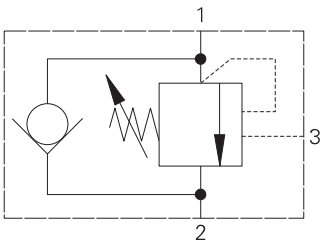
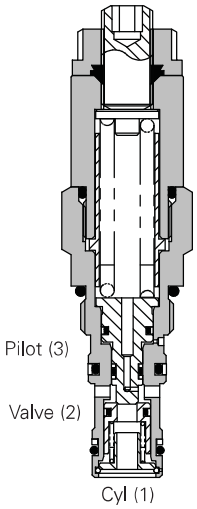
1CE20 - Overcenter valve

Pilot assisted relief with check
20 L/min (5 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

3:1 Best suited for extremely unstable applications such as long booms or flexible frameworks.

4.5:1 Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

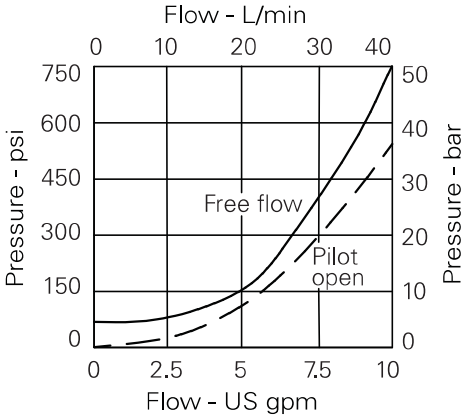
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	20 L/min (5 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A22903 (See Section M)
Torque cartridge into cavity	40 Nm (30 lbs ft)
Weight	1CE20 0.16 kg (0.35 lbs) 1CE25 0.37 kg (0.82 lbs) 1CEE24 0.41 kg (0.89 lbs)
Seal kit number	SK1276 (Nitrile) SK1276V (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.

Pressure drop



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

Model code

1CE* – F 3W – 35 S 3**

1 2 3 4 5 6

1 Basic code

1CE20 - Cartridge Only
1CE25 - Cartridge and Body
1CEE24 - Cartridges and Dual Body

2 Adjustment means

F - Screw Adjustment
N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminum single	Steel single	Aluminum dual	Steel dual
3W	3/8" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B24255	B24254	B24261	B24260
6T	3/8" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B24257	B24256	B24264	B24263

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 100-230 bar. Std setting 140 bar

35 - 200-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min
Other pressure ranges available on request

5 Seals

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

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

6 Pilot ratio

3 - 3:1

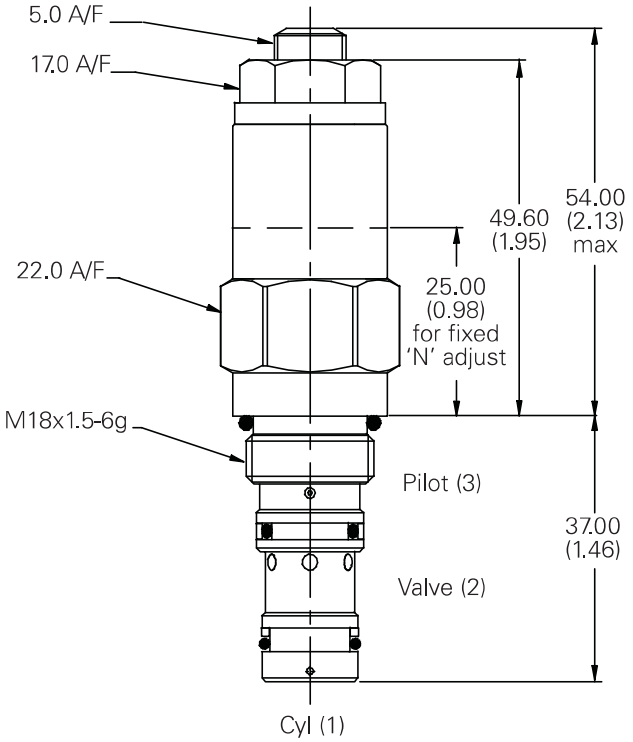
4 - 4.5.1

8 - 8:1

Dimensions

mm (inch)

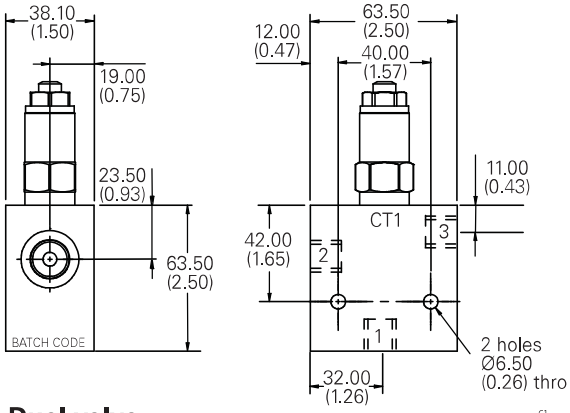
Cartridge only
Basic Code
1CE20



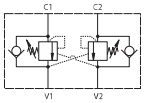
Note: For applications above 210 bar - please consult our technical department or use the steel body option.

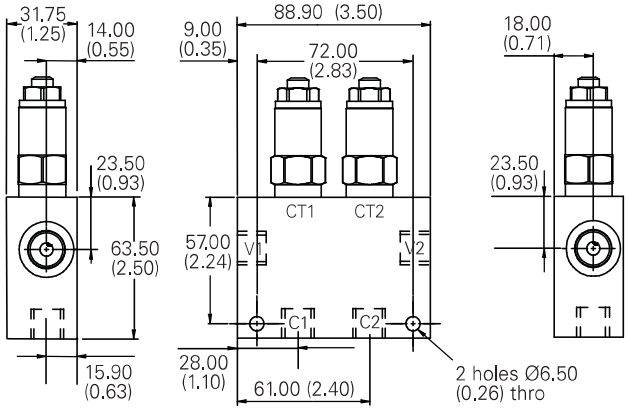
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

Single valve
3/8" Ports
Basic Code 1CE25



Dual valve
3/8" Ports
Basic Code 1CEE24 (Internally Cross Piloted)

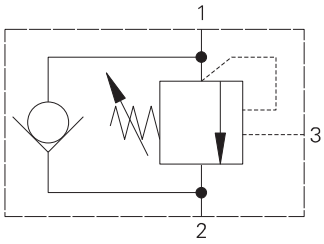




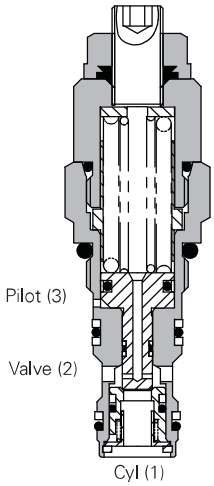
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE30 - Overcenter valve

Pilot assisted relief with check
30L/min (8 USgpm) • 270 bar (4000 psi)



Sectional View



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

2.5:1 Best suited for extremely unstable applications such as long booms or flexible frameworks.

5:1 (standard) Best suited for applications where load varies and machine structure can induce instability.

10:1 Best suited for applications where the load remains relatively constant.

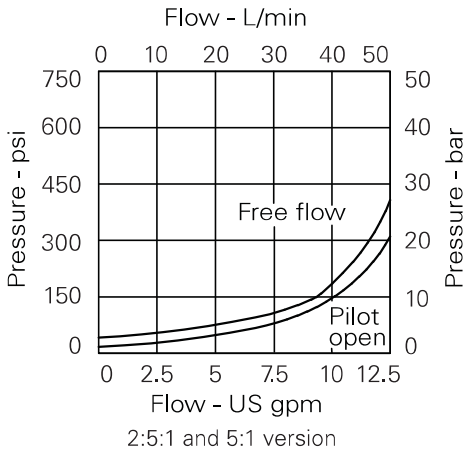
Performance data

Ratings and specifications

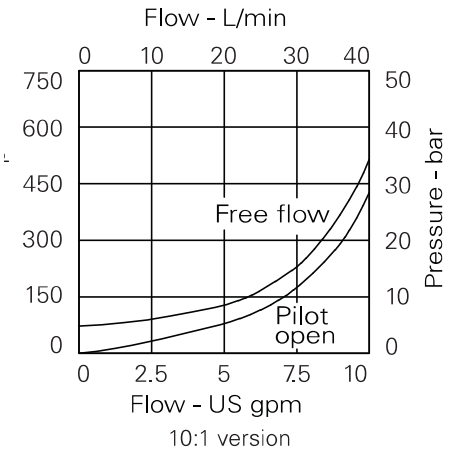
Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity	A6610 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1CE30 0.15 kg (0.33 lbs) 1CE35 0.41 kg (0.90 lbs) 1CEE34 0.90 kg (1.98 lbs)
Seal kits	SK395 (Nitrile) SK395V (Viton®)
Filtration	Cleanliness code 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



2:5:1 and 5:1 version



10:1 version

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

Model code

1CE* – F 3W – 35 S 5**

1 2 3 4 5 6

1 Function

1CE30 - Cartridge Only

1CE35 - Cartridge in body

1CEE34 - Cartridges in dual body

2 Adjustment

F - Screw adjustment

N - Fixed

For fixed versions add setting in 10 bar increments to end of part number. Subject to a +/-10% tolerance.

3 Port size

Code	Port size	Housing number - body only			
		Aluminum single	Steel single	Aluminum dual	Steel dual
3W	3/8" BSPP	B6743	B12823	B6836	B13803
6T	3/8" SAE	B10536		B10805	
8T	1/2" SAE	B7884		B30237	

4 Pressure range

Note: Code based on pressure in bar.

20 - (2.5:1 and 5:1): 70-210 bar.
Std setting 100 bar
(10:1): 100-210 bar.
Std setting 100 bar

35 - (2.5:1 and 5:1): 100-350 bar.
Std setting 210 bar
(10:1): 120-350 bar.
Std setting 210 bar

5 Seal material

S - Buna-N

SV - Viton

6 Pilot ratio

2 - 2:1

5 - 5:1

10 - 10:1

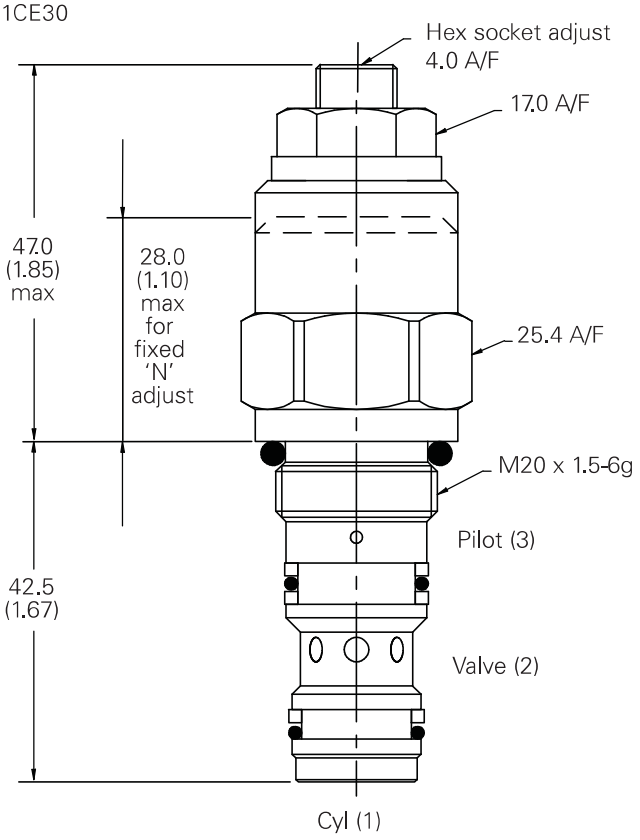
Note: For applications above 210 bar - please consult our technical department or use the steel body option

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

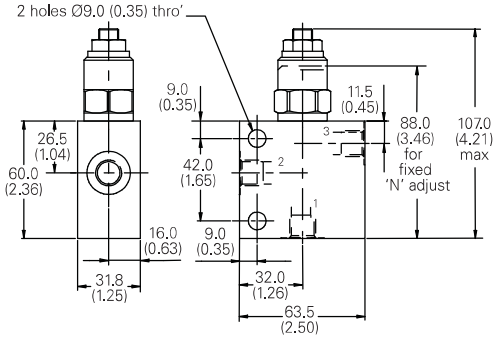
Dimensions

mm (inch)

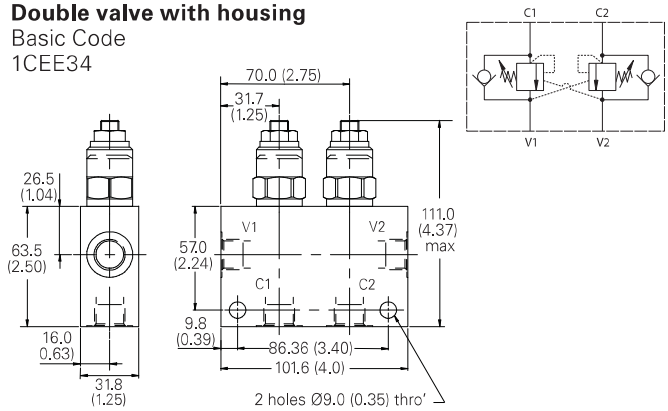
Cartridge only
Basic Code
1CE30



Single valve with housing
Basic Code
1CE35



Double valve with housing
Basic Code
1CEE34

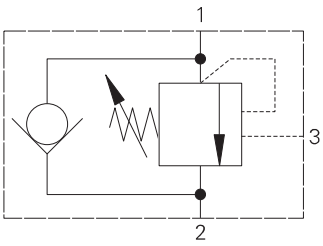


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

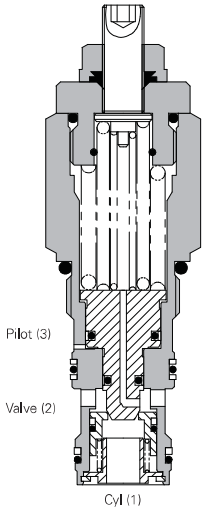
F

1CE90 - Overcenter valve

Pilot assisted relief with check
90 L/min (23 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

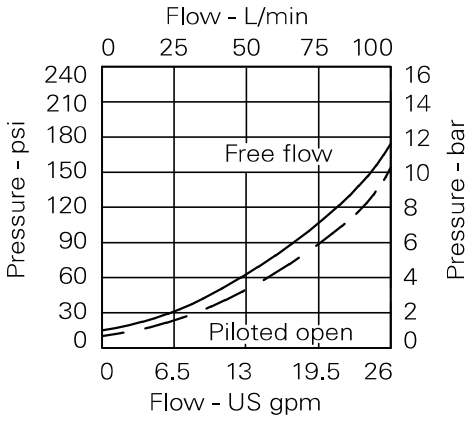
Performance data

Ratings and specifications

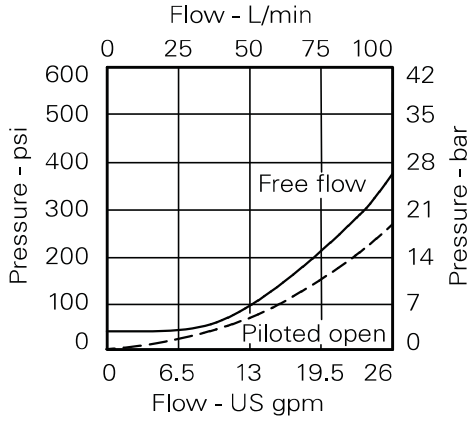
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Max relief setting	350 bar (5000 psi).
Max load Induced pressure	270 bar (4000 psi).
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12336 (See Section M)
Torque cartridge into cavity	60 Nm (44 lbs ft)
Weight	1CE90 0.29 kg (0.63 lbs) 1CE95 1.35 kg (2.97 lbs) 1CEE95 2.10 kg (4.62 lbs)
Seal kit number	SK633 (Nitrile) SK633V (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 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



4:1 Version



8:1 Version

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

Model code

1CE***–	F	4W –	35	S	4
1	2	3	4	5	6

1 Function

1CE90 - Cartridge Only

1CE95 - Cartridge and Body

1CEE95 - Cartridges and Dual Body

2 Adjustment means

F - Screw Adjustment

N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port Sizes

Code	Port size	Housing number - body only			
Body only		Aluminum single	Steel single	Aluminum dual	Steel dual
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Pressure range @ 4.8 l/min

Note: Code based on pressure in bar.

20 - 70-225 bar.
Std setting 100 bar

35 - 200-350 bar.
Std setting 210 bar

Std setting made at 4.8 L/min

5 Seals

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

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

6 Pilot Ratio

4 - 4:1

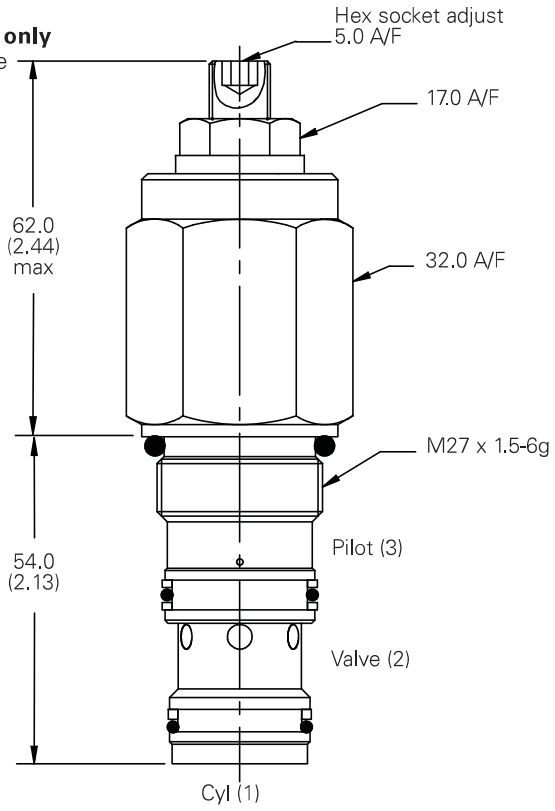
8 - 8:1

Other ratios available upon request

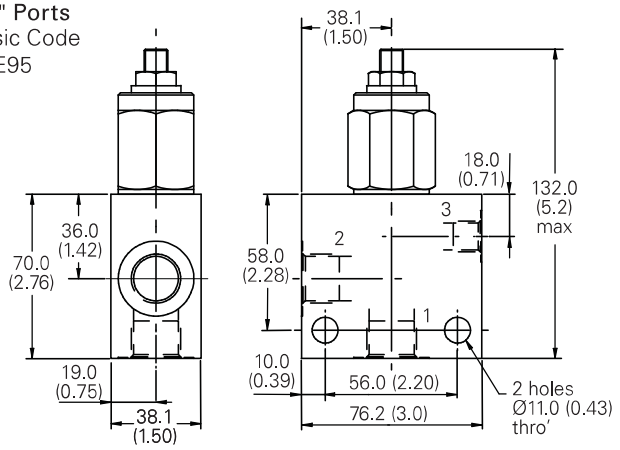
Dimensions

mm (inch)

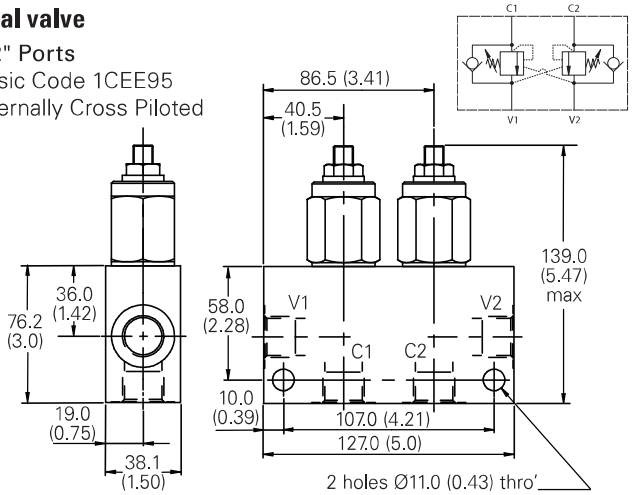
Cartridge only
Basic Code
1CE90



Single valve
1/2" Ports
Basic Code
1CE95



Dual valve
1/2" Ports
Basic Code 1CEE95
Internally Cross Piloted



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

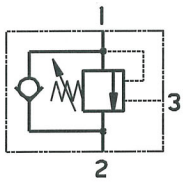
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

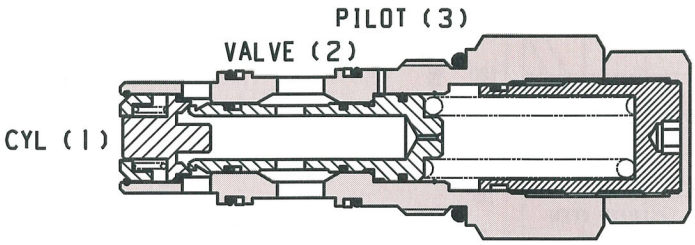
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE SERIES OVERCENTRE VALVE

PILOT ASSISTED RELIEF WITH CHECK

1CE100





APPLICATION

Overcentre valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcentre valve will stop runaway in the event of hose burst and if open centre directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcentre cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcentre valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcentre valves are used for controlling loads in both directions for motor applications or for cylinders going over centre.

OPERATION

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimisation of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

FEATURES

Cartridge is economical and fits simple 'dual purpose' cavity. Allows quick, easy field service - reduces down time. Overcentre is interchangeable with 120 litres/min pilot check cartridge. See page 7-15.

PILOT RATIOS

4:1	Best suited for applications where load varies and machine structure can induce instability.
8:1	Best suited for applications where the load remains relatively constant.

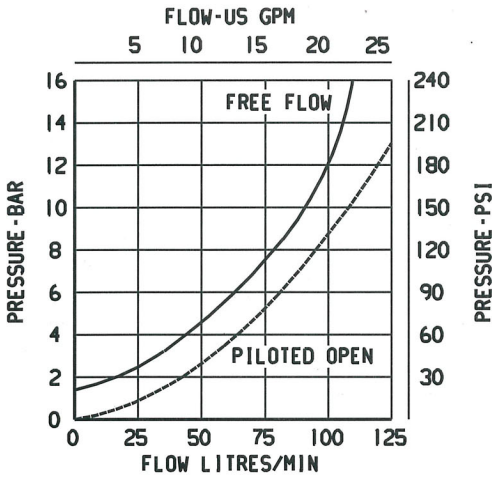
SPECIFICATIONS

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

Rated Flow	100 litres/min (26 US GPM)
Max Setting	Max Load Induced Pressure: 270 bar (4000 psi) Relief Setting: 350 bar (5000 psi)
Cartridge Material	Working parts hardened and ground steel. External surfaces electroless nickel plated
Body Material	Standard aluminium Add suffix '377' for steel option
Mounting Position	Unrestricted
Cavity Number	A877 (See page 17-03)
Torque Cartridge into Cavity	100 Nm (74 lbs ft)
Weight	1CE100 0.59 kg (1.30 lbs) 1CE150 1.46 kg (3.20 lbs) 1CEE150 2.58 kg (5.70 lbs)
Seal Kit Number	SK417 (Nitrile) SK417V (Viton)
Recommended Filtration Level	BS5540/4 Class 18/13 (25 micron nominal)
Operating Temp	-20°C to +90°C
Leakage	0.3 millilitres/min max (5 dpm)
Nominal Viscosity Range	5 to 500 cSt

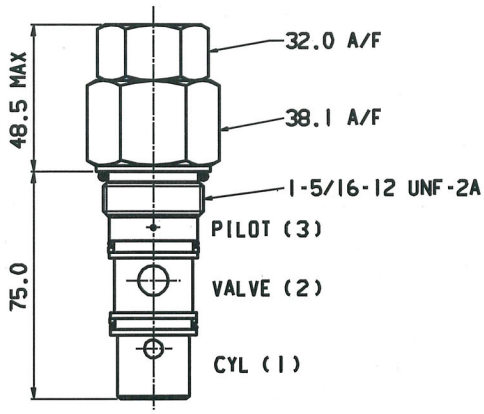
Integrated Hydraulics Limited
Collins Road, Heathcote Industrial Estate, Warwick, CV34 6TF, England. Tel: (0926) 881171 Fax: (0926) 315729

PRESSURE DROP



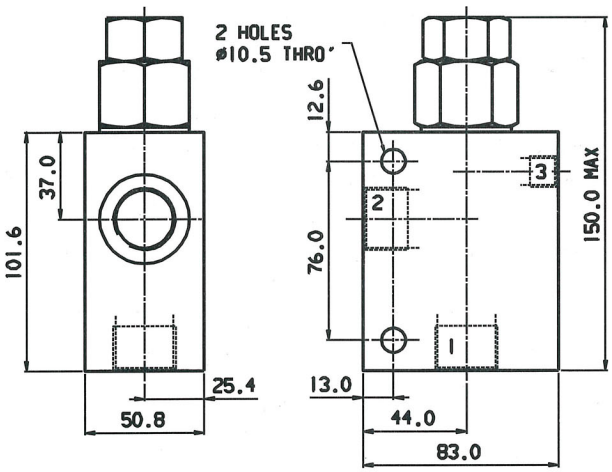
CARTRIDGE ONLY

BASIC CODE: 1CE100



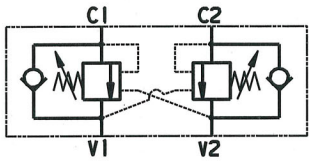
SINGLE VALVE 3/4" PORTS

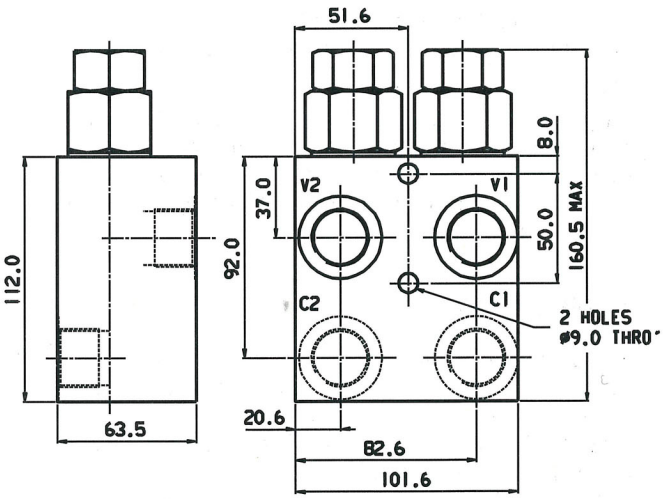
BASIC CODE: 1CE150



DUAL VALVE 3/4" PORTS

BASIC CODE: 1CEE150 (INTERNALLY CROSS PILOTED)





Where measurements are critical request certified drawings

ORDERING CODE EXAMPLE

1CE150	P	6W	35	S	4

Basic Code

Adjustment Means
P - Leakproof Screw Adjustment

Port Sizes - Bodied Valves Only
6W - 3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port
12T - 3/4" SAE Valve & Cyl Port. 1/4" SAE Pilot Port

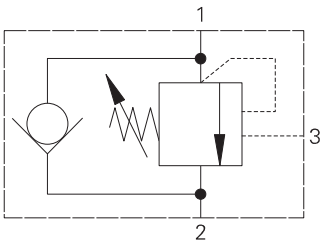
Adjustable Pressure Range
35 = 70-350 bar. Std setting 210 bar
Std setting made at 14 litres/min

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

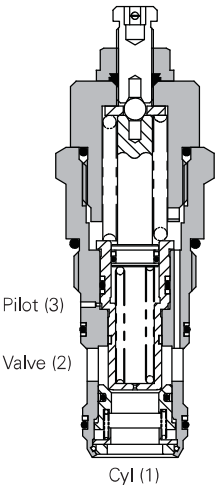
Pilot Ratio
4 - 4:1
8 - 8:1

1CE120 - Overcenter valve

Pilot assisted relief with check
120 L/min (32 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{(\text{Relief Setting}) - (\text{Load Pressure})}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

3.5:1 (standard) Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

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 relief setting	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (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	1CE120 0.59 kg (1.30 lbs) 1CE150 1.46 kg (3.20 lbs 1CEE150 2.58 kg (5.70 lbs)
Seal kit number	SK417 (Nitrile) SK417V (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

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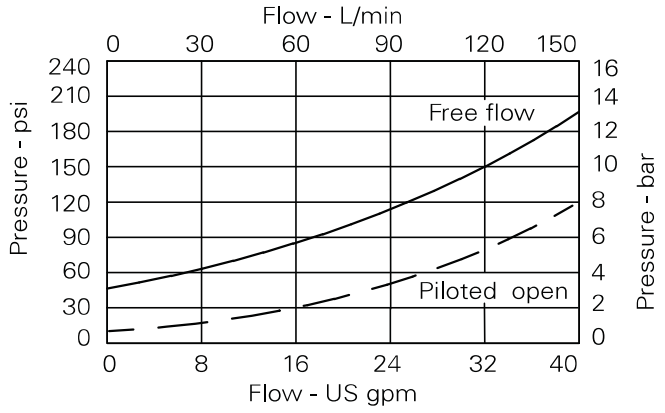
Pressure drop



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

Model code

1CE**** – F 6W – 35 S 3
1 2 3 4 5 6

1 Function

1CE120 - Cartridge Only
1CE150 - Cartridge and Body
1CEE150 - Cartridges and Dual Body

2 Adjustment means

F - Screw Adjustment

3 Port sizes

Code	Port size	Housing number			
		Aluminium single	Steel single	Aluminium dual	Steel dual
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B6898	B5544	C2543	C1200
12T	3/4" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B8200		C10629	C16434
16T	1" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B10708	B11814		

4 Pressure range @ 4.8 l/min

Note: Code based on pressure in bar.

35 - 70-350 bar.
Std setting 210 bar

Std setting made at 4.8 L/min

5 Seals

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

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

6 Pilot Ratio

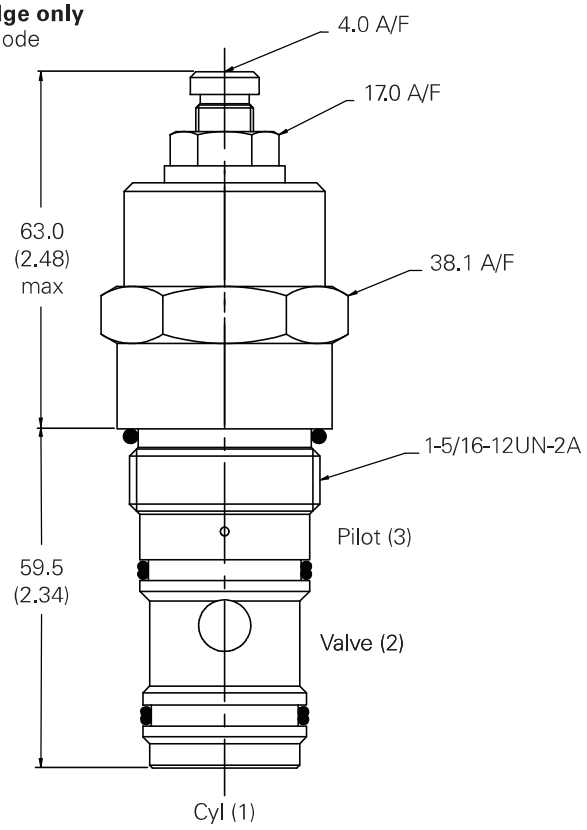
3 - 3.5:1

8 - 8:1

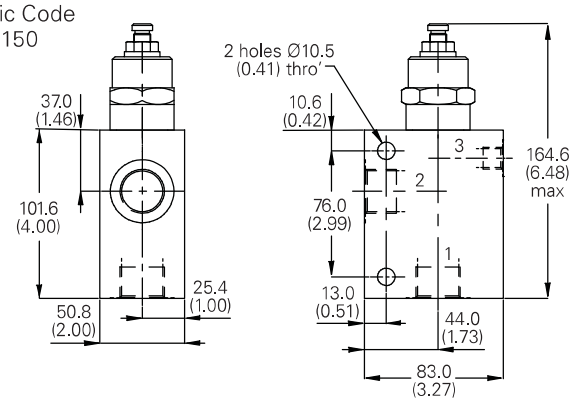
Dimensions

mm (inch)

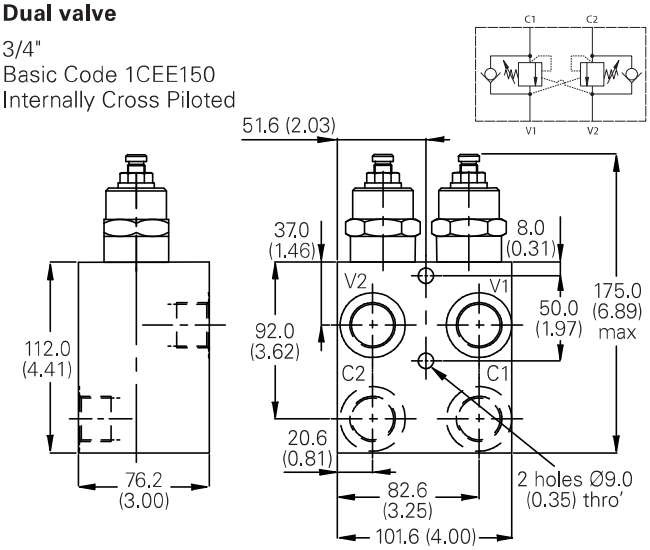
Cartridge only
Basic Code
ICE120



Single valve
3/4" , 1" Ports
Basic Code
1CE150



Dual valve
3/4"
Basic Code 1CEE150
Internally Cross Piloted



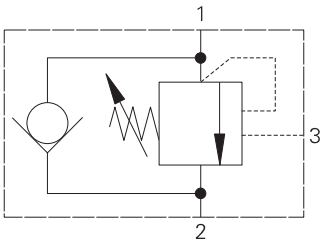
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

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

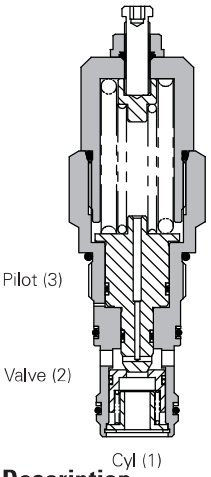
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE140 - Overcenter valve

Pilot assisted relief with check
140 L/min (37 USgpm) • 340 bar (4930 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

6:1 Best suited for applications where the load remains relatively constant.

Other options available upon request.

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	140 L/min (37 USgpm)
Max relief setting	420 bar (6090 psi)
Max load induced pressure	340 bar (4930 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A20081
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight	1CE140 1.2 kg (2.5 lbs) 1CE145 (aluminium) 2.2 kg (4.5 lbs) 1CE145 (steel) 4.0 kg (8.8 lbs) 1CEE145 (aluminium) 2.9 kg (6.4 lbs) 1CEE145 (steel) 6.0 kg (13.2 lbs)
Seal kit number	SK1108 (Nitrile) SK1108V (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

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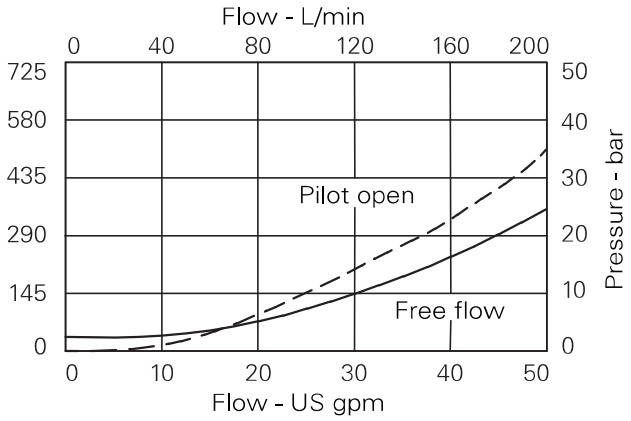
Pressure drop



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

Model code

1CE** – F 6W – 40 S 4**

1 2 3 4 5 6

1 Function

1CE140 - Cartridge only

1CE145 - Cartridge and body

1CEE145 - Cartridges and body

2 Adjustment means

F - Screw adjustment

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20105	B20106		
8W	1" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20107	B20108	C20285	C20287
16T	1" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B11946	B11947	C30105	C30106

4 Pressure range @ 4.8 l/min

Note: Code based on pressure in bar.

20 - 140-250 bar.
Std setting 190 bar

30 - 220-330 bar.
Std setting 270 bar

40 - 310-420 bar.
Std setting 370 bar
Std setting made at 4.8 liter/min

5 Seals

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

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

6 Pilot ratio

4 - 4:1

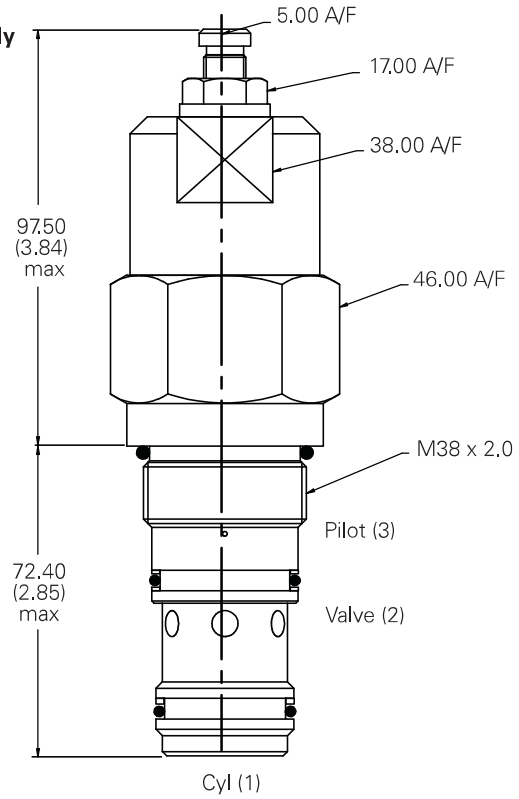
6 - 6:1

Other ratios available upon request

Dimensions

mm (inch)

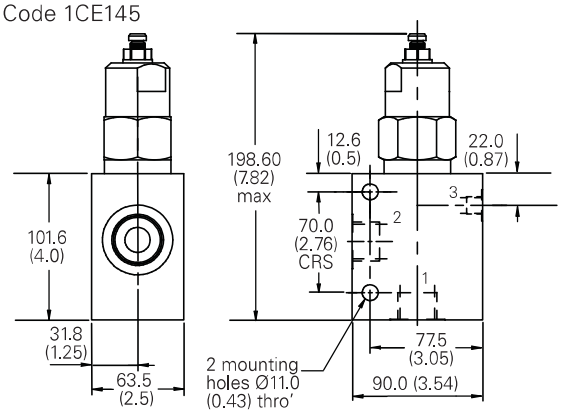
Cartridge only
Basic Code
1CE140



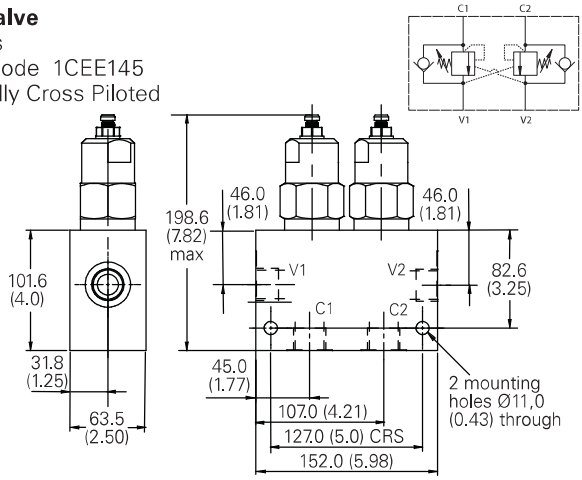
Note: For applications above 210 bar - please consult our technical department or use the steel body option

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

Single valve
3/4" , 1" Ports
Basic Code 1CE145



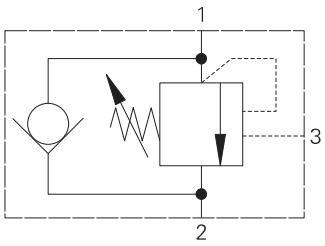
Dual valve
1" Ports
Basic Code 1CEE145
Internally Cross Piloted



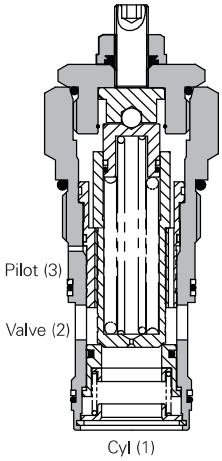
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE300 - Overcenter valve

Pilot assisted relief with check
300 L/min (80 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid.

The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator. The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

3:1 Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	300 L/min (80 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Alumiium (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity	A6935 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight cartridge only	1CE300 0.91 kg (2.00 lbs) 1CE350 2.71 kg (5.96 lbs) 1CEE350 5.42 kg (11.92 lbs)
Seal kit	SK437 (Nitrile) SK437V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	4 milliliters/min nominal (60 dpm)
Nominal viscosity range	5 to 500 cSt

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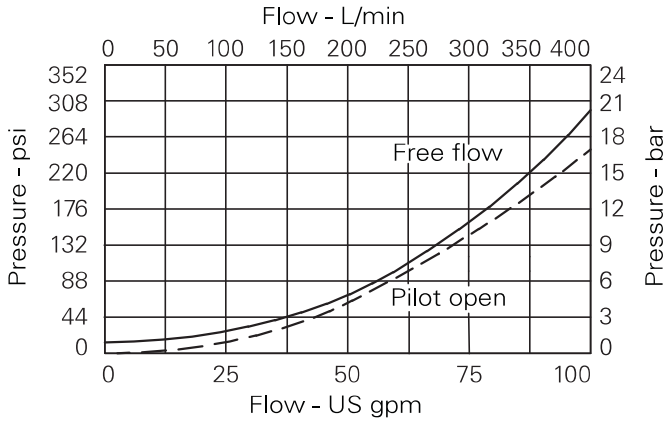
Pressure drop



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

Model code

1CE**** – F 10W – 35 S 3

1 2 3 4 5 6

1 Function

1CE300 - Cartridge only

1CE350 - Cartridge and Body

1CEE350 - Cartridges and Body

2 Adjustment

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
10W	1 1/4" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B6814	B8610	C8704	C8705
20T	1 1/4" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10630	B11474	C10811	C11564

4 Pressure range

Note: Code based on pressure in bar.

35 - 70-350 bar.

Std setting 210 bar

Std setting made at 4.8 L/min

5 Seal material

S - Buna-N

SV - Viton

6 Pilot ratio

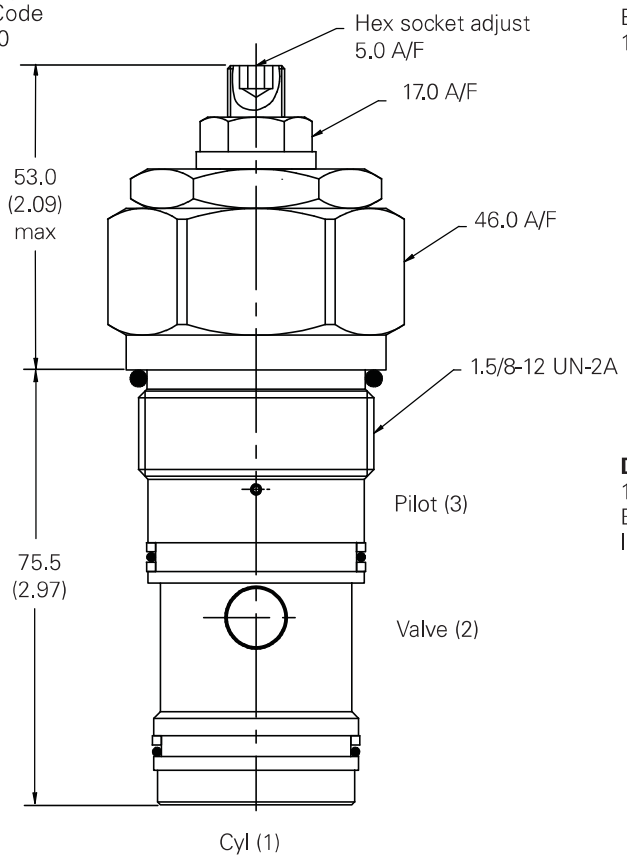
3 - 3:1 - (Standard)

8 - 8:1

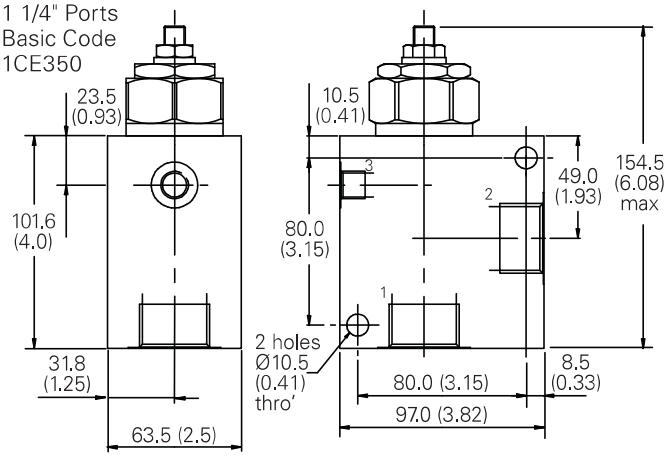
Dimensions

mm (inch)

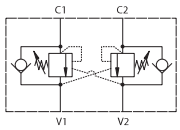
Cartridge only
Basic Code
1CE300

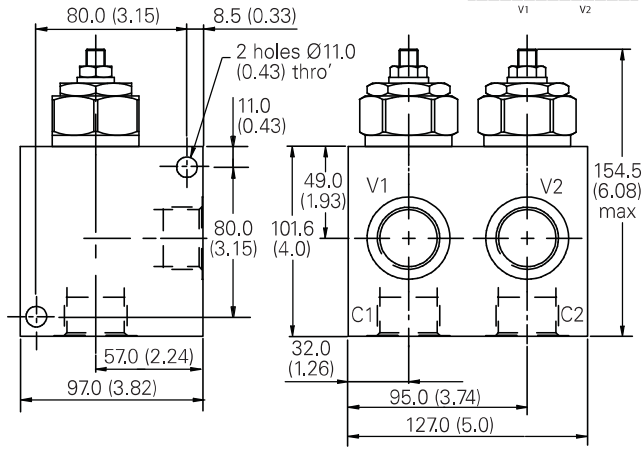


Single valve
1 1/4" Ports
Basic Code
1CE350



Dual valve
1 1/4" Ports
Basic code 1CEE350
Internally Cross Piloted





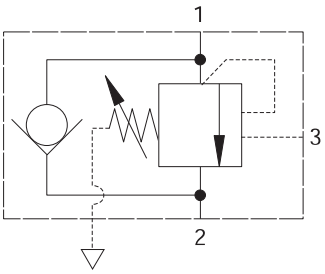
Note: For applications above 210 bar - please consult our technical department or use the steel body option.

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

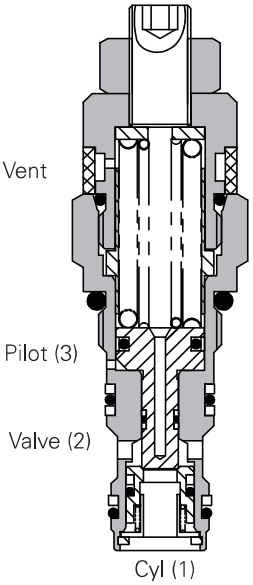
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEB30 - Overcenter valve

Fully balanced, pilot assisted, relief with check
30 L/min (8 USgpm) • 270 bar (4000 psi)



Sectional View



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They prevent runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced valve is unaffected by back pressure, allowing service line reliefs to operate and for the valve to be used in regenerative or proportional valve systems.

The overcenter valve should be mounted either into, onto or as close to the actuator as possible to give maximum protection.

Single overcenter valves control unidirectional loads such as in aerial platforms, cranes or winches and dual overcenters are suited to bi-directional motion such as wheel motor applications or cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

5.1:1 (standard) Best suited for applications where load varies and machine structure can induce instability.

Note: This valve is not suitable for high frequency applications and aggressive environmental conditions.

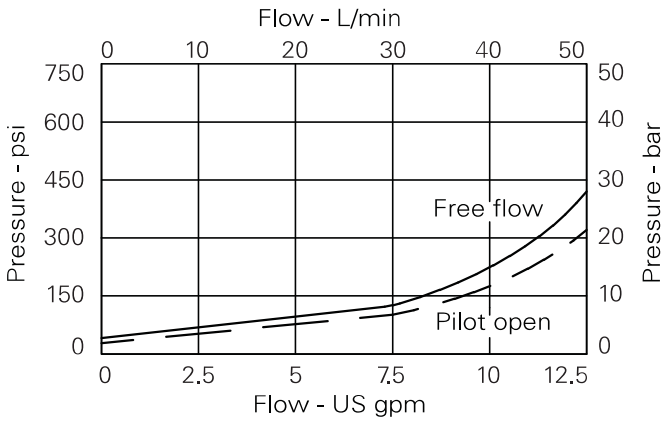
Performance data

Ratings and specifications

Figures based on: Oil Tem = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	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	1CEB30 0.14 kg (0.30 lbs) 1CEB35 0.40 kg (0.88 lbs) 1CEEB34 0.88 kg (1.94 lbs)
Seal kit number	SK395 (Nitrile SK395V (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.

Pressure drop



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

Model code

1CE*** – F 3W – 35 S 5

1 2 3 4 5 6

1 Function

1CEB30 - Cartridge Only
1CEB35 - Cartridge and Body
1CEEB34 - Cartridges and Dual Body

2 Adjustment means

F -Screw Adjustment

N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
3W	3/8" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803
6T	3/8" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10536		B10805	
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B7884	B11811	B30237	B11812

4 Pressure range

@ 4.8 L/min

Note: Code based on pressure in bar.

35 - 100-350 bar.
Std setting 210 bar

Std setting made at 4.8 L/min

5 Seals

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

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

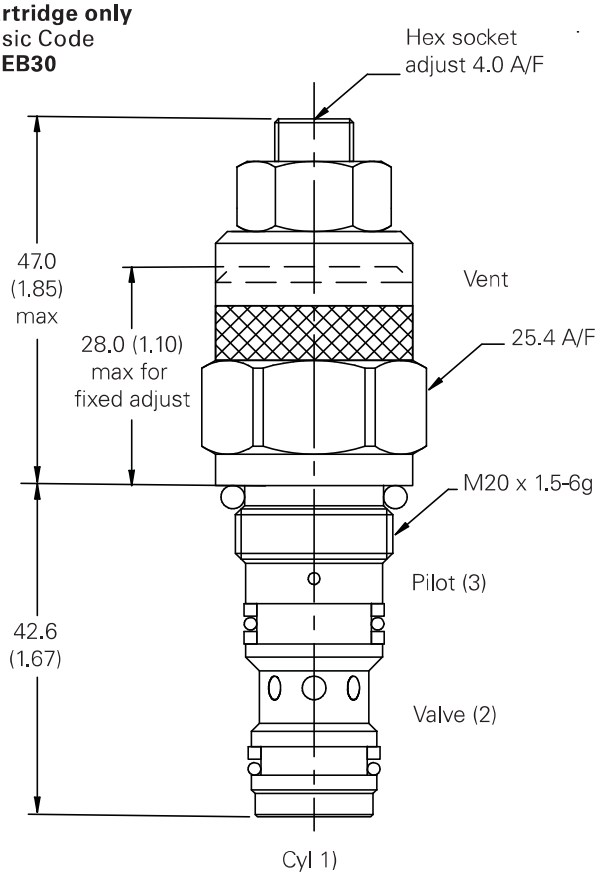
6 Pilot ratio

5 - 5:1

Dimensions

mm (inch)

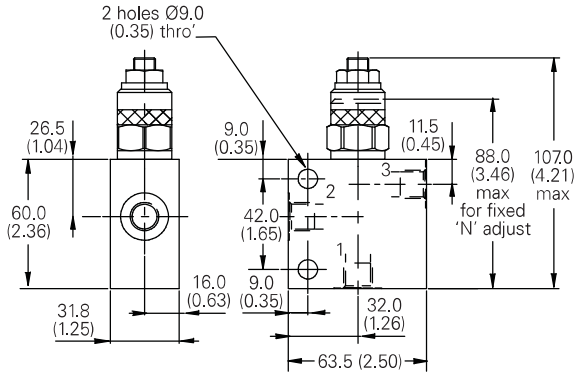
Cartridge only
Basic Code
1CEB30



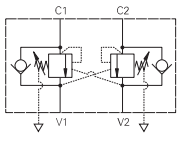
Note: For applications above 210 bar - please consult our technical department or use the steel body option

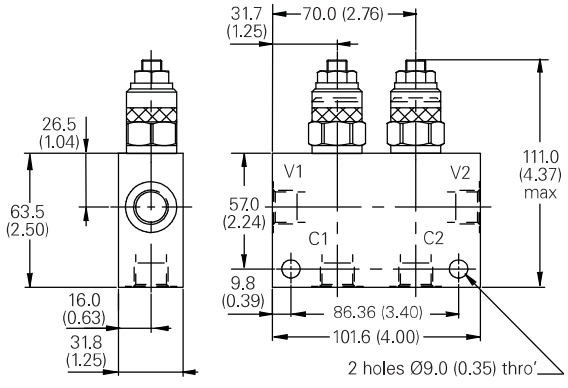
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

Single valve
3/8". 1/2" Ports
Basic Code
1CEB35



Dual valve
3/8". 1/2" Ports
Basic Code
1CEEB34
Internally Cross Piloted



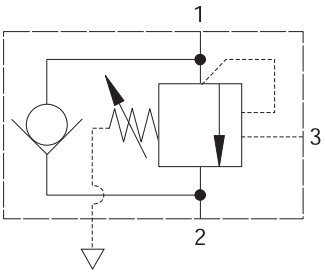


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

F

1CEB90 - Overcenter valve

Fully balanced, pilot assisted relief with check
90 L/min (23 USgpm) • 270 bar (4000 psi)



Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

Pilot Pressure =

$$\frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

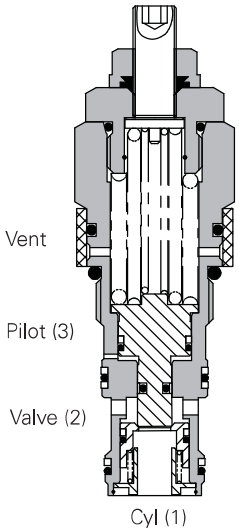
Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

Other ratios available upon request.

Sectional view



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They prevent runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced valve is unaffected by back pressure, allowing service line reliefs to operate and for the valve to be used in regenerative or proportional valve systems.

The overcenter valve should be mounted either into, onto or as close to the actuator as possible to give maximum protection.

Single overcenter valves control unidirectional loads such as in aerial platforms, cranes or winches and dual overcenters are suited to bi-directional motion such as wheel motor applications or cylinders going over center.

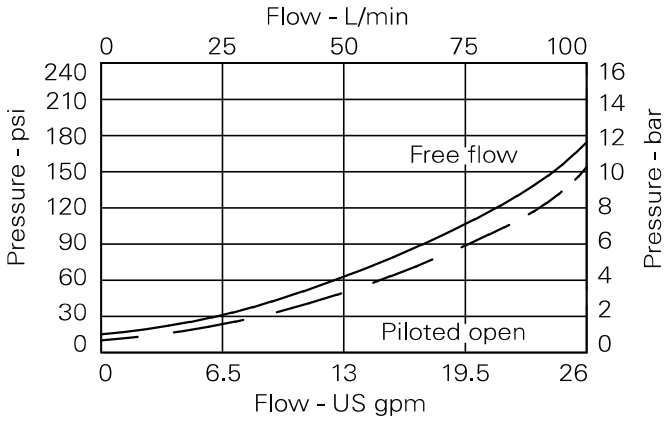
Performance data

Ratings and specifications

Performance data is typical with fluid at 32 cST (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts steel. External surfaces zinc plated.
Standard housing materials	Aluminum up to 210 bar. Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity	A12336 (see Section M)
Torque cartridge into cavity	60 Nm (44 lbs ft)
Weight	1CEB90: .29 kg (.63 lbs) 1CEB95: 1.35 kg (2.97 lbs) 1CEEB95: 2.10 kg (4.62 lbs)
Seal kit	SK634 (Nitrile) SK634V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.3 ml/min (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CE**** – F 4W – 35 S 4

1 2 3 4 5 6

1 Function

1CEB90 - Cartridge only

1CEB95 - Cartridge and body

1CEEB95 - Cartridges and dual body

2 Adjustment

F - Screw adjustment

N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port size

Code	Port Size	Housing number - body only			
Body Only		Aluminium single	Steel single	Aluminium dual	Steel dual
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 70-225 bar. Std setting 100 bar

35 - 200-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min

5 Seal material

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

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

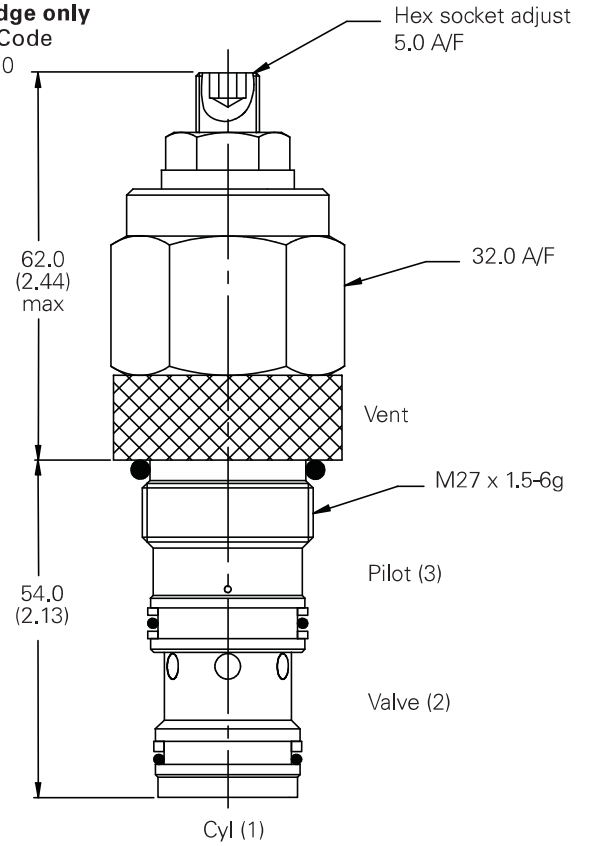
6 Pilot ratio

4 - 4:1 Other ratios available upon request

Dimensions

mm (inch)

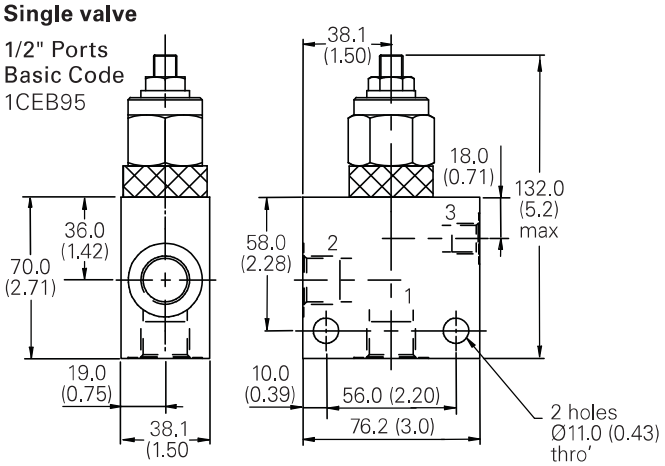
Cartridge only
Basic Code
1CEB90



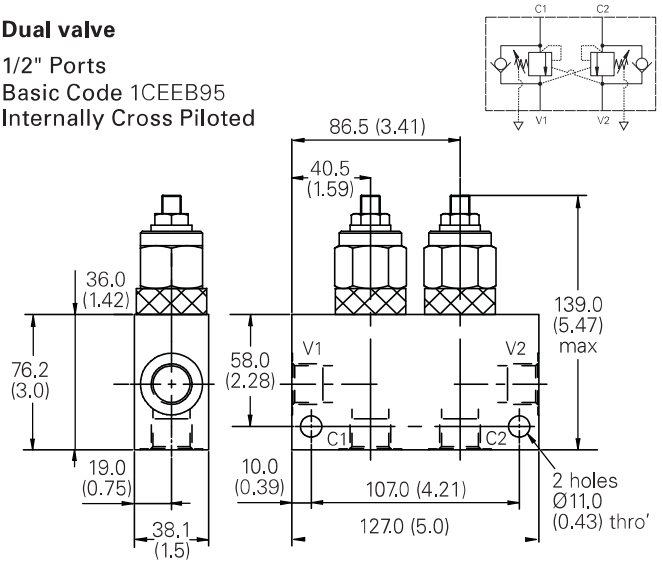
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

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

Single valve
1/2" Ports
Basic Code
1CEB95



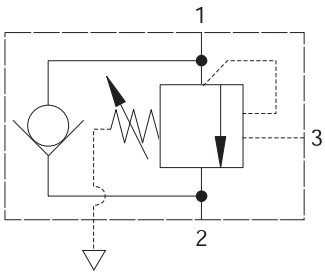
Dual valve
1/2" Ports
Basic Code 1CEEB95
Internally Cross Piloted



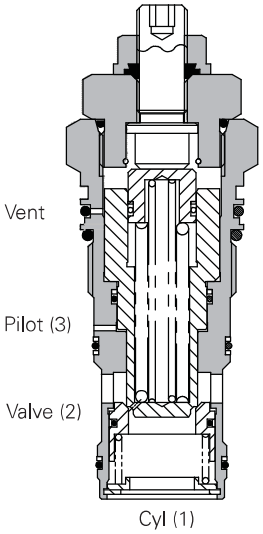
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEB300 - Overcenter valve

Fully balanced, pilot assisted
300 L/min (80 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They prevent runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced valve is unaffected by back pressure, allowing service line reliefs to operate and for the valve to be used in regenerative or proportional valve systems.

The overcenter valve should be mounted either into, onto or as close to the actuator as possible to give maximum protection.

Single overcenter valves control unidirectional loads such as in aerial platforms, cranes or winches and dual overcenters are suited to bi-directional motion such as wheel motor applications or cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

3:1 Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

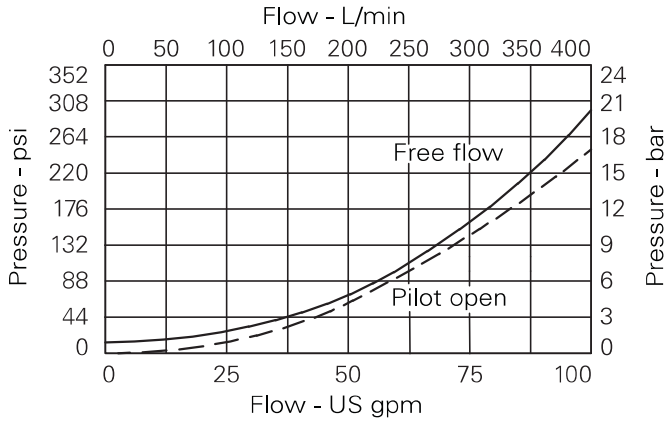
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	300 L/min (80 USgpm)
Max working pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminium (up to 210 bar) Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity	A6935 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight cartridge only	1CE300 0.91 kg (2.00 lbs) 1CE350 2.71 kg (5.96 lbs) 1CEE350 5.42 kg (11.92 lbs)
Seal kit	SK686 (Nitrile) SK686V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	4 milliliters/min nominal (60 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

1CEB300 - Overcenter valve

Fully balanced, pilot assisted
300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code

1CE*****– F 10W – 35 S 3

1 2 3 4 5 6

1 Basic code

1CEB300 - Cartridge only

1CEB350 - Cartridge and Body

1CEEB350 - Cartridges and Body

2 Adjustment means

F - Screw adjustment

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
10W	1 1/4" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B6814	B8610	C8704	C8705
20T	1 1/4" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10630	B11474	C10811	C11564

4 Pressure Range @4.8 L/min

Note: Code based on pressure in bar.

35 - 70-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min

5 Seals

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

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

6 Pilot ratio

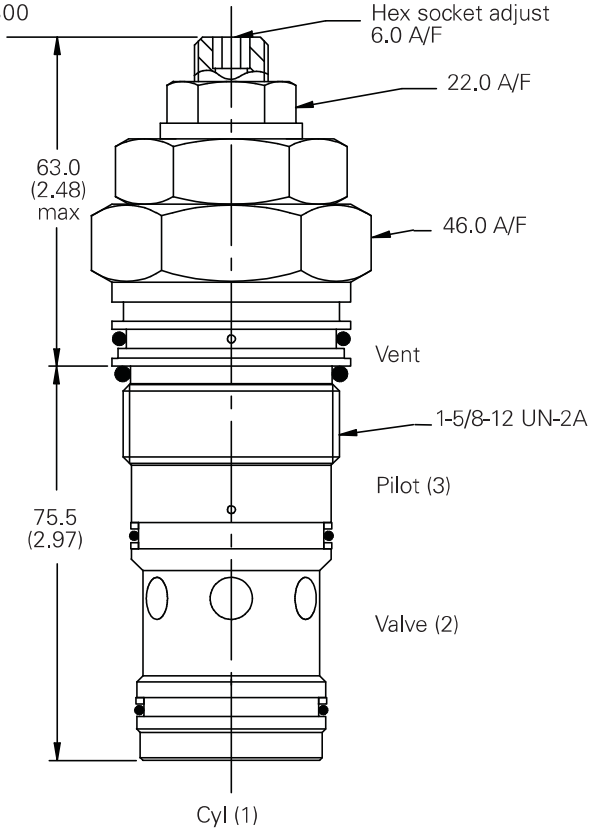
3 - 3:1 - (Standard)

8 - 8:1

Dimensions

mm (inch)

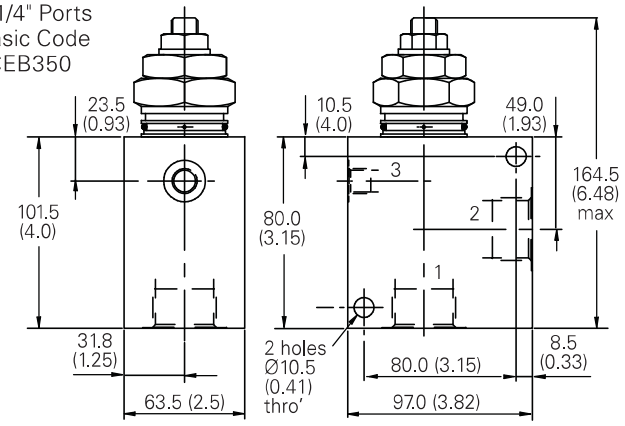
Cartridge only
Basic Code
1CEB300



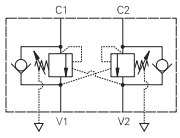
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

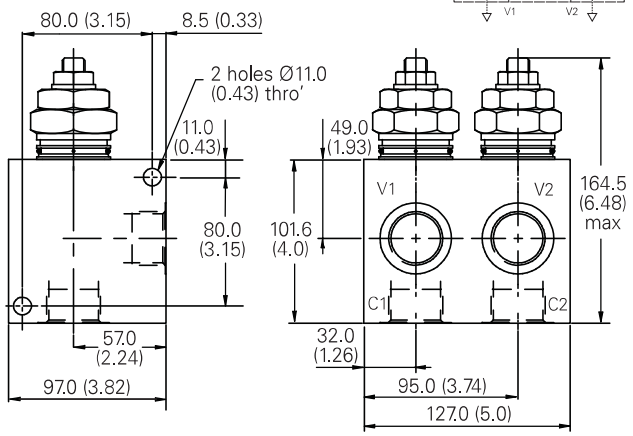
Note: For applications above 210 bar - please consult our technical department or use the steel body option.

Single valve
1 1/4" Ports
Basic Code
1CEB350



Dual valve
1 1/4" Ports
Basic Code 1CEEB350
Internally Cross Piloted

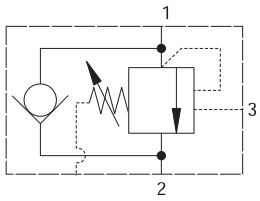




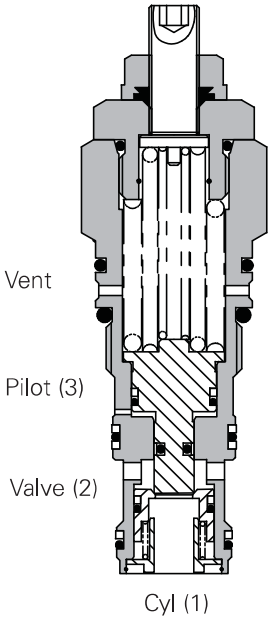
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBD90 - Overcenter valve

Fully balanced, pilot assisted relief with check
90 L/min (23 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They will stop runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced overcenter relief setting is unaffected by back pressure, enabling the valve to stay open when the valve port pressure rises. This will allow service line reliefs to work normally and will also allow the control of regenerative or proportional systems. The drain line allows the valve to be used in corrosive atmospheres preventing the ingress of atmospheric contaminant.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

Other ratios available upon request.

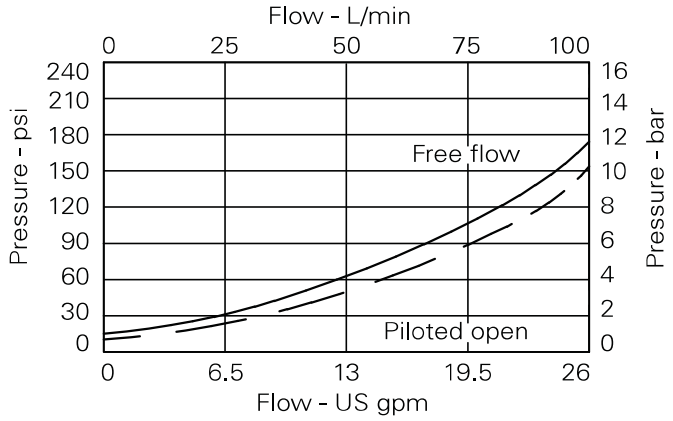
Performance data

Ratings and specifications

Figures based on Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Max relief setting	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity	A12196 (See section M)
Torque cartridge into cavity	60 Nm (44 lbs ft)
Weight	0.29 kg (0.63 lbs)
Seal kit	SK634 (Nitrile) SK634V (Viton®) SK634P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Leakage	0.3 milliliters/min (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model Code

1CEBD90 – F – ** P 4

1 2 3 4 5

1 Function
1CEBD90

2 Adjustment means
F - Screw adjustment

Line body available on request.

3 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 70-225 bar
Standard setting 100 bar

35 - 200-350 bar
Standard setting 210 bar

Standard setting made at 4.8 L/min

4 Seals

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

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

P - Polyurethane/Nitrile (for arduous applications)

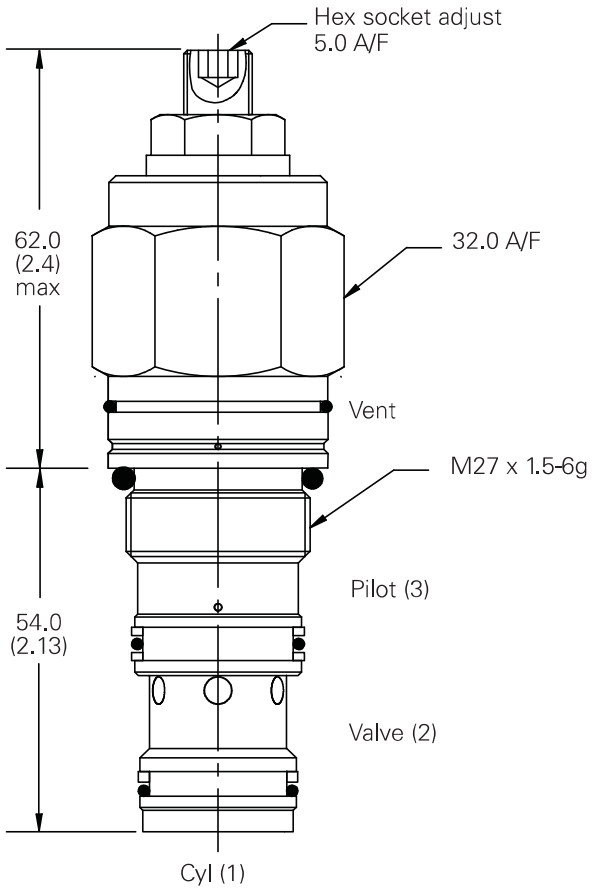
5 Pilot ratio

4 - 4:1 Other ratios available upon request

Dimensions

mm (inch)

Cartridge only
Basic Code
1CEBD90



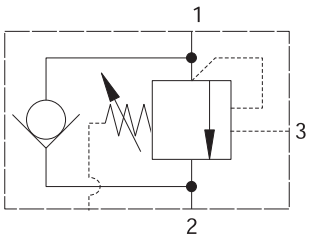
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

F

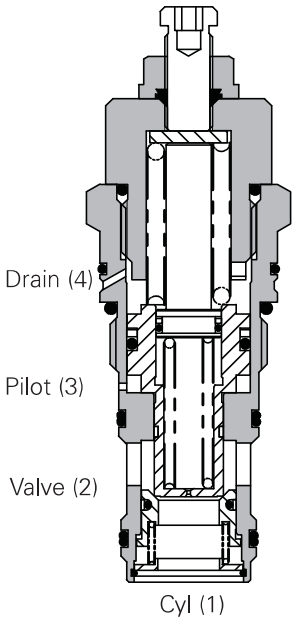
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBD120 - Overcenter valve

Fully balanced, pilot assisted relief with check
180 L/min (47 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They will stop runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced overcenter relief setting is unaffected by back pressure, enabling the valve to stay open when the valve port pressure rises. This will allow service line reliefs to work normally and will also allow the control of regenerative or proportional systems. The drain line allows the valve to be used in corrosive atmospheres preventing the ingress of atmospheric contaminant.

Single overcenter valves are normally used when the load is unidirectional, for example an aerial platform or crane and dual overcenter valves are used for controlling loads in both directional for motor applications or for cylinders going over center.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time.

Pilot ratio

3:1 (standard) Best suited for applications where load varies and machine structure can induce instability.

8:1 & 12:1 Best suited for applications where the load remains relatively constant.

22:1 Specifically designed for Boom Loc applications.

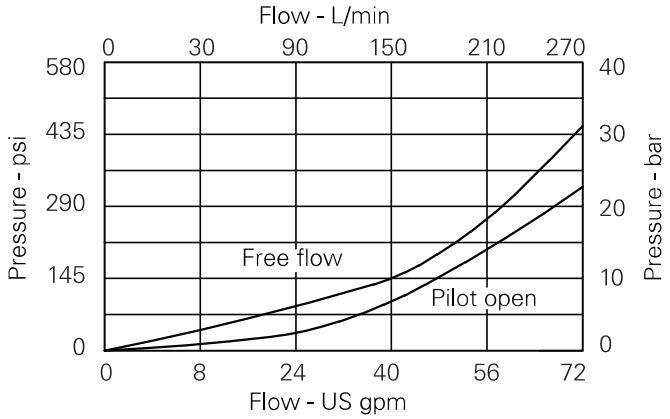
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	180 L/min (47 USgpm)
Max relief setting	400 bar (5800 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated.
Mounting position	Unrestricted
Cavity number	A6726 (See Section M)
Torque cartridge into cavity	100 Nm (74 lbs ft)
Weight	0.59 kg (1.30 lbs)
Seal kit number	SK830 (Nitrile) SK830V (Viton®) SK830P (Polyurethane/Nitrile)
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 max (5 dpm)
Nominal viscosity range	5 to 500 cSt
Bar per turn	65 bar

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CEBD120 – F – 35 P 8

1 2 3 4 5

1 Function
1CEBD120 - Cartridge only

2 Adjustment means
F - Screw adjustment

3 Pressure range @ 4.8 l/min
Note: Code based on pressure in bar.
35 - (3:1, 8:1 and 22:1): 70-350 bar Std setting 350 bar
40 - (12:1): 70-400 bar. Std setting 350 bar Std setting made at 4.8 L/min

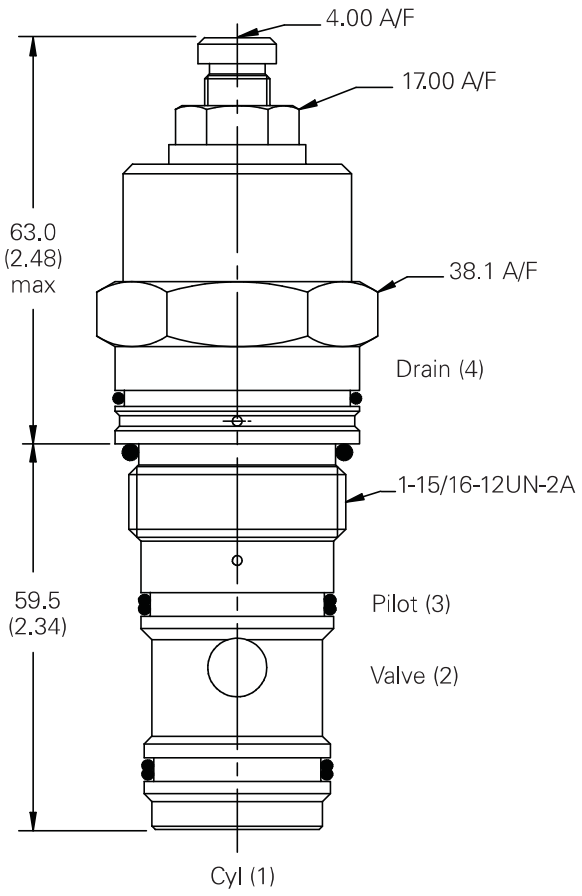
4 Seals
S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)
P - Polyurethane/Nitrile (For arduous applications)

5 Pilot ratio
3 - 3:1
8 - 8:1
12 - 12:1
22 - 22:1

Dimensions

mm (inch)

Cartridge only
Basic Code
1CEBD120



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

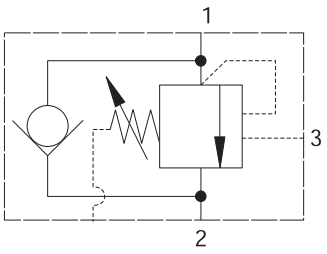
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

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

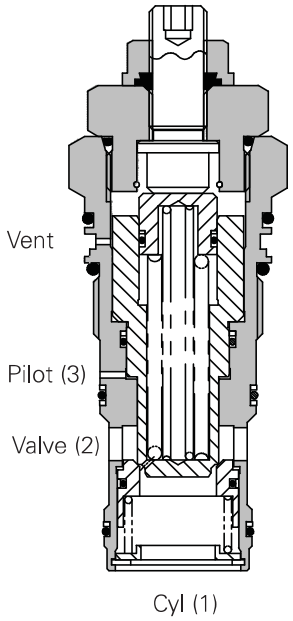
F

1CEBD300 - Overcenter valve

Fully balanced, pilot assisted relief with check
300 L/min (80 USgpm) • 270 bar (4000 psi)



Sectional view



Description

Overcenter valves give static and dynamic control of loads by supplying a counterbalance pressure to the actuator. They prevent runaway in the event of hose burst and hold the load with minimal leakage.

The pressure balanced valve is unaffected by back pressure, allowing service line reliefs to operate and for the valve to be used in regenerative or proportional valve systems.

The overcenter valve should be mounted either into, onto or as close to the actuator as possible to give maximum protection.

Single overcenter valves control unidirectional loads such as in aerial platforms, cranes or winches and dual overcenters are suited to bi-directional motion such as wheel motor applications or cylinders going over center.

Operation

"The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time.

Pilot ratio

3:1 Best suited for applications where load varies and machine structure can induce instability.

8:1 Best suited for applications where the load remains relatively constant.

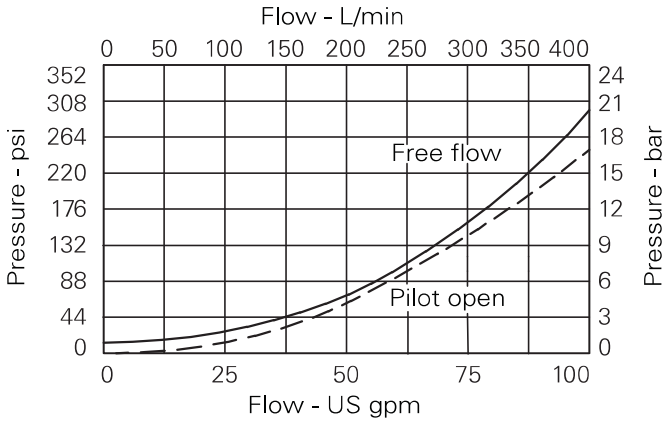
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	300 L/min (80 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity	A13098 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight cartridge only	0.91 kg (2.00 lbs)
Seal kit	SK686 (Nitrile) SK686V (Viton®) SK686P (Polyurethane Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	4 milliliters/min (60 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CEBD300 – F – 35 S 3

1 2 3 4 5

1 Basic Code

1CEBD300 - Cartridge only

2 Adjustment

F - Screw adjustment

3 Pressure range @4.8 L/min

Note: Code based on pressure in bar.

35 - 70-350 bar.
Std setting 210 bar

Std setting made at 4.8 L/min

4 Seals

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

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

P - Polyurethane/Nitrile (For arduous applications)

5 Pilot ratio

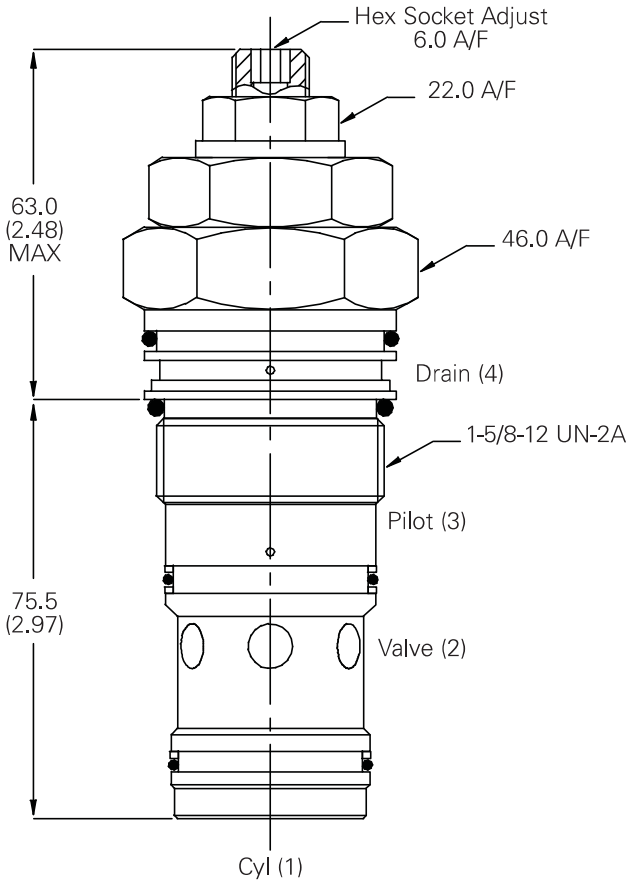
3 - 3:1 - (Standard)

8 - 8:1

Dimensions

mm (inch)

Cartridge only
Basic Code
1CEBD300

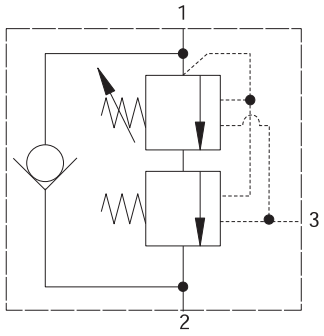


Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

F

1CEL30 - Overcenter valve

Counterbalance pilot assisted relief with check
30 L/min (8 USgpm) • 380 bar (5510 psi)



Operation

The check section allows free flow and then locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied, maintaining a counterbalance pressure to prevent initial pressure loss and therefore instability. The total pressure setting will normally be set at 1.3 times the load induced pressure. The counterbalance pressure reduces as the pilot pressure increases.

Features

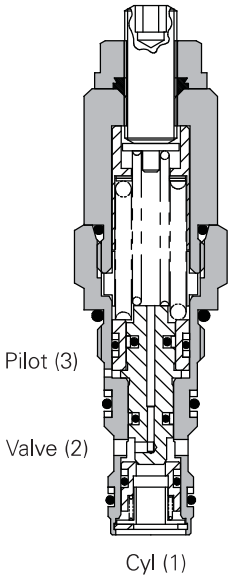
Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

Primary 4.3:1

Secondary 0.4:1

Sectional view



Description

The 1CEL overcenter valve performs all duties of a regular overcenter but maintains a counterbalance pressure to provide dampening of cylinders when there is a rapid loss in stored pressure. This counterbalance pressure reduces as the pilot pressure increases. Typical applications include extension cylinders on telescopic handlers where it is important to have a smooth operation when retracting from full extension.

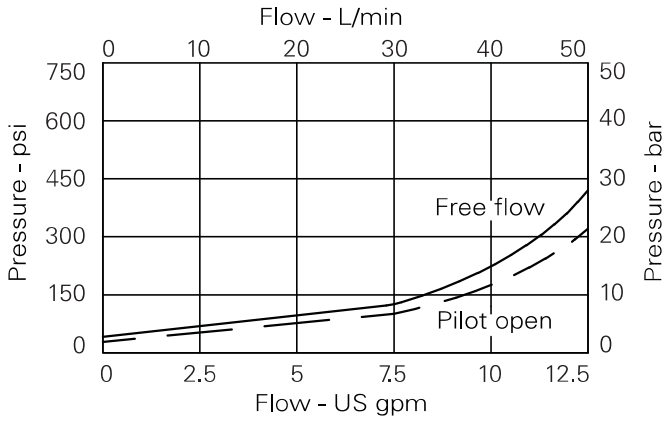
Performance data

Ratings and specifications

Performance data is typical with fluid at 32 cST (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max setting	380 bar (5510 psi)
Internal leakage	0.3 ml/min (5 dpm)
Temperature range	-30° to +90°C (-22° to +194°F)
Cavity	A6610 (see Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Nominal viscosity range	5 to 500 cSt
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminium up to 210 bar. Add suffix "377" for steel option.
Weight	0.15 kg (0.33 lbs)
Seal kit	SK395 (Nitrile) SK395V (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop



Note: This valve has been designed to eliminate instability from flexible boom applications or where he load induced pressure varies greatly. To get the best results, the settings should be adjusted for each application and then factory set for production quantities. Please contact our Technical Department for more information.

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

Model code

1CE** – F 3W – 30 S 230 / 50**

1 2 3 4 5 6 7

1 Function

1CEL30 - Cartridge only

1CEL35 - Cartridge and body

1CEEL34 - Cartridges and dual body

2 Adjustment means/ counterbalance setting

F - Screw adjustment

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port size

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
3W	3/8" BSP valve & cylinder port. 1/4" BSP pilot port	B6743	B12823	B6836	B13803
6T	3/8" SAE valve & cylinder port. 1/4" SAE pilot port	B10536	B10805		
8T	1/2" SAE valve & cylinder port. 1/4" SAE pilot port	B7884	B11811	B30237	B11812

4 Pressure range bar @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 170-300 bar.
Std setting 220 bar

30 - 240-370 bar.
Std setting 280 bar

40 -270-380 bar.
Std setting 350 bar

Std setting made at 4.8 L/min

5 Seals

S - Nitrile

SV - Viton

6 High pressure setting bar

10 bar increments
150 to 310 bar
(2175 to 5000 psi)

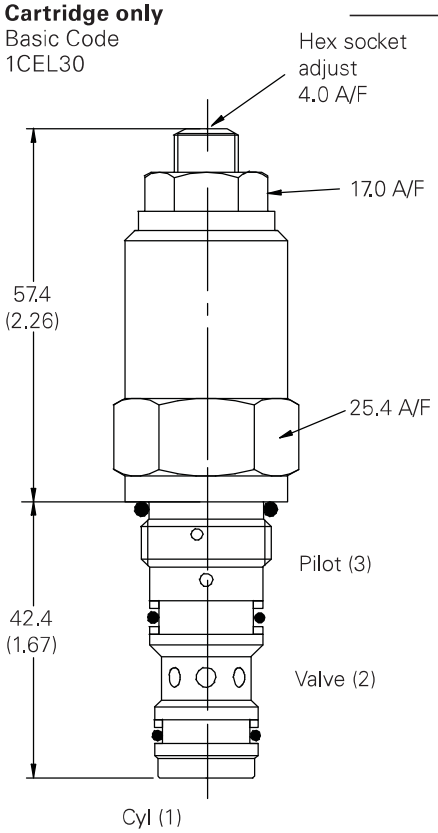
7 Counterbalance setting bar

10 bar increments
20 to 120 bar (300 to 1740 psi)

Dimensions

mm (inch)

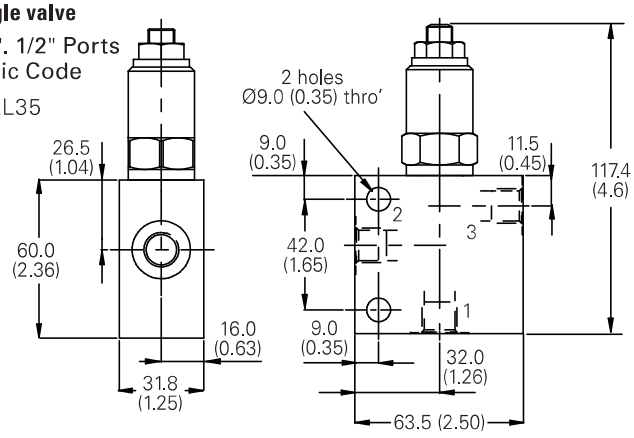
Cartridge only
Basic Code
1CEL30



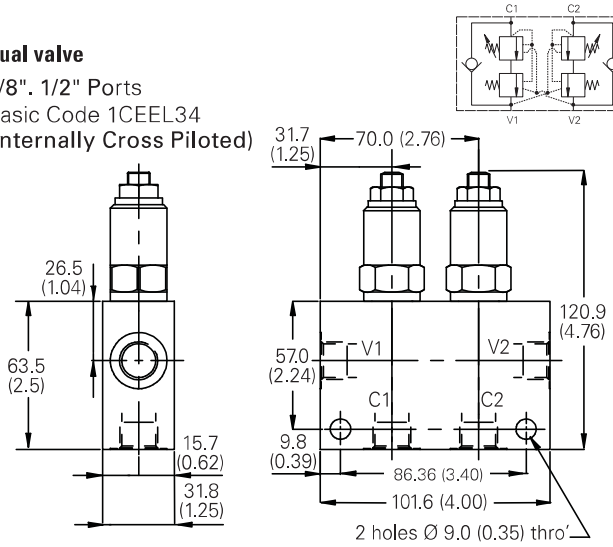
Note: Tightening torque of "F" adjuster locknut= 20-25 Nm.

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

Single valve
3/8". 1/2" Ports
Basic Code
1CEL35



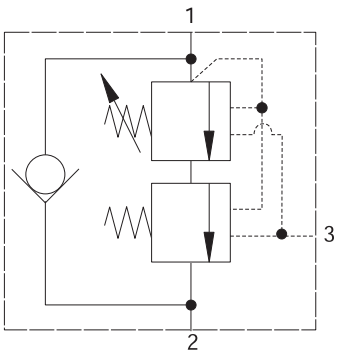
Dual valve
3/8". 1/2" Ports
Basic Code 1CEEL34
(Internally Cross Piloted)



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

1CEL90 - Overcenter valve

Counterbalance, pilot assisted relief with check
90 L/min (23 USgpm) • 280 bar (4000 psi)



Operation

The check section allows free flow and then locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied, maintaining a counterbalance pressure to prevent initial pressure loss and therefore instability. The total pressure setting will normally be set at 1.3 times the load induced pressure. The counterbalance pressure reduces as the pilot pressure increases.

Features

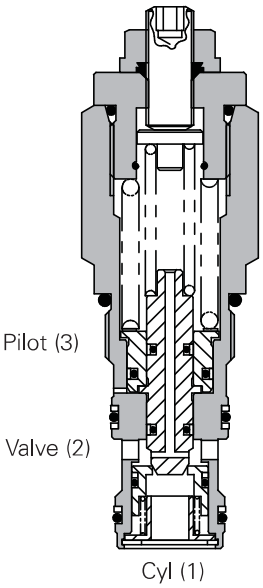
Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

Primary 5.6:1

Secondary 0.7:1

Sectional view



Performance data

Ratings and specifications

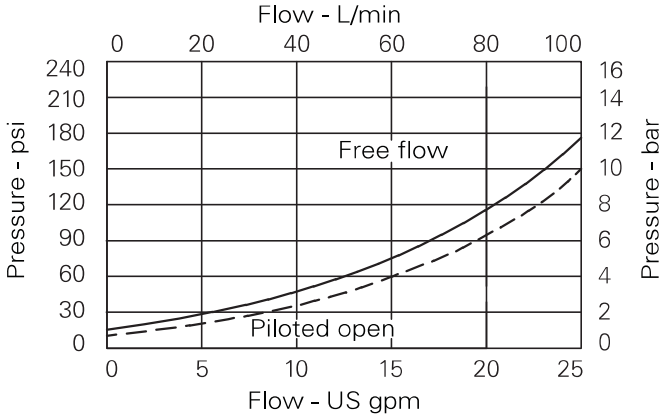
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Maximum setting	1SEL30
Max load induced pressure	280 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12336 (See Section M)
Torque cartridge into cavity	60 Nm (44 ft. lbs.)
Weight	1CEL90 0.29 kg (0.63 lbs.) 1CEL95 1.35 kg (2.97 lbs.) 1CEEL95 2.10 kg (4.62 lbs.)
Seal kit number	SK633 (Nitrile) SK633V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° C to +90° C (-22° to +194°F)
Internal 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

The 1CEL overcenter valve performs all duties of a regular overcenter but maintains a counterbalance pressure to provide dampening of cylinders when there is a rapid loss in stored pressure. This counterbalance pressure reduces as the pilot pressure increases. Typical applications include extension cylinders on telescopic handlers where it is important to have a smooth operation when retracting from full extension.

Pressure drop



Note: This valve has been designed to eliminate instability from flexible boom applications or where the load induced pressure varies greatly. To get the best results, the settings should be adjusted for each application and then factory set for production quantities. Please contact our Technical Department for more information.

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

Model code

1CE* – F 4W – 30 S 220 / 60**

1 2 3 4 5 6 7

1 Function

1CEL90 - Cartridge Only

1CEL95 - Cartridge and Body

1CEEL95 - Cartridges and Dual Body

2 Adjustment means counterbalance setting

F - Screw Adjustment
N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port sizes

Code	Port Size	Housing Number - Body Only			
		Aluminium single	Steel Single	Aluminium dual	Steel dual
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Pressure range bar @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 170-350 Standard 220 (160/60)

30 - 210-380 Standard 280 (220/60).
Standard setting made at 4.8 L/min

5 Seals

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

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

6 High pressure setting bar

(10 bar increments) 150 to 230 bar (2175 to 3335 psi)

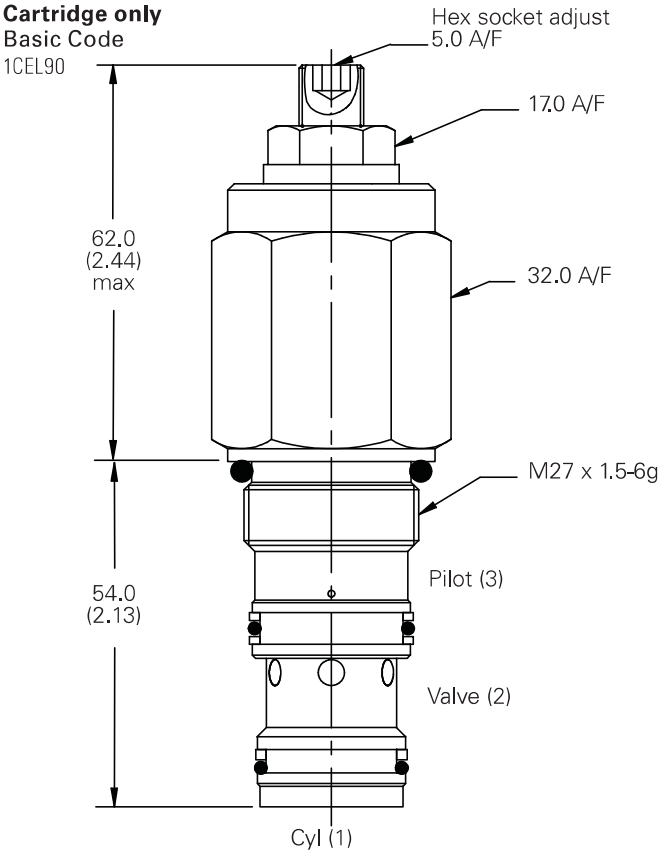
7 Counterbalance setting bar

(10 bar increments)
20 to 170 bar (300 tp 250 psi)

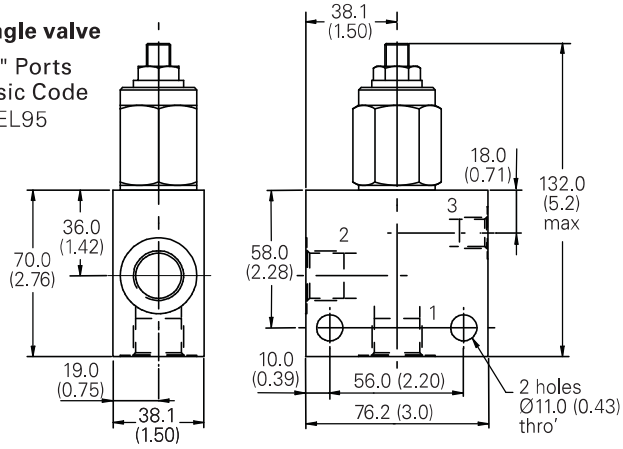
Dimensions

mm (inch)

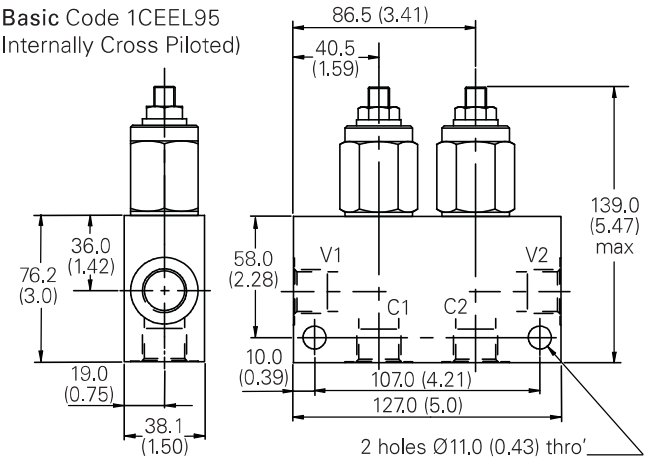
Cartridge only
Basic Code
1CEL90



Single valve
1/2" Ports
Basic Code
1CEL95



Dual valve
1/2" Ports
Basic Code 1CEEL95
Internally Cross Piloted)



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

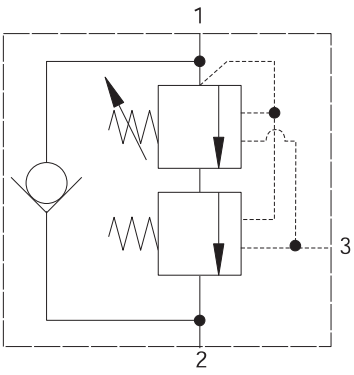
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

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

F

1CEL140 - Overcenter valve

Counterbalance, pilot assisted relief with check
140 L/min (37 USgpm) • 380 bar (5510 psi)



Operation

The check section allows free flow and then locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied, maintaining a counterbalance pressure to prevent initial pressure loss and therefore instability. The total pressure setting will normally be set at 1.3 times the load induced pressure. The counterbalance pressure reduces as the pilot pressure increases.

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

Primary 6.1:1

Secondary 0.5:1

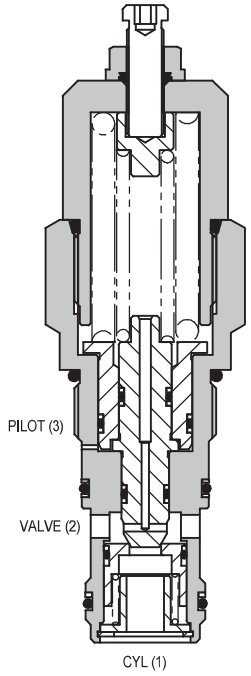
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	140 L/min (37 USgpm)
Max setting	380 bar (5510 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A20081
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight	1CEL140 1.2 kg (2.6 lbs) 1CEL145 (aluminium) 2.2 kg (4.8 lbs) 1CEL145 (steel) 4.0 kg (8.8 lbs) 1CEEL145 (aluminium) 2.9 kg (6.4 lbs) 1CEEL145 (steel) 6.0 kg (13.2 lbs)
Seal kit number	SK1108 (Nitrile) SK1108V (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 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

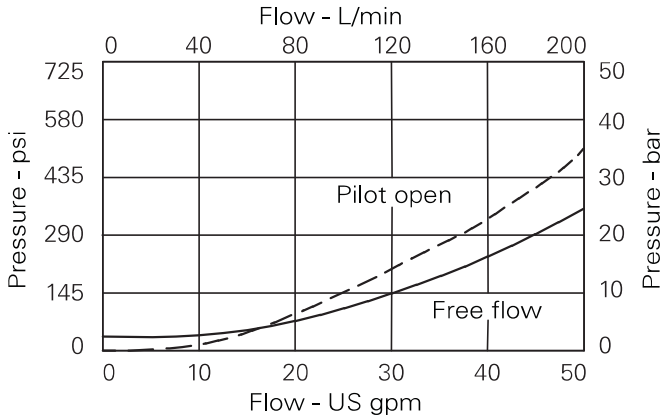
Sectional view



Description

The 1CEL overcenter valve performs all duties of a regular overcenter but maintains a counterbalance pressure to provide dampening of cylinders when there is a rapid loss in stored pressure. This counterbalance pressure reduces as the pilot pressure increases. Typical applications include extension cylinders on telescopic handlers where it is important to have a smooth operation when retracting from full extension.

Pressure drop



Note: This valve has been designed to eliminate instability from flexible boom applications or where the load induced pressure varies greatly. To get the best results, the settings should be adjusted for each application and then factory set for production quantities. Please contact Eaton/ Integrated Hydraulics for more information.

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

Model code

1CEL* – F 6W – 30 S 220 / 60**

1 2 3 4 5 6 7

1 Function

1CEL140 - Cartridge Only

1CEL145 - Cartridge and Body

1CEEL145 - Cartridges and Body

2 Adjustment means counterbalance setting

F - Screw Adjustment

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel dual
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20105	B20106		
8W	1" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20107	B20108	C20285	C20287
16T	1" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B11946	B11947	C30105	C30106

4 Pressure Range @ 4.8 l/min

Note: Code based on pressure in bar.

20 - 170-320. Std 220 (160/60)

30 - 230-380. Std 280 (220/60)

40 - 310-380. Std 350 (290/60)

5 Seals

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

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

6 High pressure setting bar

(10 bar increments).
150 to 350 bar
(2175 to 5000 psi)

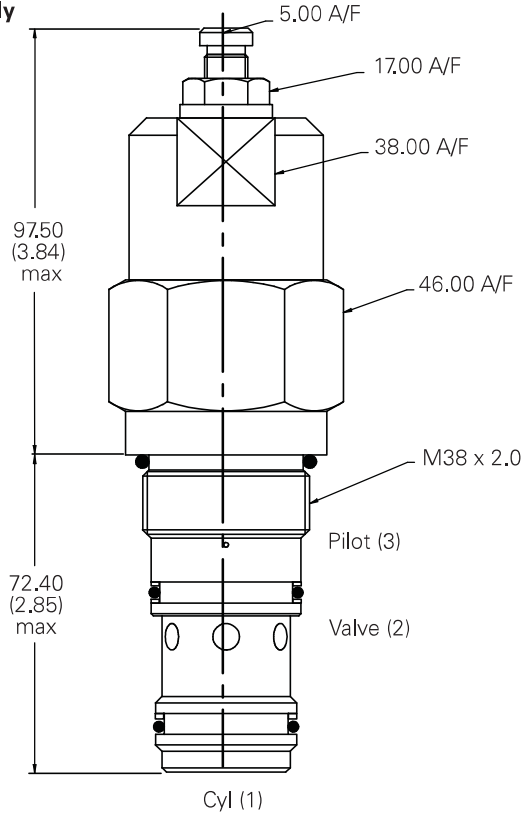
7 Counterbalance setting bar

(10 bar increments).
20 to 100 bar (300 to 1500 psi)

Dimensions

mm (inch)

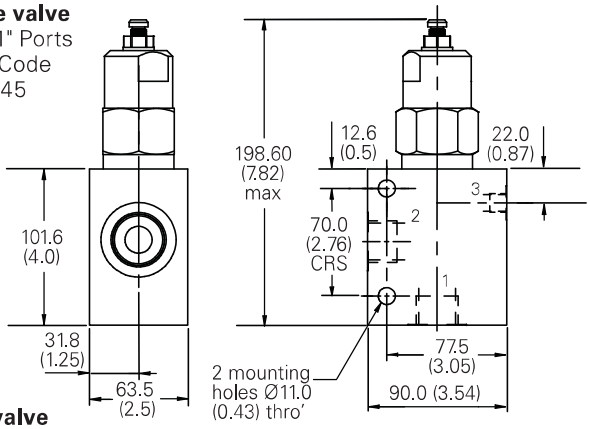
Cartridge only
Basic Code
1CEL140



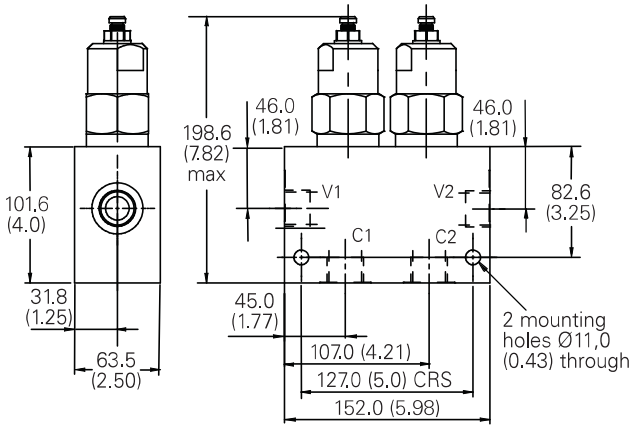
Note: For applications above 210 bar - please consult our technical department or use the steel body option.

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

Single valve
3/4" , 1" Ports
Basic Code
1CEL145



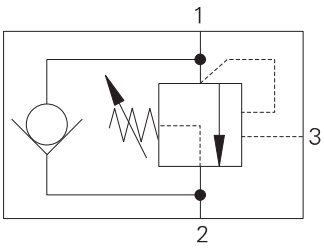
Dual valve
1" Ports
Basic code 1CEEL145
Internally Cross Piloted



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

1CER30 - Overcenter valve

Part balanced, pilot assisted relief with check
30 L/min (8 USgpm) • 270 bar (4000 psi)



Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

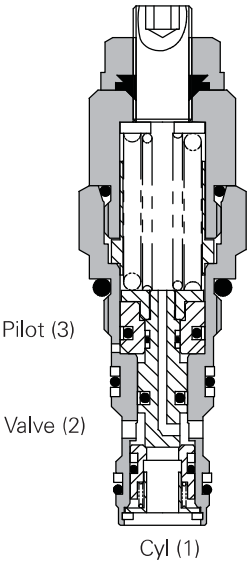
Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

2.5:1 Best suited for extremely unstable applications such as long booms or flexible frameworks.

4:1 Best suited for applications where load varies and machine structure can induce instability.

Sectional view



Description

The 1CER series overcenter valve performs all duties of a regular overcenter but is able to relieve and stay open irrespective of downstream pressure. This enables the valve to operate when used with a closed center directional valve which has service line reliefs. The poppet is pressure balanced, preventing relief setting increase due to back pressure.

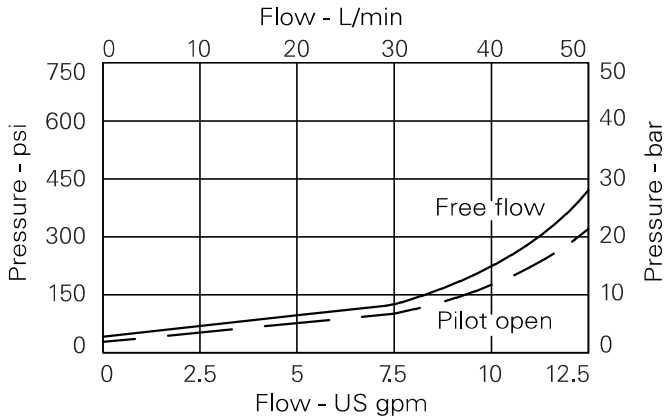
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity	A6610 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1CER30 0.15 kg (0.33 lbs) 1CER35 0.41 kg (0.90 lbs) 1CEER34 0.90 kg (1.98 lbs)
Seal kits	SK395 (Nitrile) SK395V (Viton®)
Filtration	Cleanliness code 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CE****	–	F	3W	–	35	S	4
1		2	3		4	5	6

1 Basic code

1CER30 - Cartridge only

1CER35 - Cartridge and body

1CEER34 - Cartridges and dual body

2 Adjustment

F - Screw adjustment

N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a ±10% tolerance.

3 Port sizes - bodied valves only

Code	Port size	Housing number			
Body Only		Aluminum single	Steel single	Aluminum dual	Steel dual
3W	3/8" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803
6T	3/8" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10536		B10805	
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B7884	B11811	B30237	B11812

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

35 - 100-350 bar.
Std setting 210 bar

Std setting made at 4.8 L/min

5 Seals

S - Nitrile

SV - Viton

6 Pilot ratio

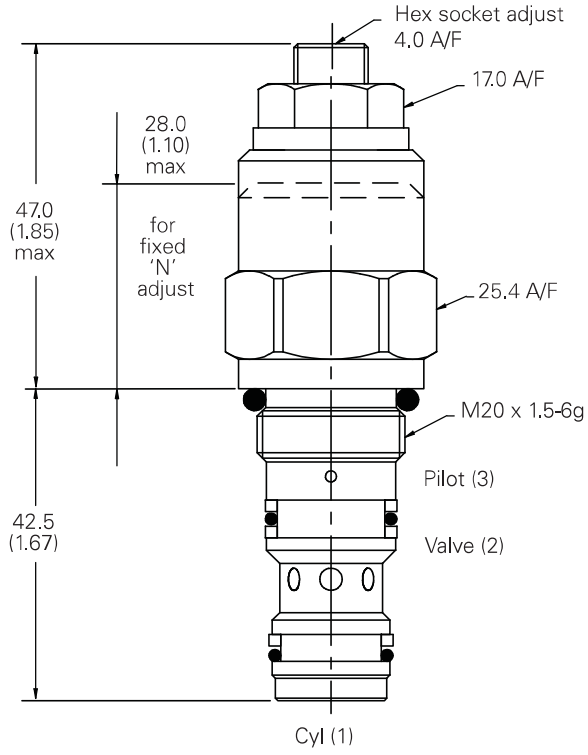
2 - 2.5:1

4 - 4:1

Dimensions

mm (inch)

Cartridge only
Basic Code
1CER30

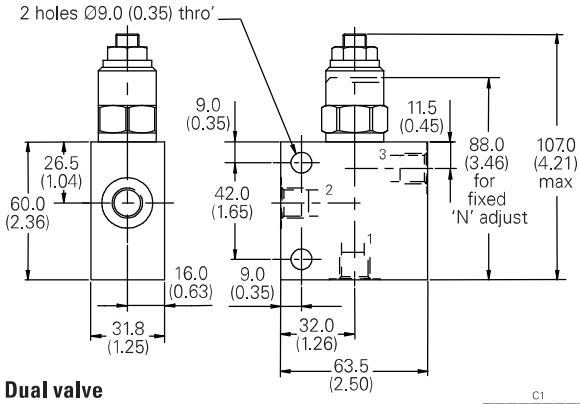


Note: For applications above 210 bar - please consult our technical department or use the steel body option

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

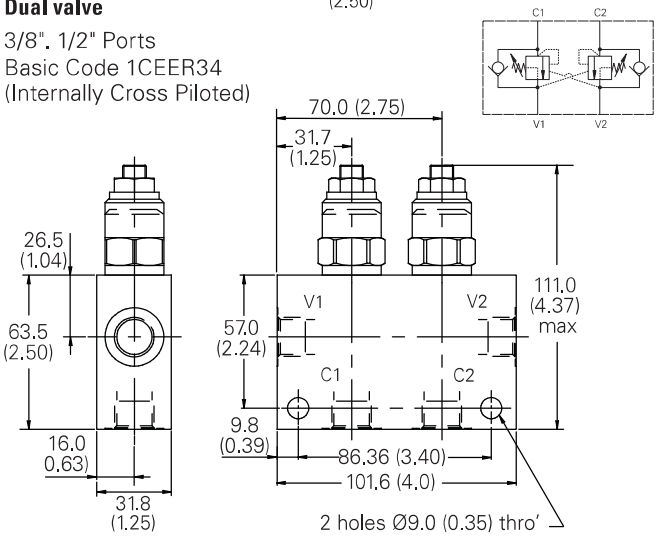
Single valve

3/8". 1/2" Ports
Basic Code 1CER35



Dual valve

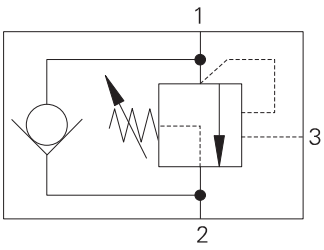
3/8". 1/2" Ports
Basic Code 1CEER34
(Internally Cross Piloted)



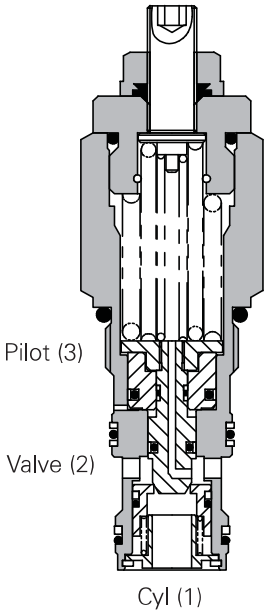
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CER90 - Overcenter valve

Part balanced, pilot assisted relief with check
90 L/min (23 USgpm) • 270 bar (4000 psi)



Sectional view



Description

The 1CER series overcenter valve performs all duties of a regular overcenter but is able to relieve and stay open irrespective of downstream pressure. This enables the valve to operate when used with a closed center directional valve which has service line reliefs. The poppet is pressure balanced, preventing relief setting increase due to back pressure.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

Other ratios available upon request.

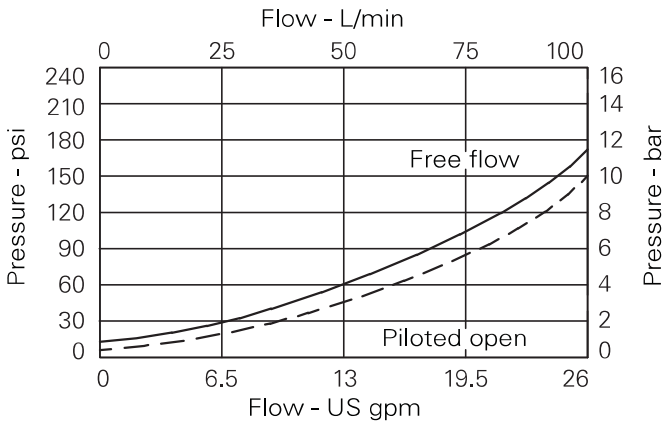
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Max relief pressure	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminum up to 210 bar. Add suffix "377" for steel option.
Cavity	A12336 (see Section M)
Mounting position	Unrestricted
Torque cartridge into cavity	60 Nm (44 lbs ft)
Weight	1CER90 29 kg (.63 lbs) 1CER95 1.35 kg (2.97 lbs) 1CEER95 2.10 kg (4.62 lbs)
Seal kit	SK633 (Nitrile) SK633V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.3 ml/min (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CE**** – F 4W – 35 S 4

1 2 3 4 5 6

1 Function

1CER90 - Cartridge only

1CER95 - Cartridge and body

1CEER95 - Cartridges and body

2 Adjustment

F - Screw adjustment

N - Fixed - State pressure setting required.

For fixed versions add setting in 10 bar increments to end of part number. Subject to a +/-10% tolerance.

3 Port size

Code	Port size	Housing number - body only			
		Aluminum single	Steel single	Aluminum dual	Steel dual
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

20 - 70-225 bar. Std setting 100 bar

35 - 200-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min

5 Seal material

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

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

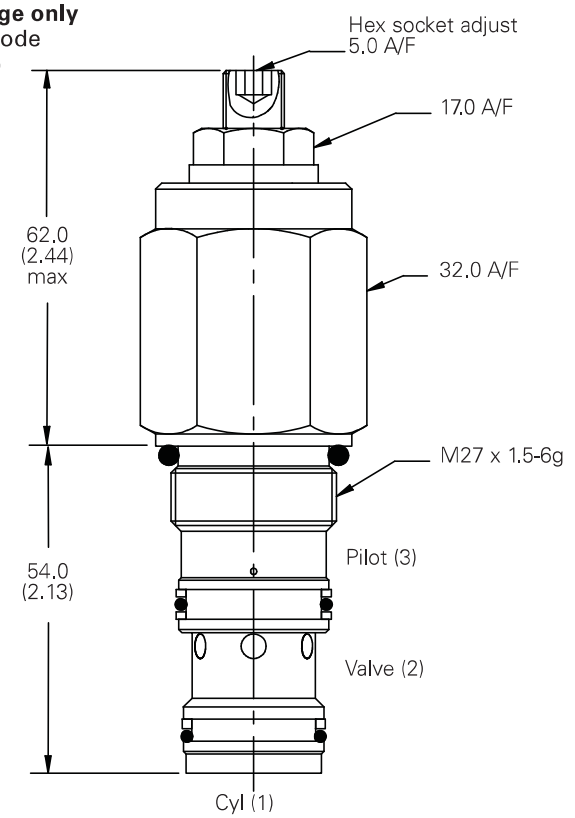
6 Pilot ratio

4 - 4:1 Other ratios available upon request

Dimensions

mm (inch)

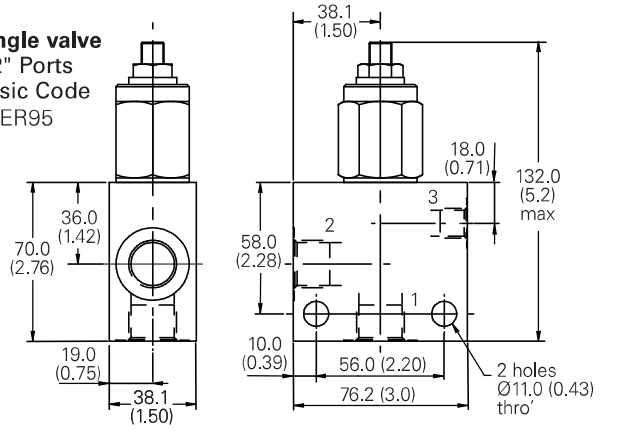
Cartridge only
Basic Code
1CER90



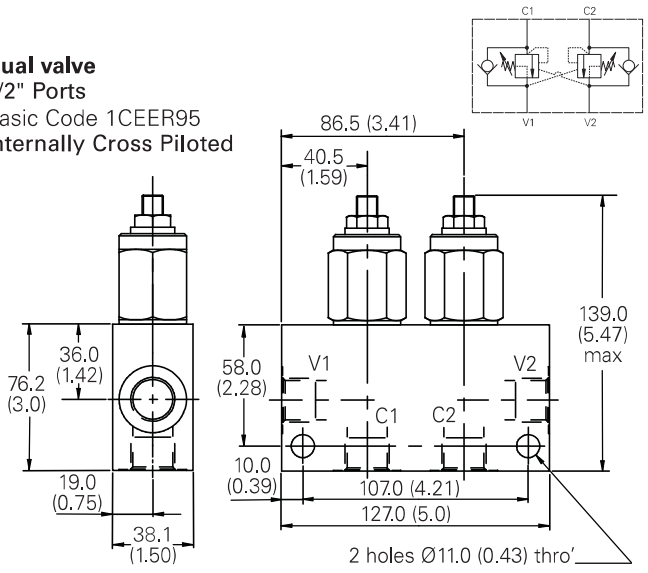
Note: For applications above 210 bar - please consult our technical department or use the steel body option.

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

Single valve
1/2" Ports
Basic Code
1CER95



Dual valve
1/2" Ports
Basic Code 1CEER95
Internally Cross Piloted

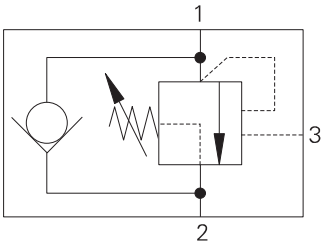


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

F

1CER140 - Overcenter valve

Part balanced, pilot assisted relief with check
140 L/min (37 USgpm) • 340 bar (4930 psi)



Operation

The check section allows free flow into the actuator then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement when pilot pressure is applied. The relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure but the pressure required to open the valve and allow movement depends on the pilot ratio of the valve. For optimization of load control and energy usage, a choice of pilot ratios is available.

The pressure required to open the valve and start actuator movement can be calculated as follows:

$$\text{Pilot Pressure} = \frac{\text{(Relief Setting) - (Load Pressure)}}{\text{Pilot Ratio}}$$

Features

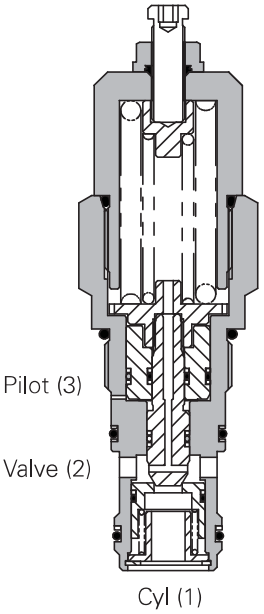
Cartridge is economical and fits simple cavity. Allows quick, easy field service - reduces down time. Interchangeable with pilot check valve of a similar size.

Pilot ratio

4:1 Best suited for applications where load varies and machine structure can induce instability.

6:1 Best suited for applications where the load remains relatively constant.

Sectional view



Description

The 1CER series overcenter valve performs all duties of a regular overcenter but is able to relieve and stay open irrespective of downstream pressure. This enables the valve to operate when used with a closed center directional valve which has service line reliefs. The poppet is pressure balanced, preventing relief setting increase due to back pressure.

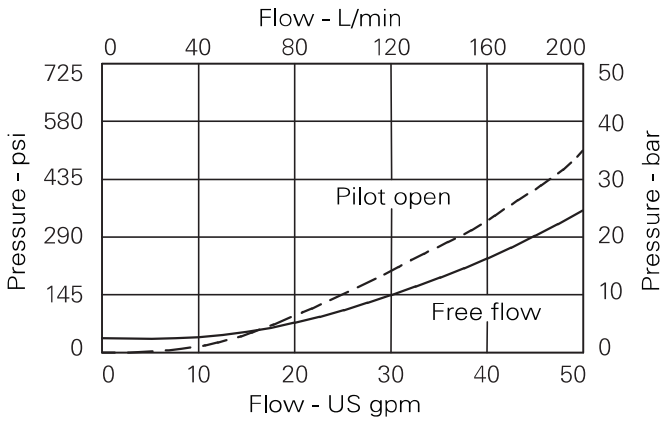
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	140 L/min (37 USgpm)
Max relief setting	420 bar (6090 psi)
Max load induced pressure	340 bar (4930 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A20081
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight	1CER140 1.2 kg (2.6 lbs) 1CER145 (aluminium) 2.2 kg (4.8 lbs) 1CER145 (steel) 4.0 kg (8.8 lbs) 1CEER145 (aluminium) 2.9 kg (6.4 lbs) 1CEER145 (steel) 6.0 kg (13.2 lbs)
Seal kit number	SK1108 Nitrile) SK1108V (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 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

1CER140 - Overcenter valve

Part balanced, pilot assisted relief with check
140 L/min (37 USgpm) • 340 bar (4930 psi)

Model code

1CER* – F 6W – 40 S 4**

1 2 3 4 5 6

1 Function

1CER140 - Cartridge Only

1CER145 - Cartridge and Body

1CEER145 - Cartridges and Body

2 Adjustment means

F - Screw Adjustment

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium dual	Steel Dual
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20105	B20106		
8W	1" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B20107	B20108	C20285	C20287
12T	3/4" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B11952	B11953		
16T	1" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B11946	B11947	C30105	C30106

4 Pressure range @ 4.8 l/min

Note: Code based on pressure in bar.

20 - 140-250 bar.
Std setting 190 bar

30 - 220-330 bar.
Std setting 270 bar

40 - 310-420 bar.
Std setting 370 bar

Std setting made at 4.8 L/min

5 Seals

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

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

6 Pilot ratio

4 - 4:1

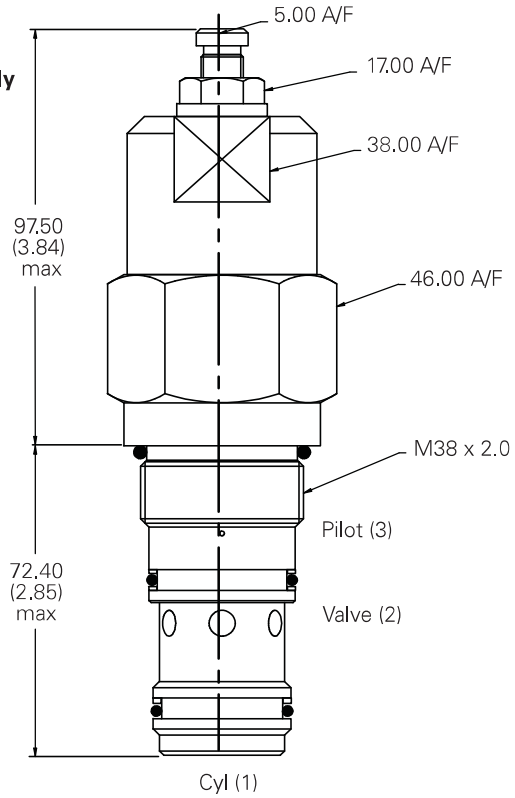
6 - 6:1

Other ratios available upon request

Dimensions

mm (inch)

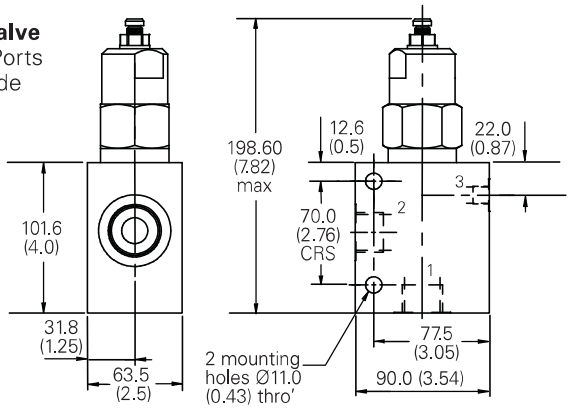
Cartridge only
Basic Code
1CER140



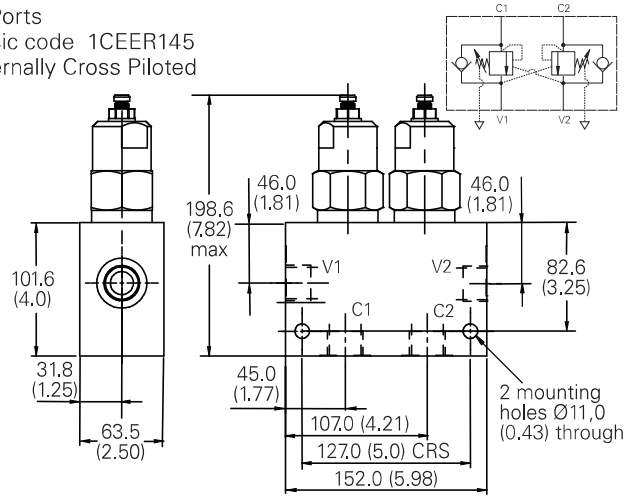
Note: For applications above 210 bar - please consult our technical department or use the steel body option

Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

Single valve
3/4" , 1" Ports
Basic Code
1CER145



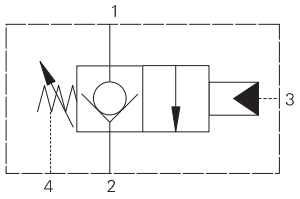
Dual valve
1" Ports
Basic code 1CEER145
Internally Cross Piloted



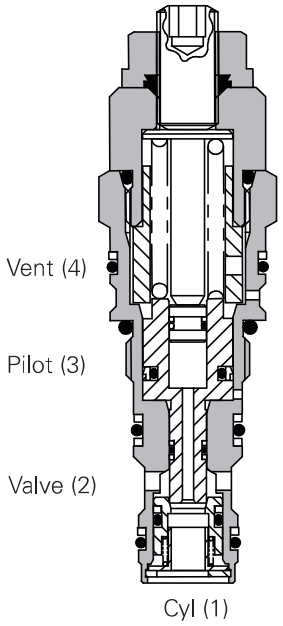
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CPBD30 - Overcenter valve

Zero differential with check
30 L/min (8 USgpm) • 350 bar (5000 psi)



Sectional view



Description

Zero differential overcenter valves give static and dynamic control of loads by supplying a restriction to flow related to the opening of the valve created by the pilot pressure.

The valve is used in conjunction with a remote pilot source to provide hose failure protection, load control and load holding functions.

If over-pressure or shock pressure protection is required then a separate relief valve should be used

The drain line allows the valve to be used in corrosive atmospheres preventing the ingress of atmospheric contaminant.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. By the application of pilot pressure to the pilot port the poppet moves back against the main spring opening the cylinder port to the valve port. The metering characteristic of the valve is controlled by the rate of the spring, the seat angle and the pilot pressure applied.

Due to the balanced poppet design load induced pressure will not open the valve and once open valve port pressure will not increase the pilot pressure required to keep the valve open

Features

The cartridge fits a simple cavity allowing quick, easy field service reducing down time. Hardened poppet and seat provide for long leak free performance.

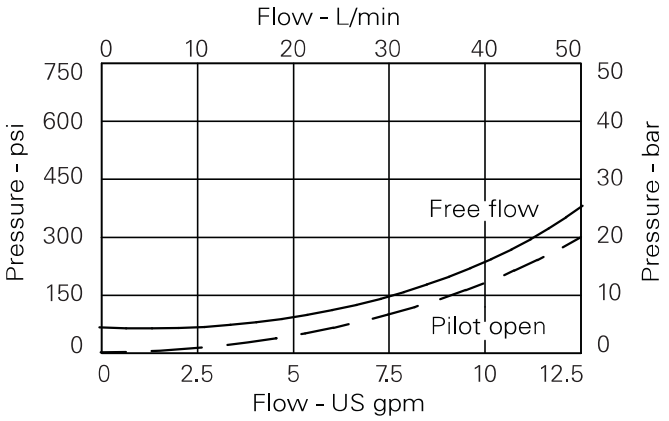
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max working pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity	AXP20530 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	0.15 kg (0.33 lbs)
Seal kit	SK1159 (Nitrile) SK1159V (Viton®) SK1159P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.3 milliliters/min max (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CPBD30 – F – 2 P

1 2 3 4

1 Function

1CPBD30 - Cartridge only

2 Adjustment

F - Screw adjustment

3 Pilot adjust range

Note: Code based on pressure in bar.

2 - 5-20 bar. Std setting 10 bar

Std setting made at 4.8 L/min

4 Seal material

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

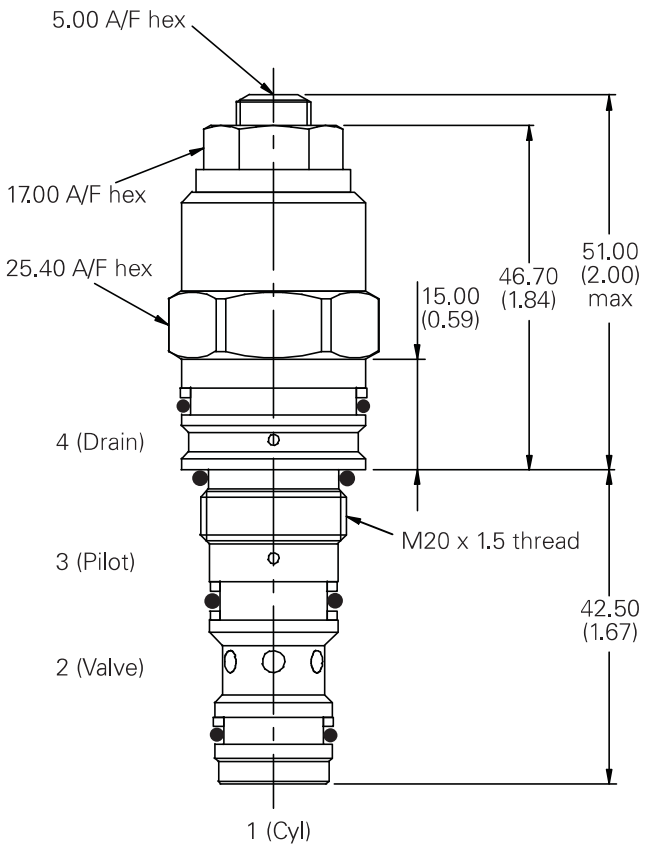
SV - Viton (For high temperature and most special fluid applications)

P -Polyurethane/Nitrile (For arduous applications)

Dimensions

mm (inch)

Cartridge only
Basic Code 1CPBD30



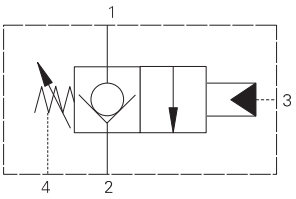
Note: Tightening torque of "F" adjuster locknut= 20-25 Nm.

F

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

1CPBD90 - Overcenter valve

Zero differential with check
90 L/min (23 USgpm) • 350 bar (5000 psi)



Operation

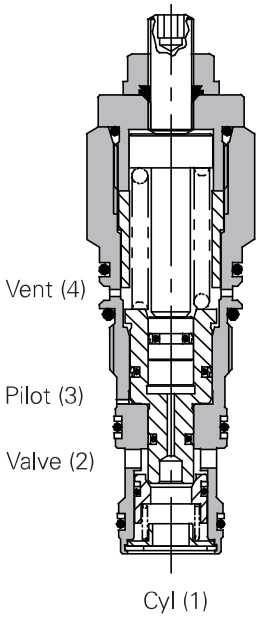
The check section allows free flow into the actuator then holds and locks the load against movement. By the application of pilot pressure to the pilot port the poppet moves back against the main spring opening the cylinder port to the valve port. The metering characteristic of the valve is controlled by the rate of the spring, the seat angle and the pilot pressure applied.

Due to the balanced poppet design load induced pressure will not open the valve and once open valve port pressure will not increase the pilot pressure required to keep the valve open.

Pilot ratios

The cartridge fits a simple cavity allowing quick, easy field service reducing down time. Hardened poppet and seat provide for long leak free performance.

Sectional view



Performance data

Ratings and Specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (23 USgpm)
Maximum working pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	A12196 (See Section M)
Torque cartridge into cavity	60 Nm (44 ft. lbs.)
Weight	0.29 kg (0.63 lbs.)
Seal kit number	SK634 (Nitrile) SK634V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Temperature	-30° C to +90° C (-22° to +194°F)
Internal leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont.

Application

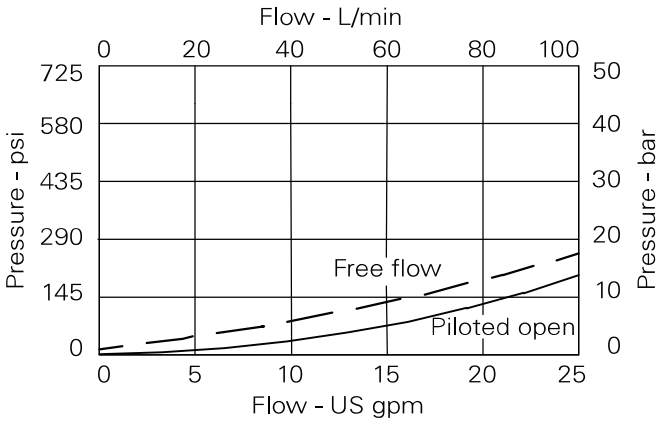
Zero differential overcenter valves give static and dynamic control of loads by supplying a restriction to flow related to the opening of the valve created by the pilot pressure.

The valve is used in conjunction with a remote pilot source to provide hose failure protection, load control and load holding functions.

If over-pressure or shock pressure protection is required then a separate relief valve should be used.

The drain line allows the valve to be used in corrosive atomspheres preventing the ingestion of atomosphere contamination.

Pressure drop



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

Model code

1CPBD90 – F – 2 P

1 2 3 4

1 Function

1CPBD90 - Cartridge Only

Line body available on request.

2 Adjustment means

F - Screw Adjustment

3 Pilot adjustment range @ 4.8 L/min

Note: Code based on pressure in bar.

2 - 5 - 20 bar.
Standard setting: 10 bar

Standard setting made at 4.8 L/min

4 Seals

S - Nitrile (for use with most industrial hydraulic coils).

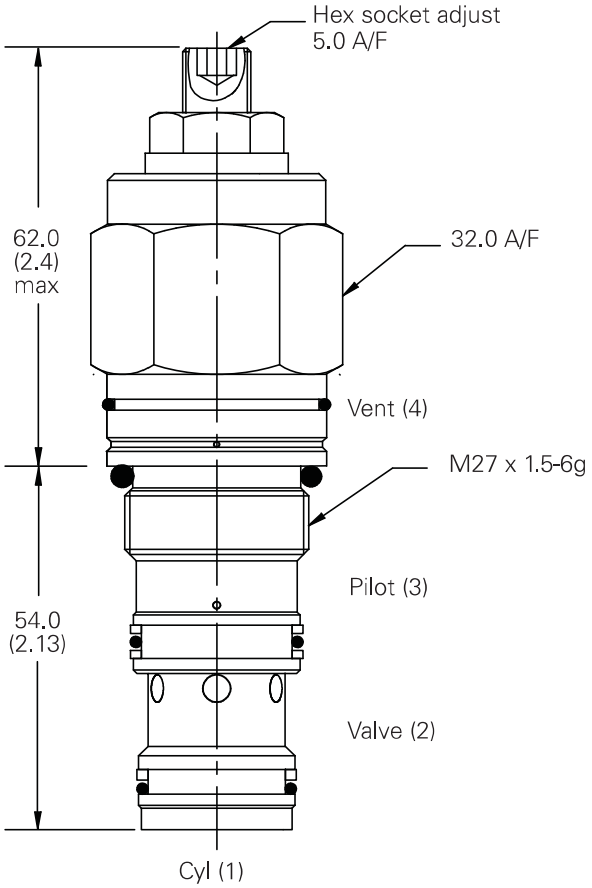
SV - Viton (for high temperature andmost special fluid applications).

P - Polyurethane/Nitrile (for arduous applications)

Dimensions

mm (inch)

Cartridge only
Basic Code
1CPBD90



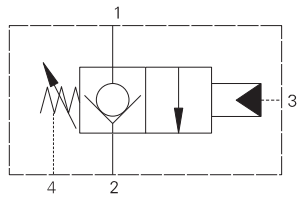
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

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

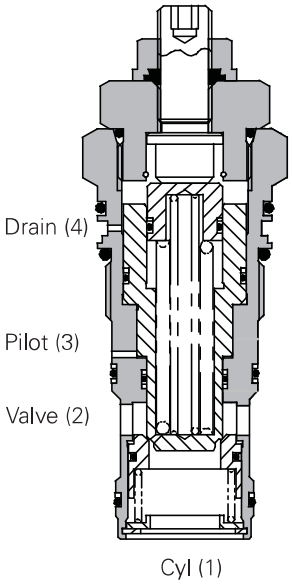
F

1CPBD300 - Overcenter valve

Zero differential with check
300 L/min (80 USgpm) • 400 bar (5800 psi)



Sectional view



Description

Zero differential overcenter valves give static and dynamic control of loads by supplying a restriction to flow related to the opening of the valve created by the pilot pressure.

The valve is used in conjunction with a remote pilot source to provide hose failure protection, load control and load holding functions.

If over-pressure or shock pressure protection is required then a separate relief valve should be used.

The drain line allows the valve to be used in corrosive atmospheres preventing the ingress of atmospheric contaminant.

Operation

The check section allows free flow into the actuator then holds and locks the load against movement. By the application of pilot pressure to the pilot port the poppet moves back against the main spring opening the cylinder port to the valve port. The metering characteristic of the valve is controlled by the rate of the spring, the seat angle and the pilot pressure applied.

Due to the balanced poppet design load induced pressure will not open the valve and once open valve port pressure will not increase the pilot pressure required to keep the valve open.

Features

The cartridge fits a simple cavity allowing quick, easy field service reducing down time. Hardened poppet and seat provide for long leak free performance.

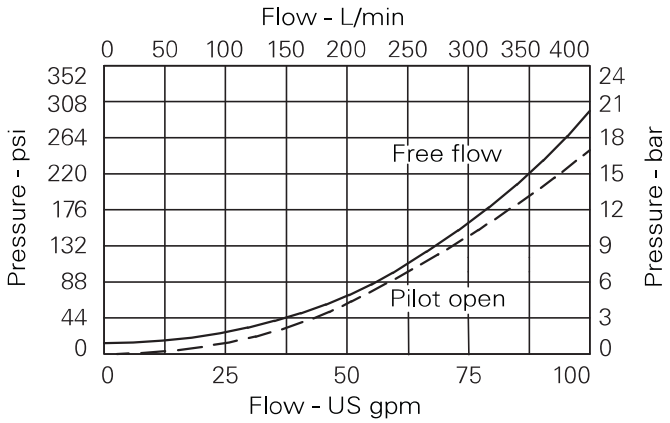
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	300 L/min (80 USgpm)
Max working pressure	400 bar (5800 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity	A13098 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight cartridge only	0.91 kg (2.00 lbs)
Seal kit	SK971 (Nitrile) SK971V (Viton®) SK971P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	4 milliliters/min nominal (60 dpm)
Nominal viscosity range	5 to 500 cSt
Bar per turn	5 bar

Viton is a registered trademark of E.I. DuPont.

Pressure drop



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

Model code

1CPBD300	F	2	P
1	2	3	4

1 Function
1CEBD300 - Cartridge only

2 Adjustment
F - Screw adjustment

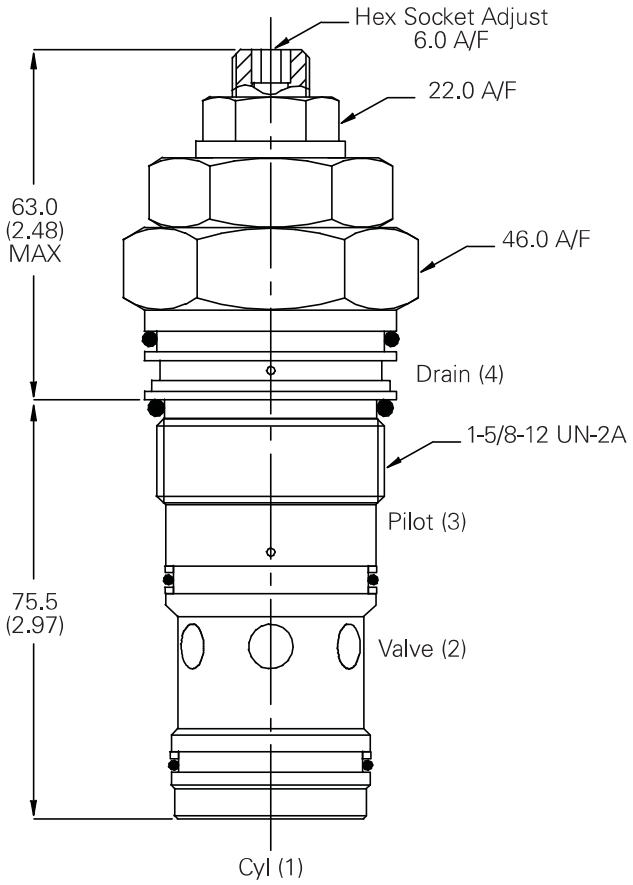
3 Pilot adjust range
Note: Code based on pressure in bar.
2 - 5-20 bar. Std setting 10 bar
Std setting made at 4.8 L/min

4 Seal material
S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton® (For high temperature and most special fluid applications)
P - Polyurethane/Nitrile (For arduous applications)

Dimensions

mm (inch)

Cartridge only
Basic Code
1CPBD300



Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

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