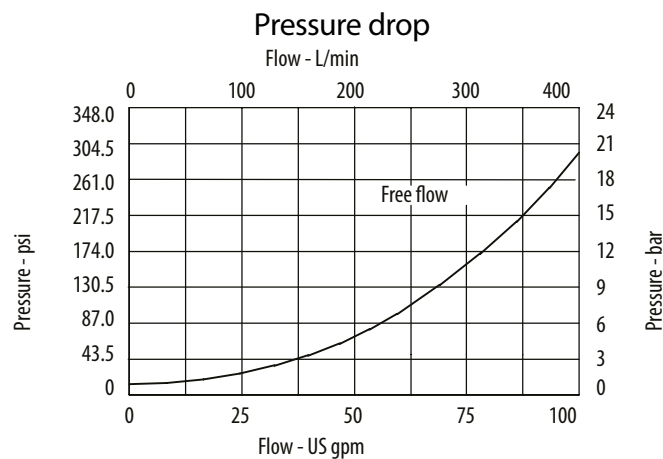


Installation torque  
150 Nm [110 ft. lbs]

#### PERFORMANCE DATA

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

#### PERFORMANCE CURVES



#### MODEL CODE

<b>5CK300 - 1 - 10W - S - 2 - 377</b>			
<b>Basic Code</b>		<b>Housing Material</b>	
5CK300 - No Housing		Omit - Aluminum/No housing	
5CK350 - Cartridge and housing		377 - Steel	
<b>Pilot Option</b>		<b>Pilot Ratio</b>	
1 - Internal		2-2:1	
<b>Housing</b>			
<b>Code</b>	<b>Ports</b>	<b>Housing Model Code</b>	
Omit	No Housing	<b>Aluminum</b>	<b>Steel</b>
10W	1 1/4" BSP 1/4" BSP/SAE Pilot Port	B6814	B8610
20T	1 1/4" SAE 1/4" BSP/SAE Pilot Port	B10630	B11474
* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi]			
* Additional housings available			
<b>Seal Option</b>			
<b>Code</b>	<b>Seal kit</b>		
S-Nitrile	SK834		
SV-Viton	SK834V		

## Check Valves

### DPC2-8

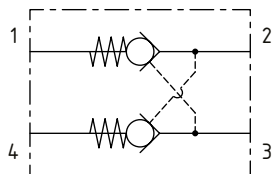
Dual Pilot Operated Check Valve

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

<b>Rated pressure</b>	<b>240 bar [3500 psi]</b>
<b>Rated flow</b>	<b>19 l/min [5 US gpm]</b>
<b>Weight</b>	<b>0.08 kg [0.18 lb]</b>
<b>Pilot Ratio</b>	<b>3:1</b>
<b>Leakage</b>	
Ports 2 to 3 and 3 to 2:	140 cc/min. [8.5 in <sup>3</sup> /min.] @ 240 bar [3500 psi]
Ports 4 to 3 and 1 to 2:	5 drops/min. @ 240 bar [3500 psi]
<b>Cavity</b>	<b>SDC08-4</b>

#### MODEL CODE

**DPC2 - 8 - U - A - 25 - A - 0**

##### Seal Option

U-Urethane

##### Pilot Leakage

A-Standard

##### Crack Pressure

Code	Bar	Psi
25	1.7	[25]

##### Housing Material

Omit-No Housing

A-Aluminum

S-Steel

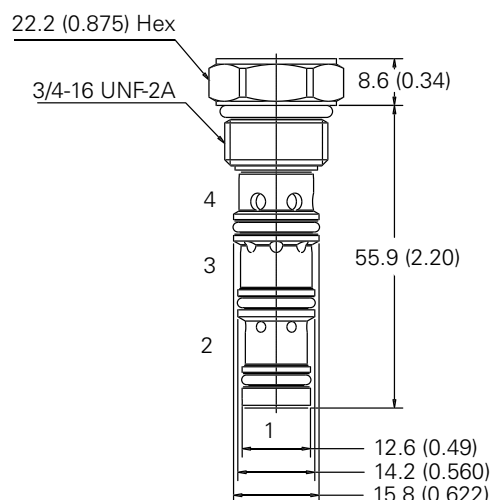
##### Housing

Code	Ports	Housing Model Code	
		Aluminum heavy duty	Steel heavy duty
0	No Housing		
2G	1/4" BSP	02-160747	02-160753
3G	3/8" BSP	02-160748	02-160754
4T	#4 SAE	02-160749	02-160751
6T	#6 SAE	02-160750	02-160752

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

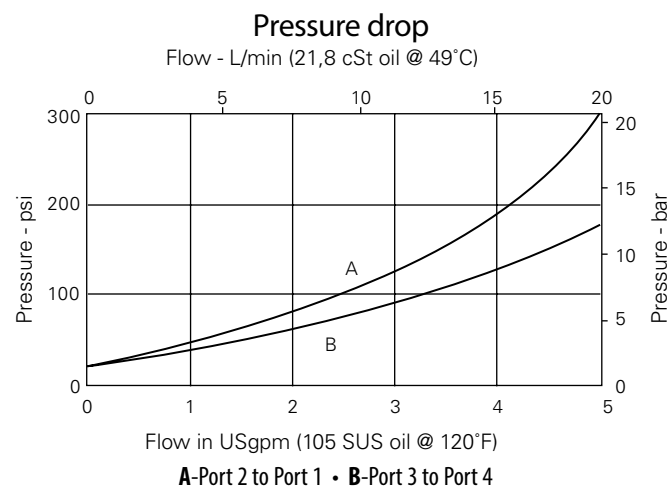
#### DIMENSIONS

mm [in]



**Installation torque**  
34-41 Nm [25-30 ft. lbs]

#### PERFORMANCE CURVES



## Check Valves

### 4CKKT50

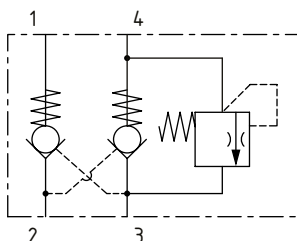
Dual Pilot Operated Check Valve, with Thermal Relief

210 bar [3000 psi] • 25 l/min [7 US gpm]

#### DESCRIPTION AND OPERATION

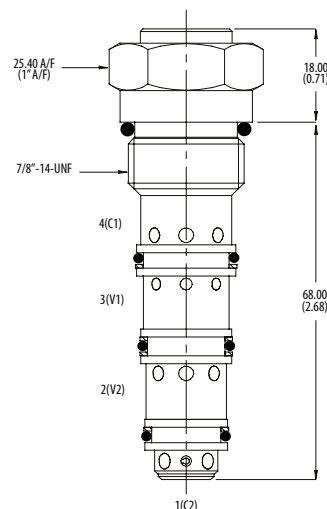
This is a dual pilot operated check valve where free flow takes place from port 2 to 1 and port 3 to 4. Flow is blocked from port 1 to 2 until pressure is applied to port 3 and blocked from port 4 to 3 until pressure is applied to port 2. This valve has the addition of a thermal relief valve that will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

#### SCHEMATIC



#### DIMENSIONS

mm [in]



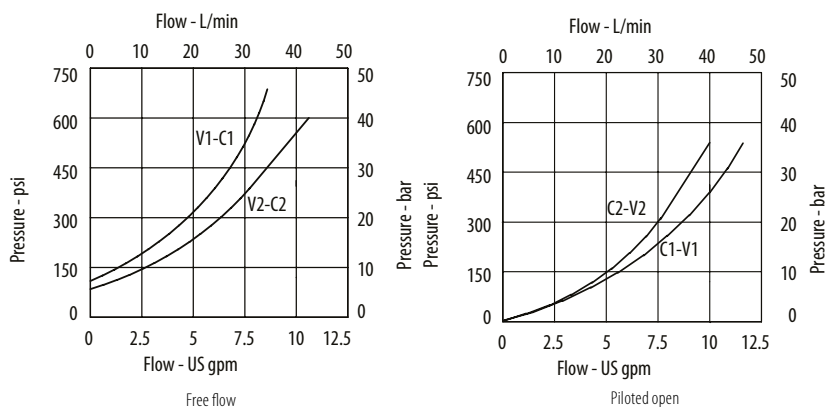
Installation torque  
30 Nm [22 ft. lbs]

#### PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	25 l/min [7 US gpm]
Weight	0.08 kg [0.18 lb]
Pilot Ratio	3:1
Leakage	C1-V1 1.0 ml/min nominal [15 drops/min] C2-V2 0.3 ml/min nominal [5 drops/min]
Cavity	A12744

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**4CKKT50 - 3W - 3 - S - 3 - 28**

##### Basic Code

4CKKT50-No Housing

4CKKT55-Cartridges and Dual Housing

##### Housing

Code	Ports	Housing Model Code
<b>Aluminium dual</b>		
Omit	No Housing	
3W	3/8" BSP	B19240
6T	3/8" SAE	B19241
4W	1/2" BSP	B19228
8T	1/2" SAE	B19229

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

\* Additional housings available

##### Pilot Ratio

3-3:1

##### Pressure Setting

Code	Bar	Psi
24	240	[3500]
28	280	[4000]
35	350	[5000]

##### Pilot Seal Option

3 - Seals

##### Seal Option

Code	Seal kit
S-Nitrile	SK1120
SV-Viton	SK1120V

## Check Valves

### CP410-1

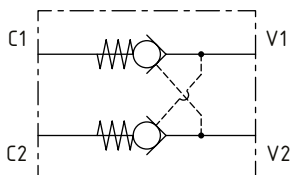
Dual Pilot Operated Check Valves, Line Mounted

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

#### DESCRIPTION AND OPERATION

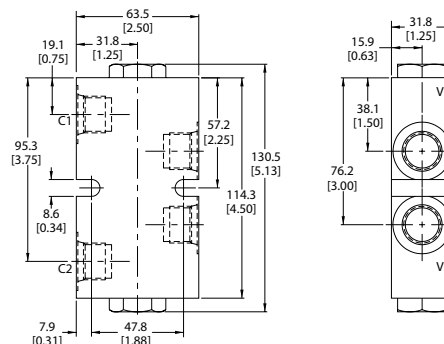
This is a line mounted, dual pilot operated check valve, which uses two CV10-NP check valves. Free flow takes place from ports V1 to C1 and ports V2 to C2. Flow is blocked from port C1 to V1 until pressure is applied to port V2 and blocked from port C2 to V2 until pressure is applied to port V1.

#### SCHEMATIC



#### DIMENSIONS

mm [in]



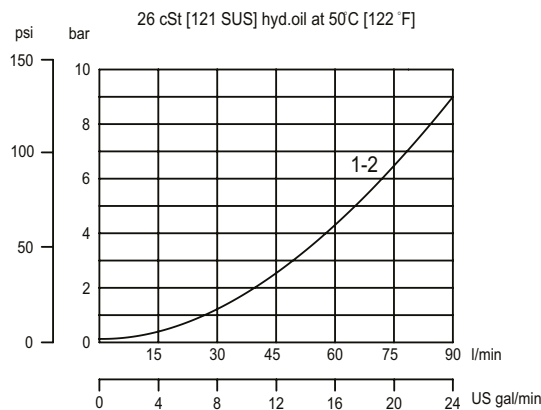
#### PERFORMANCE DATA

<b>Rated pressure</b>	<b>210 bar [3000 psi]</b>
<b>Rated flow at 7 bar [100 psi]</b>	<b>80 l/min [21 US gpm]</b>
<b>Leakage</b>	6 drops/min @ rated pressure
<b>Weight</b>	0.67 kg [1.48 lb]
<b>Pilot Ratio</b>	4:1

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

#### PERFORMANCE CURVES

##### Pressure drop



#### MODEL CODE

**CP410 - 1 - B - 8S - 0 - 065**

##### Seal Option

Code	Seal kit	W/Pilot Seal Option
<b>B</b> -Buna-N	120072	120176
<b>V</b> -Viton	120161	120177

##### Housing

Code	Ports	Housing Model Code
<b>6S</b>	AI, #6 SAE	220099
<b>8S</b>	AI, #8 SAE	220100
<b>3B</b>	AI, 3/8 BSP	221794
<b>4B</b>	AI, 1/2 BSP	221652

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

##### Crack Pressure

Code	Bar	Psi
<b>065</b>	4.5	[65]

##### Pilot Seal Option

**0** - No seals  
**S** - Seals

*Danfoss*