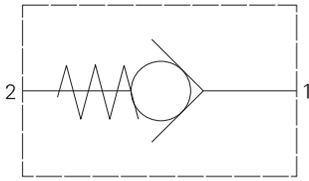


# 3CA20 - Check valve

Direct acting, ball type  
40 L/min (10 USgpm) • 350 bar (5000 psi)



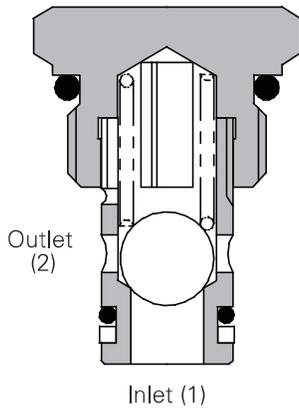
### Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

### Features

Cartridge design with machined seats and precision ground balls gives excellent flow reseat characteristics. Installation into the 2-port 7/8" UNF cavity gives easy fitment and serviceability.

### Sectional view



### Performance data

#### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	40 L/min (10 USgpm)
Maximum pressure	350 bar (5000 psi)
Cracking pressures	0.5 bar (7 psi) 1.5 bar (22 psi) 3.5 bar (50 psi) 7.0 bar (100 psi)
Cartridge material	All steel construction. External parts electroless zinc plated.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "37" for steel option.
Mounting position	Unrestricted
Cavity number	A879 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs. ft.)
Weight	0.05 kg (0.11 lbs.)
Seal kit number	SK396 (Nitrile), SK396V (Viton®)
Recommended filtration level	BS5540/4 Class 18/3 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22°C to +194°F)
Leakage	0.2 ml/min nominal
Nominal viscosity range	5 to 500 cSt

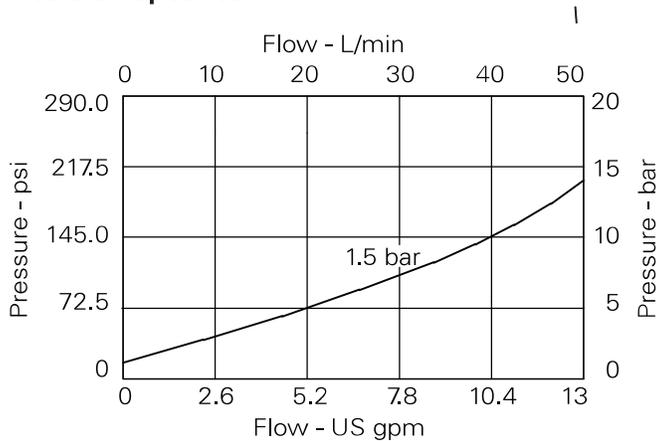
Viton is a registered trademark of E. I. DuPont

### Description

These cartridge check valves allow flow at a low pressure drop, with cracking pressure from 0.5 to 7 bar (7 to 100 psi) in the free flow direction and close to prevent flow in the reverse direction.

They fit into simply machined cavities and are therefore ideal for installation into custom designed Hydraulic Integrated Circuits, manifold blocks and other hydraulic equipment.

### Pressure drop curves

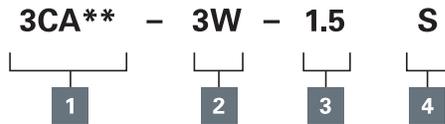


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 3CA20 - Check valve

Direct acting, ball type  
40 L/min (10 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

**3CA20** - Cartridge only  
**3CA25** - Cartridge and body

### 2 Port size

Code	Port size	Housing number - body only	
		Aluminium	Steel
<b>2W</b>	1/4" BSP	A1485	
<b>3W</b>	3/8" BSP	A1043	A14175
<b>6T</b>	3/8" SAE	A15676	A14843

### 3 Cracking pressure

**0.5** - 0.5 bar (7 psi)  
**1.5** - 1.5 bar (22 psi)  
**3.5** - 3.5 bar (50 psi)  
**7.0** - 7.0 bar (100 psi)

### 4 Seals

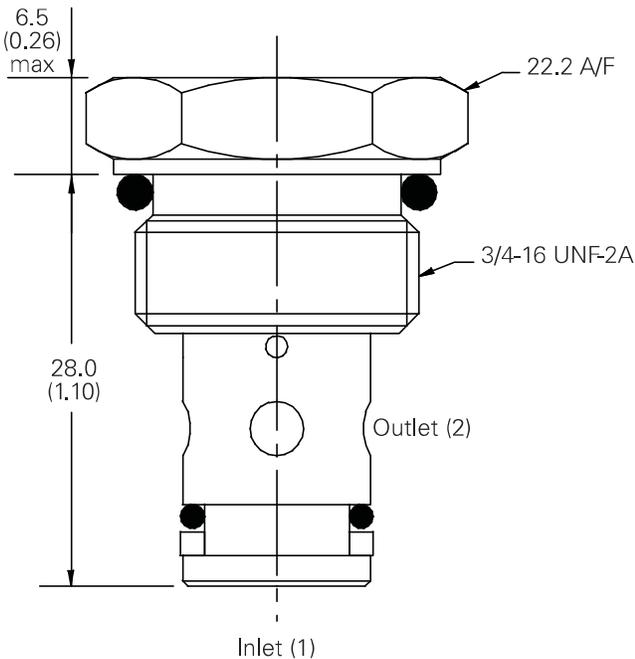
**S** - Nitrile (For use with most industrial hydraulic oils)  
**SV** - Viton (for high temperature and most special fluid applications)

## Dimensions

mm (inch)

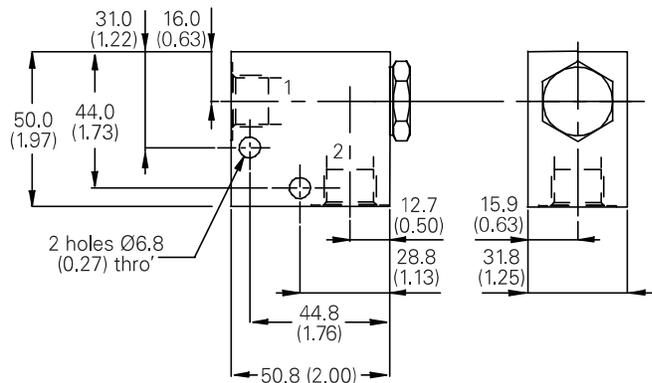
### Cartridge only

Basic code  
3CA20



### Single valve

1/4", 3/8" Ports  
Basic code  
3CA25



**Note:** For applications above 210 please consult our technical department or use the steel body option.

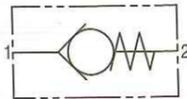
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



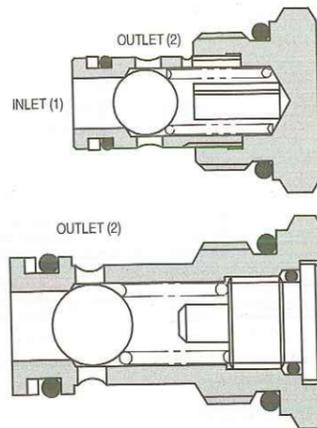
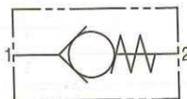
# 3CA SERIES CHECK VALVE

## BALL TYPE

### 3CA20



### 3CA80



### APPLICATION

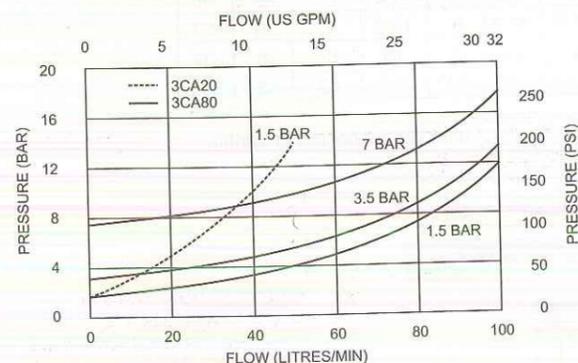
These cartridge check valves allow flow at a low pressure drop, with cracking pressure from 0.5 to 7 bar (7 to 100 psi) in the free flow direction and close to prevent flow in the reverse direction.

Two sizes of check cartridge are available with nominal flow rating up to 80 litres/minute (20 US GPM). They fit into simply machined cavities and are therefore ideal for installation into custom designed Hydraulic Integrated Circuits, manifold blocks and other hydraulic equipment.

### FEATURES

Cartridge design with machined seats and precision ground balls gives excellent flow reset characteristics. Installation into the 2-port 3/4" UNF or 7/8" UNF cavities gives easy fitment and serviceability.

### PRESSURE DROP



\*For applications above 210 bar please consult our technical department or use the steel body option.

### SPECIFICATIONS

Figures based on: Oil Temp = 40°C Viscosity = 40 cSt

Rated Flow	3CA20	40 litres/min (10 US GPM)
	3CA80	80 litres/min (20 US GPM)
Max Setting	3CA20/3CA80	350 bar (5000 psi)
Cracking Pressure	0.5 bar ( 7 psi)	Other options available on request
	1.5 bar ( 22 psi)	
	3.5 bar ( 50 psi)	
	7.0 bar (100 psi)	
Cartridge Material	All steel construction. External parts electroless zinc plated. Delrin seat option available on request.	
Body Material	Standard aluminium (up to 210 bar*) Add suffix '377' for steel option.	
Mounting Position	Unrestricted	
Cavity Number	3CA20	A879 (See Section 17)
	3CA80	A3973
Torque Cavity into Cartridge	3CA20	45 Nm (33 lbs ft)
	3CA80	60 Nm (44 lbs ft)
Weight	3CA20	0.05 kg (0.11 lbs)
	3CA80	0.08 kg (0.17 lbs)
Seal Kit Number	3CA20:	SK396 (Nitrile) SK396V (Viton)
	3CA80:	SK226 (Nitrile) SK226V (Viton)
Recommended Filtration Level	BS5540/4 Class 18/13 (25 micron nominal)	
Operating Temp	-20°C to +90°C	
Leakage	0.2 millilitres/min nominal	
Nominal Viscosity Range	5 to 500 cSt	

### Integrated Hydraulics Ltd

Collins Road, Heathcote Ind. Est., Warwick, CV34 6TF, UK.  
Tel: +44 (0) 1926 881171 Fax: +44 (0) 1926 315729  
Website: www.integratedhydraulics.com

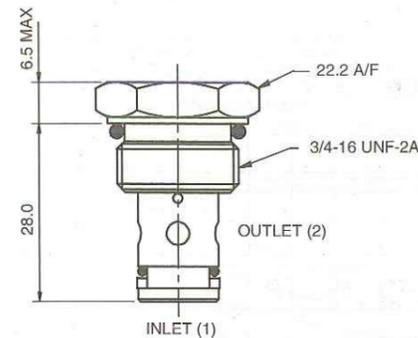
### Integrated Hydraulics Inc

7047 Spinach Drive, Mentor, Ohio 44060, USA  
Tel: (440) 974 3171 Fax: (440) 974 3170  
Website: www.integratedhydraulics.com



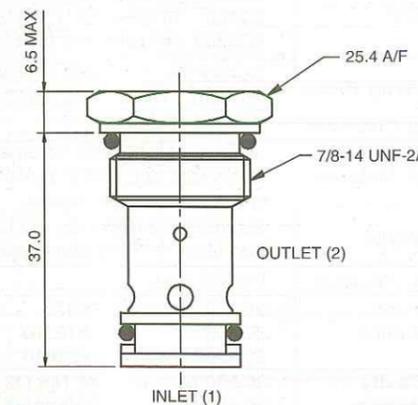
### CARTRIDGE ONLY

BASIC CODE: 3CA20



### CARTRIDGE ONLY

BASIC CODE: 3CA80

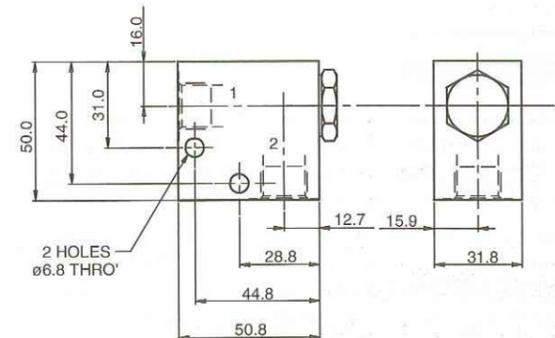


### COMPLETE VALVE 1/4" 3/8" PORTS

BASIC CODE: 3CA25

Body ONLY part numbers

BSP, aluminium	SAE, aluminium	BSP, steel	SAE, steel
1/4" A1485	3/8" A15676	3/8" A14175	3/8" A14843
3/8" A1043			

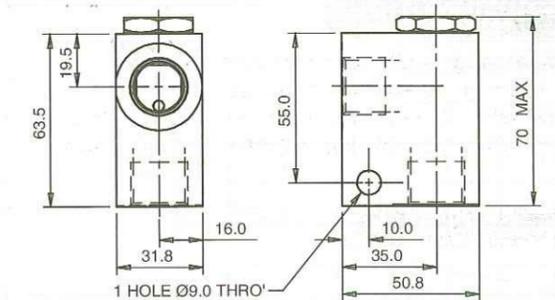


### COMPLETE VALVE 1/2" PORTS

BASIC CODE: 3CA85

Body ONLY part numbers

BSP, aluminium	SAE, aluminium	SAE, steel
1/2" B20868	1/2" B20870	1/2" B20869



Where measurements are critical request certified drawings

### ORDERING CODE EXAMPLE

3CA\*\*\* - 3W - 1.5 - S

#### Basic Code

- 3CA20 = Cartridge Only
- 3CA25 = Cartridge and Body
- 3CA80 = Cartridge Only
- 3CA85 = Cartridge and Body

#### Port Sizes - Bodied Valves Only

- 2W = 1/4" BSP
- 3W = 3/8" BSP
- 4W = 1/2" BSP
- 4T = 1/4" SAE
- 6T = 3/8" SAE
- 8T = 1/2" SAE

#### Seals

- S = Nitrile (For use with most industrial hydraulic oils)
- SV = Viton (For high temperature and most special fluid applications)

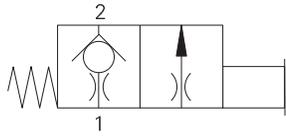
#### Cracking Pressure

- 0.5 = 0.5 bar
- 1.5 = 1.5 bar
- 3.5 = 3.5 bar
- 7.0 = 7.0 bar

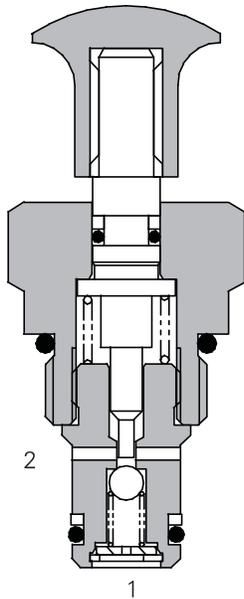
We reserve the right to change specifications without notice

# 3CP2 - Series check valve

Check, manually operated  
5.5-15 L/min (1.5-4 USgpm) • 210 bar (3000 psi)



## Sectional view



## Operation

The poppet seals flow from ports 1 to 2, depressing the hand knob lifts the poppet from its seat permitting flow the flow rate is determined by the size of the orifice and the pressure in the system, various orifice sizes are available.

Flow from port 2 to 1 should be avoided - if required please consult our technical department.

## Features

Cartridge design with machined seats and precision ground balls gives excellent flow reseal characteristics.

## Performance data

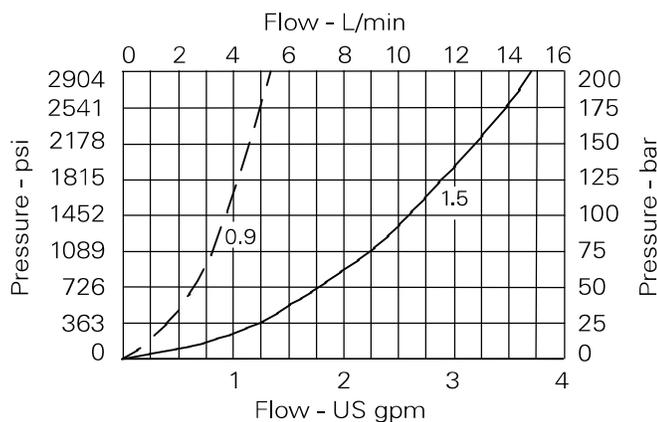
### Ratings and specifications

*Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)*

Max pressure	210 bar (3000 psi)
Rated flow	.9 mm orifice 5.5 L/min (1.4 US gpm), 1.5 mm orifice 15 L/min (4 US gpm)
Internal leakage	.3 ml/min nominal (5 dpm)
Temperature range	-30° to 90°C (-22° to 194°F)
Cavity	A879 (see Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron or better)
Nominal viscosity range	5 to 500 cSt
Cartridge material	All steel construction. External parts electroless zinc plated.
Standard housing materials	Aluminum
Weight	.05 kg (.11 lbs)
Seal kit	SK187 (Nitrile) SK187V (Viton®)

Viton is a registered trademark of E.I. DuPont

## Pressure drop



## Description

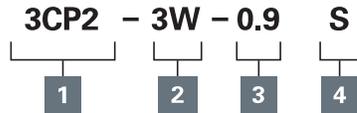
These cartridges permit a small regulated flow to pass when the hand knob is depressed. A typical application would be on an access platform to lower the boom in the event of a power failure.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 3CP2 - Series check valve

Check, manually operated  
5.5-15 L/min (1.5-4 USgpm) • 210 bar (3000 psi)

## Model code



### 1 Function

**3CP2** - Cartridge only  
**3CP25** - Cartridge and body

### 2 Port size

Code	Port size	Housing number	
		Aluminum	Steel
<b>0</b>	Cartridge only		
<b>2W</b>	1/4" BSP	A1485	
<b>3W</b>	3/8" BSP	A1043	A18175
<b>6T</b>	3/8" SAE	A15676	A14843

See section J for housing details.

### 3 Orifice size

**0.9** - 0.9 mm  
**1.5** - 1.5 mm

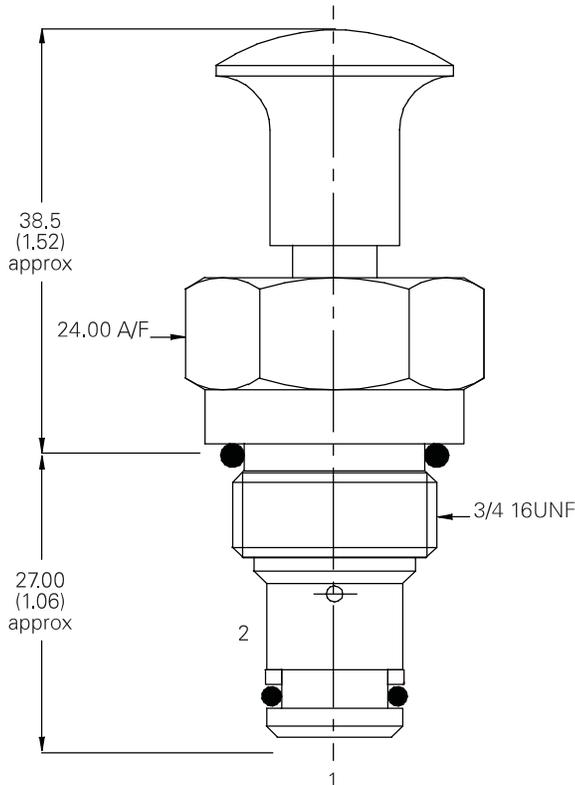
### 4 Seals

**S** - Nitrile  
**SV** - Viton

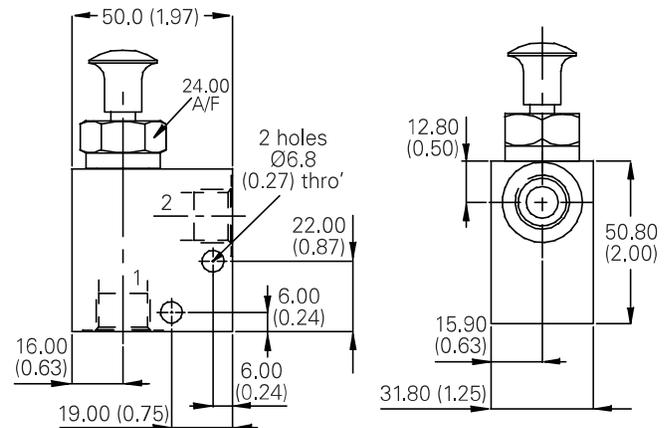
## Dimensions

mm (inch)

### Cartridge only



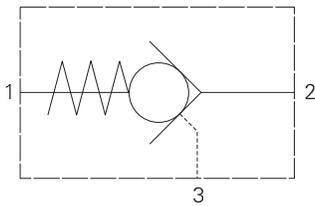
### Installation drawing



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK30 - Check valve

Pilot-to-open, poppet type  
30 L/min (8 USgpm) • 350 Bar (5000 psi)



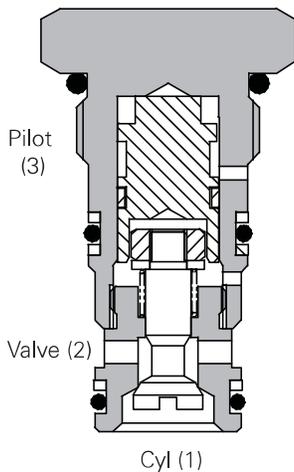
## Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

## Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)		
Max setting	350 bar (5000 psi)		
Pilot ratio	3:1		
Cartridge material	Working parts hardened & ground steel. Electroless zinc plated body.		
Standard housing material	Standard aluminium (up to 210 bar) Add suffix "377" for steel option		
Mounting position	Unrestricted		
Cavity number	A6610 (See section M)		
Torque cartridge into cavity	45 Nm (33 lbs ft)		
Weight	4CK30	0.08 kg	(0.18 lbs)
	4CK35	0.34 kg	(0.75 lbs)
	4CKK35	0.76 kg	(1.67 lbs)
Seal kit number	SK430 (Nitrile) SK430V (Viton®)		
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)		
Operating temperature	-30°C to +90°C (-22° to +194°F)		
Leakage	0.3 milliliters/min nominal (5 dpm)		
Nominal viscosity range	5 to 500 cSt		

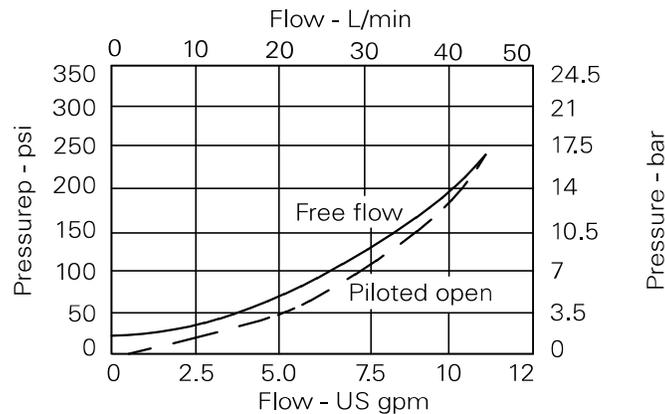
Viton is a registered trademark of E.I. DuPont

## Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

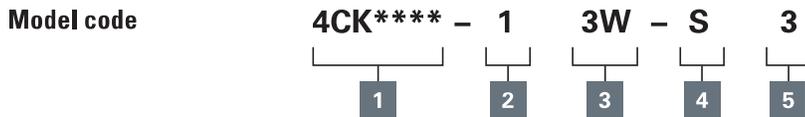
## Pressure drop



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK30 - Check valve

Pilot-to-open, poppet type  
30 L/min (8 USgpm) • 350 Bar (5000 psi)



## 1 Basic code

**4CK30** - Cartridge Only  
**4CK35** - Cartridge and Body  
**4CKK34** - Cartridges and Dual Body

## 2 Pilot port size

**1** - Internal

## 3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
<b>3W</b>	3/8" BSP. 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803
<b>6T</b>	3/8" SAE. 1/4" SAE Pilot Port	B10536		B10805	
<b>8T</b>	1/2" SAE. 1/4" SAE Pilot Port	B7884	84811	B30237	B11812

## 4 Seals

**S** -Nitrile (For use with most industrial hydraulic oils)  
**SV** -Viton (For high temperature and most special fluid applications)

## 5 Optional pilot seal

Omit if not required

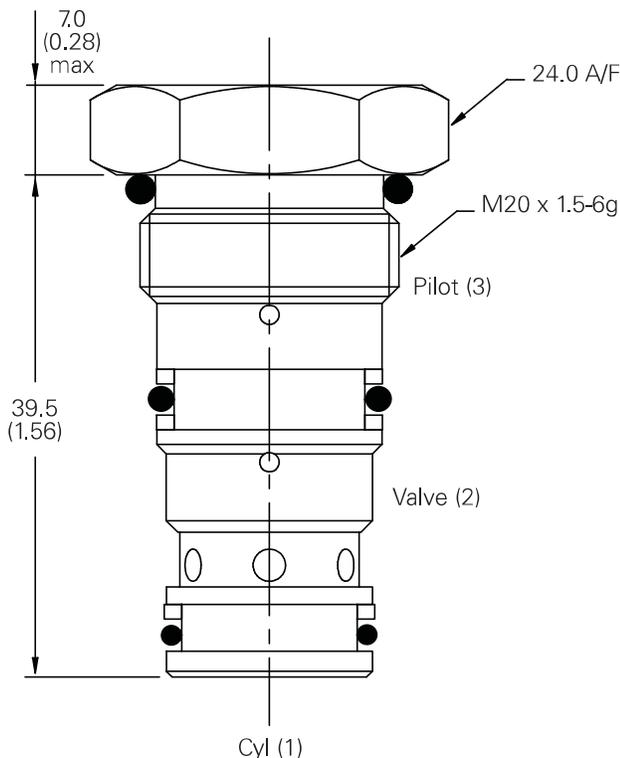
## Dimensions

mm (inch)

### Cartridge only

Basic code

4CK30

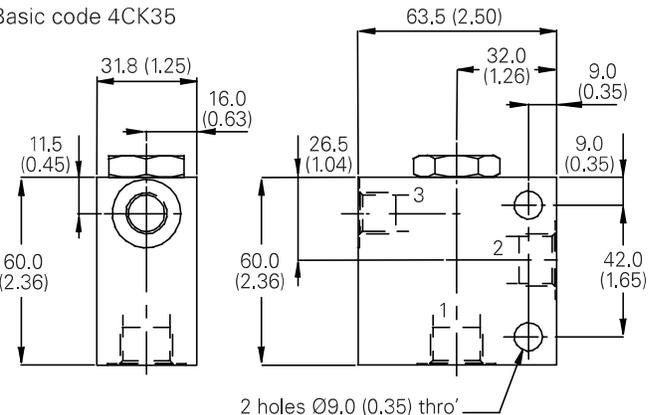


**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

### Single valve

3/8", 1/2" Ports

Basic code 4CK35

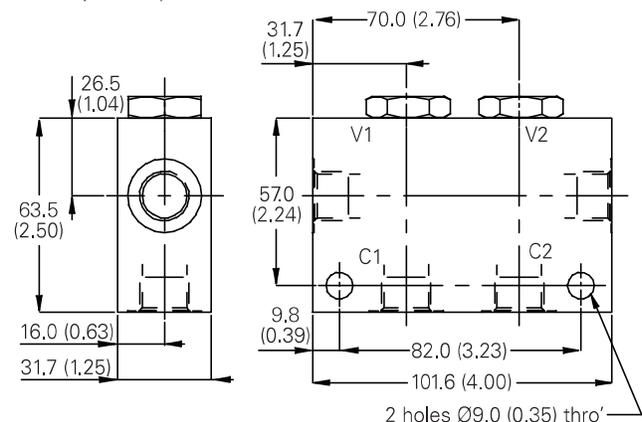


### Dual valve

3/8", 1/2" Ports

Basic code 4CKK34

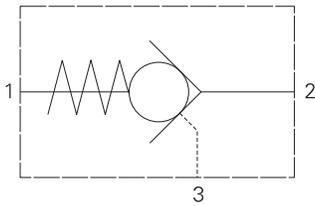
Internally cross piloted



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK90 - Check valve

Pilot-to-open, poppet type  
90 L/min (24 USgpm) • 350 bar (5000 psi)



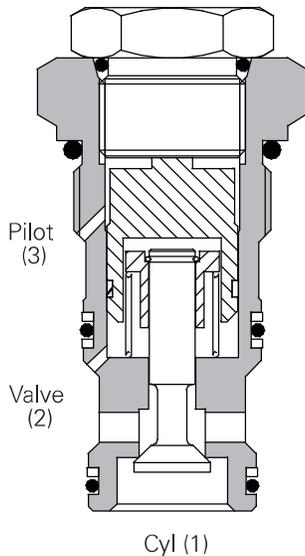
## Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

## Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	90 L/min (24 USgpm)	
Max pressure	350 bar (5000 psi)	
Pilot ratio	4:1	
Cartridge material	Working parts hardened and ground steel. Electroless zinc plated body.	
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.	
Mounting position	Unrestricted	
Cavity number	A12336 (See Section M)	
Torque cartridge into cavity	90 Nm (66 lbs ft)	
Weight	4CK90	0.27 kg (0.61 lbs)
	4CK95	1.33 kg (2.90 lbs)
	4CKK95	2.03 kg (4.51 lbs)
Seal kit number	SK832 (Nitrile) SK832V (Viton®)	
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)	
Operating temperature	-30°C to +90°C (-22° to +194°F)	
Leakage	0.3 milliliters/min nominal (5 dpm)	
Nominal viscosity range	5 to 500 cSt	

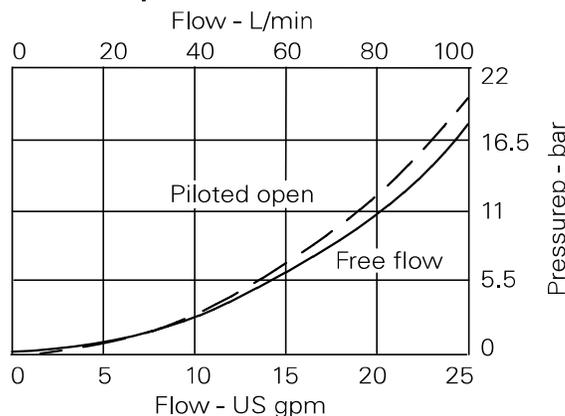
Viton is a registered trademark of E.I. DuPont

## Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

## Pressure drop

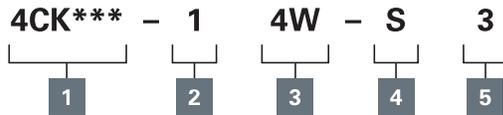


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK90 - Check valve

Pilot-to-open, poppet type  
90 L/min (24 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

4CK90 - Cartridge Only  
4CK95 - Cartridge and Body  
4CKK95 - Cartridges and Dual Body

### 2 Pilot port sizes

1 - Internal

### 3 Port sizes

Code	Port size	Housing number - body valves only			
		Aluminium single	Steel single	Aluminium double	Steel double
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

### 4 Seals

S - Nitrile (For use with most industrial hydraulic oils)

SV - Viton (For high temperature and most special fluid applications)

### 5 Optional pilot seal

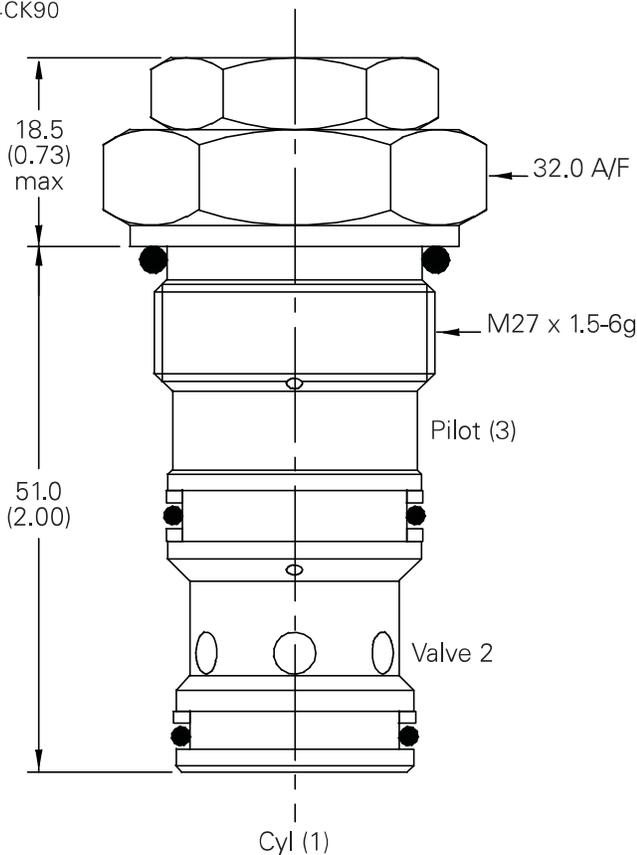
Omit if not required

## Dimensions

mm (inch)

### Cartridge only

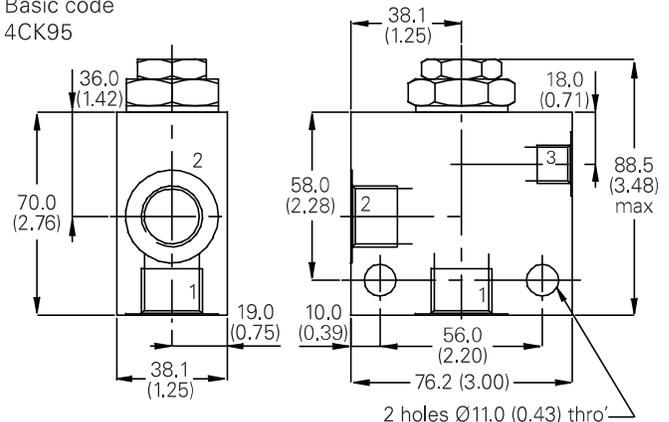
Basic code  
4CK90



**Note:** For applications above 210 bar (3000 psi) please consult our technical department.

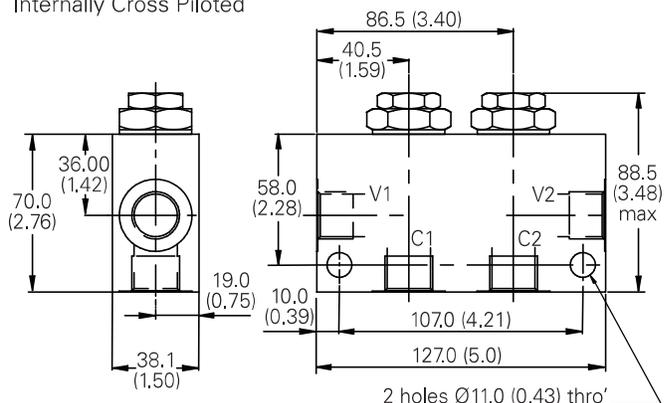
### Complete valve

1/2" Ports  
Basic code  
4CK95



### Dual valve

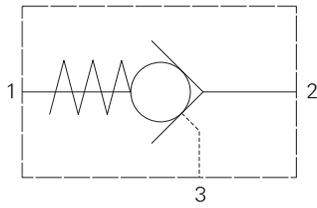
1/2" Ports  
Basic code 4CKK95  
Internally Cross Piloted



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK120 - Check valve

Pilot-to-open, poppet type  
120 L/min (32 USgpm) • 350 bar (5000 psi)



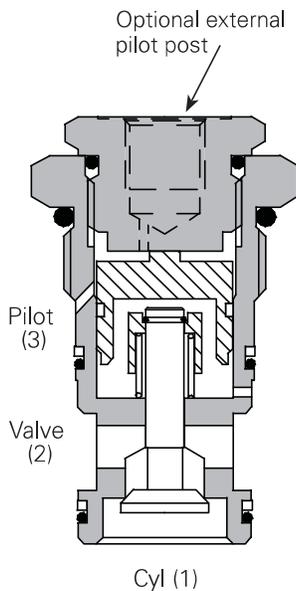
## Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

## Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	120 L/min (32 USgpm)
Max pressure	350 bar (5000 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Zinc plated body.
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A877 (See Section M)
Torque cartridge into cavity	100 Nm (74 lbs ft)
Weight	4CK120 0.28 kg (0.62 lbs) 4CK125 1.15 kg (2.54 lbs) 4CKK125 1.96 kg (4.32 lbs)
Seal kit number	SK381 (Nitrile) SK381V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

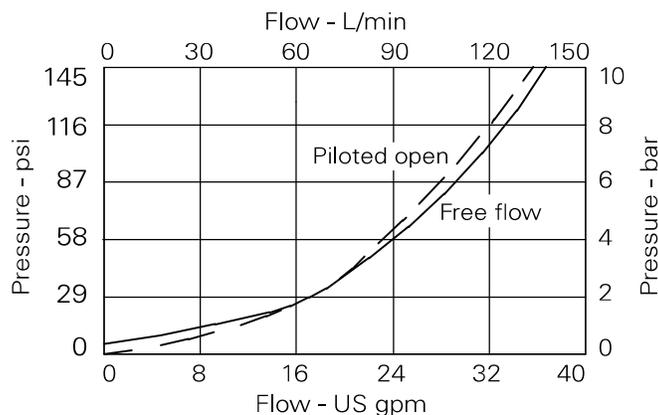
Viton is a registered trademark of E.I. DuPont

## Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

## Pressure drop

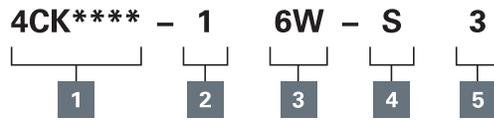


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK120 - Check valve

Pilot-to-open, poppet type  
120 L/min (32 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

**4CK120** - Cartridge Only  
**4CK125** - Cartridge and Body  
**4CKK125** - Cartridges and Dual Body

### 2 Pilot port sizes

Code	Port size
1	Internal
2W	1/4" BSP (External Pilot). Omit for bodied valves
4T	1/4" SAE (External Pilot). Omit for bodied valves

### 4 Seals

**S** - Nitrile (For use with most industrial hydraulic oils)  
**SV** - Viton (For high temperature and most special fluid applications)

### 3 Port sizes - bodied valves only

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
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		

### 5 Optional pilot seal

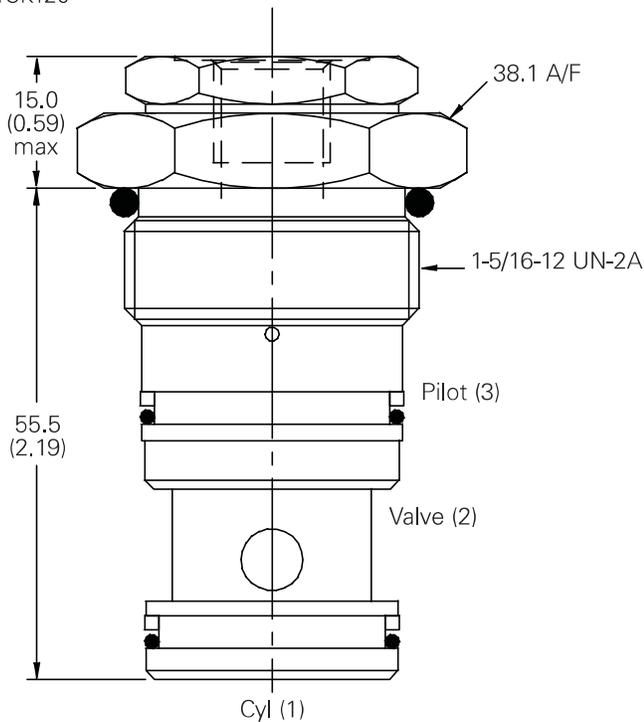
Omit if not required

## Dimensions

mm (inch)

### Cartridge only

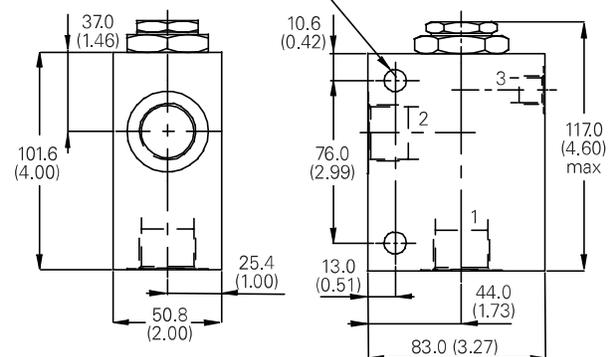
Basic code  
4CK120



**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body.

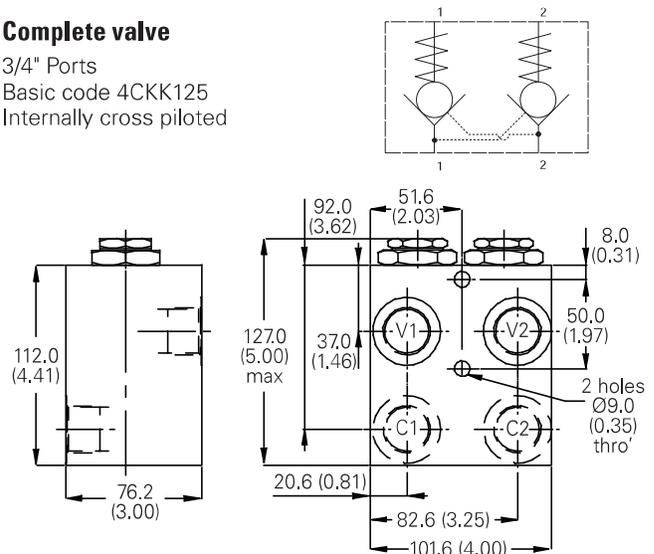
### Complete valve

3/4", 1/2" Ports  
Basic code 4CK125  
2 holes  $\varnothing 10.5$  (0.41) thro'



### Complete valve

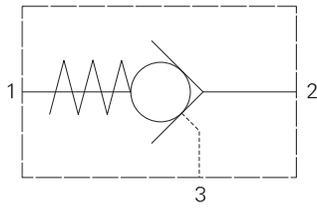
3/4" Ports  
Basic code 4CKK125  
Internally cross piloted



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK300 - Check valve

Pilot-to-open, poppet type  
300 L/min (80 USgpm) • 350 bar (5000 psi)



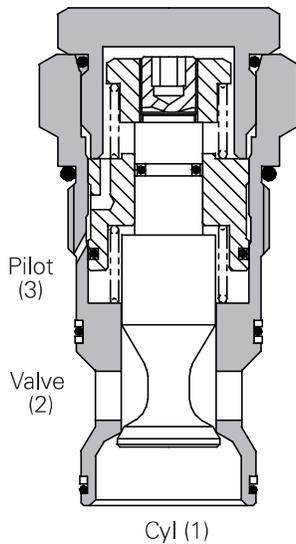
## Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

## Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on oil temp of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	300 L/min (80 USgpm)
Max pressure	350 bar (5000 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A6935 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight	4CK300 0.28 kg (0.62 lbs) 4CK350 1.15 kg (2.54 lbs) 4CKK350 1.96 kg (4.32 lbs)
Seal kit number	SK683 (Nitrile) SK683V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.5 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

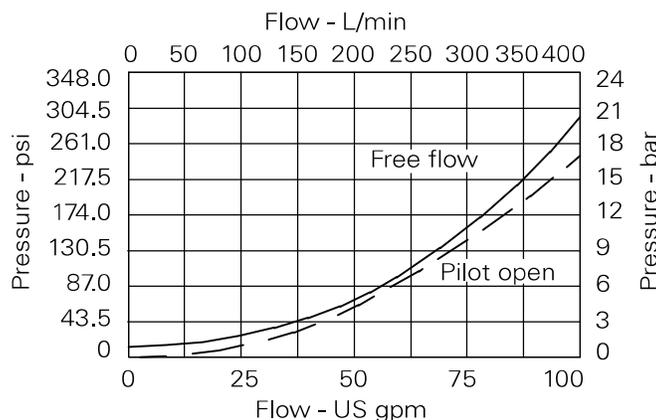
Viton is a registered trademark of E.I. DuPont

## Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

## Pressure drop

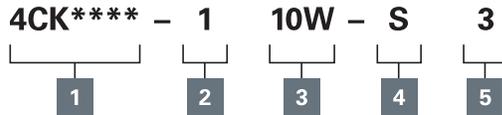


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CK300 - Check valve

Pilot-to-open, poppet type  
300 L/min (80 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

- 4CK300 - Cartridge Only
- 4CK350 - Cartridge and Body
- 4CKK350 - Cartridges and Dual Body

### 2 Pilot port size

- 1 - Internal

### 3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
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

### 4 Seals

**S** - Nitrile (For use with most industrial hydraulic oils)

**SV** - Viton (For high temperature and most special fluid applications)

### 5 Optional pilot seal

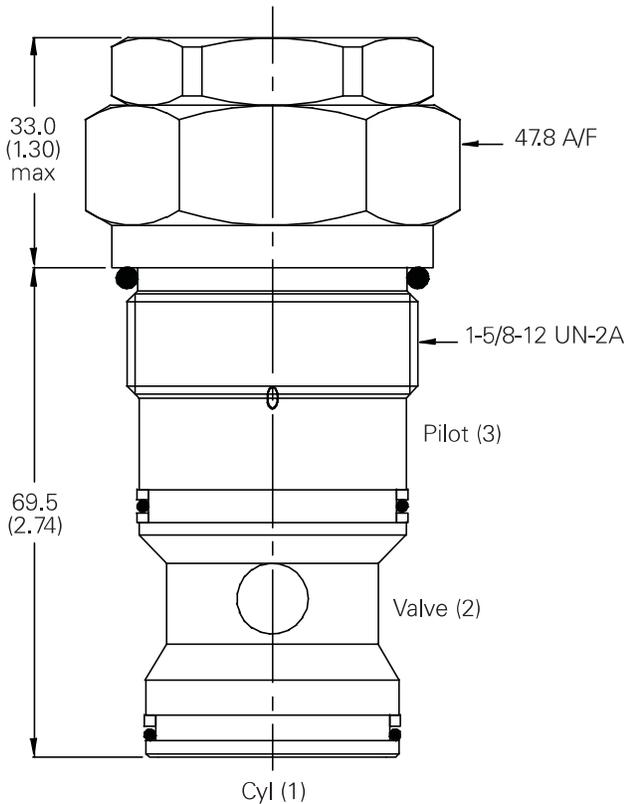
Omit if not required

## Dimensions

mm (inch)

### Cartridge only

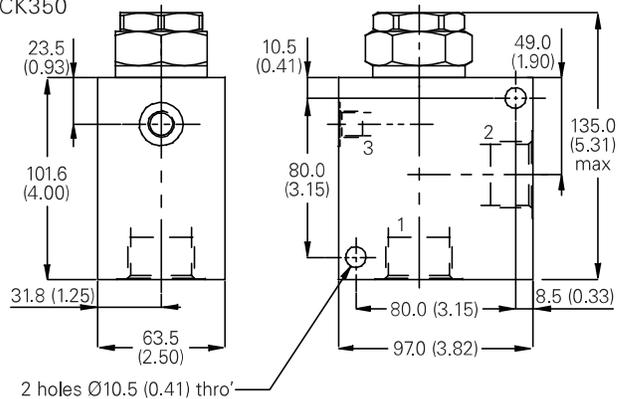
Basic code  
4CK300



**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body.

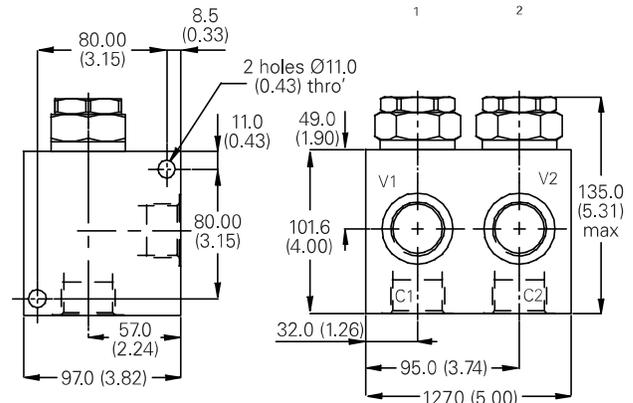
### Single valve

1 1/4" Ports  
Basic code  
4CK350



### Dual valve

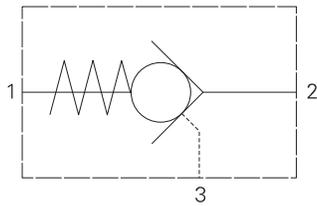
1 1/4" Ports  
Basic code 4CKK350  
Internally Cross Piloted



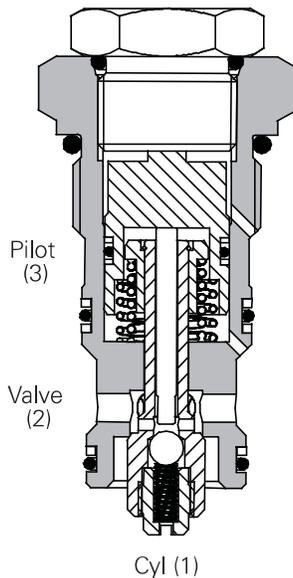
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CKD90 - Check valve

Pilot-to-open, poppet type with decompression stage  
 90 L/min (24 USgpm) • 420 bar (6000 psi)



## Sectional view



## Operation

The ball and poppet are held onto their respective seats by spring force, ensuring positive sealing as long as the pressure on port 1 is equal to or greater than the pressure on port 2. As soon as the pressure on port 2 exceeds the pressure on port 1 plus the spring force, the valve opens from 2 to 1. In order to pass flow in the reverse direction, pilot pressure must be applied to port 3. Once this reaches the required level, the pilot piston acting on the pin in the Center of the poppet lifts the ball off its seat, enabling

the fluid to decompress and thus reducing the load pressure acting on port 1. As the load pressure decreases, the pilot pressure required to open the main stage also decreases and when the correct pilot pressure is reached, the main stage poppet is lifted off its seat by the advancing pilot piston, allowing full flow from 1 to 2.

When calculating the pilot pressure, it must be remembered that any back pressure on port 2 will cause this to increase on a 1:1 ratio.

## Features

Decompression stage reduces hydraulic noise on rapid loss of pressure. Precision ground ball and hardened and ground poppet ensure positive sealing and long, trouble-free working life.

This valve is directly interchangeable with the 4CK90 check valve and 1CE\*90 series overcenter valve.

## Performance data

### Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

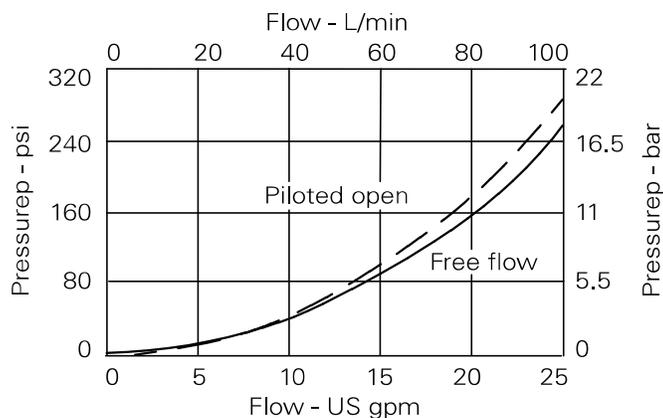
Rated flow	90 L/min (24 USgpm)
Max pressure	Cylinder Port 1 420 bar (6000 psi) Ports 2 & 3 350 bar (5000 psi)
Pilot ratio	25:1 decompression stage 3: main stage
Cartridge material	Working parts hardened and ground steel. Electroless nickel plated body.
Standard Housing Material	Standard aluminium (up to 210 bar*). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12336
Torque cartridge into cavity	90 Nm (66 lbs ft)
Weight	0.243 kg (0.54 lbs)
Seal kit number	SK986 (Nitrile) SK986V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

## Description

A decompression pilot check can be used in most applications that use a standard pilot operated check. Free flow in one direction and load holding in the other. The decompression feature allows locked-in pressure to decay in a controlled fashion, reducing hydraulic noise and instability caused by the rapid loss of energy from the actuator. The valve is effective in clamping circuits and when used with intensifiers or when there are high load induced pressures.

## Pressure drop

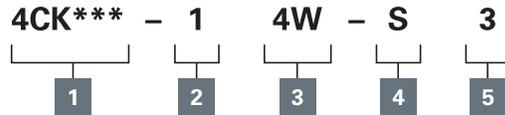


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CKD90 - Check valve

Pilot-to-open, poppet type with decompression stage  
90 L/min (24 USgpm) • 420 bar (6000 psi)

Model code



## 1 Basic code

**4CKD90** - Cartridge only  
**4CKD95** - Cartridge and Body  
**4CKKD95** - Cartridges and Dual Body

## 2 Pilot port sizes

1 - Internal

## 3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
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

## 4 Seals

**S** - Nitrile (For use with most industrial hydraulic oils)

**SV** - Viton (For high temperature and most special fluid applications)

## 5 Optional pilot seal

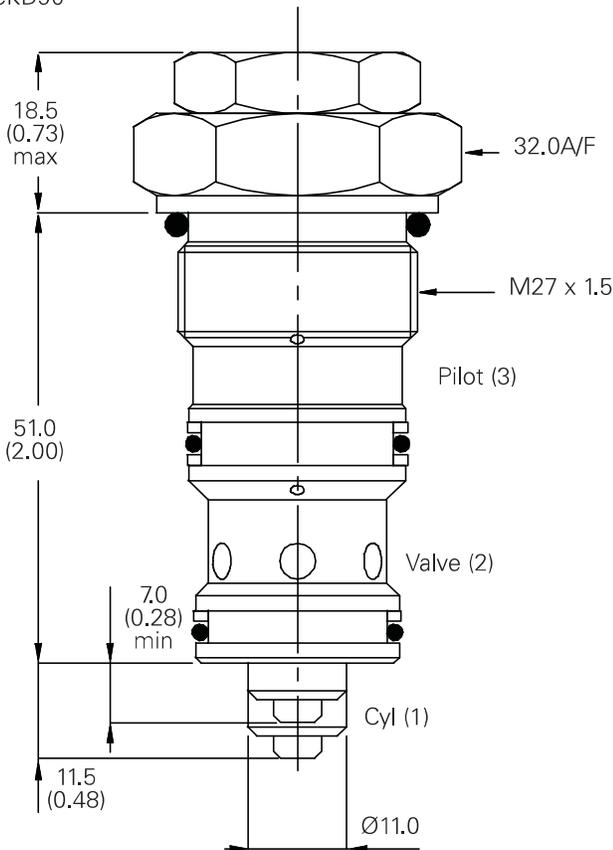
Omit if not required

## Dimensions

mm (inch)

### Cartridge only

Basic code  
4CKD90

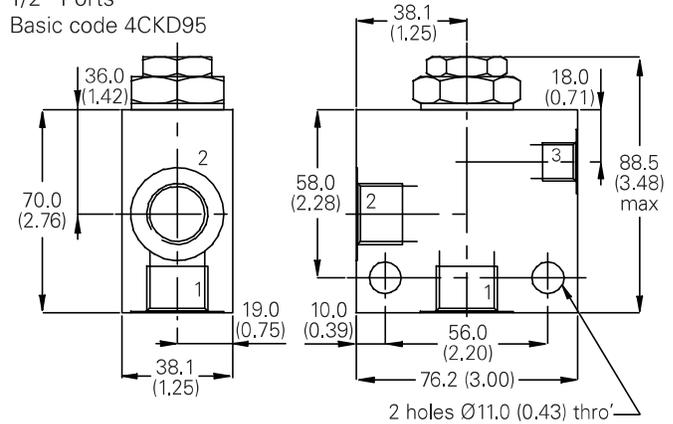


**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

**Note:** Ensure cavity clears nose end of cartridge.

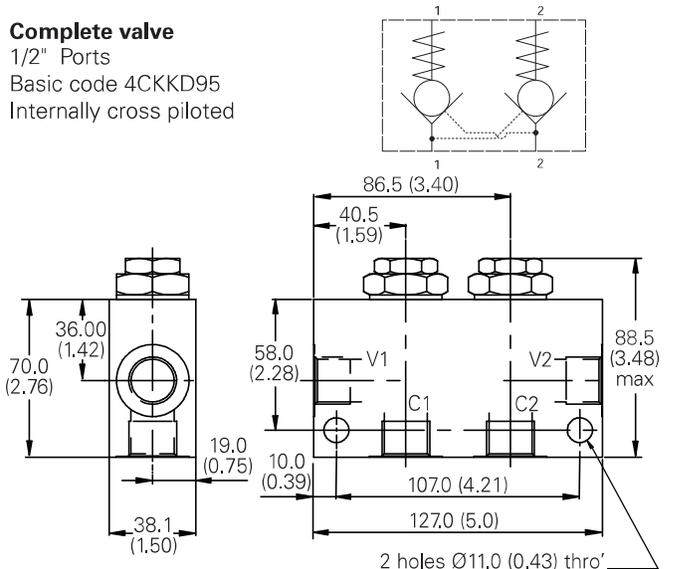
### Complete valve

1/2" Ports  
Basic code 4CKD95



### Complete valve

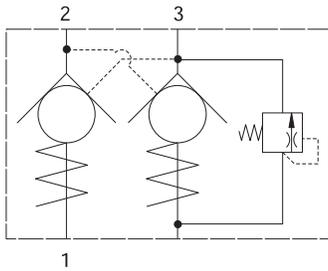
1/2" Ports  
Basic code 4CKKD95  
Internally cross piloted



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CKKT - Check valve

Dual, pilot-to-open with thermal relief  
 25 L/min (6.6 USgpm) • 300 bar (4350 psi)



## Operation

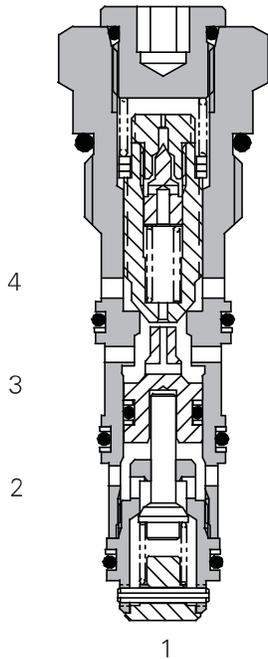
Pressure on the valve port causes the poppet to lift against the spring force, allowing the flow to the cylinder port. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

In dual pilot check valves, each pilot section is cross connected to the opposite line giving automatic pilot operation in both directions. When the pressure in C2 rises above the setting of the relief valve, the relief valve will open, allowing flow to the V2 port, relieving pressure on the cylinder.

## Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	25 L/min (6.6 USgpm)
Maximum pressure	300 bar (4350 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Electroless zinc plated body.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12744 (See Section M)
Torque cartridge into cavity	30 Nm (22 lbs. ft.)
Weight	4CKKT50 0.08 kg (0.18 lbs) 4CKKT55 0.34 kg (0.75 lbs)
Seal kit number	SK1120 (Nitrile) SK1120V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Leakage	C1 - V1 1.0 ml/min nominal (15 dpm) C2 - V2 0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

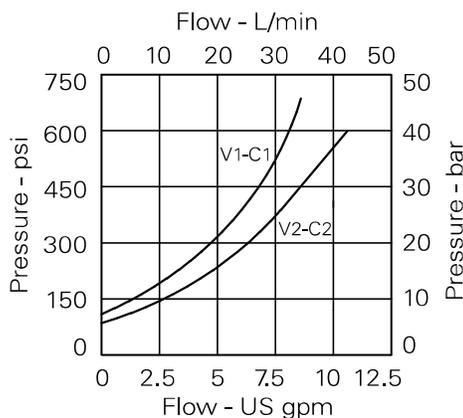
Viton is a registered trademark of E. I. DuPont

## Description

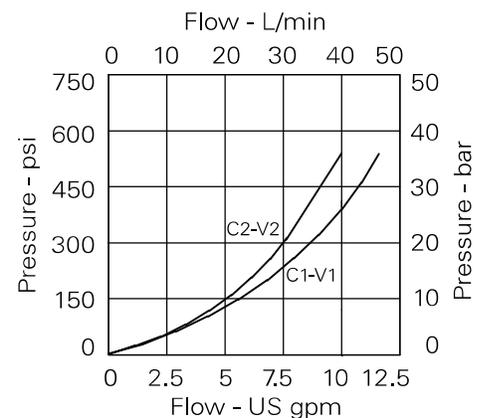
Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

A pilot relief valve will protect the cylinder and hoses from thermal expansion of the hydraulic fluid. The maximum flow through the relief is 1.0l/min.

## Pressure drop



Free flow



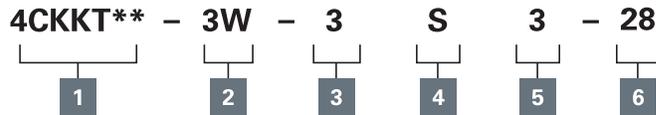
Piloted open

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4CKKT - Check valve

Dual, pilot-to-open with thermal relief  
25 L/min (6.6 USgpm) • 300 bar (4350 psi)

## Model code



### 1 Basic code

**4CKKT50** - Cartridge only  
**4CKKT55** - Cartridge and body

### 2 Port size - bodied valves only

Code	Port size	Housing number
<b>Aluminium dual</b>		
<b>3W</b>	3/8" BSP	B19240
<b>6T</b>	3/8" SAE	B19241
<b>4W</b>	1/2" BSP	B19228
<b>8T</b>	1/2" SAE	B19229

### 3 Pilot Ratio

**3** - 3:1

### 4 Seals

**S** - Nitrile (For use with most industrial hydraulic oils)  
**SV** - Viton (For high temperature and most special fluid applications)

### 5 Optional Pilot Seal

**3** - Standard  
Omit if not required

### 6 Pressure Setting

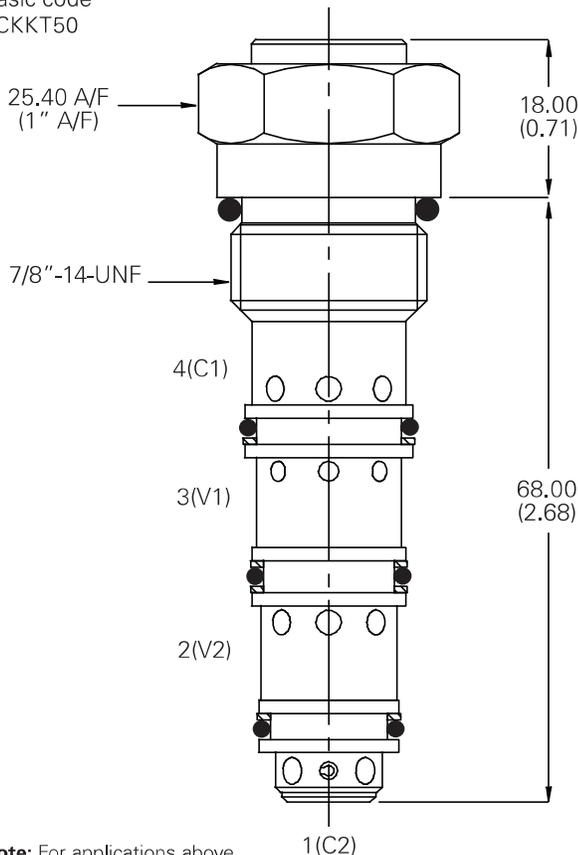
**24** - 240 bar (3500 psi)  
**28** - 280 bar (4000 psi)  
**35** - 350 bar (5000 psi)

## Description

mm (inch)

### Cartridge only

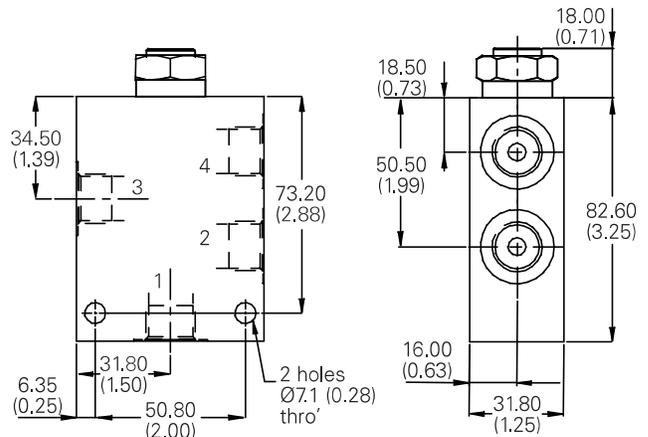
Basic code  
4CKKT50



**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

### Dual valve

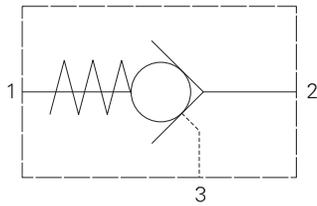
3/8" Ports  
4CKKT55 Internally Cross -Piloted



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4KD25 - Check valve

Pilot-to-open with decompression stage  
 25 L/min (6 USgpm) • 700 bar (10000 psi)



## Operation

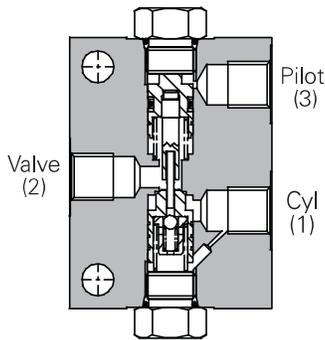
In free flow direction, flow through inlet unseats the poppet and flows out of the cylinder port. When the control valve is centered the load is locked. When pilot pressure is applied the piston unseats the small poppet in the center of

the main poppet. Flow through this small seat area lowers the load or locked pressure (decompression stage). With load pressure reduced the main poppet is then piloted fully open allowing reverse flow.

## Features

Decompression feature for low pilot pressure requirements and to reduce hydraulic noise on rapid loss of pressure.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

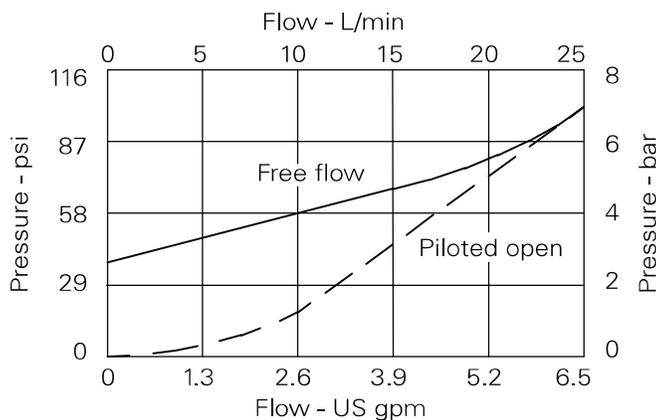
Rated flow	25 L/min (6 USgpm)
Maximum pressure	700 bar (10000 psi) Cylinder Port 140 bar (2000 psi) Pilot Port
Pilot ratio	25:1 Decompression 4:1 Full Flow
Body material	Steel
Mounting position	Line mounted
Weight	0.8 kg (1.8 lbs.)
Seal kit number	SK1060 (Nitrile) SK1060V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E. I. DuPont

## Description

Used to lock a cylinder or part of a circuit and prevent reverse flow until pilot pressure is applied. For use in high pressure, low flow circuits and circuits requiring decompression. Can be used in conjunction with the 1T16 pressure intensifier. See page J-42.

## Pressure drop

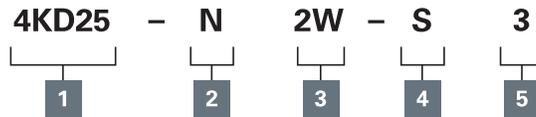


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 4KD25 - Check valve

Pilot-to-open with decompression stage  
25 L/min (6 USgpm) • 700 bar (10000 psi)

## Model code



### 1 Basic code

4KD25 - Complete valve

### 2 Adjustment means

N - Fixed

### 3 Port sizes - bodied valves only

2W - 1/4" BSP

### 4 Seals

S - Nitrile (for use with most industrial hydraulic oils)

SV - Viton (for high temperature and most special fluid applications)

### 5 'O' Ring on pilot piston

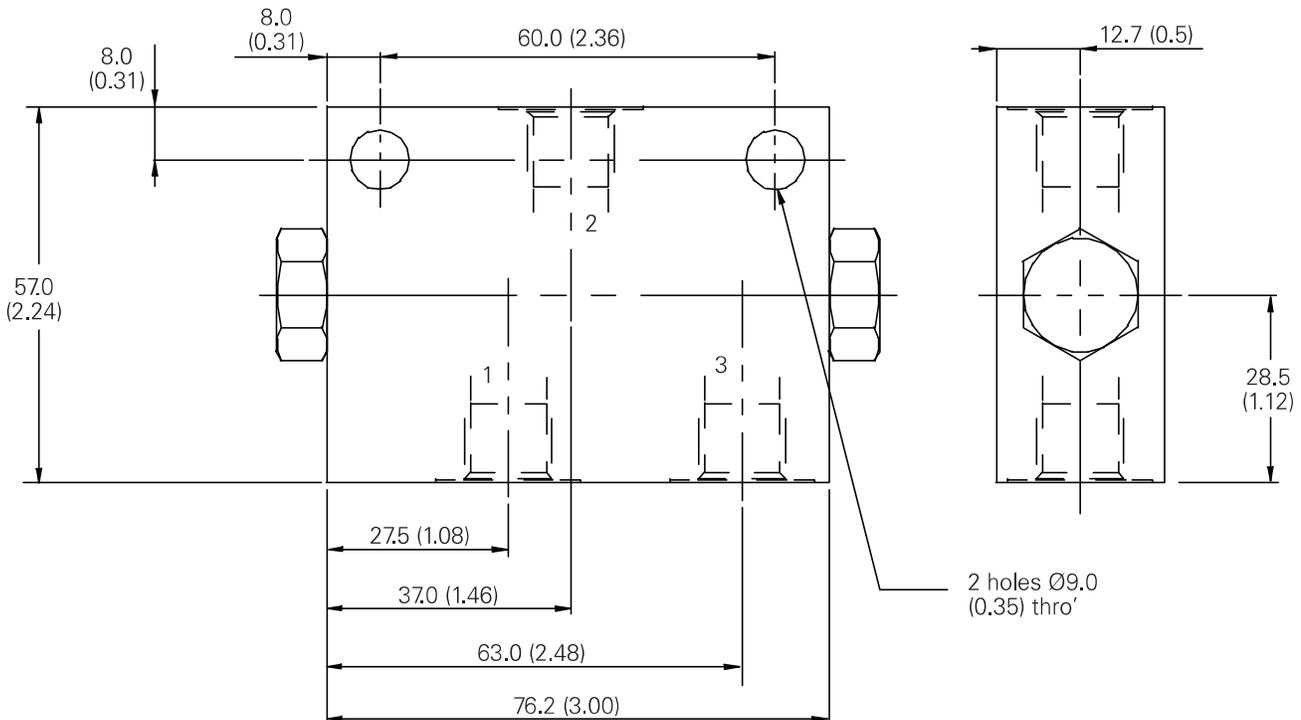
3 - Standard  
Omit if not required

## Dimensions

mm (inch)

### Complete valve

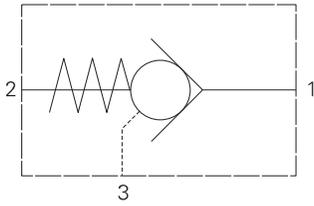
1/4" Ports  
Basic code  
4KD25



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK30 - Check valve

Pilot-to-close, ball type  
30 L/min (8 USgpm) • 350 bar (5000 psi)



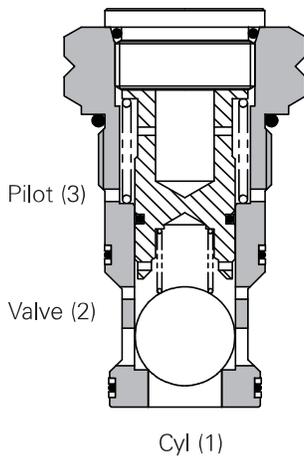
## Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

## Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity number	A6610 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs. ft.)
Weight	0.08 kg (0.18 lbs)
Seal kit number	SK829 (Nitrile) SK829V (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

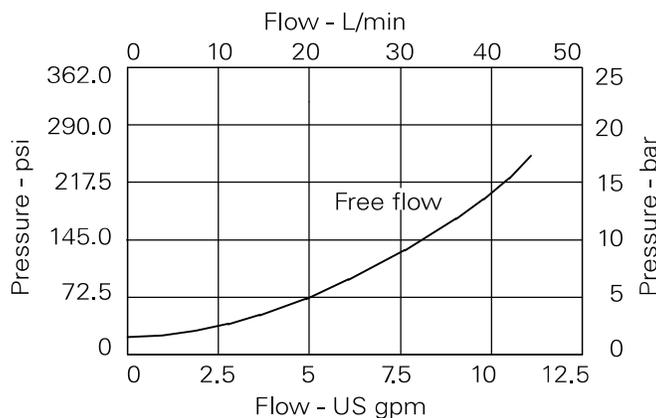
Viton is a registered trademark of E. I. DuPont

## Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

## Pressure drop

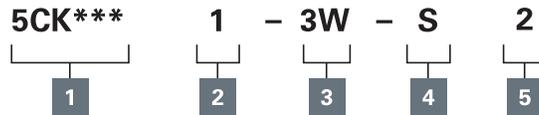


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK30 - Check valve

Pilot-to-close, ball type  
30 L/min (8 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

5CK30 - Cartridge only  
5CK35 - Cartridge & body

### 2 Pilot port size

1 - Internal  
Omit for line valves

### 3 Port size - bodied valves only

Code	Port size	Housing number	
		Aluminum	Steel
3W	3/8" BSP 1/4" BSP Pilot Port	B6743	B12823
6T	3/8" SAE 1/4" SAE Pilot Port	B10536	
8T	1/2" SAE 1/4" Pilot Port		B11811

### 4 Seals

S - Nitrile (for use with most industrial hydraulic oils)  
SV - Viton (for high temperature and most special fluid applications)

### 5 Pilot ratio

2 - 2:1

## Dimensions

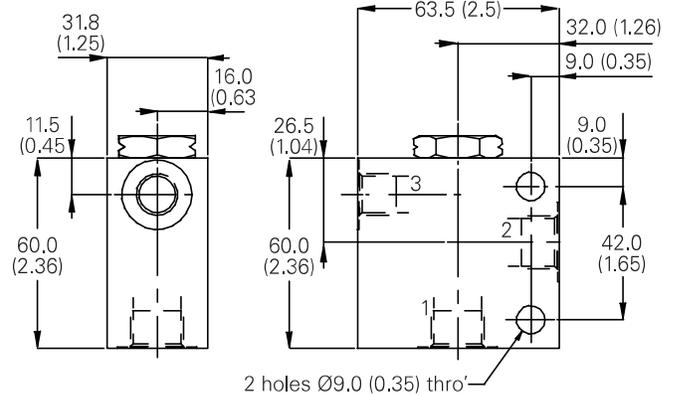
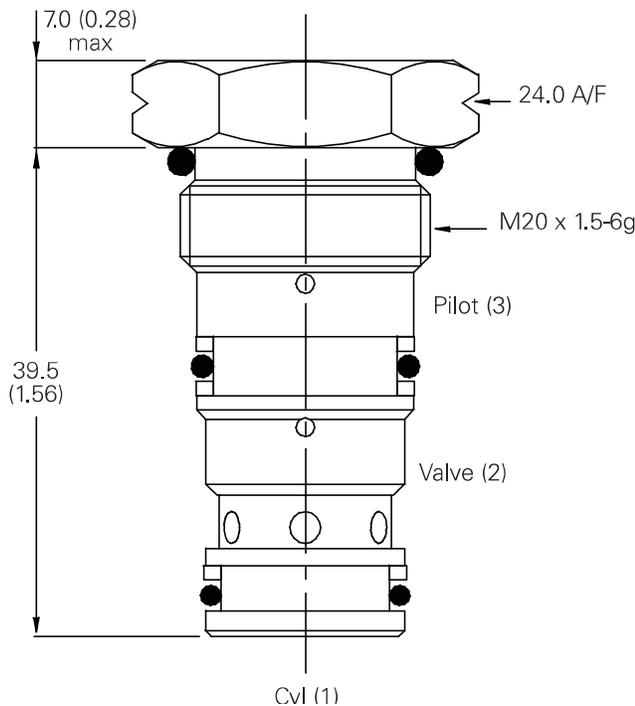
mm (inch)

### Cartridge only

Basic code  
5CK30

### Single valve

3/8", 1/2" Ports  
Basic code  
5CK35

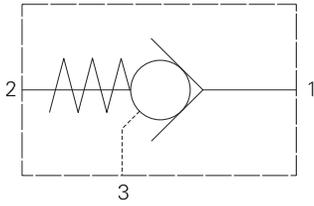


**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK120 - Check valve

Pilot-to-close, ball type  
120 L/min (32 USgpm) • 350 bar (5000 psi)



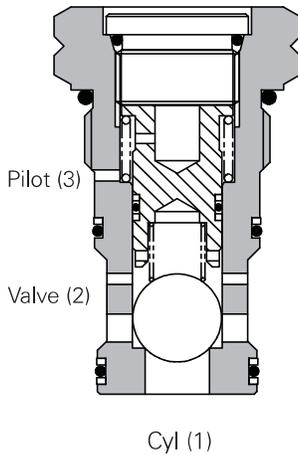
## Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

## Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

## Sectional view



## Performance data

### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	120 L/min (32 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminum (up to 210 bar*). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A877
Torque cartridge into cavity	100 Nm (74 lbs. ft.)
Weight	0.28 kg (0.62 lbs)
Seal kit number	SK833 (Nitrile) SK833 (Viton®)
Recommended Filtration level	BS540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

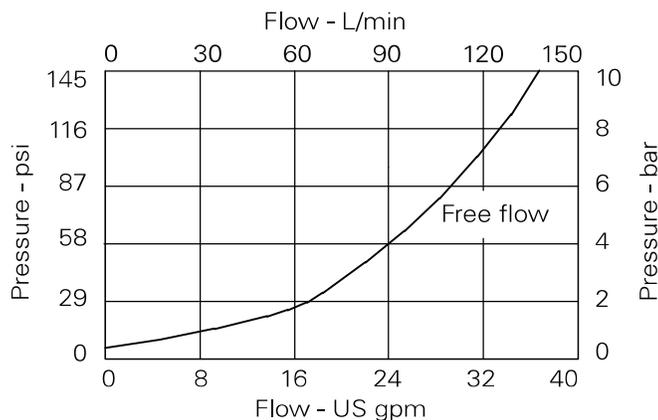
Viton is a registered trademark of E. I. DuPont

## Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

## Pressure drop

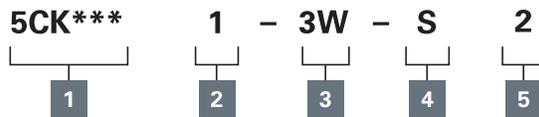


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK120 - Check valve

Pilot-to-close, ball type  
120 L/min (32 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Function

**5CK120** - Cartridge only  
**5CK125** - Cartridge and body

### 2 Pilot port size

**1** - Internal  
Omit for line valves

### 3 Port size

Code	Port size	Housing number	
		Aluminum	Steel
<b>6W</b>	3/4" BSP 1/4" BSP/SAE Pilot Port	B6898	B5544
<b>12T</b>	3/4" SAE 1/4" SAE Pilot Port	B8200	
<b>16T</b>	1" SAE 1/4" SAE Pilot Port	B10708	B11814

### 4 Seals

**S** - Nitrile (for use with most industrial hydraulic oils)  
**SV** - Viton (for high temperature and most special fluid applications)

### 5 Pilot Ratio

**2** - 2:1

## Dimensions

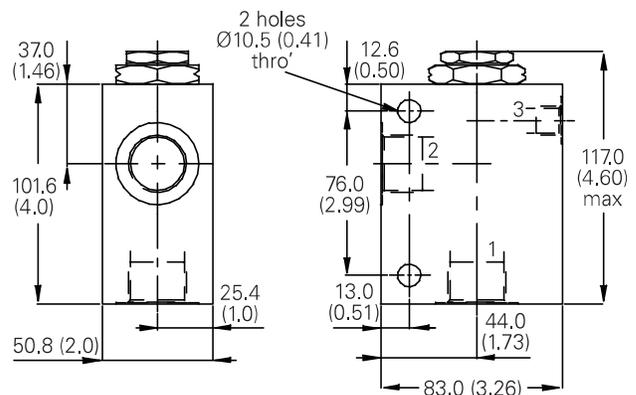
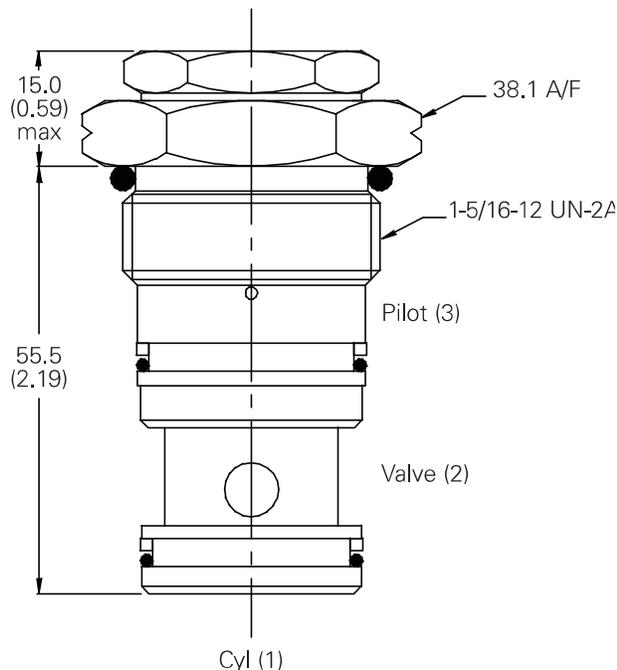
mm (inch)

### Cartridge only

Basic code  
5CK120

### Single valve

3/4", 1" Ports  
Basic code  
5CK125

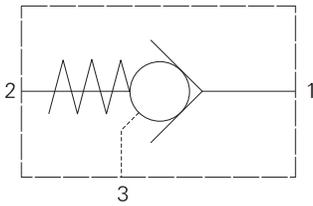


**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

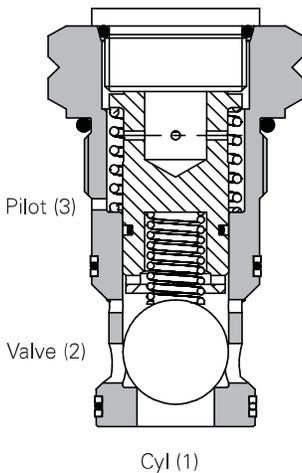
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK300 - Check valve

Pilot-to-close, ball type  
250 L/min (65 USgpm) • 350 bar (5000 psi)



## Sectional view



## Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

## Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

## Performance data

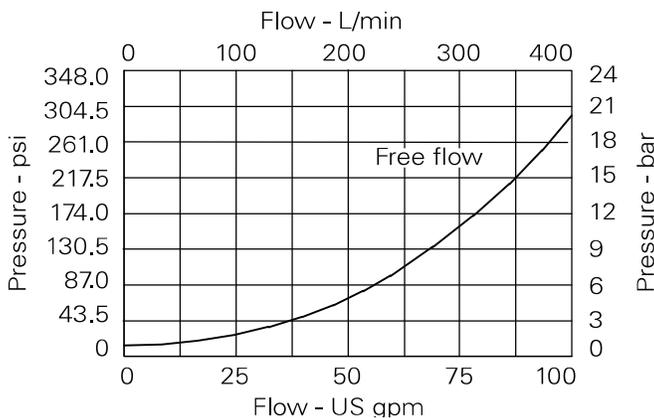
### Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	250 L/min (65 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body
Standard housing material	Standard aluminum (up to 210 bar*). Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity number	A6935
Torque cartridge into cavity	150 Nm (110 lbs. ft.)
Weight	0.28 kg (0.62 lbs)
Seal kit number	SK834 (Nitrile) SK834V (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E. I. DuPont

## Pressure drop



## Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

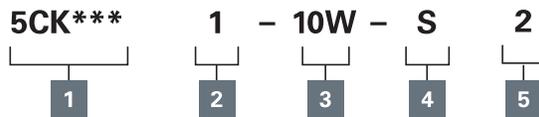
The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 5CK300 - Check valve

Pilot-to-close, ball type  
250 L/min (65 USgpm) • 350 bar (5000 psi)

## Model code



### 1 Basic code

**5CK300** - Cartridge only  
**5CK350** - Cartridge & body

### 2 Pilot port size

**1** - Internal  
Omit for line valves

### 3 Port size - bodied valves only

Code	Port size	Housing number- body only	
		Aluminum	Steel
10W	1 1/4" BSP	B6814	B8610
	1/4" BSP/SAE Pilot Port		
20T	1 1/4" SAE	B10630	B11474
	1/4" BSP/SAE Pilot Port		

### 4 Seals

**S** - Nitrile (for use with most industrial hydraulic oils)  
**SV** - Viton (for high temperature and most special fluid applications)

### 5 Pilot ratio

**2** - 2:1

## Dimensions

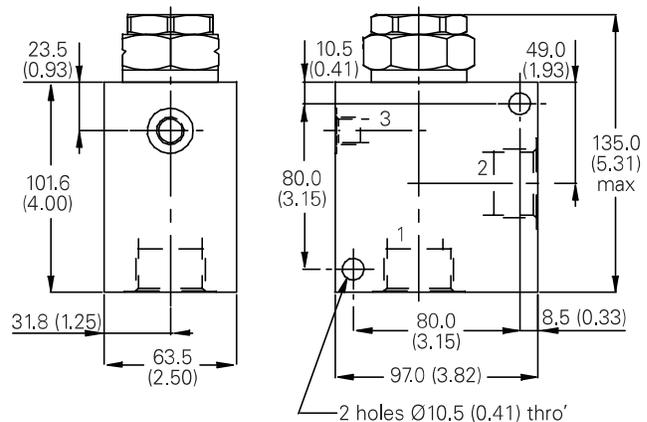
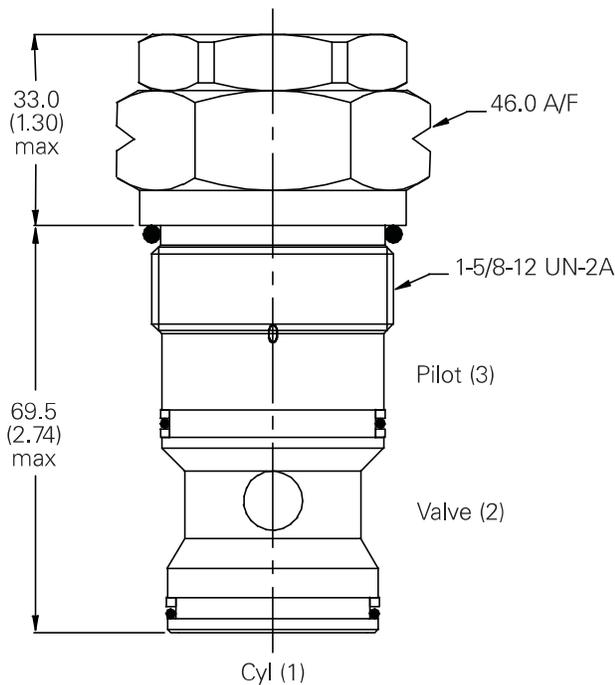
mm (inch)

### Cartridge only

Basic code  
5CK300

### Single valve

1 1/4" Ports  
Basic code  
5CK350



**Note:** For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.