Motion control valves

Motion control functions for applications up to 350 bar (5000 psi) and 550 L/min (143 USgpm)

Powering Business Worldwide

Motion control valves

Section contents

This section contains a most extensive range of overcenter and motion control cartridges, including normal, part vented and fully vented versions. Suitable for load holding, load safety and to prevent load runaway, giving low pressure drops, various pilot ratios and excellent stability to all types of moving loads.

Adjustments

The adjustment range and Max setting figures shown throughout this catalogue give the design range for each valve, higher or lower values may be attainable but should not be used without first contacting our Engineering department. Setting must ALWAYS be carried out using an appropriate gauge and it must NOT be assumed that screwing an adjuster to its maximum or minimum position will yield the maximum or minimum stated design setting for that valve.

1CE/1CEE
Overcenter cartridge pilot assisted relief with check

To control moving loads and prevent load runaway, giving load holding and hose failure safety

1CER
Overcenter cartridge as 1CE series with relief balanced

As 1CE series but with relief balanced against back pressure allowing the valve to be used with closed center DCV with service line reliefs

1CEB/1CEBD
Overcenter cartridge as 1CE series with relief and pilot balanced

As 1CE series but balanced on relief and pilot areas. For use on proportional systems or applications with widely varying back pressures

1CEL
Overcenter cartridge with constant counterbalance pressure

This valve is used in systems where the machine framework introduces instability, such as telescopic handlers, cranes and concrete pumps

1CPB/1CPBD
Pilot controlled cartridges without relief function, unaffected by back pressure

For use on boom lock applications giving load-holding and hose failure safety. With or without internal relief

1CEEC
Line mounted overcenter with make up checks. Piece parts in body style

Motion control valves with make up checks and cross line relief function for use on transmission systems or single rod cylinders when dual relief is required

1CEESH/1CEECSH
As ICEEC series with brake shuttle. Piece parts in body style

As ICEEC series but with added brake shuttle for removal of spring applied park brakes

1CEBL
In-line or cylinder mounted BoomLoc valves incorporating 1CPB(D) cartridge and additional relief cartridge element

These overcenter valves are suitable for use on the boom and dipper cylinders of an excavator to help the manufacturer or user comply with standard ISO8643.

1CE	1CEH	1SE	1CER	1CERH	1SER	1CEB	1SEB	1CEL	1SEL
1CE20	1CEH30	1SE30	1CER30	1CERH30	1SER30	1CEB30	1SEB30	1CEL30	1SEL30
1CE30	1CEH90	1SE90	1CER90	1CERH90	1SER90	1CEB90	1SEB90	1CEL90	1SEL90
1CE90		1SE140	1CER140		1SER140	1CEB120		1CEL140	1SEL140
1CE120						1CEB300			
1CE140									
1CE300									

1CPBD	1CPPD	1CEBD	1CEESH	1CEEC	1CEECSH	1CEBL		
1CPBD30	1CPPD90	1CEBD30	1CEESH35	1CEEC35	1CEECSH35	1CEBL256	1CEBL556	1CEBL31F3W35P
1CPBD90	1CPPD300	1CEBD90	1CEESH95	1CEEC95	1CEECSH95	1CEBL356		1CEBL31F1/2635P
1CPBD120		1CEBD120	1CEESH150	1CEEC150	1CEECSH150			1CEBL31F4W35P
1CPBD300		1CEBD300	1CEESH350	1CEEC350	1CEECSH350			1CEBL91F4W35P
								1CEBL151F4W35P
								1CEBL153F4W35P

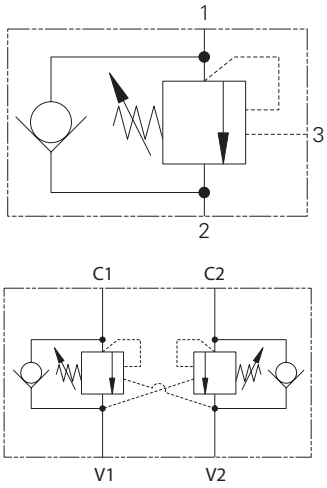
Application Data

Installation Information

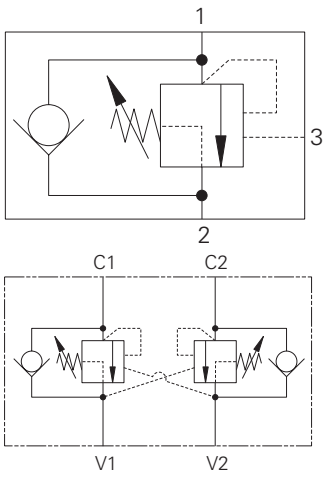
Note: For applications above 210 bar - please consult our technical department or use the steel body option

Model	Torque For Cartridge in Body	Tightening Torque of adjuster lock nut
1CE20	40 Nm (30 lbs ft)	20 to 25 Nm
1CE30	45 Nm (33 lbs ft)	20 to 25 Nm
1CE90	60 Nm (44 lbs ft)	20 to 25 Nm
1CE120	100 Nm (74 lbs ft)	20 to 25 Nm
1CE140	150 Nm (110 lbs ft)	20 to 25 Nm
1CE300	150 Nm (110 lbs ft)	20 to 25 Nm
1CEH30	68-75 Nm (50-56 lbs ft)	20 to 25 Nm
1CEH90	100-110 Nm (73-81 lbs ft)	20 to 25 Nm
1SE30	45 Nm (33 lbs ft)	20 to 25 Nm
1SE90	60 Nm (44 lbs ft)	20 to 25 Nm
1SE140	150 Nm (110 lbs ft)	20 to 25 Nm
1CER30	45 Nm (33 lbs ft)	20 to 25 Nm
1CER90	60 Nm (44 lbs ft)	20 to 25 Nm
1CER140	150 Nm (110 lbs ft)	20 to 25 Nm
1CERH30	68-75 Nm (50-56 lbs ft)	20 to 25 Nm
1CERH90	100-110 Nm (73-81lbs ft)	20 to 25 Nm
1SER30	45 Nm (33 lbs ft)	20 to 25 Nm
1SER90	60 Nm (44 lbs ft)	20 to 25 Nm
1SER140	150 Nm (110 lbs ft)	20 to 25 Nm
1CEB30	45 Nm (33 lbs ft)	20 to 25 Nm
1CEB90	60 Nm (44 lbs ft)	20 to 25 Nm
1CEB120	100 Nm (74 lbs ft)	20 to 25 Nm
1CEB300	150 Nm (110 lbs ft)	20 to 25 Nm
1SEB30	45 Nm (33 lbs ft)	20 to 25 Nm
1SEB90	60 Nm (44 lbs ft)	20 to 25 Nm
1CEL30	45 Nm (33 lbs ft)	20 to 25 Nm
1CEL90	60 Nm (44 ft. lbs.)	20 to 25 Nm
1CEL140	150 Nm (110 lbs ft)	20 to 25 Nm
1SEL30	45 Nm (33 lbs ft)	20 to 25 Nm
1SEL90	60 Nm (44 lbs ft)	20 to 25 Nm
1SEL140	150 Nm (110 lbs ft)	20 to 25 Nm
1CPBD30	45 Nm (33 lbs ft)	20 to 25 Nm
1CPBD90	60 Nm (44 ft. lbs.)	20 to 25 Nm
1CPBD120	100 Nm (74 lbs ft)	20 to 25 Nm
1CPBD300	150 Nm (110 lbs ft)	20 to 25 Nm
1CPPD90	60 Nm (44 ft. lbs.)	20 to 25 Nm
1CPPD300	150 Nm (110 lbs ft)	-
1CEBD30	45 Nm (33 lbs ft)	-
1CEBD90	60 Nm (44 lbs ft)	20 to 25 Nm
1CEBD120	100 Nm (74 lbs ft)	20 to 25 Nm
1CEBD300	150 Nm (110 lbs ft)	20 to 25 Nm
1CEESH35	-	20 to 25 Nm
1CEESH95	-	20 to 25 Nm
1CEESH150	-	20 to 25 Nm
1CEESH350	-	20 to 25 Nm
1CEEC35	-	20 to 25 Nm
1CEEC95	-	20 to 25 Nm
1CEEC150	-	20 to 25 Nm
1CEEC350	-	20 to 25 Nm
1CEECSH35	-	20 to 25 Nm
1CEECSH95	-	20 to 25 Nm
1CEECSH150	-	20 to 25 Nm
1CEECSH350	-	20 to 25 Nm
1CEBL256	-	20 to 25 Nm
1CEBL356	-	20 to 25 Nm
1CEBL556	-	20 to 25 Nm
1CEBL31F3W35P	-	20 to 25 Nm
1CEBL31F1/2635P	-	20 to 25 Nm
1CEBL31F4W35P	-	20 to 25 Nm
1CEBL91F4W35P	-	20 to 25 Nm
1CEBL151F4W35P	-	20 to 25 Nm
1CEBL153F4W35P	-	20 to 25 Nm

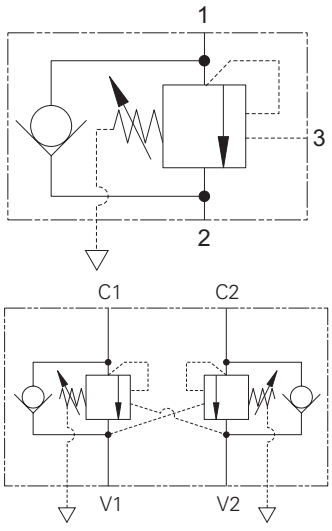
Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
OCV standard		L/min (USgpm)	bar (psi)	
1CE20	A22903	20 (5)	270 (4000)	F-8
1CE30	A6610	30 (8)	270 (4000)	F-8
1CEH30	A6610	30 (8)	350 (5000)	F-19
1CE90	A12336	90 (23)	270 (4000)	F-8
1CEH90	A12336	90 (23)	350 (5000)	F-19
1CE120	A877	120 (32)	270 (4000)	F-8
1CE140	A20081	140 (37)	340 (4390)	F-8
1CE300	A6935	300 (80)	270 (4000)	F-8
1SE30	A20090-T11A	30 (8)	270 (4000)	F-61
1SE90	A20092-T2A	90 (23)	270 (4000)	F-61
1SE140	A20094-T17A	140 (37)	340 (4390)	F-61



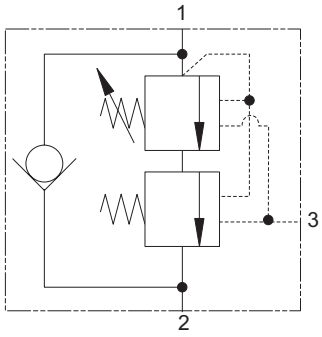
Model	Cavity	Flow rating	Typical pressure	Page
OCV part balanced		L/min (USgpm)	bar (psi)	
1CER30	A6610	30 (8)	270 (4000)	F-23
1CERH30	A6610	30 (8)	350 (5000)	F-29
1CER90	A12336	90 (23)	270 (4000)	F-23
1CERH90	A12336	90 (23)	350 (5000)	F-29
1CER140	A20081	140 (37)	340 (4390)	F-23
1SER30	A20090-T11A	30 (8)	270 (4000)	F-66
1SER90	A20092-T2A	90 (23)	270 (4000)	F-66
1SER140	A20094-T17A	140 (37)	340 (4390)	F-66



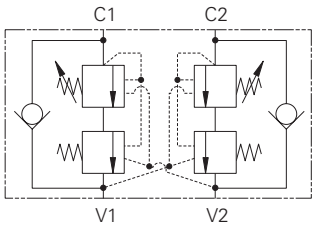
Model	Cavity	Flow rating	Typical pressure	Page
OCV fully balanced		L/min (USgpm)	bar (psi)	
1CEB30	A6610	30 (8)	270 (4000)	F-33
1CEB90	A12336	90 (23)	270 (4000)	F-33
1CEB120	A877	120 (32)	270 (4000)	F-33
1CEB300	A6935	300 (80)	270 (4000)	F-33
1SEB30	A20090-T11A	30 (8)	270 (4000)	F-71
1SEB90	A20092-T2A	90 (23)	270 (4000)	F-71

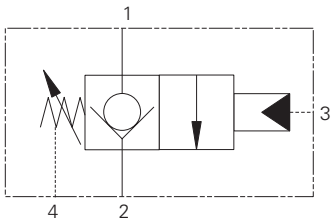
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Functional symbol

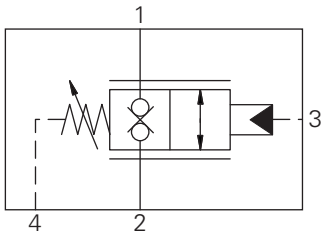


Model	Cavity	Flow rating	Typical pressure	Page
OCV counterbalanced		L/min (USgpm)	bar (psi)	
1CEL30	A6610	30 (8)	380 (5510)	F-44
1CEL90	A12336	90 (23)	380 (5510)	F-44
1CEL140	A20081	140 (37)	380 (5510)	F-44
1SEL30	A20090-T11A	30 (8)	380 (5510)	F-74
1SEL90	A20092-T2A	90 (23)	380 (5510)	F-74
1SEL140	A20094-T17A	140 (37)	380 (5310)	F-74

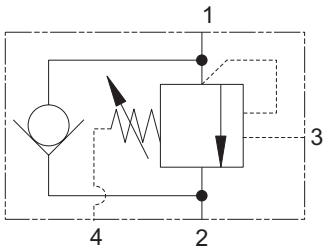




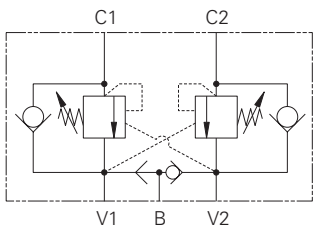
Model	Cavity	Flow rating	Typical pressure	Page
OCV zero differential		L/min (USgpm)	bar (psi)	
1CPBD30	AXP 20530	30 (8)	350 (5000)	F-50
1CPBD90	A12196	90 (23)	350 (5000)	F-50
1CPBD120	A6726	180 (47)	400 (5800)	F-50
1CPBD300	A13098	300 (80)	400 (5800)	F-50



Model	Cavity	Flow rating	Typical pressure	Page
OCV normally closed zero differential		L/min (USgpm)	bar (psi)	
1CPPD90	A12196	90 (23)	350 (5000)	F-56
1CPPD300	A13098	300 (80)	350 (5000)	F-56



Model	Cavity	Flow rating	Typical pressure	Page
OCV fully balanced		L/min (USgpm)	bar (psi)	
1CEBD30	A20530	30 (8)	350 (5000)	F-40
1CEBD90	A12196	90 (23)	270 (4000)	F-40
1CEBD120	A6726	180 (47)	270 (4000)	F-40
1CEBD300	A13098	300 (80)	270 (4000)	F-40



Model	Cavity			
Motion control valve, with brake shuttle		L/min (USgpm)	bar (psi)	Page
1CEESH35		30 (8)	270 (4000)	F-79
1CEESH95		90 (23)	270 (4000)	F-79
1CEESH150		150 (40)	270 (4000)	F-79
1CEESH350		300 (80)	270 (4000)	F-79

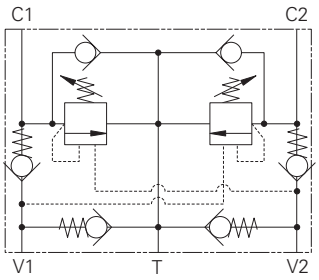
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

F

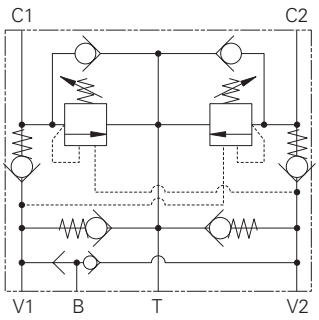
Motion controls

Valve locator

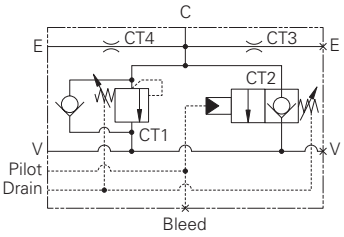
Functional symbol



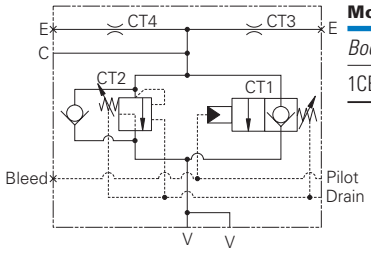
Model	Cavity	Flow rating	Typical pressure	Page
Motion control valve & lock		**L/min (USgpm)**	**bar (psi)**	
1CEEC35		30 (8)	270 (4000)	F-85
1CEEC95		95 (25)	270 (4000)	F-85
1CEEC150		150 (40)	270 (4000)	F-85
1CEEC350		300 (80)	270 (4000)	F-85



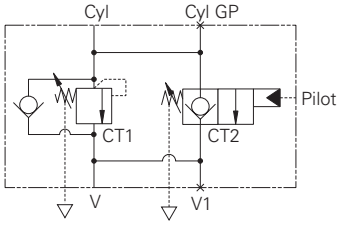
Model	Cavity	Flow rating	Typical pressure	Page
Motion control valve & lock with brake shuttle		**L/min (USgpm)**	**bar (psi)**	
1CEECSH35		30 (8)	270 (4000)	F-91
1CEECSH95		95 (25)	270 (4000)	F-91
1CEECSH150		150 (40)	270 (4000)	F-91
1CEECSH350		350 (80)	270 (4000)	F-91



Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		**L/min (USgpm)**	**bar (psi)**	
1CEBL256		250 (66)	350 (5000)	F-98
1CEBL356		350 (92)	350 (5000)	F-98



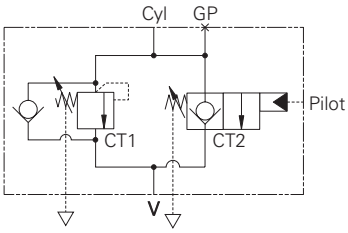
Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		**L/min (USgpm)**	**bar (psi)**	
1CEBL556		550 (145)	400 (5800)	F-101



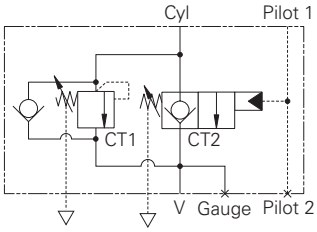
Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		**L/min (USgpm)**	**bar (psi)**	
1CEBL31F3W35P		30 (8)	350 (5000)	F-103

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

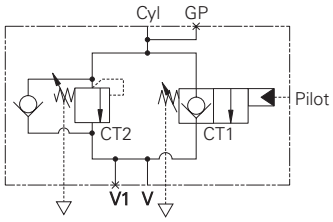
Functional symbol



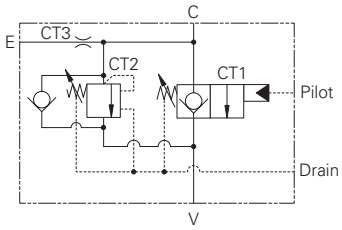
Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		L/min (USgpm)	bar (psi)	
1CEBL31F1/2635P		30 (8)	350 (5000)	F-105



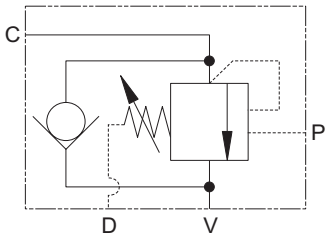
Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		L/min (USgpm)	bar (psi)	
1CEBL31F4W35P		30 (8)	350 (5000)	F-107



Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		L/min (USgpm)	bar (psi)	
1CEBL91F4W35P		90 (24)	350 (5000)	F-109



Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		L/min (USgpm)	bar (psi)	
1CEBL151F4W35P		150 (40)	350 (5000)	F-111



Model	Cavity	Flow rating	Typical pressure	Page
BoomLoc		L/min (USgpm)	bar (psi)	
1CEBL153F4W35P		150 (40)	350 (5000)	F-113

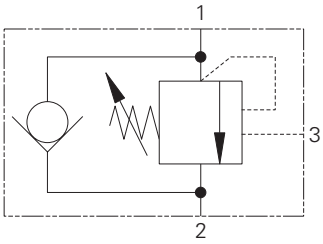
F

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

1CE20/30/90/120/140/300 - Overcenter valve

Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 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:

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

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CE20: 20 L/min (5 USgpm) 1CE30: 30 L/min (8 USgpm) 1CE90: 90 L/min (23 USgpm)	1CE120: 120 L/min (32 USgpm) 1CE140: 140 L/min (37 USgpm) 1CE300: 300 L/min (80 USgpm)
Max relief pressure	1CE20/1CE30/1CE90/1CE120/1CE300: 350 bar (5000 psi) 1CE140: 420 bar (6090 psi)
Max load induced pressure	1CE20/1CE30/1CE90/1CE120/1CE300: 270 bar (4000 psi) 1CE140: 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 - (Refer section M for dimensions) 1CE20: A22903 1CE30: A6610 1CE90: A12336	1CE120: A877 1CE140: A20081 1CE300: A6935
Torque cartridge into cavity	40 Nm (30 lbs ft)
Weight - 1CE20: 1CE20 0.16 kg (0.35 lbs) 1CE25 0.37 kg (0.82 lbs) 1CEE24 0.41 kg (0.89 lbs) Weight - 1CE30: 1CE30 0.15 kg (0.33 lbs) 1CE35 0.41 kg (0.90 lbs) 1CEE34 0.90 kg (1.98 lbs) Weight - 1CE90: 1CE90 0.29 kg (0.63 lbs) 1CE95 1.35 kg (2.97 lbs) 1CEE95 2.10 kg (4.62 lbs)	Weight - 1CE120: 1CE120 0.59 kg (1.30 lbs) 1CE150 1.46 kg (3.20 lbs 1CEE150 2.58 kg (5.70 lbs) Weight - 1CE140: 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) Weight - 1CE300: 1CE300 0.91 kg (2.00 lbs) 1CE350 2.71 kg (5.96 lbs) 1CEE350 5.42 kg (11.92 lbs)
Seal kit number 1CE20: SK1276 (Nitrile), SK1276V (Viton®) 1CE30: SK395 (Nitrile), SK395V (Viton®) 1CE90: SK633 (Nitrile), SK633V (Viton®)	1CE120: SK417 (Nitrile), SK417V (Viton®) 1CE140: SK1108 (Nitrile), SK1108V (Viton®) 1CE300: SK437 (Nitrile), SK437V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	1CE20/1CE30/1CE90/1CE120/1CE140: 0.3 milliliters/min nominal (5 dpm) 1CE300: 4 milliliters/min (60 dpm)
Nominal viscosity range	5 to 500 cSt

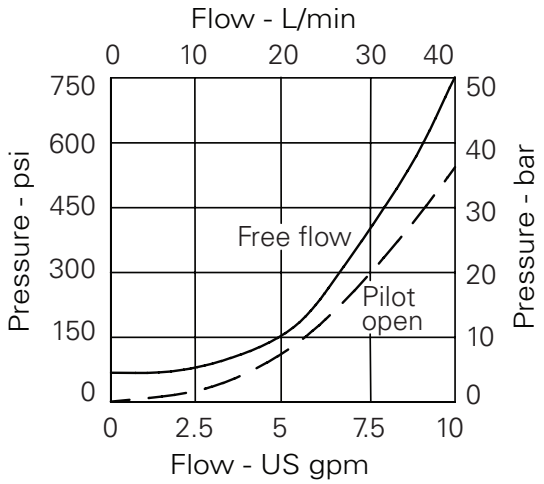
Viton is a registered trademark of E.I. DuPont.

Pilot Ratio	1CE20	1CE30	1CE90	1CE120	1CE300
Best suited for extremely unstable applications such as long booms or flexible frameworks.	3:1	2.5:1	-	-	-
Best suited for applications where load varies and machine structure can induce instability.	4.5:1	5:1	4:1	3.5:1	3:1
Best suited for applications where the load remains relatively constant.	8:1	10:1	8:1	8:1	8:1

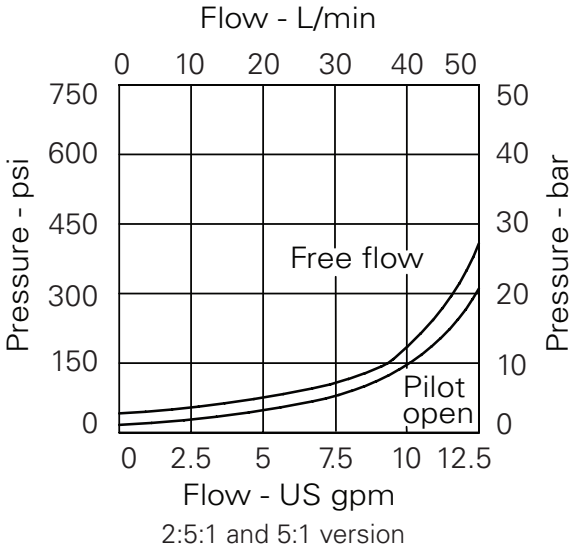
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

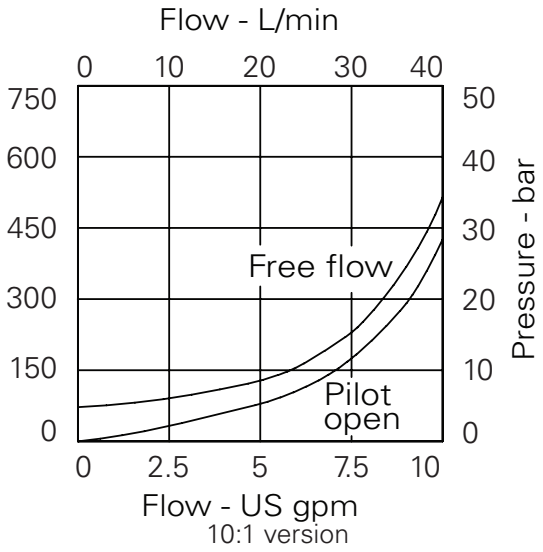
Pressure drop - 1CE20



Pressure drop - 1CE30

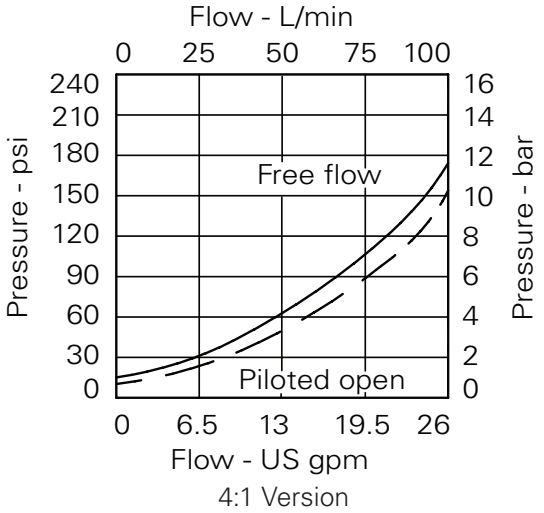


2:5:1 and 5:1 version

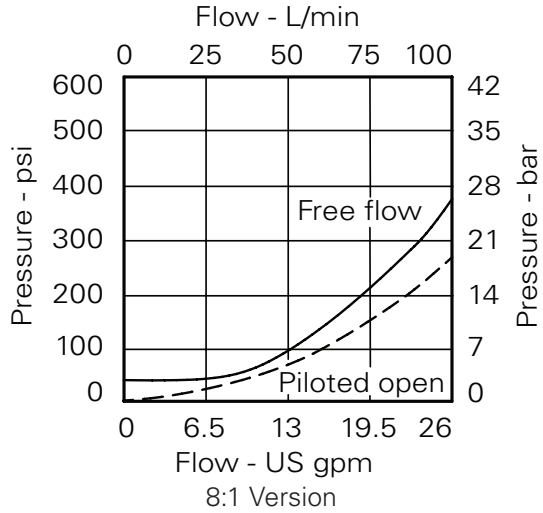


10:1 version

Pressure drop - 1CE90



4:1 Version



8:1 Version

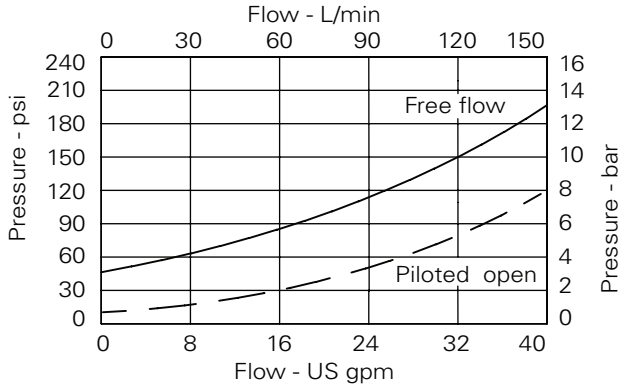
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE20/30/90/120/140/300 - Overcenter valve

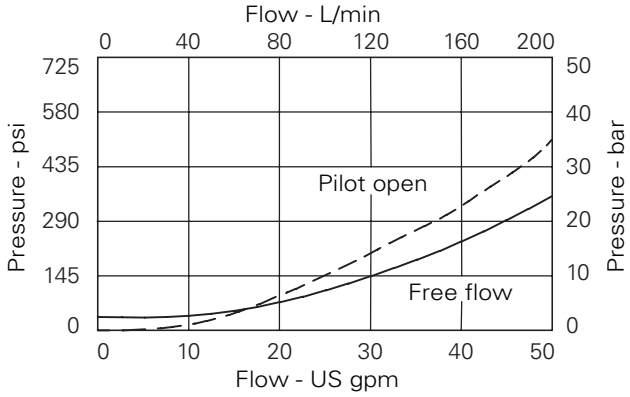
Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

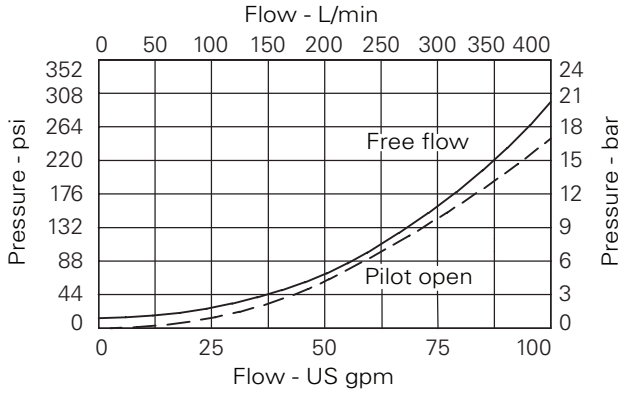
Pressure drop - 1CE120



Pressure drop - 1CE140



Pressure drop - 1CE300



F

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

1CE20/30/90/120/140/300 - Overcenter valve

Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CE20

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)

Single valve: 1CE25

3/8" Ports

6 Pilot ratio

3 - 3:1

4 - 4.5.1

8 - 8:1

Model code: 1CE30

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

F

1CE20/30/90/120/140/300 - Overcenter valve

Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CE90

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

Model code: 1CE120

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

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

1CE20/30/90/120/140/300 - Overcenter valve

Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CE140

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

Model code: 1CE300

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

F

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

1CE20/30/90/120/140/300 - Overcenter valve

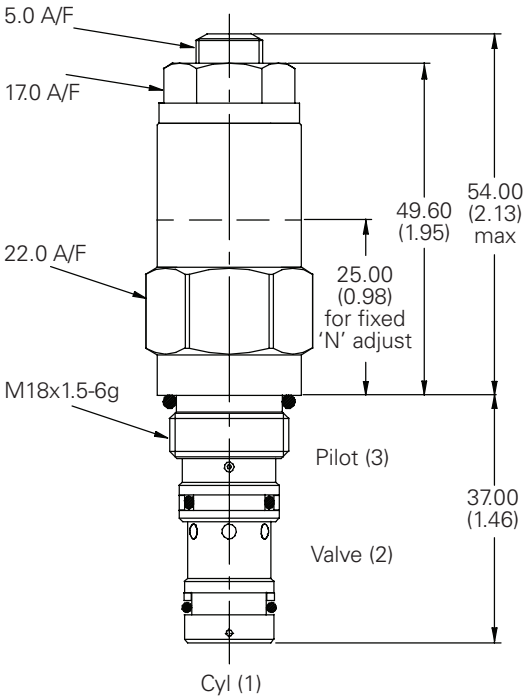
Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

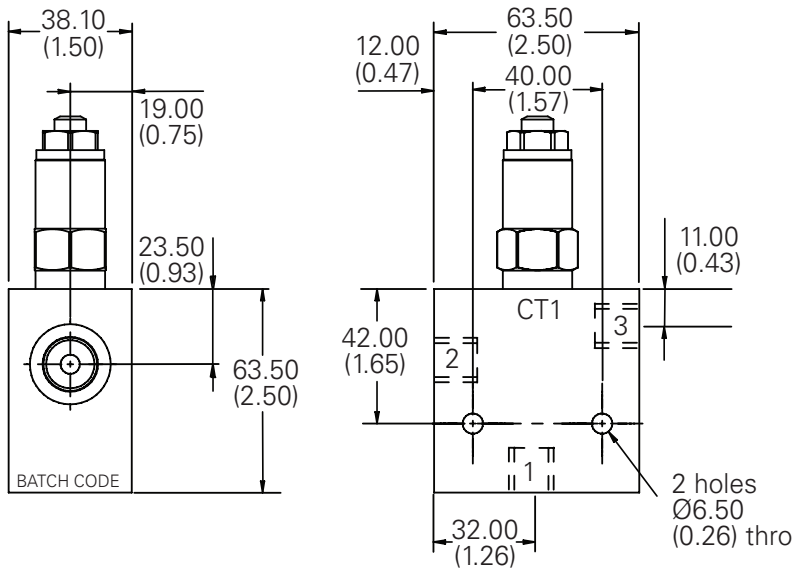
mm (inch)

Cartridge only: 1CE20



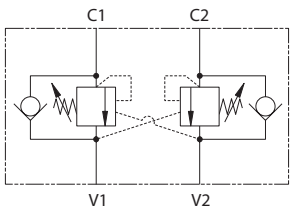
Single valve: 1CE25

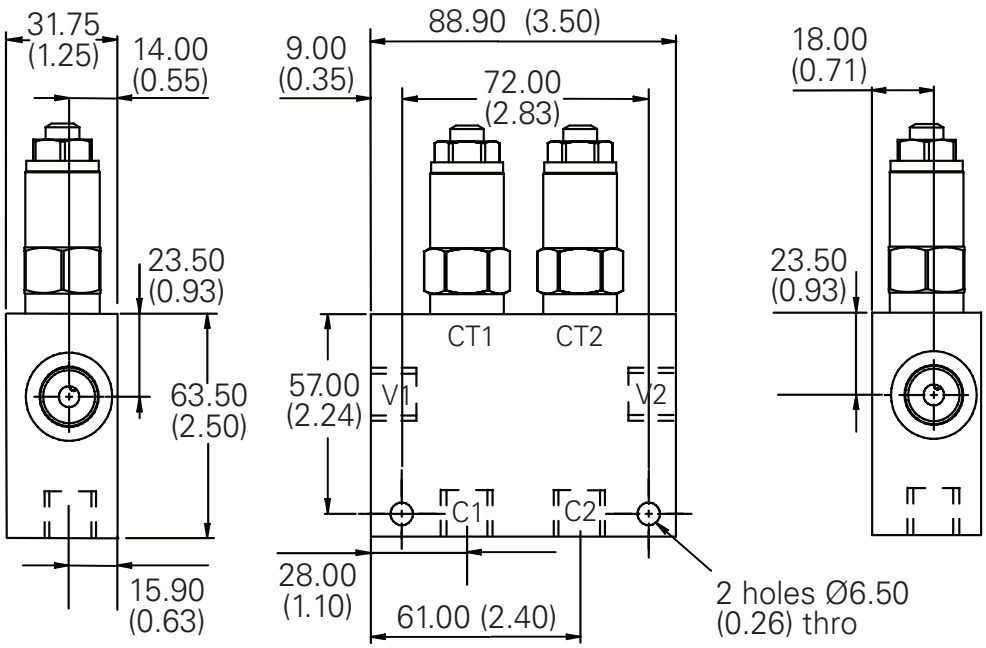
3/8" Ports



Dual valve: 1CEE24 (Internally Cross Piloted)

3/8" Ports





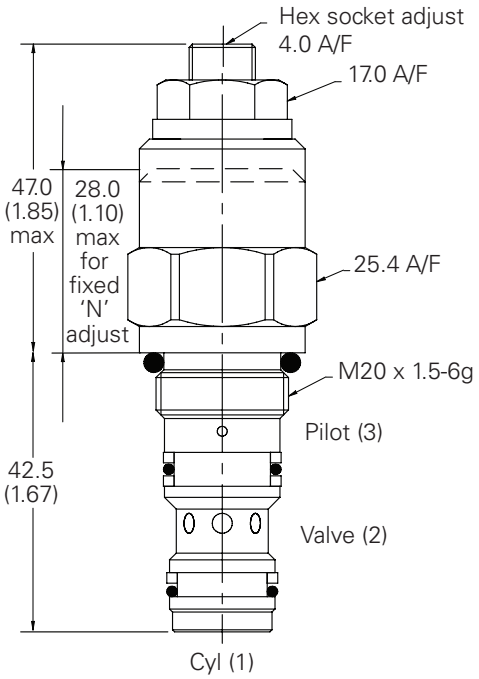
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

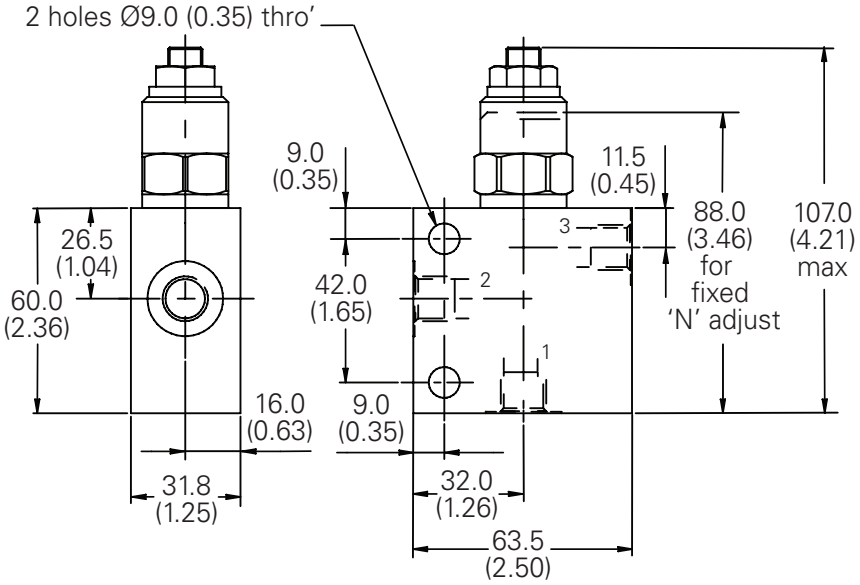
Dimensions

mm (inch)

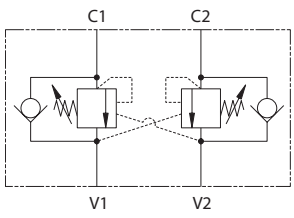
Cartridge only: 1CE30

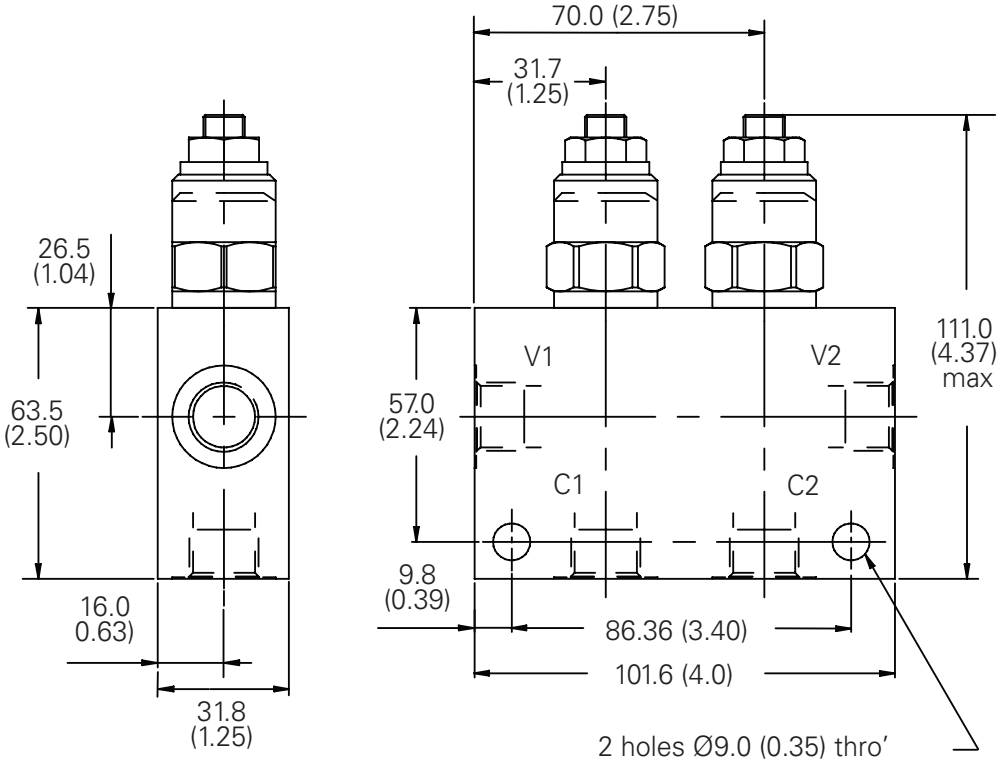


Single valve: 1CE35



Double valve: 1CEE34





F

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

1CE20/30/90/120/140/300 - Overcenter valve

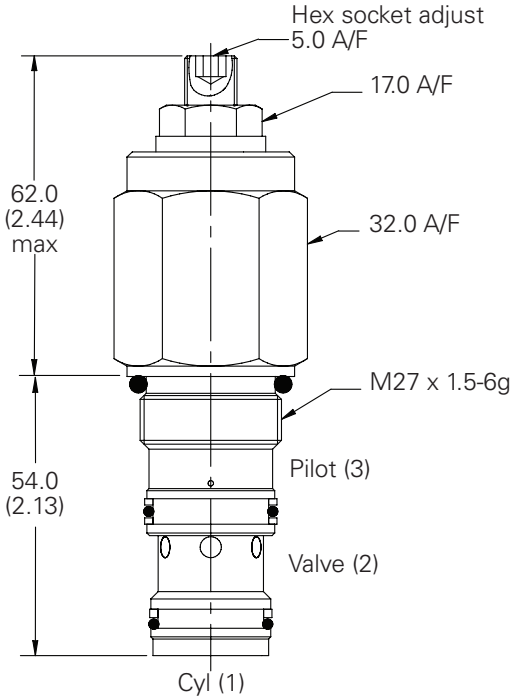
Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

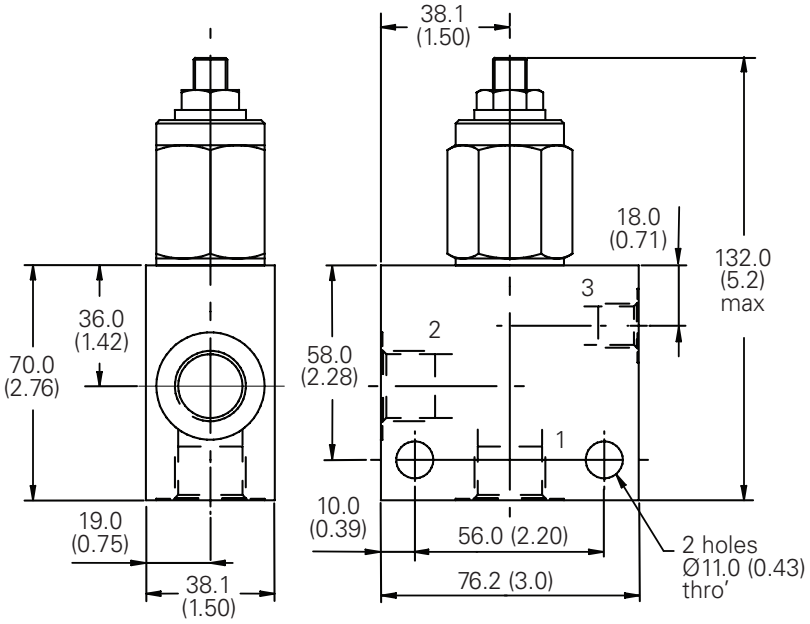
Dimensions

mm (inch)

Cartridge only: 1CE90

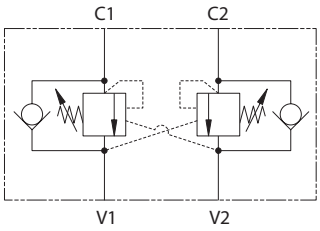


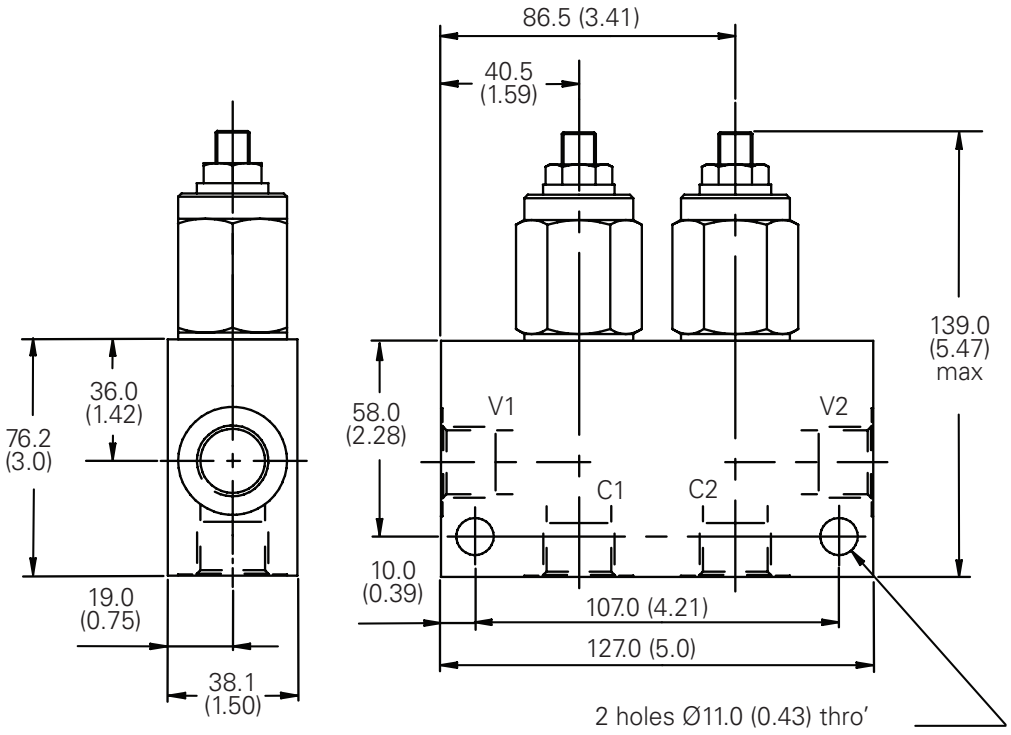
Single valve: 1CE95



Dual valve: 1CEE95

1/2" Ports
Internally Cross Piloted





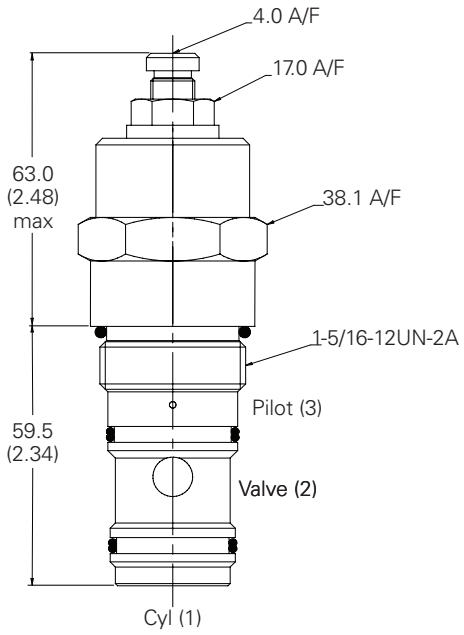
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

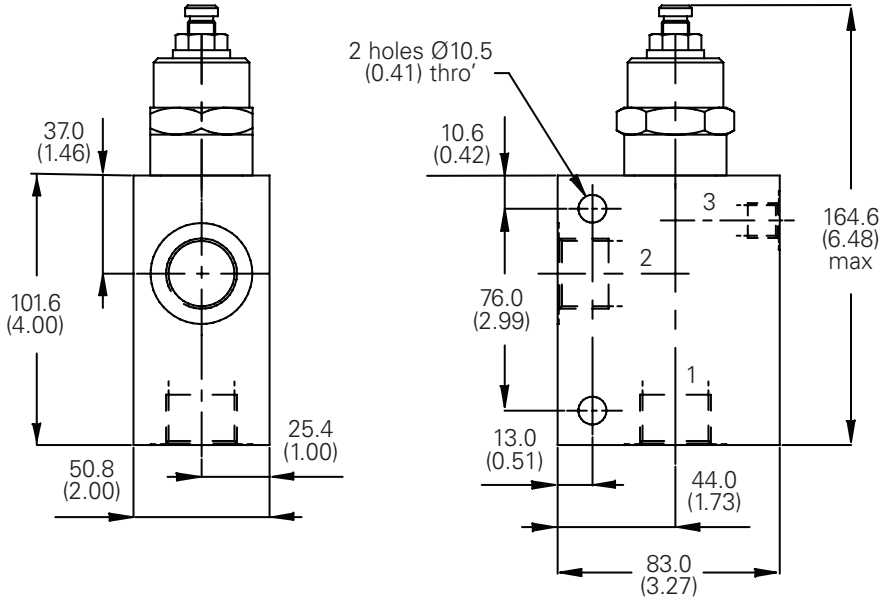
mm (inch)

Cartridge only: ICE120



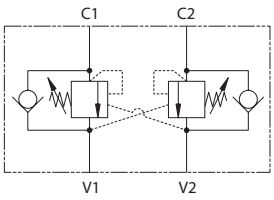
Single valve: 1CE150

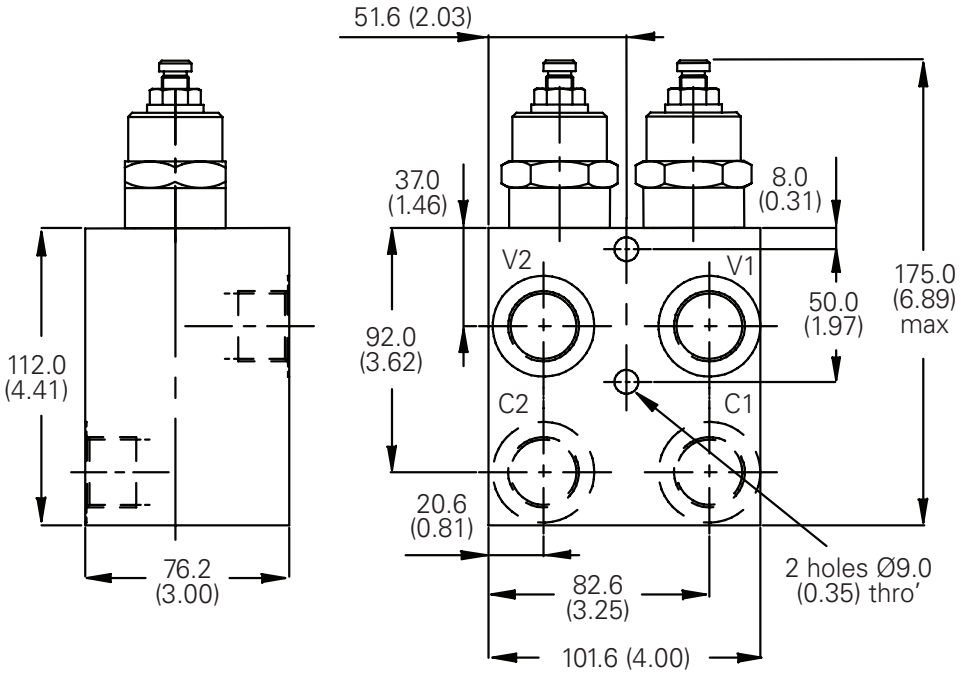
3/4" , 1" Ports



Dual valve: 1CEE150

3/4" Ports
Internally Cross Piloted





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

1CE20/30/90/120/140/300 - Overcenter valve

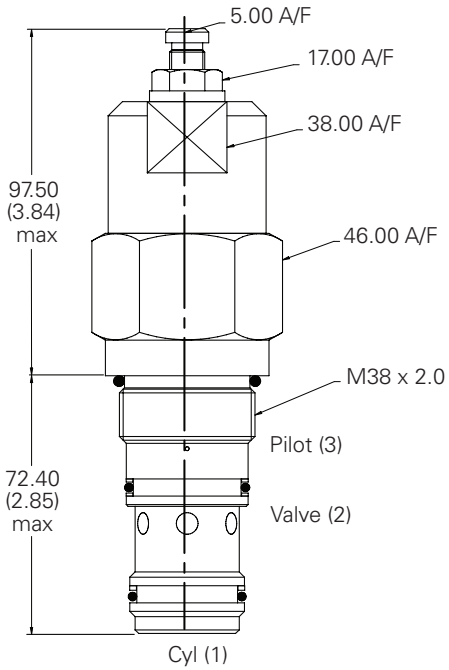
Pilot assisted relief with check

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

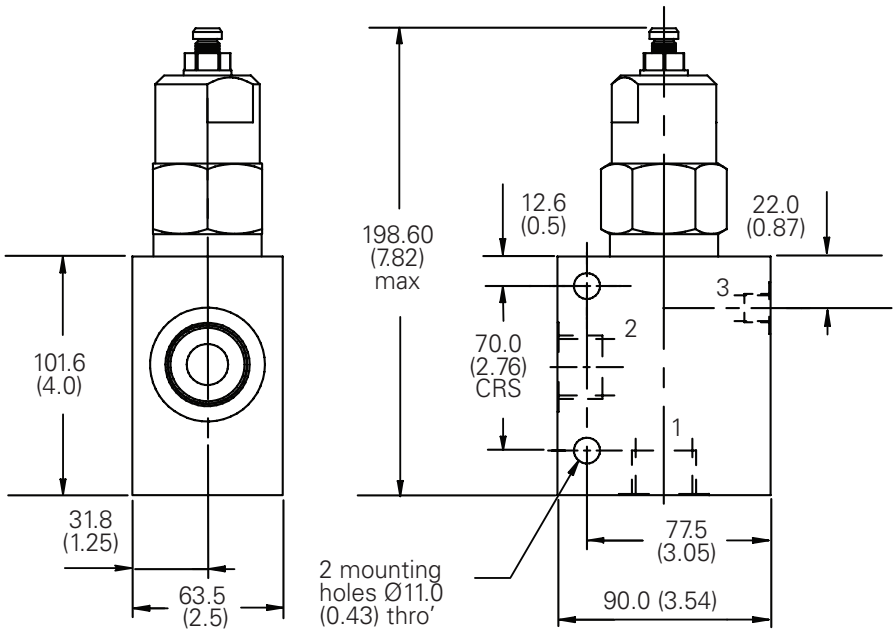
mm (inch)

Cartridge only: 1CE140



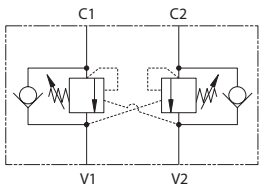
Single valve: 1CE145

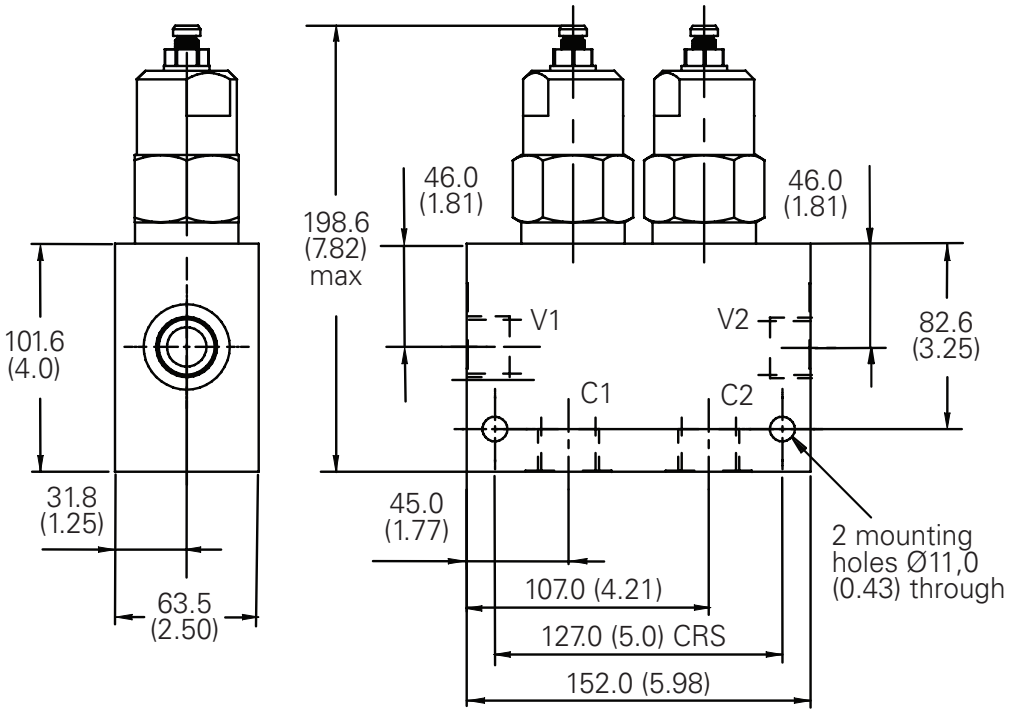
3/4" , 1" Ports



Dual valve: 1CEE145

1" Ports
Internally Cross Piloted





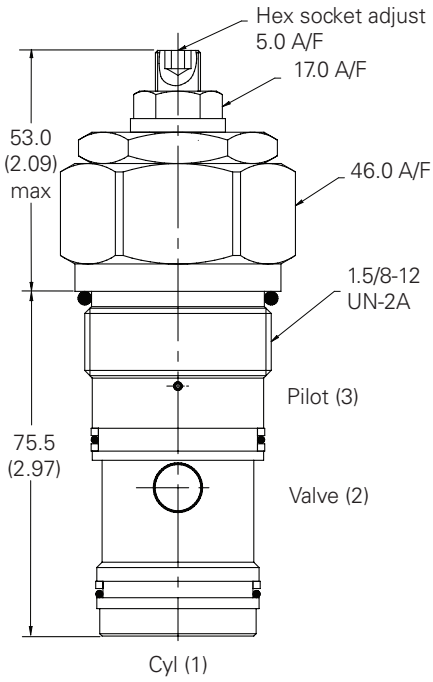
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE20: 20 L/min (5 USgpm) • 270 bar (4000 psi)
1CE30: 30L/min (8 USgpm) • 270 bar (4000 psi)
1CE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CE120: 120 L/min (32 USgpm) • 270 bar (4000 psi)
1CE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)
1CE300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

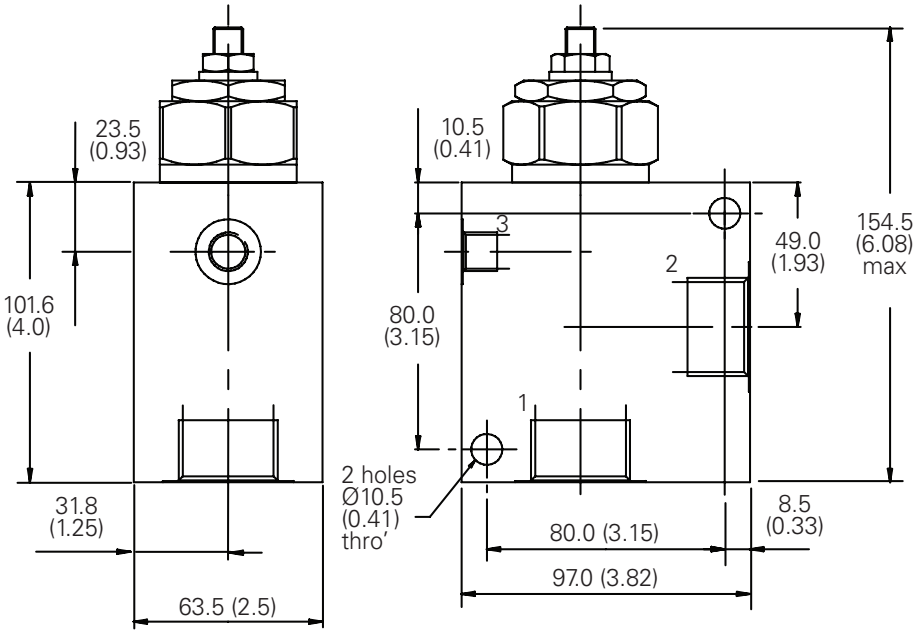
mm (inch)

Cartridge only: 1CE300



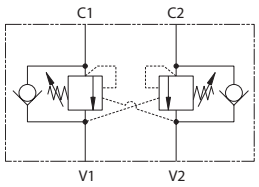
Single valve: 1CE350

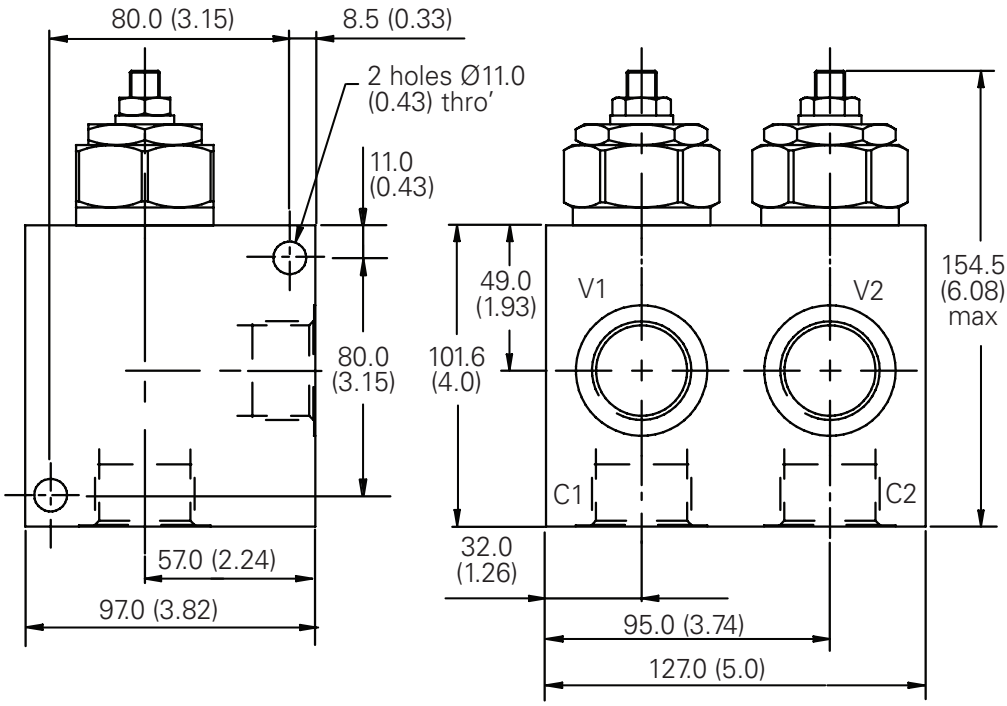
1 1/4" Ports



Dual valve: 1CEE350

1 1/4" Ports
Internally Cross Piloted



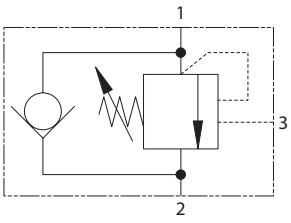


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEH30/90 - High pressure overcenter valve

Pilot assisted relief with check

1CEH30: 30L/min (8 USgpm) • 350 bar (5000 psi)
1CEH90: 90 L/min (23 USgpm) • 350 bar (5000 psi)



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:

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

Performance data

Ratings and specifications

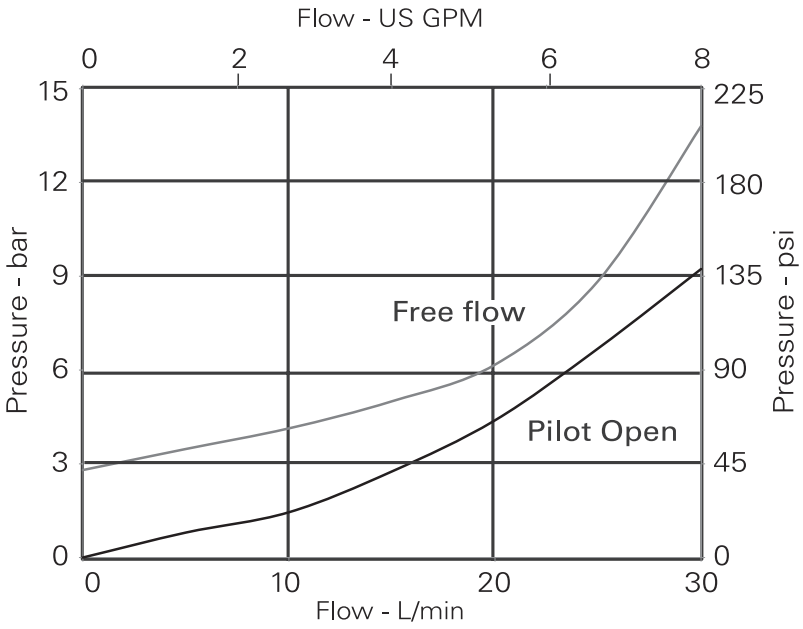
Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	1CEH30: 30 L/min (8 USgpm) 1CEH90: 90 L/min (23 USgpm)
Max relief pressure	430 bar (6240 psi)
Max load induced pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Steel. Add suffix "377".
Mounting position	Unrestricted
Cavity	1CEH30: A6610 (See Section M) 1CEH90: A12336 (See Section M)
Torque cartridge into cavity	68-75 Nm (50-56 lbs ft)
Weight - 1CEH30: 1CEH30 0.25 kg (0.55 lbs) 1CEH35 0.51 kg (1.12 lbs) 1CEEH34 1 kg (2.2 lbs)	Weight - 1CEH90: 1CEH90 0.6 kg (1.32 lbs) 1CEH95 1.66 kg (3.66 lbs) 1CEEH95 2.72 kg (6.00 lbs)
Seal kits - 1CEH30: 9900925-000 (Nitrile) 9900926-000 (Viton®)	Seal kits - 1CEH90: 9900927-000 (Nitrile) 9900928-000(Viton®)
Filtration	Cleanliness code 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	5 dpm - Leakage at 85% of Crack Pressure
Nominal viscosity range	5 to 500 cSt

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

Pilot Ratio	1CEH30	1CEH90
Best suited for extremely unstable applications such as long booms or flexible frameworks.	3:1	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	4:1

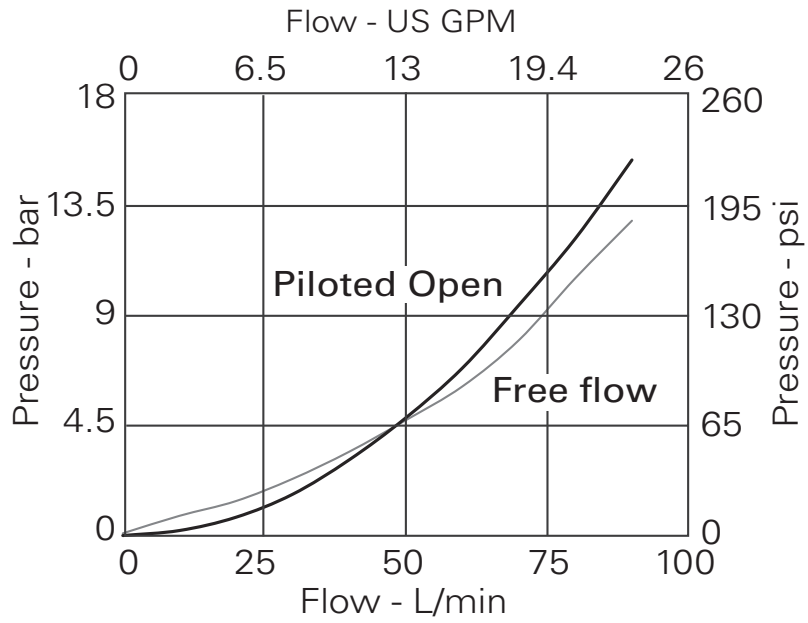
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Pressure drop -1CEH30



3:1 and 5:1 Version

Pressure drop - 1CEH90



4:1 Version

F

1CEH30/90 - High pressure overcenter valve

Pilot assisted relief with check

1CEH30: 30L/min (8 USgpm) • 350 bar (5000 psi)
1CEH90: 90 L/min (23 USgpm) • 350 bar (5000 psi)

Model code: 1CEH30

1CEH* – F 3W – 43 S ***

1 2 3 4 5 6

1 Function

1CEH30 - Cartridge Only

1CEH35 - Cartridge in body

1CEEH34 - Cartridges in dual body

2 Adjustment

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only	
		Steel single	Steel dual
3W	3/8" BSPP	B12823	B13803
8T	1/2" SAE	B11811	B11812

4 Pressure range

Note: Code based on pressure in bar.

43 - (3:1 and 5:1): 250-430 bar.
Std setting 350 bar.
Std setting made at 1 L/min

Note: Contact CSR for special pressure setting.

5 Seal material

S - Buna-N

SV - Viton

6 Pilot ratio

2 - 3:1

5 - 5:1

Model code: 1CEH90

1CEH* – F 4W – 43 S 4**

1 2 3 4 5 6

1 Function

1CEH90 - Cartridge Only

1CEH95 - Cartridge and Body

1CEEH95 - Cartridges and Dual Body

2 Adjustment means

F - Screw Adjustment

3 Port sizes

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

4 Pressure range

Note: Code based on pressure in bar.

43 - (4:1) 275 - 430 bar.
Std setting 350 bar

Std setting made at 1 L/min

Note: Contact CSR for special pressure setting requirement

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

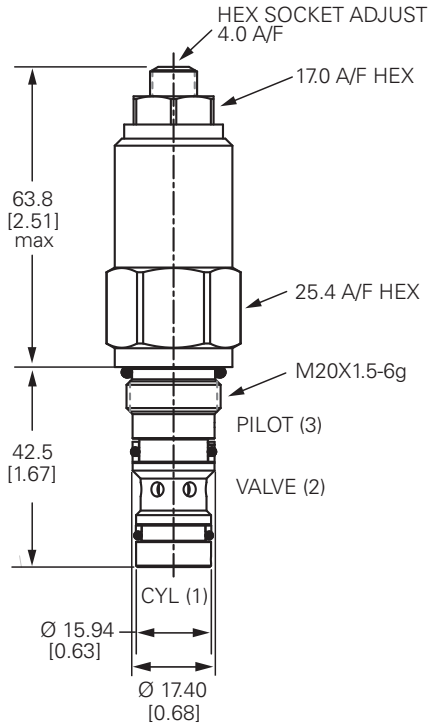
Other ratios available upon request

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

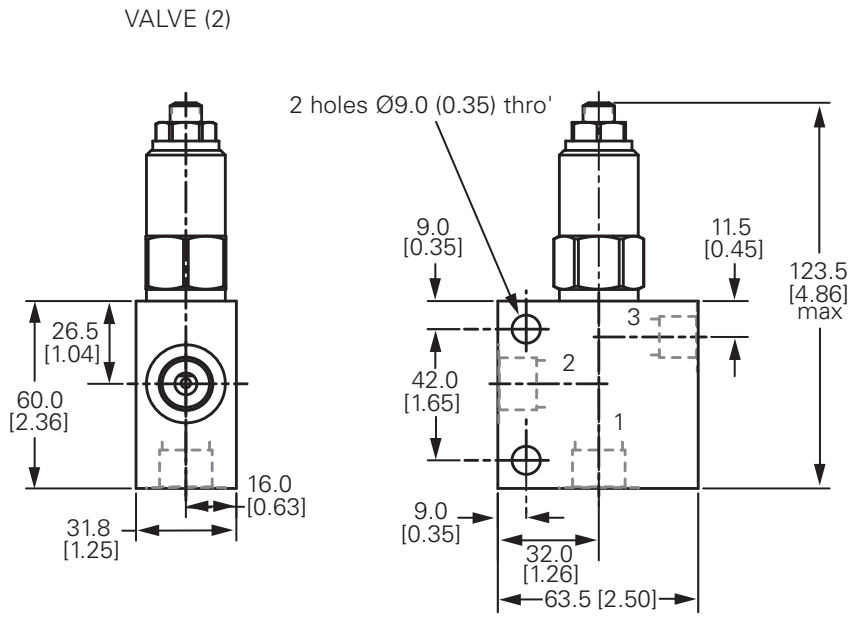
Dimensions

mm (inch)

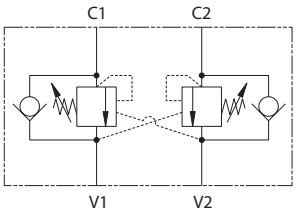
Cartridge only: 1CEH30

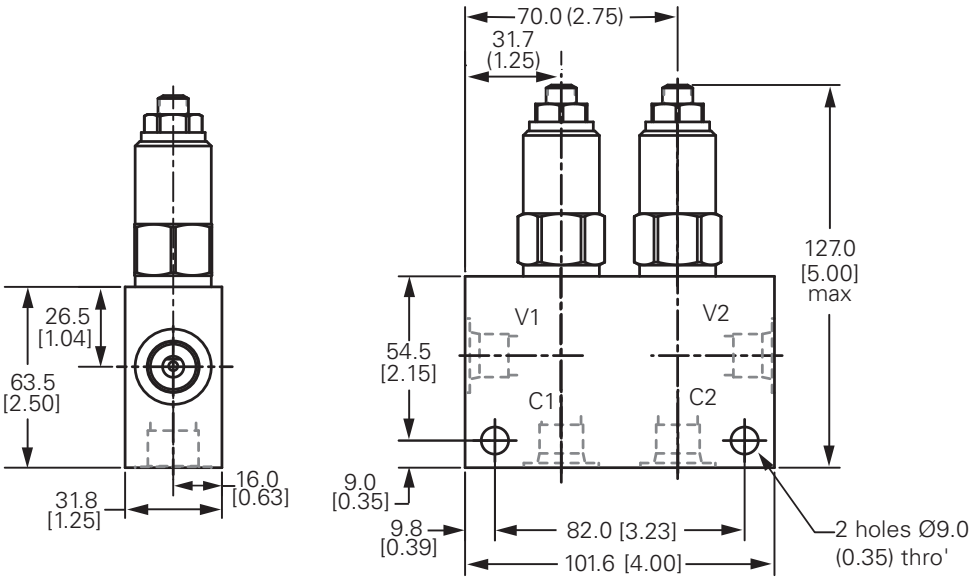


Single valve: 1CEH35



Double valve: 1CEE34





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

1CEH30/90 - High pressure overcenter valve

Pilot assisted relief with check

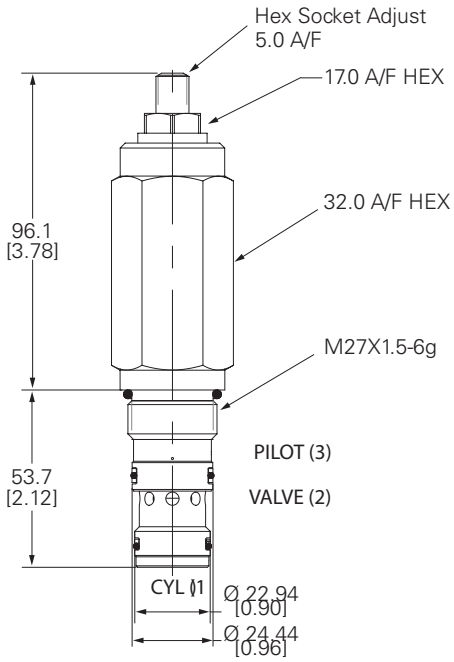
30L/min (8 USgpm) • 350 bar (5000 psi)

90 L/min (23 USgpm) • 350 bar (5000 psi)

Dimensions

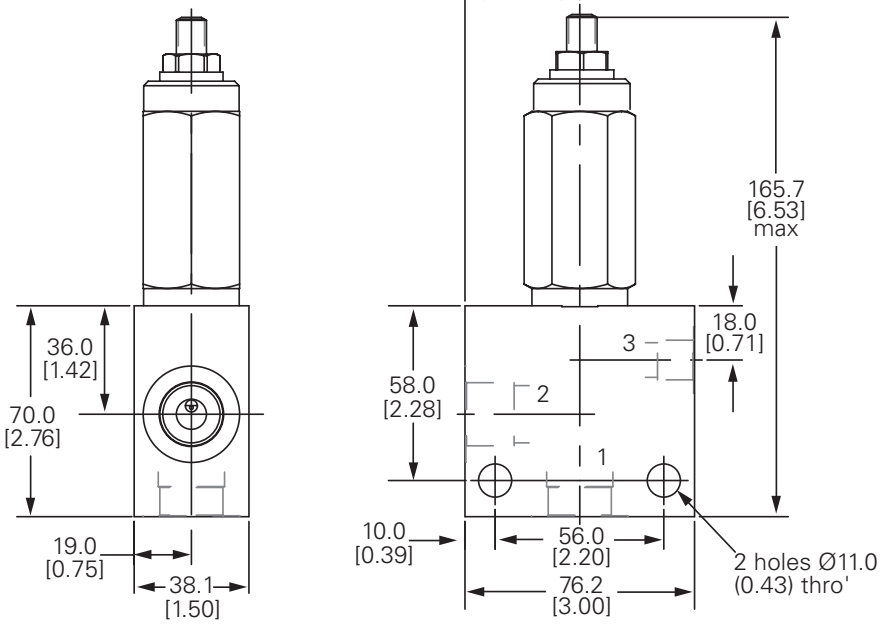
mm (inch)

Cartridge only: 1CEH90



Single valve: 1CEH95

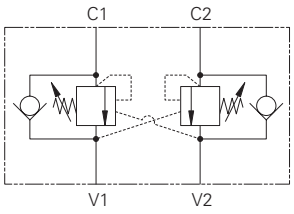
1/2" Ports

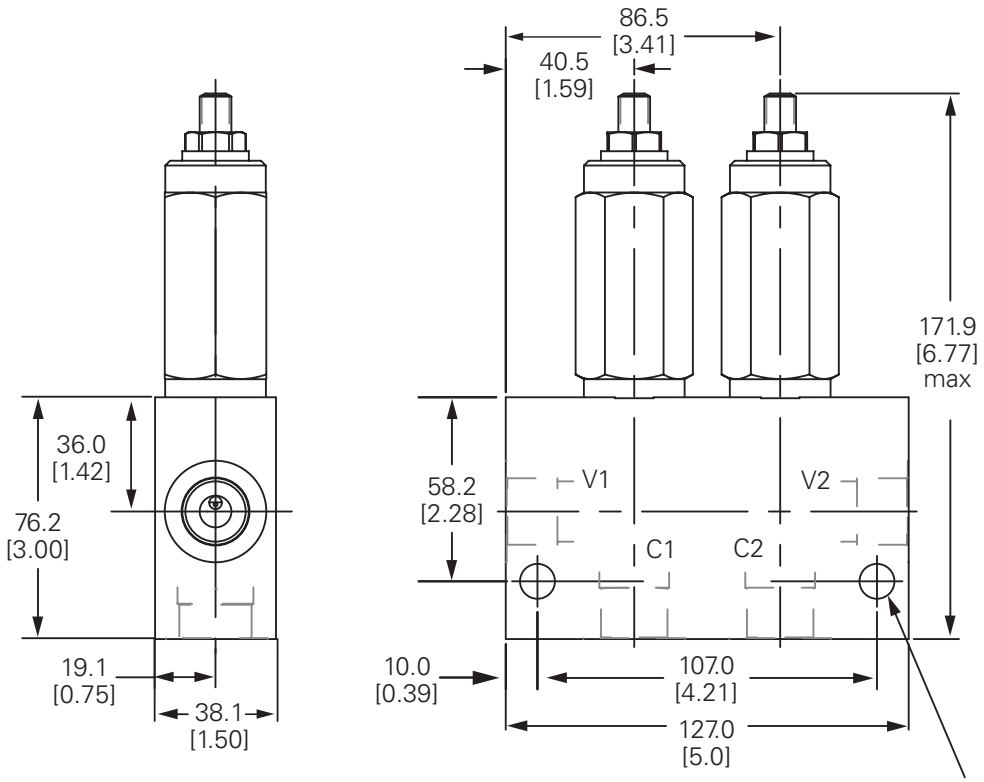


Dual valve: 1CEEH95

1/2" Ports

Internally Cross Piloted



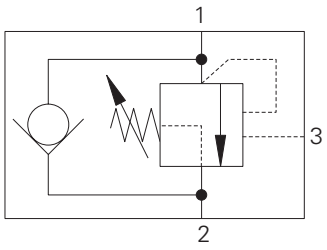


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CER30/90/140 - Overcenter valve

Part balanced, pilot assisted relief with check

1CER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CER140: 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:

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

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	1CER30: 30 L/min (8 USgpm) 1CER90: 90 L/min (23 USgpm) 1CER140: 140 L/min (37 USgpm)
Max relief pressure	1CER30: 350 bar (5000 psi) 1CER90: 350 bar (5000 psi) 1CER140: 420 bar (6090 psi)
Max load induced pressure	1CER30: 270 bar (4000 psi) 1CER90: 270 bar (4000 psi) 1CER140: 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	1CER30: A6610 (See Section M) 1CER90: A12336 (See Section M) 1CER140: A20081 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight - 1CER30: 1CER30 0.15 kg (0.33 lbs) 1CER35 0.41 kg (0.90 lbs) 1CEER34 0.90 kg (1.98 lbs) Weight - 1CER90: 1CER90 29 kg (.63 lbs) 1CER95 1.35 kg (2.97 lbs) 1CEER95 2.10 kg (4.62 lbs)	Weight - 1CER140: 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 kits	1CER30: SK395 (Nitrile), SK395V (Viton®) 1CER90: SK633 (Nitrile), SK633V (Viton®) 1CER140: SK1108 (Nitrile), SK1108V (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.

Pilot Ratio	1CER30	1CER90	1CER140
Best suited for extremely unstable applications such as long booms or flexible frameworks.	2.5:1	-	-
Best suited for applications where load varies and machine structure can induce instability.	4:1	4:1	4:1
Best suited for applications where the load remains relatively constant.	-	-	6:1

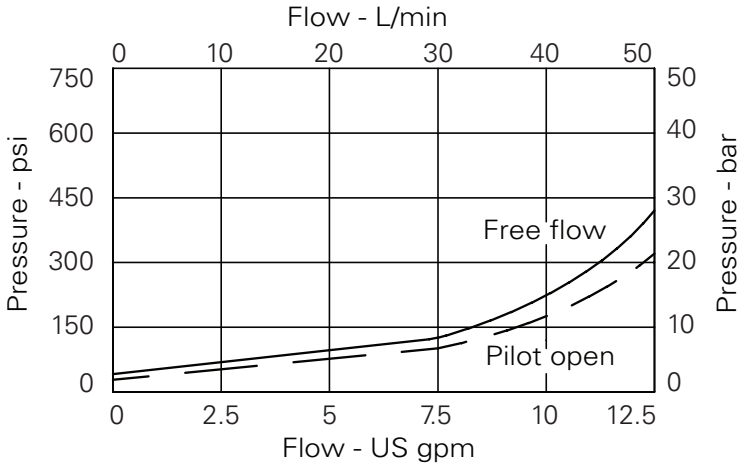
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CER30/90/140 - Overcenter valve

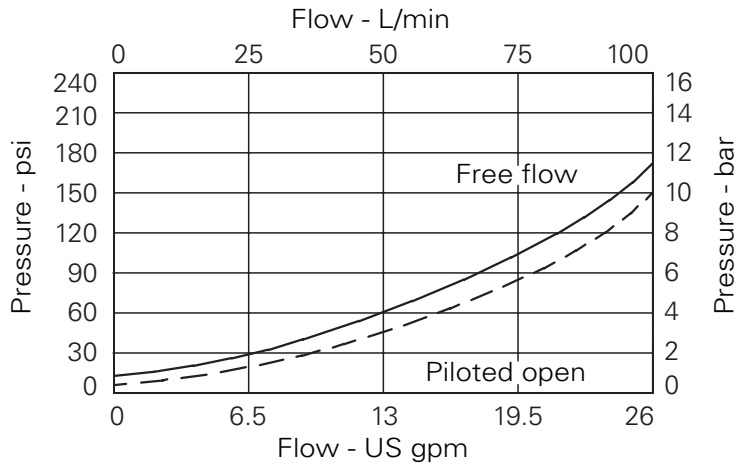
Part balanced, pilot assisted relief with check

1CER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

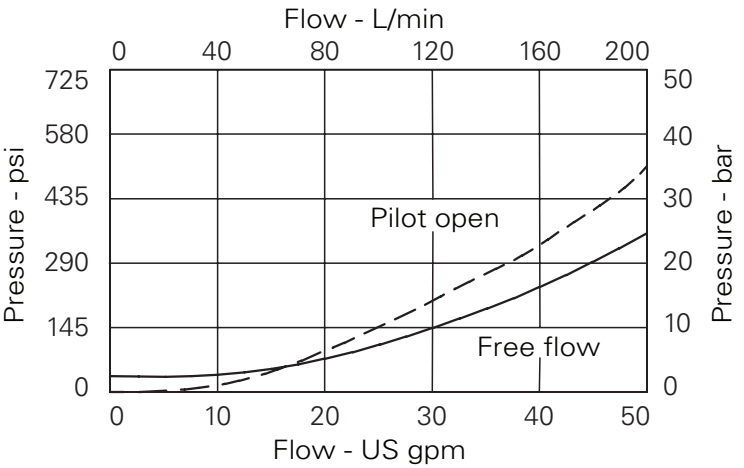
Pressure drop - 1CER30



Pressure drop - 1CER90



Pressure drop - 1CER140



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

1CER30/90/140 - Overcenter valve

Part balanced, pilot assisted relief with check
1CER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Model code: 1CER30

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

Model code: 1CER90

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

F

1CER30/90/140 - Overcenter valve

Part balanced, pilot assisted relief with check

1CER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Model code: 1CER140

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

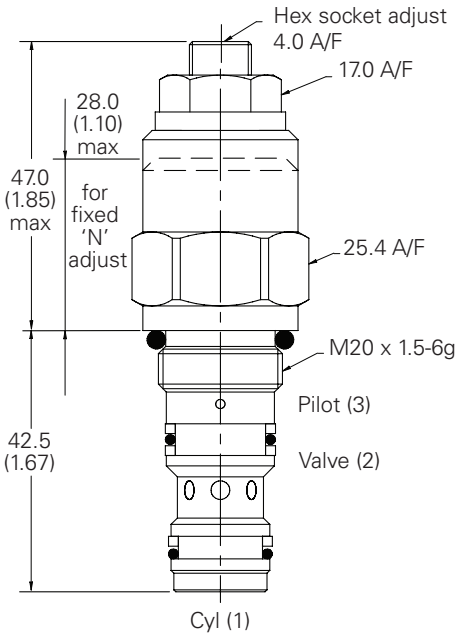
F

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

Dimensions

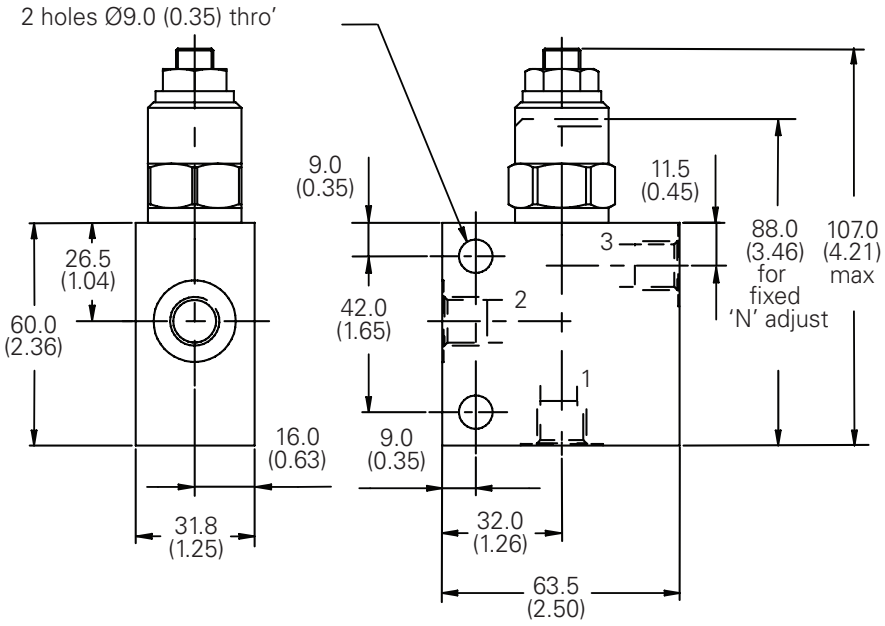
mm (inch)

Cartridge only: 1CER30



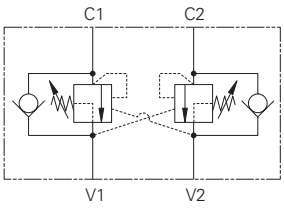
Single valve: 1CER35

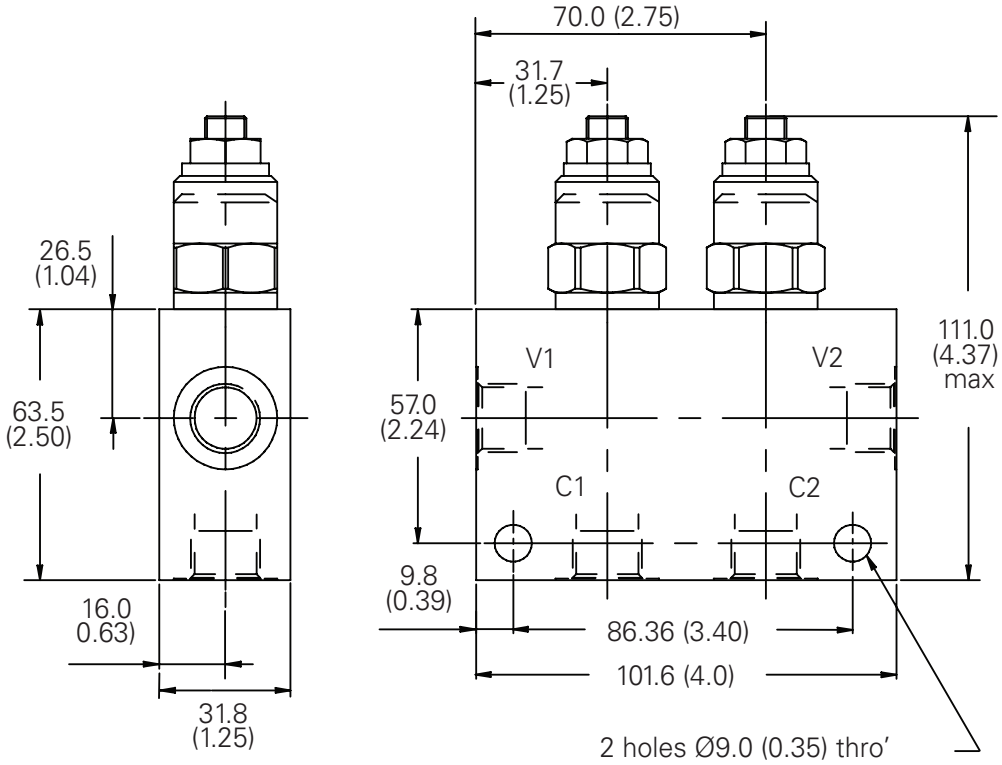
3/8". 1/2" Ports



Dual valve: 1CEER34

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





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

1CER30/90/140 - Overcenter valve

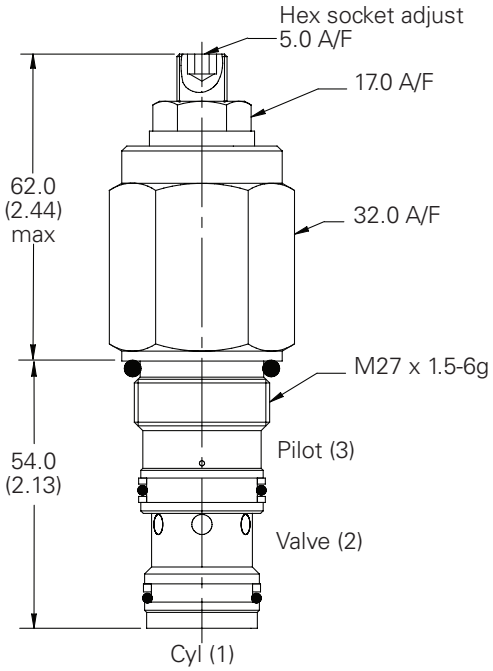
Part balanced, pilot assisted relief with check

1CER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Dimensions

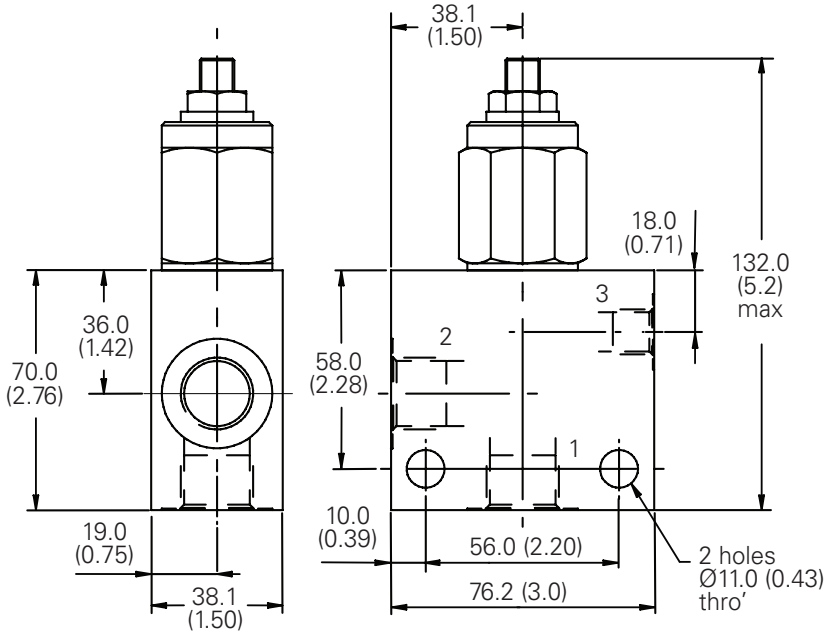
mm (inch)

Cartridge only: 1CER90



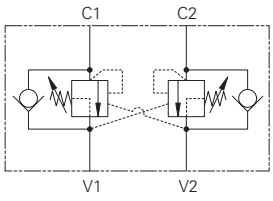
Single valve: 1CER95

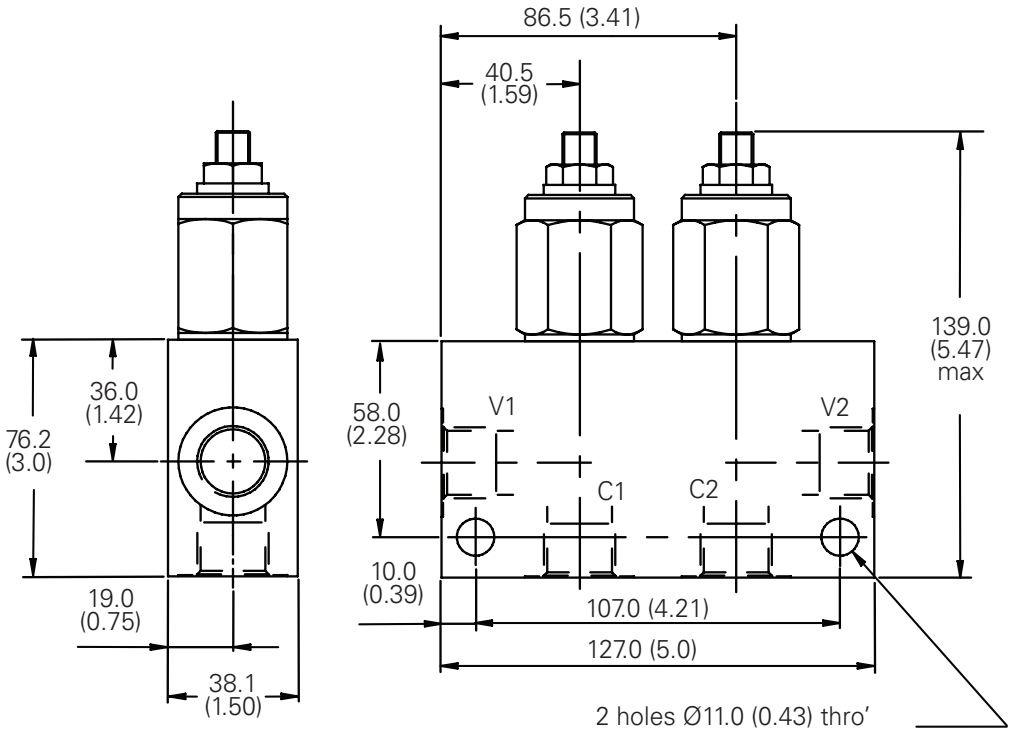
1/2" Ports



Dual valve: 1CEER95

1/2" Ports
Internally Cross Piloted



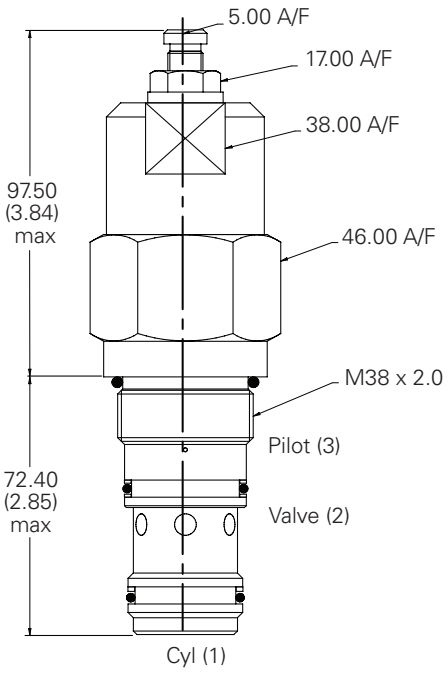


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Dimensions

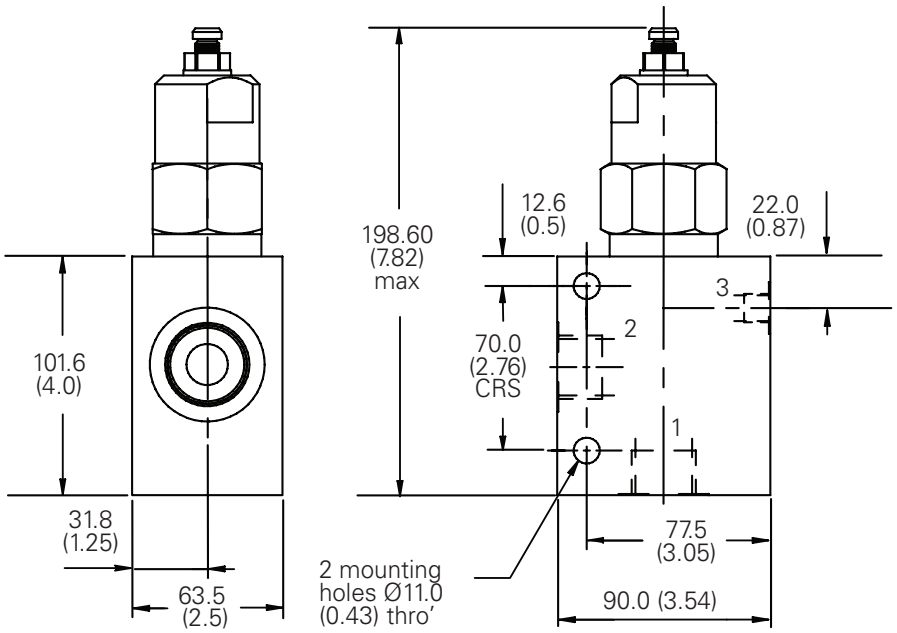
mm (inch)

Cartridge only: 1CER140



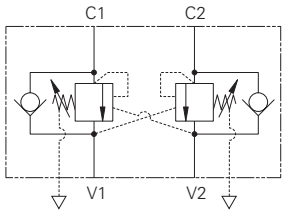
Single valve: 1CER145

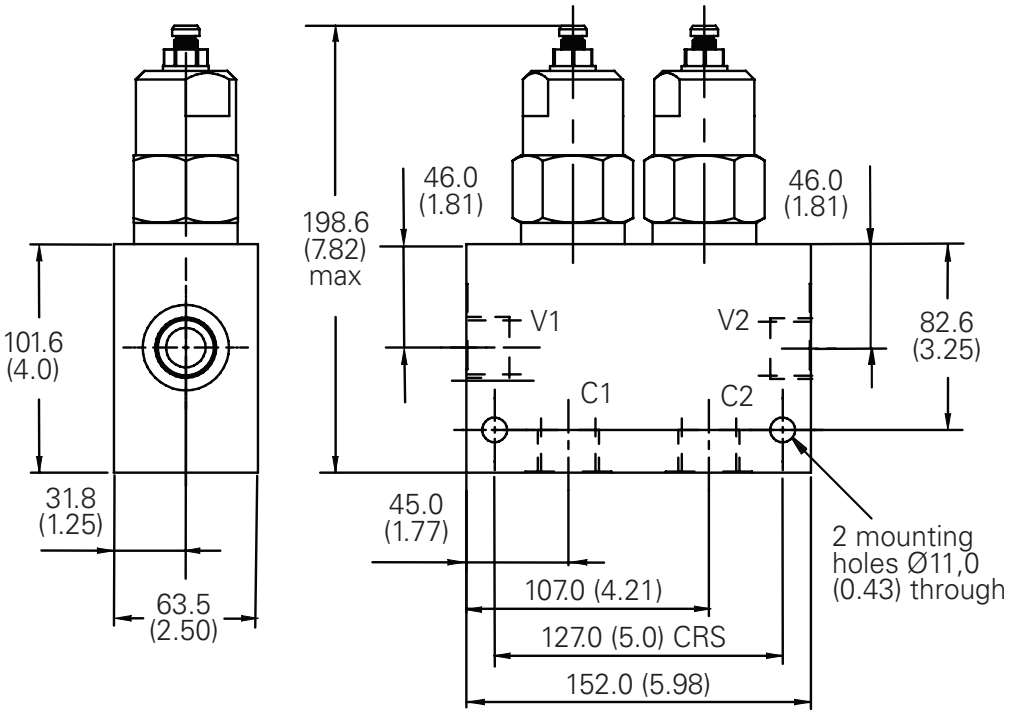
3/4" , 1" Ports



Dual valve: 1CEER145

1" Ports
Internally Cross Piloted





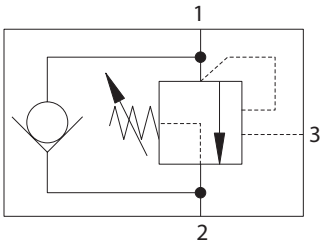
F

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

1CERH30/90 - High pressure overcenter valve

Pilot assisted relief with check

1CERH30: 30L/min (8 USgpm) • 350 bar (5000 psi)
1CERH90: 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. 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:

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

Performance data

Ratings and specifications

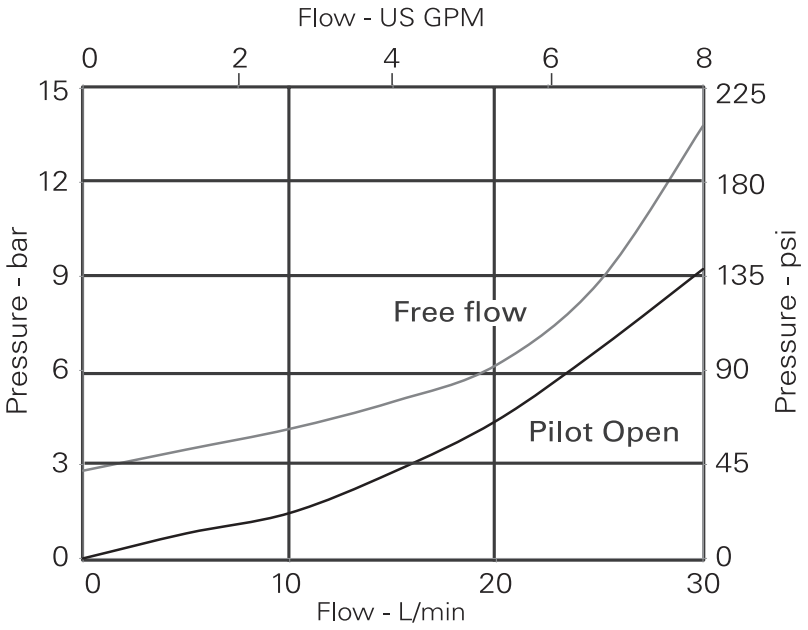
Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)	
Rated flow	1CERH30: 30 L/min (8 USgpm) 1CERH90: 90 L/min (23 USgpm)
Max relief pressure	430 bar (6240 psi)
Max load induced pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Standard housing material	Steel. Add suffix "377".
Mounting position	Unrestricted
Cavity	1CERH30: A6610 (See Section M) 1CERH90: A12336 (see Section M)
Torque cartridge into cavity	68-75 Nm (50-56 lbs ft)
Weight - 1CERH30: 1CERH30 0.2 kg (0.55 lbs) 1CERH35 0.51 kg (1.12 lbs) 1CEERH34 1.0 kg (2.2 lbs)	Weight - 1CERH90: 1CERH90 0.6 kg (1.32 lbs) 1CERH95 1.66 kg (3.66 lbs) 1CEERH95 2.72 kg (6.00 lbs)
Seal kits	1CERH30: 9900925-000 (Nitrile), 9900926-000 (Viton®) 1CERH90: 9900927-000 (Nitrile), 9900928-000 (Viton®)
Filtration	Cleanliness code 18/13 (25 micron nominal)
Temperature range	-30°C to +90°C (-22° to +194°F)
Internal leakage	5 dpm @ 85% of Cracking
Nominal viscosity range	5 to 500 cSt

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

Pilot Ratio	1CERH30	1CERH90
Best suited for extremely unstable applications such as long booms or flexible frameworks.	3:1	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	4:1

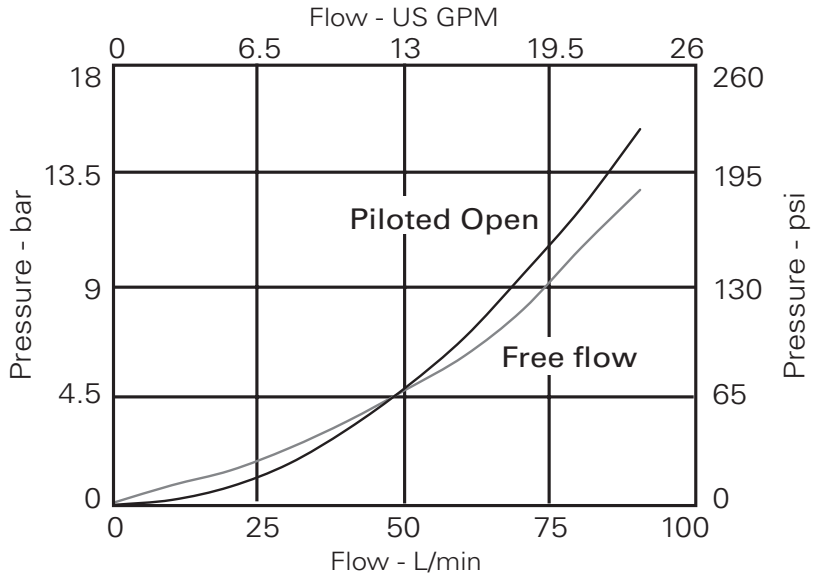
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Pressure drop - 1CERH30



3:1 and 5:1 version

Pressure drop - 1CERH90



F

1CERH30/90 - High pressure overcenter valve

Pilot assisted relief with check

1CERH30: 30L/min (8 USgpm) • 350 bar (5000 psi)
1CERH90: 90 L/min (23 USgpm) • 350 bar (5000 psi)

Model code: 1CERH30

1CERH** – F 3W – 43 S ***

1 2 3 4 5 6

1 Basic code

1CERH30 - Cartridge only

1CERH35 - Cartridge and body

1CEER34 - Cartridges and dual body

2 Adjustment

F - Screw adjustment

3 Port sizes - bodied valves only

Code	Port size	Housing number	
Body Only		**Steel single**	**Steel dual**
3W	3/8" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B12823	B13803
8T	1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B11811	B11812

4 Pressure range

Note: Code based on pressure in bar.

43 - 250-430 bar. Std setting 350 bar
Std setting made at 1 L/min

Note: Contact CSR for special pressure setting.

5 Seals

S - Nitrile

SV - Viton

6 Pilot ratio

3 - 3:1

5 - 5:1

Model code: 1CERH90

1CERH* – F 4W – 43 S 4**

1 2 3 4 5 6

1 Function

1CERH90 - Cartridge only

1CERH95 - Cartridge and body

1CEERH95 - Cartridges and body

2 Adjustment

F - Screw adjustment

3 Port size

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

4 Pressure range

Note: Code based on pressure in bar.

43 - (4:1) 275-430 bar. Std setting 350 bar

Std setting made at 1L/min

Note: Contact CSR for special pressure setting requirement

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

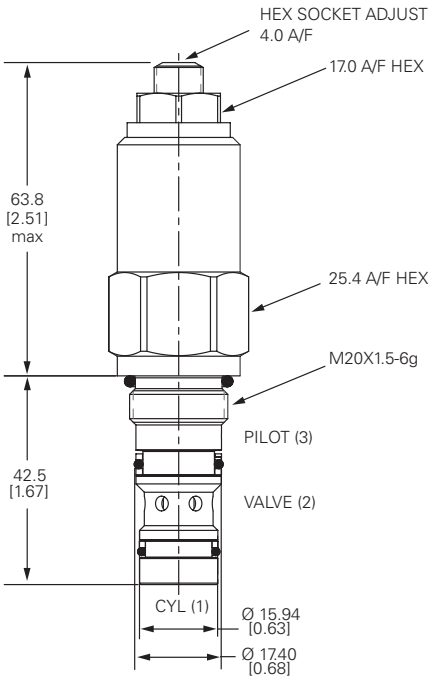
4 - 4:1 Other ratios available upon request

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

Dimensions

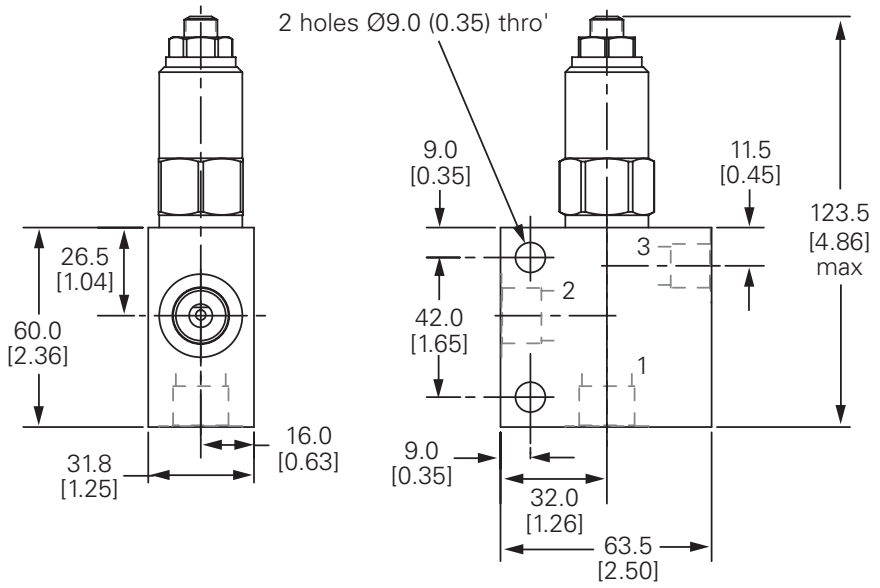
mm (inch)

Cartridge only: 1CERH30



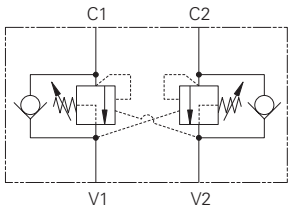
Single valve: 1CERH35

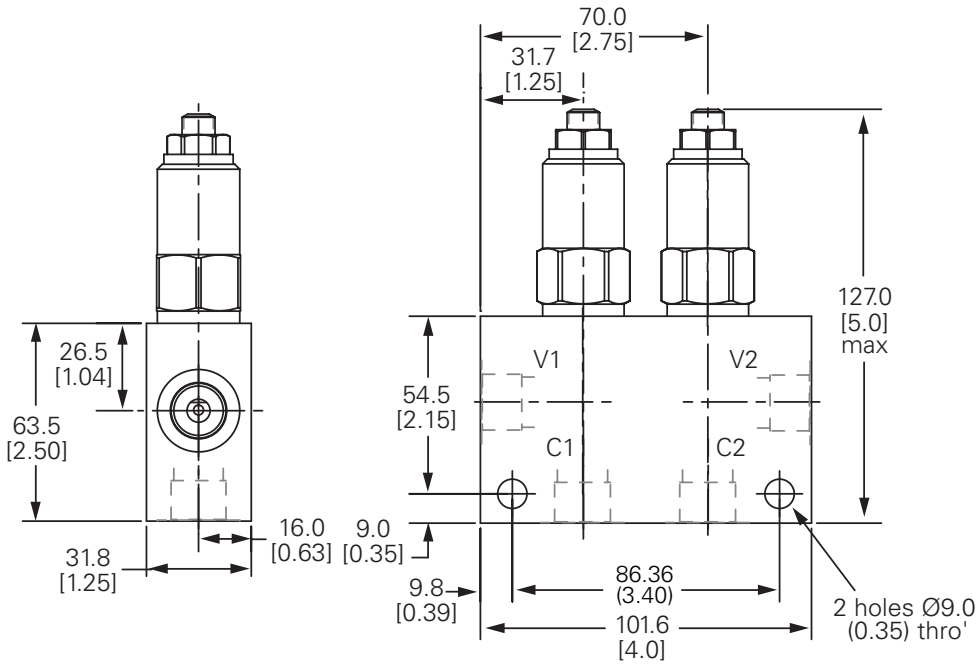
3/8". 1/2" Ports



Dual valve: 1CEERH34

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





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

1CERH30/90 - High pressure overcenter valve

Pilot assisted relief with check

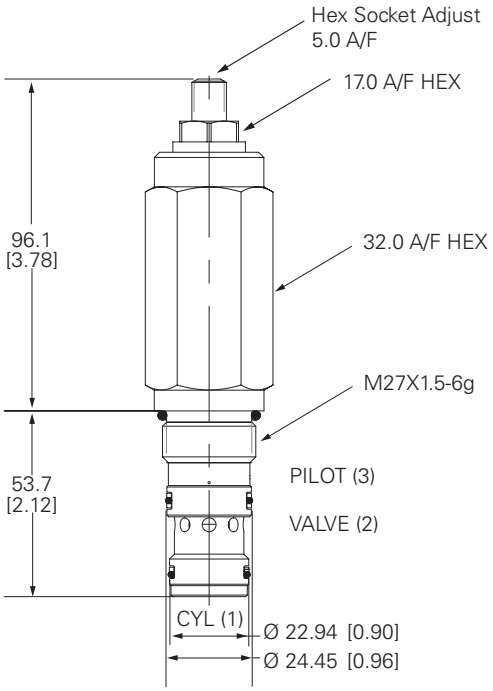
1CERH30: 30L/min (8 USgpm) • 350 bar (5000 psi)

1CERH90: 90 L/min (23 USgpm) • 350 bar (5000 psi)

Dimensions

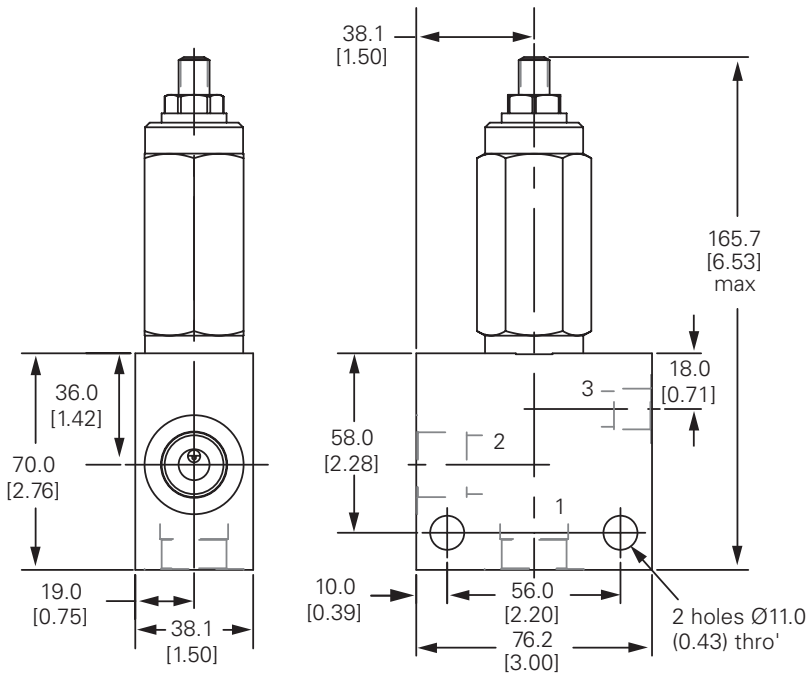
mm (inch)

Cartridge only: 1CERH90



Single valve: 1CERH95

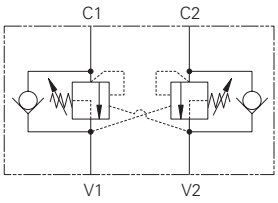
1/2" Ports

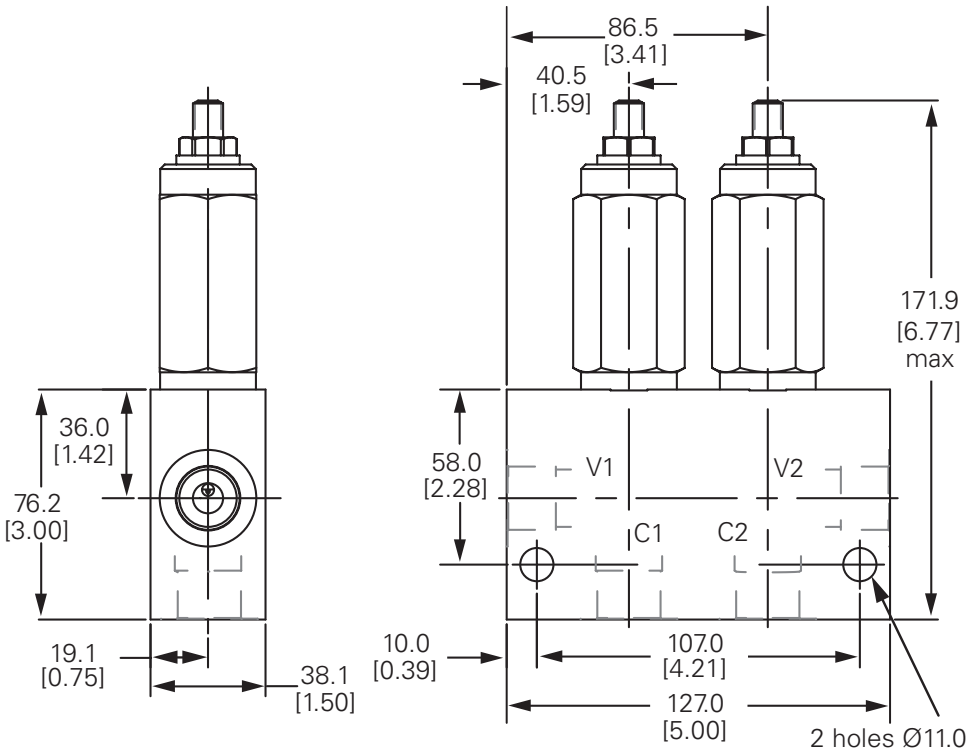


Dual valve: 1CEERH95

1/2" Ports

Internally Cross Piloted



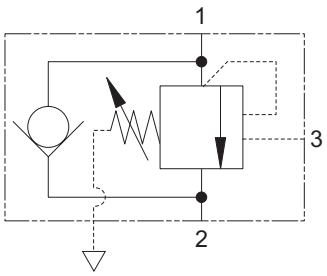


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEB30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 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:

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

Performance data

Ratings and specifications

Figures based on: Oil Tem = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	
1CEB30: 30 L/min (8 USgpm)	1CEB120: 120 L/min (32 USgpm)
1CEB90: 90 L/min (23 USgpm)	1CEB300: 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	Aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	
1CEB30: A6610 (See Section M)	1CEB120: A877 (See Section M)
1CEB90: A12336 (see Section M	1CEB300: A6935 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight - 1CEB30:	Weight -1CEB120:
1CEB30 0.14 kg (0.30 lbs)	1CEB120 0.59 kg (1.30 lbs)
1CEB35 0.40 kg (0.88 lbs)	1CEB150 1.46 kg (3.20 lbs)
1CEEB34 0.88 kg (1.94 lbs)	1CEEB150 2.58 kg (5.70 lbs)
Weight - 1CEB90:	Weight -1CEB300:
1CEB90: .29 kg (.63 lbs)	1CE300 0.91 kg (2.00 lbs)
1CEB95: 1.35 kg (2.97 lbs)	1CE350 2.71 kg (5.96 lbs)
1CEEB95: 2.10 kg (4.62 lbs)	1CEE350 5.42 kg (11.92 lbs)
Seal kit number	
1CEB30: SK395 (Nitrile, SK395V (Viton®)	1CEB120: SK417 (Nitrile), SK417V (Viton®)
1CEB90: SK634 (Nitrile), SK634V (Viton®)	1CEB300: SK686 (Nitrile), SK686V (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.

Pilot Ratio	1CEB30	1CEB90	1CEB120	1CEB300
Best suited for applications where load varies and machine structure can induce instability.	5.1:1	4:1	3:1	3:1
Best suited for applications where the load remains relatively constant.	-	-	8:1	8:1

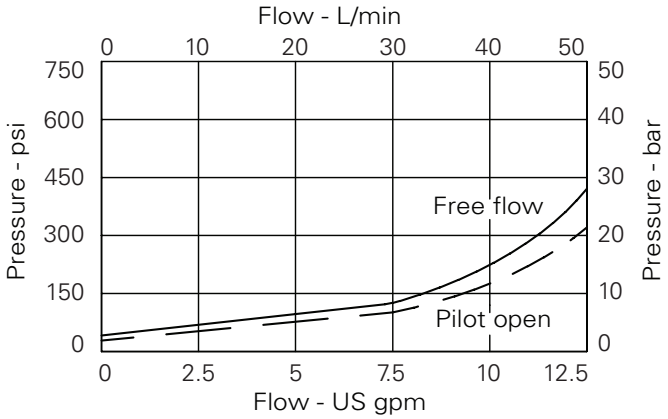
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEB30/90/120/300 - Overcenter valve

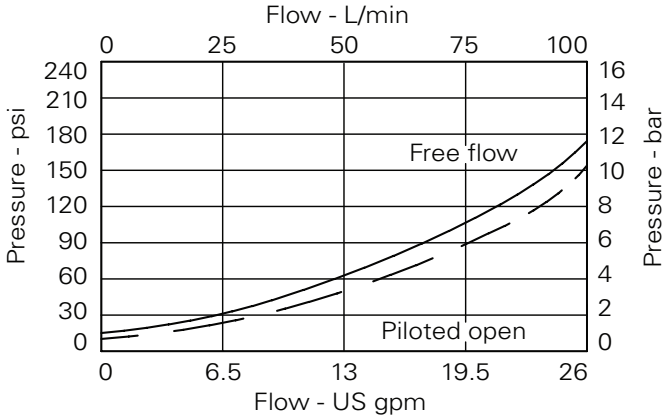
Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

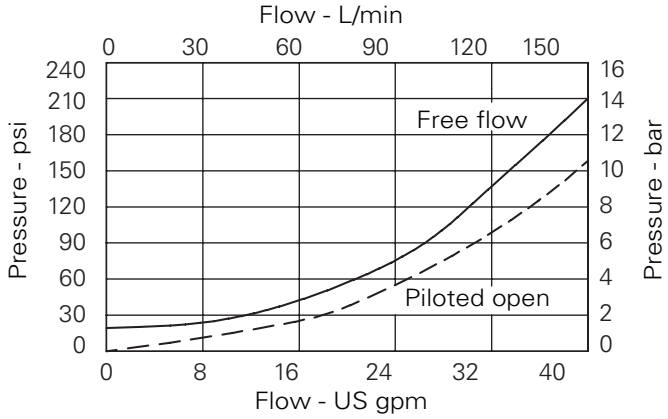
Pressure drop - 1CEB30



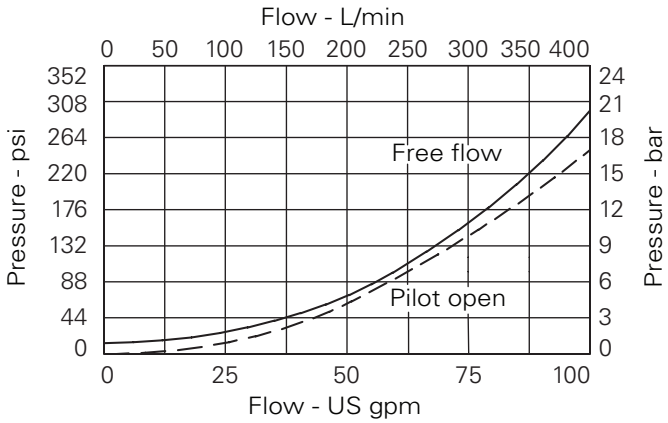
Pressure drop - 1CEB90



Pressure drop - 1CEB120



Pressure drop - 1CEB300



F

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

1CEB30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEB30

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

Model code: 1CEB90

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

F

1CEB30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEB120 **1CE***** – P 6W – 35 S 3**

1 2 3 4 5 6

1 Function

1CEB120 - Cartridge only

1CEB150 -Cartridge in body

1CEEB150 - Cartridges in dual body

2 Adjustment means

P - Leakproof 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	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)

P - Polyurethane/Nitrile (For arduous applications)

6 Pilot ratio

3 - 3:1 (Standard)

8 - 8:1

F

Model code: 1CEB300 **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)

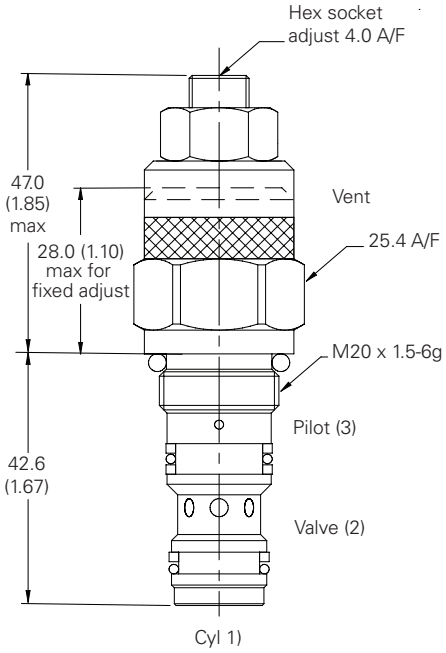
8 - 8:1

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

Dimensions

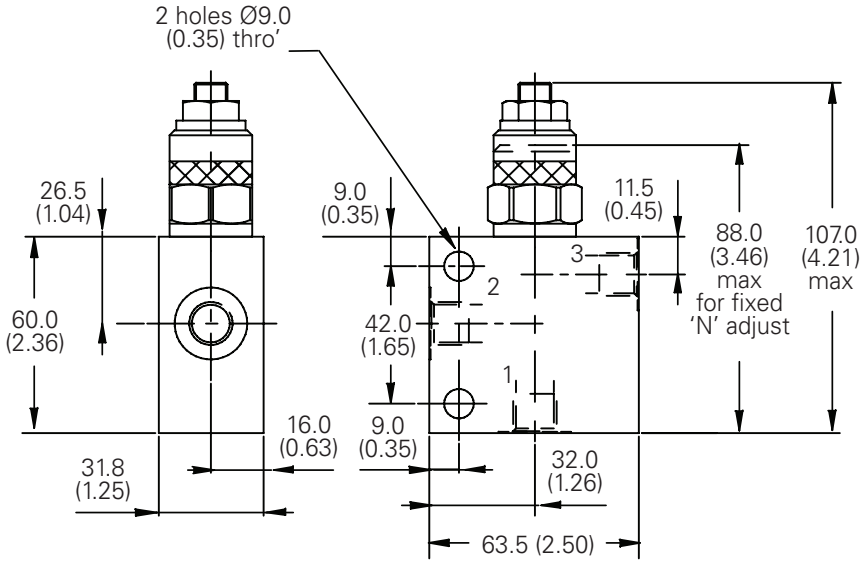
mm (inch)

Cartridge only: 1CEB30



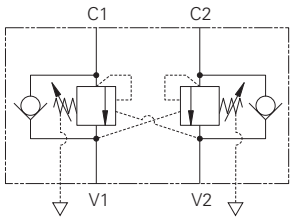
Single valve: 1CEB35

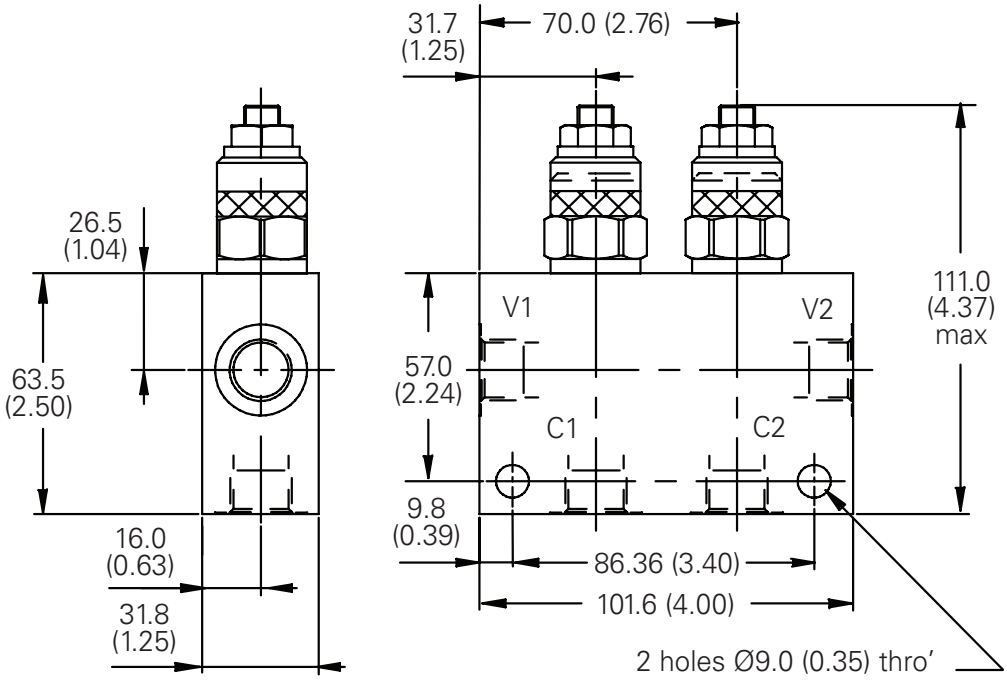
3/8". 1/2" Ports



Dual valve: 1CEEB34

3/8". 1/2" Ports
Internally Cross Piloted





F

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

1CEB30/90/120/300 - Overcenter valve

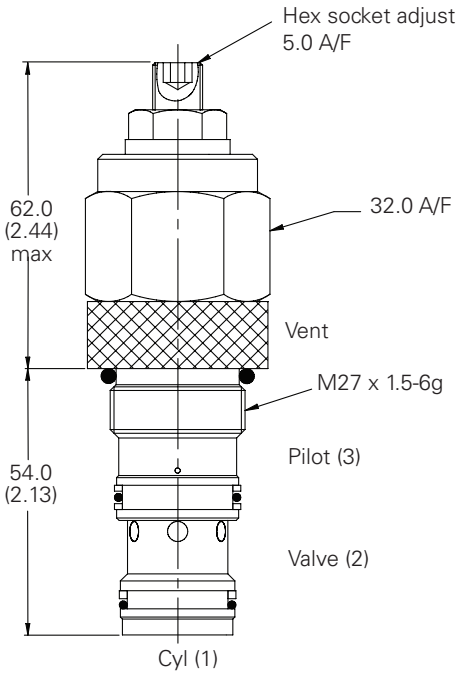
Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

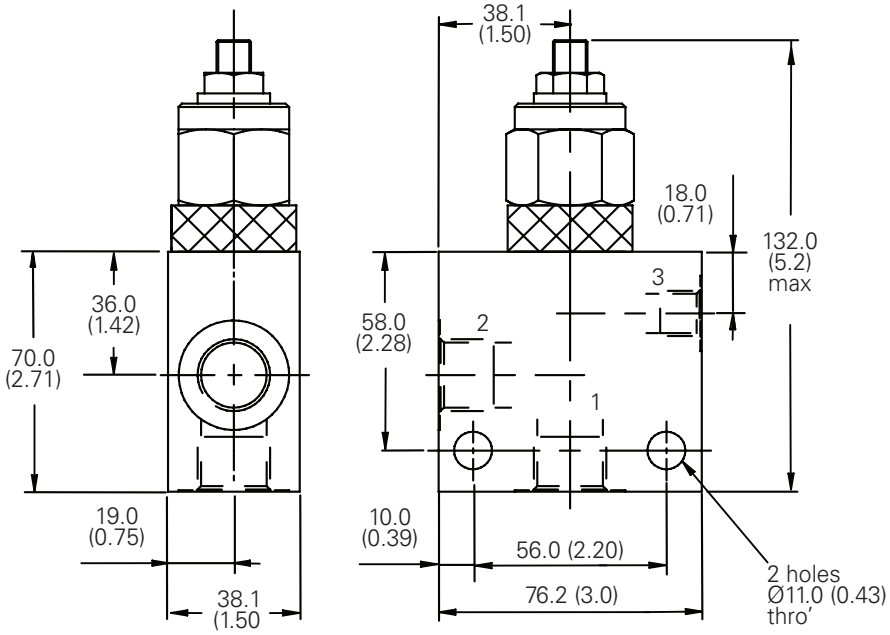
mm (inch)

Cartridge only: 1CEB90



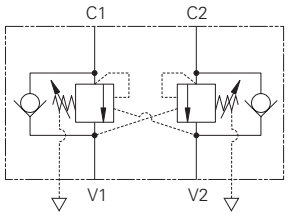
Single valve: 1CEB95

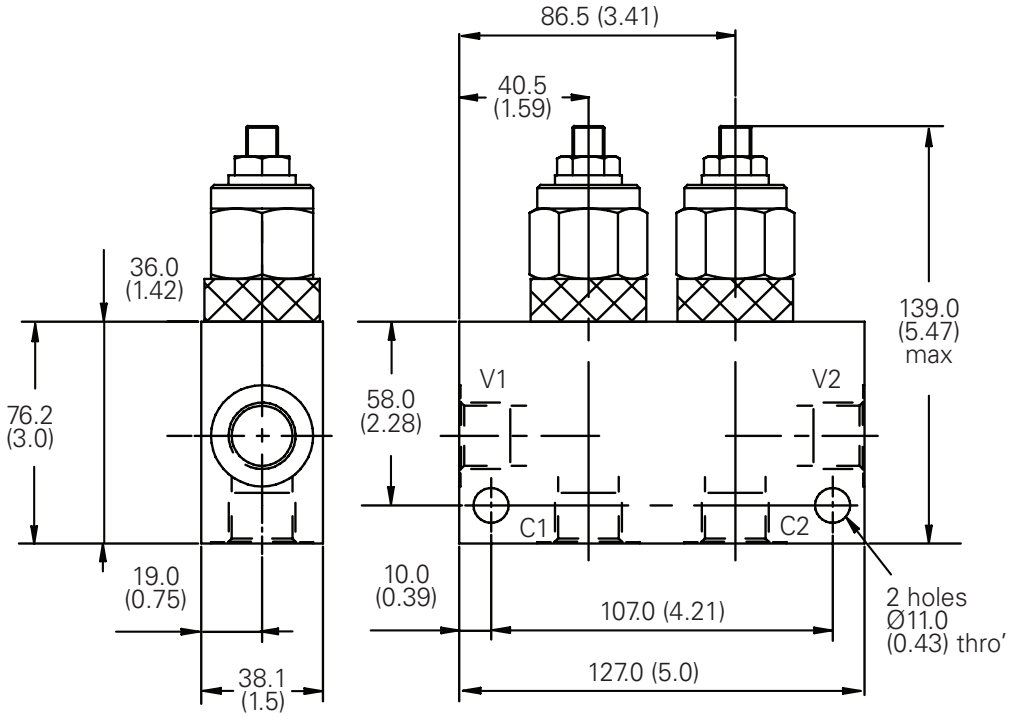
1/2" Ports



Dual valve: 1CEEB95

1/2" Ports
Internally Cross Piloted



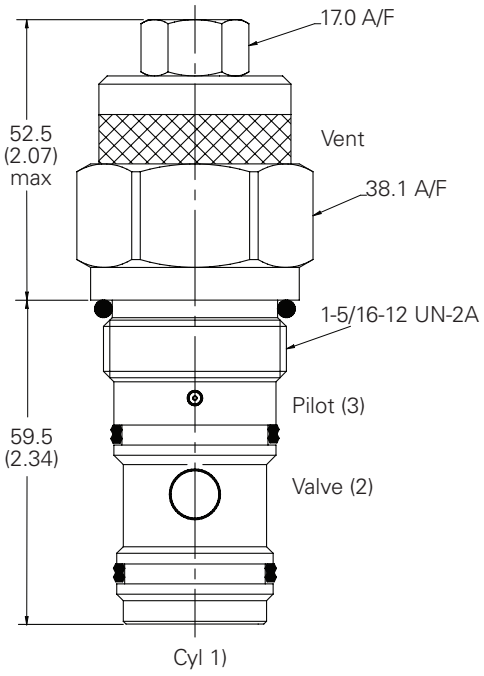


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Dimensions

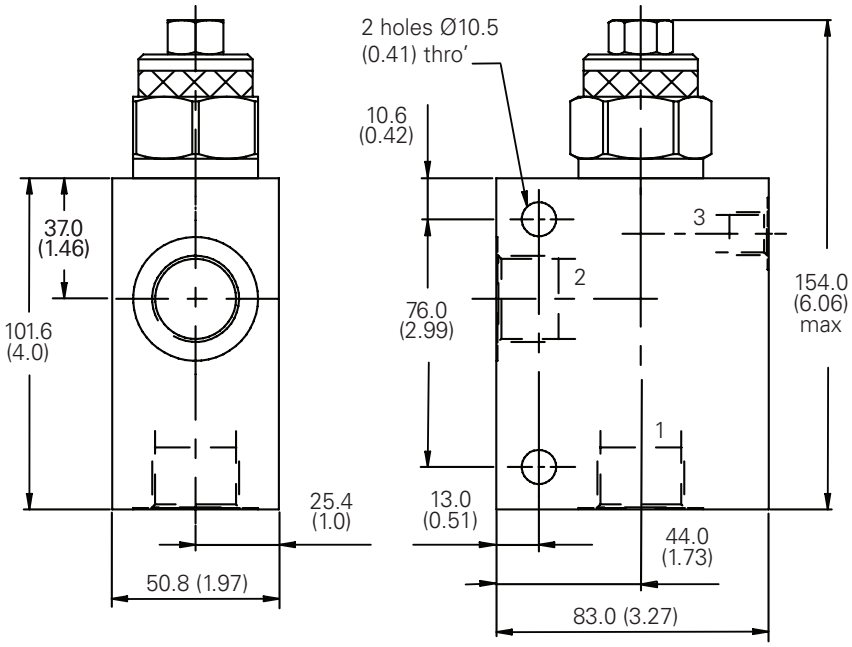
mm (inch)

Cartridge only: ICEB120



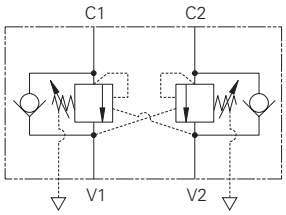
Single valve: 1CEB150

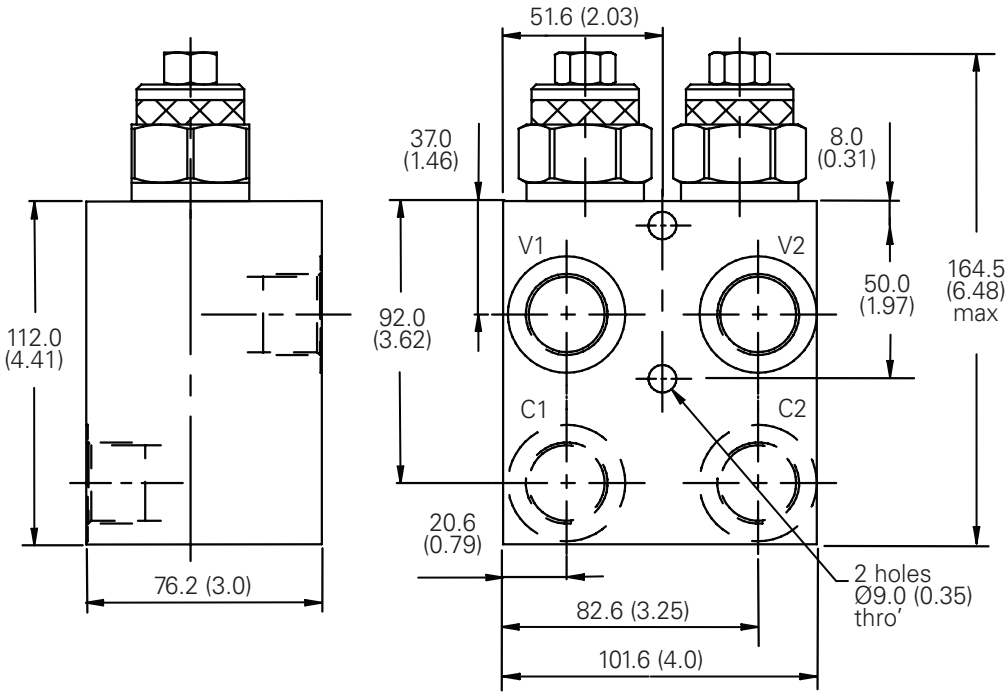
3/4" , 1" Ports



Dual valve: 1CEEB150

3/4" Ports
Internally Cross Piloted





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

1CEB30/90/120/300 - Overcenter valve

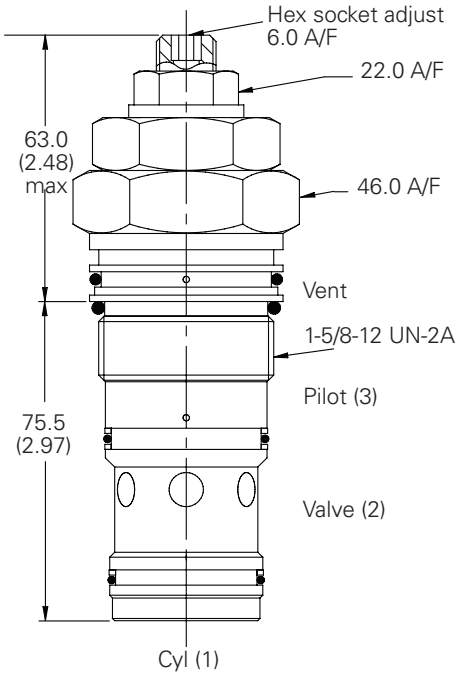
Fully balanced, pilot assisted, relief with check

1CEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEB120: 120 L/min (32 USgpm). 270 bar (4000 psi)
1CEB300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

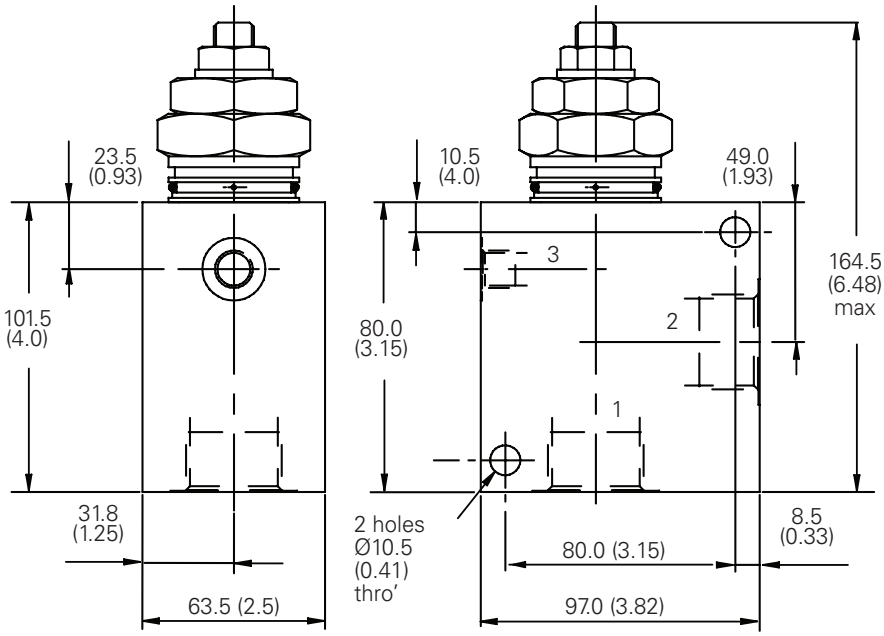
mm (inch)

Cartridge only: 1CEB300



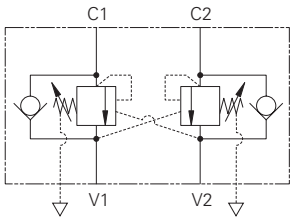
Single valve: 1CEB350

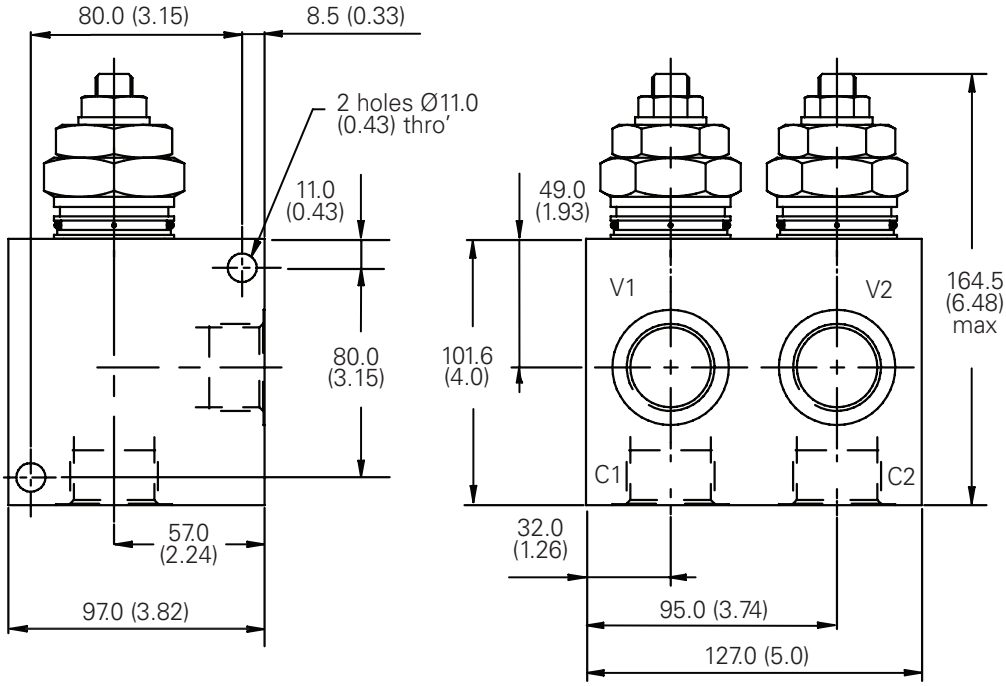
1 1/4" Ports



Dual valve: 1CEEB350

1 1/4" Ports
Internally Cross Piloted



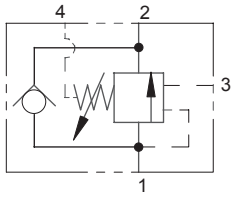


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBD30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief

1CEBD30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEBD90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEBD120: 180 L/min (47 USgpm) • 270 bar (4000 psi)
1CEBD300: 300 L/min (80 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:

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

Performance data

Ratings and specifications

Figures based on Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CEBD30: 30 L/min (8 USgpm) 1CEBD90: 90 L/min (23 USgpm)	 1CEBD120: 180 L/min (47 USgpm) 1CEBD300 :300 L/min (80 USgpm)
Rated relief pressure	1CEBD0: 400, For rest it is same 350
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 1CEBD30: A20530 (See section M) 1CEBD90: A12196 (See section M)	 1CEBD120: A6726 (See Section M) 1CEBD300: A13098 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight 1CEBD30: 0.14 kg (0.30 lbs) 1CEBD90: 0.29 kg (0.63 lbs)	 1CEBD120: 0.59 kg (1.30 lbs) 1CEBD300: 0.91 kg (2.00 lbs)
Seal kit: 1CEBD30: SK1159 (Nitrile) SK1159V (Viton®) SK634P (Polyurethane/Nitrile)	Seal kit: 1CEBD120: SK830 (Nitrile) SK830V (Viton®) SK830P (Polyurethane/Nitrile)
Seal kit: 1CEBD90: SK634 (Nitrile) SK634V (Viton®) SK634P (Polyurethane/Nitrile)	Seal kit: 1CEBD300: SK686 (Nitrile) SK686V (Viton®) SK686P (Polyurethane Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-20° to +90°C (-4° to +194°F)
Leakage	0.3 milliliters/min (5 dpm)
Internal Lekage	1CEBD300: 4 millilites for rest of the valves it is 0.3 milliters
Bar per turn	1CEBD120
Nominal viscosity range	5 to 500 cSt

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

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

Pilot Ratio	1CEBD30	1CEBD90	1CEBD120	1CEBD300
Best suited for applications where load varies and machine structure can induce instability.	5.1:1	4:1	3:1	3:1
Best suited for applications where the load remains relatively constant.	-	-	8:1 & 12:1	8:1
Specifically designed for Boom Loc applications.	-	-	22:1	-

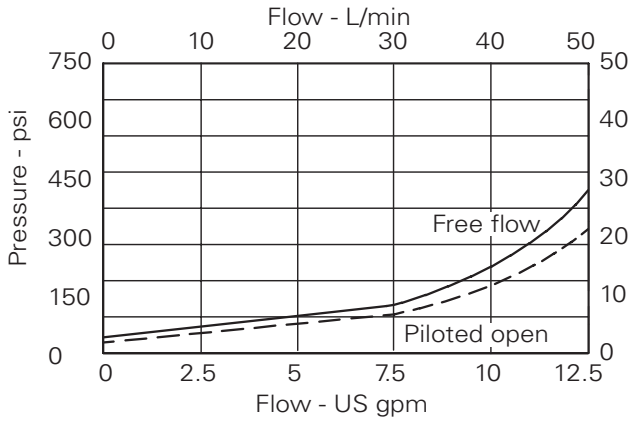
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBD30/90/120/300 - Overcenter valve

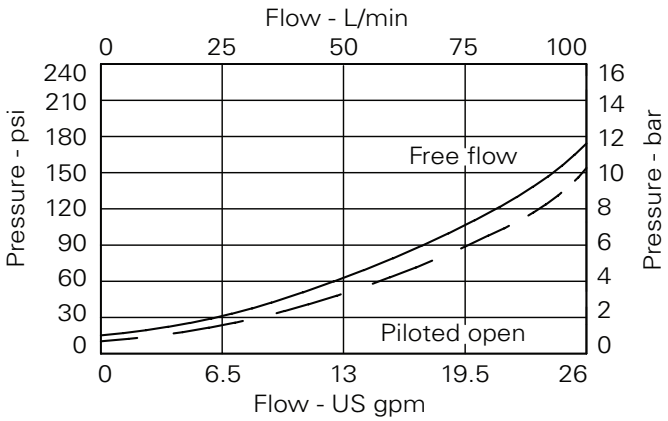
Fully balanced, pilot assisted, relief

1CEBD30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEBD90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEBD120: 180 L/min (47 USgpm) • 270 bar (4000 psi)
1CEBD300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

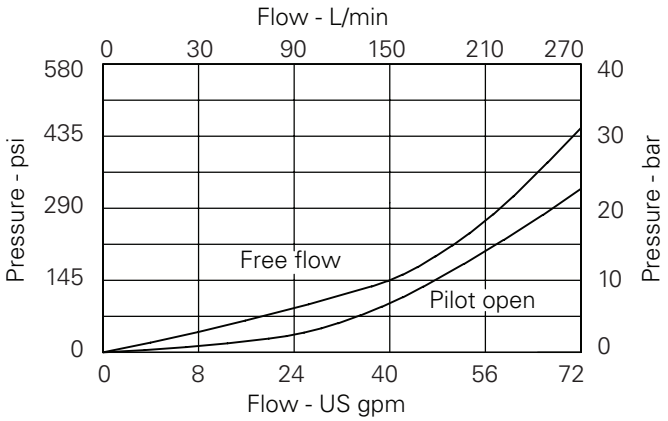
Pressure drop - 1CEBD30



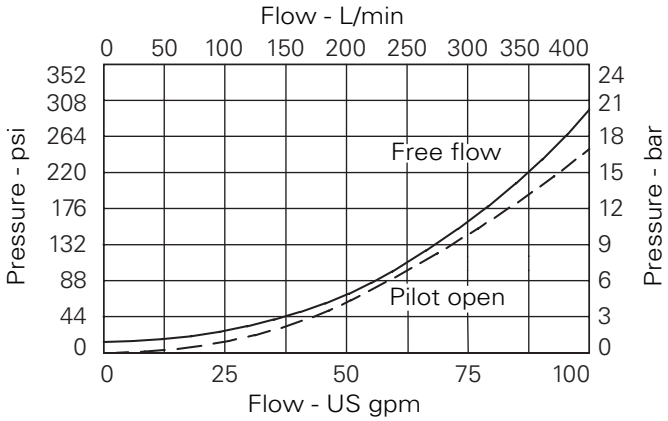
Pressure drop - 1CEBD90



Pressure drop - 1CEBD120



Pressure drop - 1CEBD300



F

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

1CEBD30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief

1CEBD30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEBD90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEBD120: 180 L/min (47 USgpm) • 270 bar (4000 psi)
1CEBD300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEBD30

1CEBD30 – F 35 – S 5
1 2 3 4 5

1 Function
1CEBD30 - Cartridge Only

2 Adjustment
F - Screw adjustment

3 Pressure range @4.8L/min
Note: Code based on pressure in bar.
20 - 70-210 bar.
Standard setting 100 bar
20 - 100-350 bar.
Standard setting made at 4.8 L/min

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

5 Pilot ratio
5 - 5:1

Model Code: 1CEBD90

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

F

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

1CEBD30/90/120/300 - Overcenter valve

Fully balanced, pilot assisted, relief

1CEBD30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEBD90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEBD120: 180 L/min (47 USgpm) • 270 bar (4000 psi)
1CEBD300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEBD120

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

Model code: 1CEBD300

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

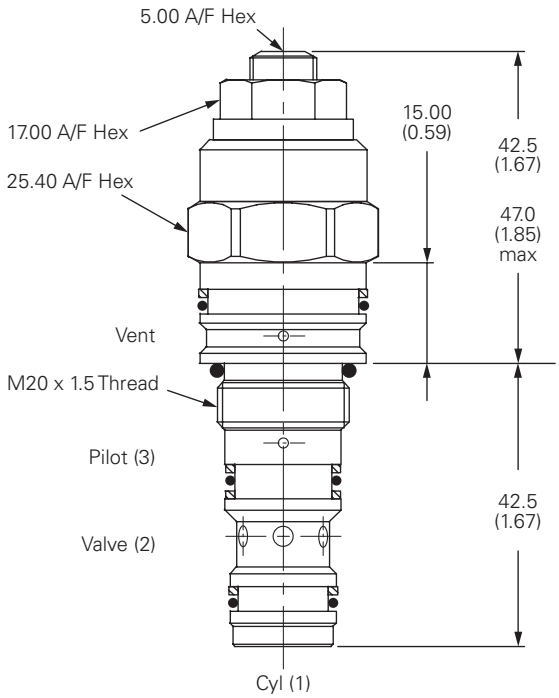
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBD30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEBD90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEBD120: 180 L/min (47 USgpm) • 270 bar (4000 psi)
1CEBD300: 300 L/min (80 USgpm) • 270 bar (4000 psi)

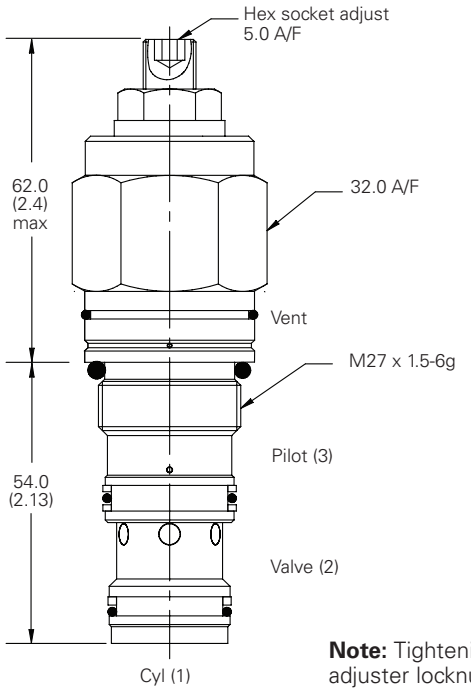
Dimensions

mm (inch)

Cartridge only: 1CEBD30

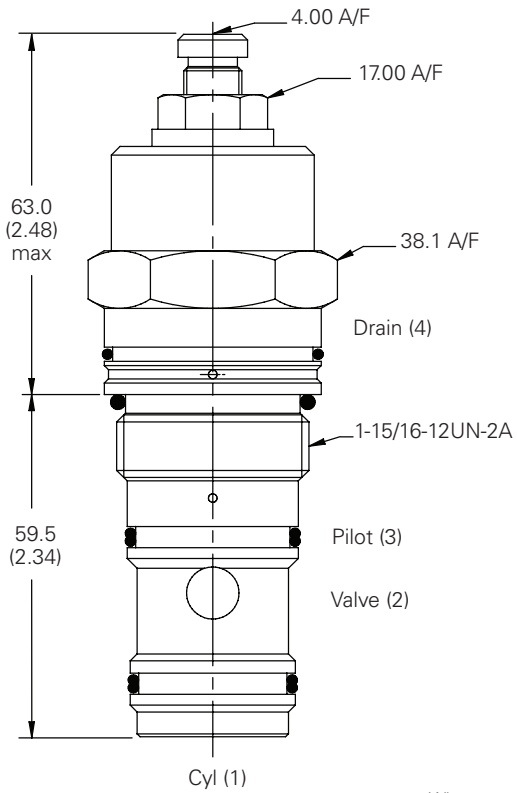


Cartridge only: 1CEBD90

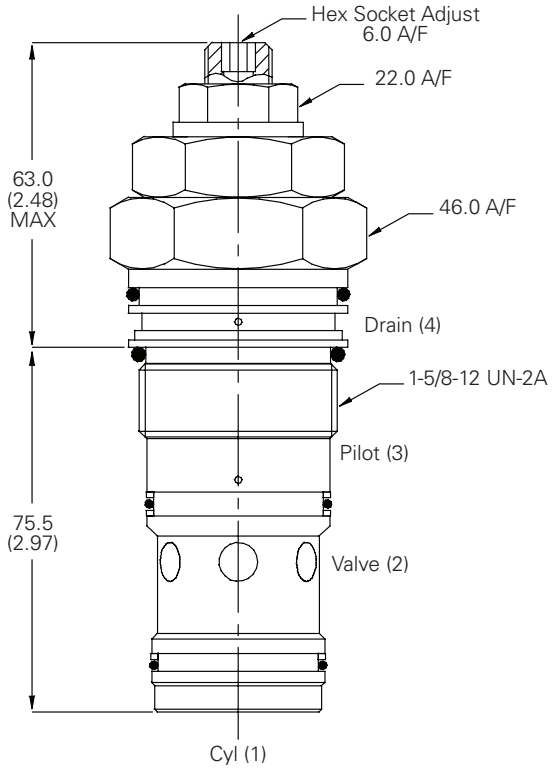


Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm

Cartridge only: 1CEBD120



Cartridge only: 1CEBD300



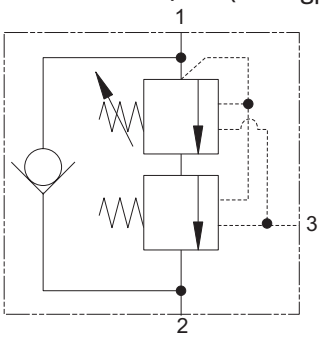
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

F

1CEL30/90/140 - Overcenter valve

Counterbalance pilot assisted relief with check

1CEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1CEL90: 90 L/min (23 USgpm) • 280 bar (4000 psi)
1CEL140: 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.

Pilot ratio

1CEL30: Primary 4.3:1
Secondary 0.4:1

1CEL90: Primary 5.6:1
Secondary 0.7:1

1CEL140: Primary 6.1:1
Secondary 0.5:1

Performance data

Ratings and specifications

Performance data is typical with fluid at 32 cST (150 SUS)	
Rated flow	1CEL30: 30 L/min (8 USgpm) 1CEL90: 90 L/min (23 USgpm) 1CEL140: 140 L/min (37 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	1CEL30: A6610 (see Section M) 1CEL90: A12336 (See Section M) 1CEL140: A20081
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: 1CEL30: 0.15 kg (0.33 lbs) Weight: 1CEL90: 1CEL90 0.29 kg (0.63 lbs.) 1CEL95 1.35 kg (2.97 lbs.) 1CEEL95 2.10 kg (4.62 lbs.)	Weight: 1CEL140: 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	1CEL30: SK395 (Nitrile), SK395V (Viton®) 1CEL90: SK633 (Nitrile), SK633V (Viton®) 1CEL140: SK1108 (Nitrile), SK1108V (Viton®)

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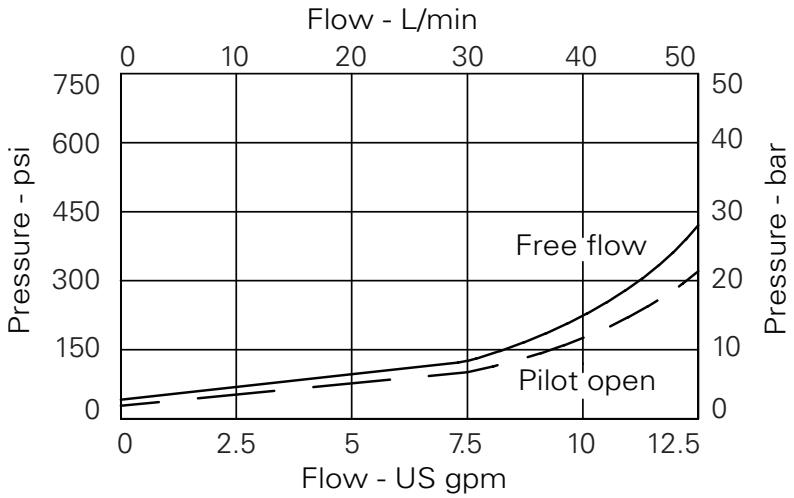
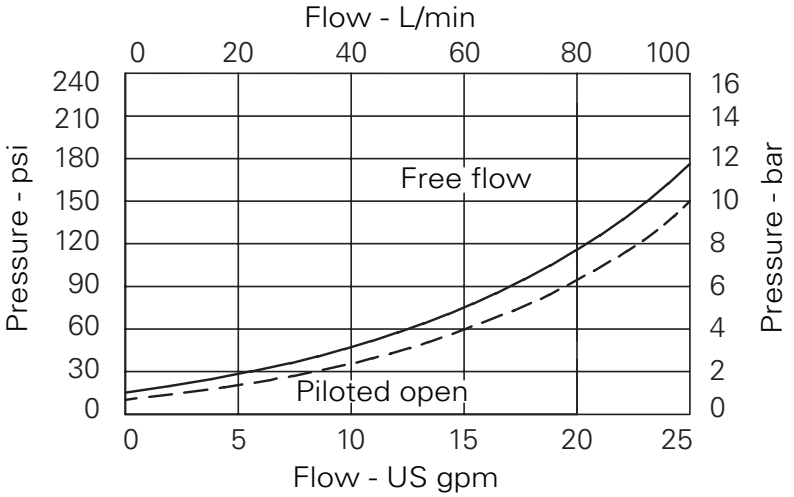
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

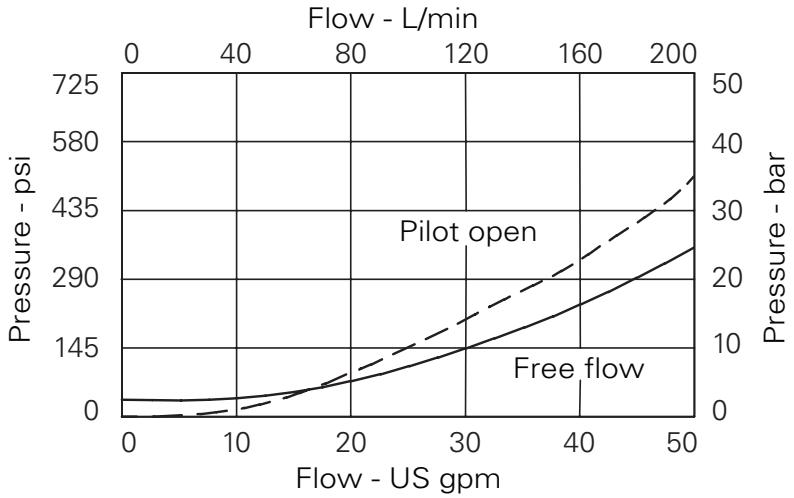
Pressure drop - 1CEL30



Pressure drop - 1CEL90



Pressure drop - 1CEL140



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.

1CEL30/90/140 - Overcenter valve

Counterbalance pilot assisted relief with check

1CEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1CEL90: 90 L/min (23 USgpm) • 280 bar (4000 psi)
1CEL140: 140 L/min (37 USgpm) • 380 bar (5510 psi)

Model code: 1CEL30

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)

Model code: 1CEL90

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)

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

1CEL30/90/140 - Overcenter valve

Counterbalance pilot assisted relief with check

1CEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1CEL90: 90 L/min (23 USgpm) • 280 bar (4000 psi)
1CEL140: 140 L/min (37 USgpm) • 380 bar (5510 psi)

Model code: 1CEL140

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)

F

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

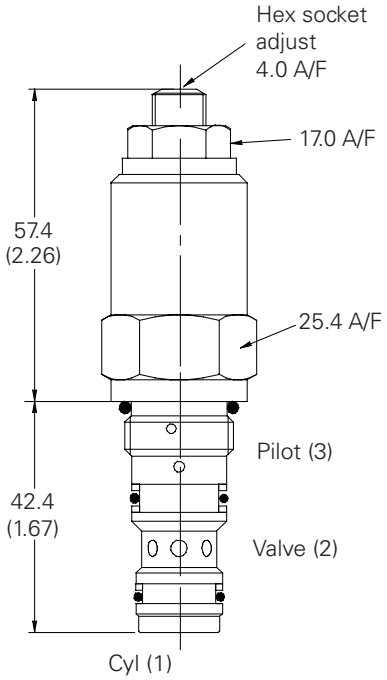
1CEL30/90/140 - Overcenter valve

Counterbalance pilot assisted relief with check
1CEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1CEL90: 90 L/min (23 USgpm) • 280 bar (4000 psi)
1CEL140: 140 L/min (37 USgpm) • 380 bar (5510 psi)

Dimensions

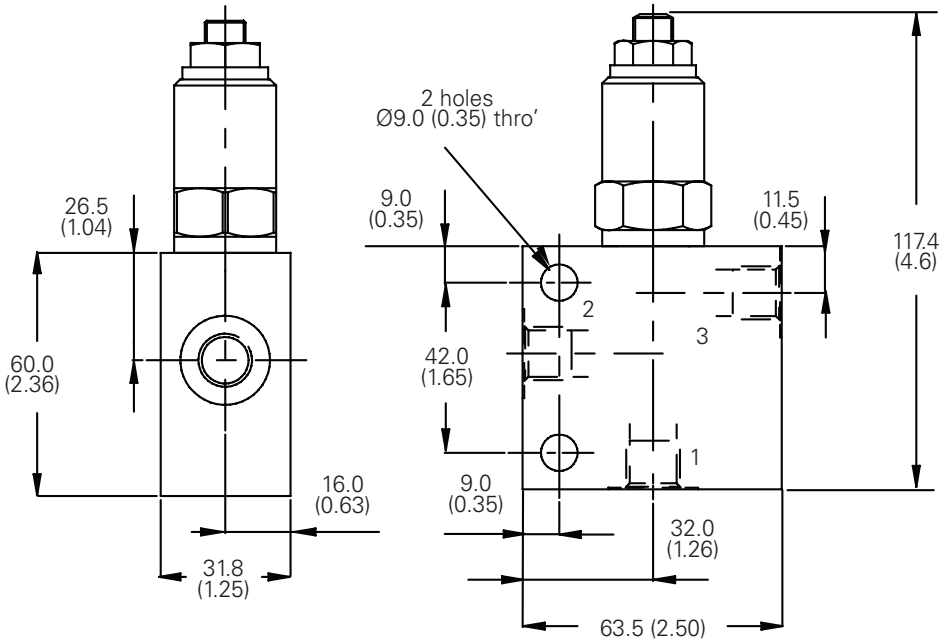
mm (inch)

Cartridge only: 1CEL30



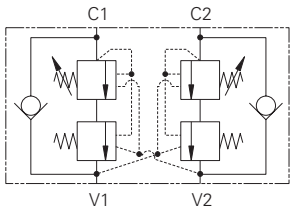
Single valve: 1CEL35

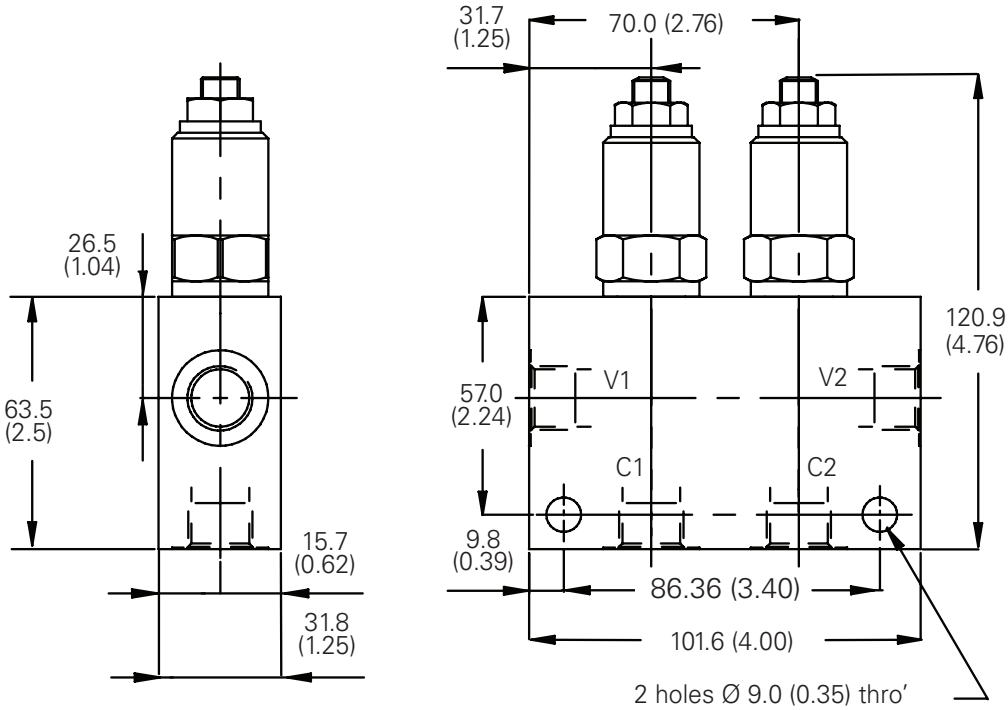
3/8". 1/2" Ports



Dual valve: 1CEEL34

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



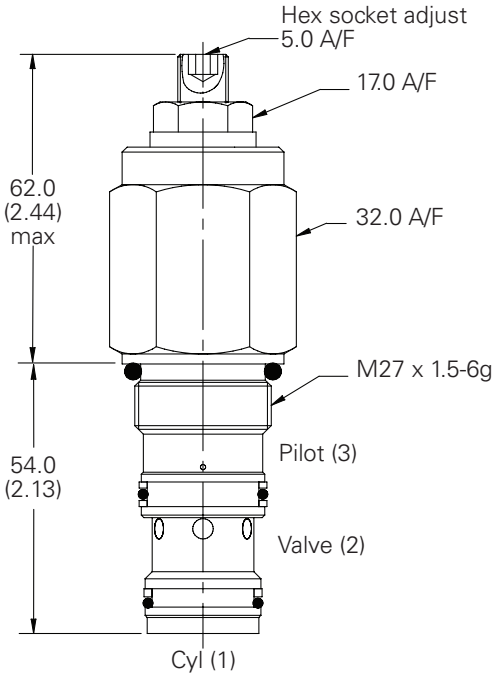


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Dimensions

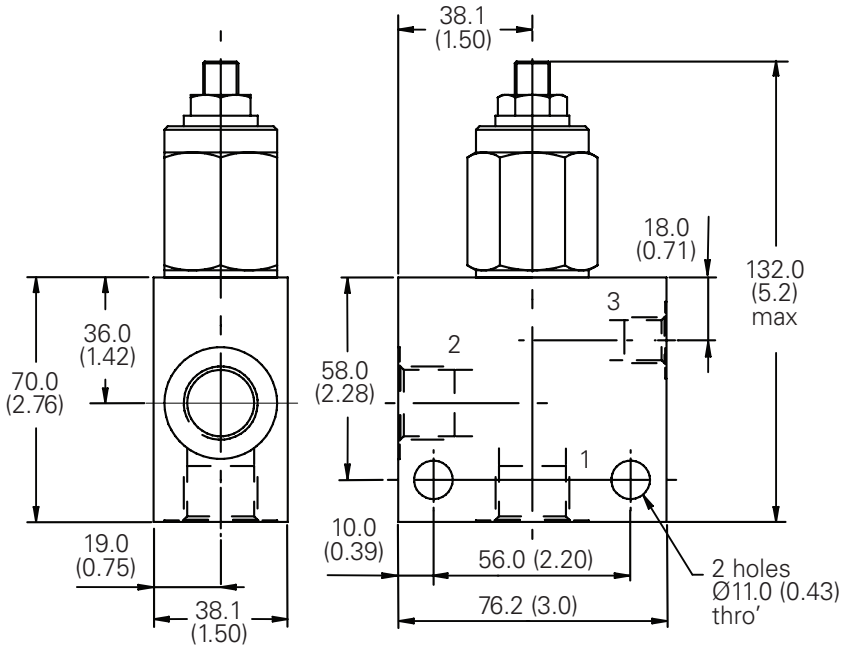
mm (inch)

Cartridge only: 1CEL90



Single valve: 1CEL95

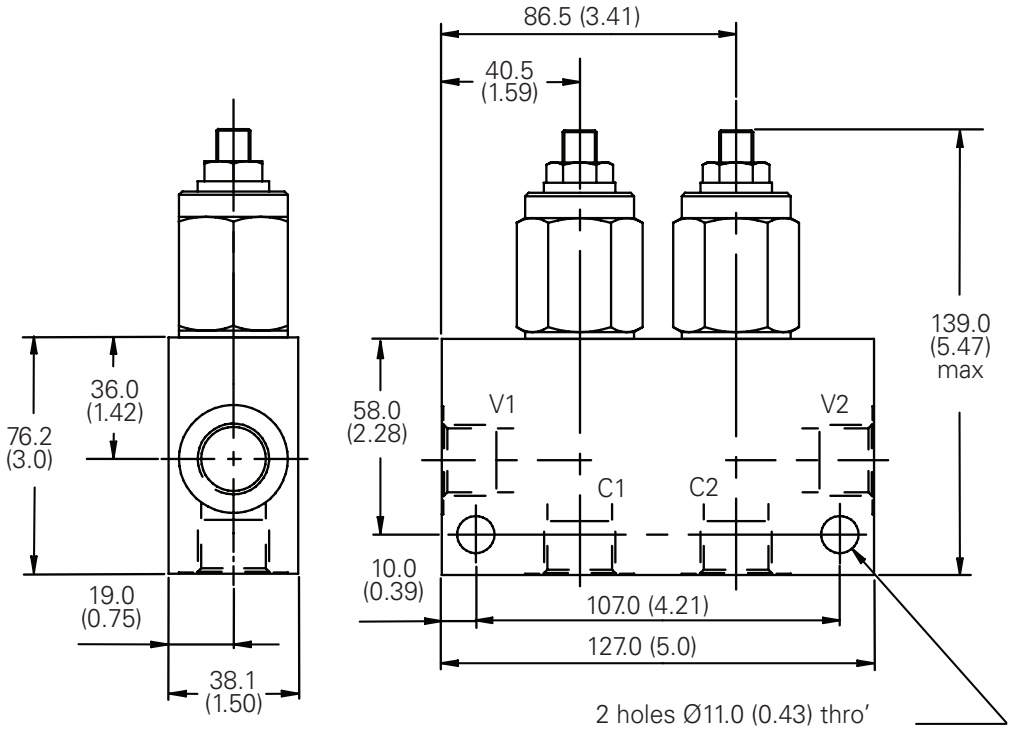
1/2" Ports



Dual valve: 1CEEL95

1/2" Ports

Internally Cross Piloted)



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

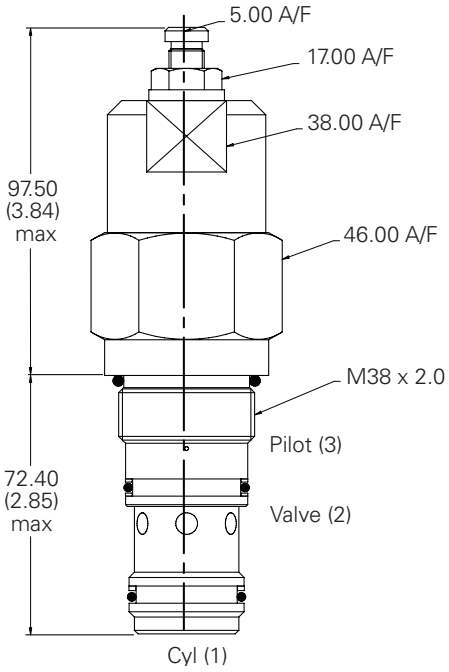
1CEL30/90/140 - Overcenter valve

Counterbalance pilot assisted relief with check
1CEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1CEL90: 90 L/min (23 USgpm) • 280 bar (4000 psi)
1CEL140: 140 L/min (37 USgpm) • 380 bar (5510 psi)

Dimensions

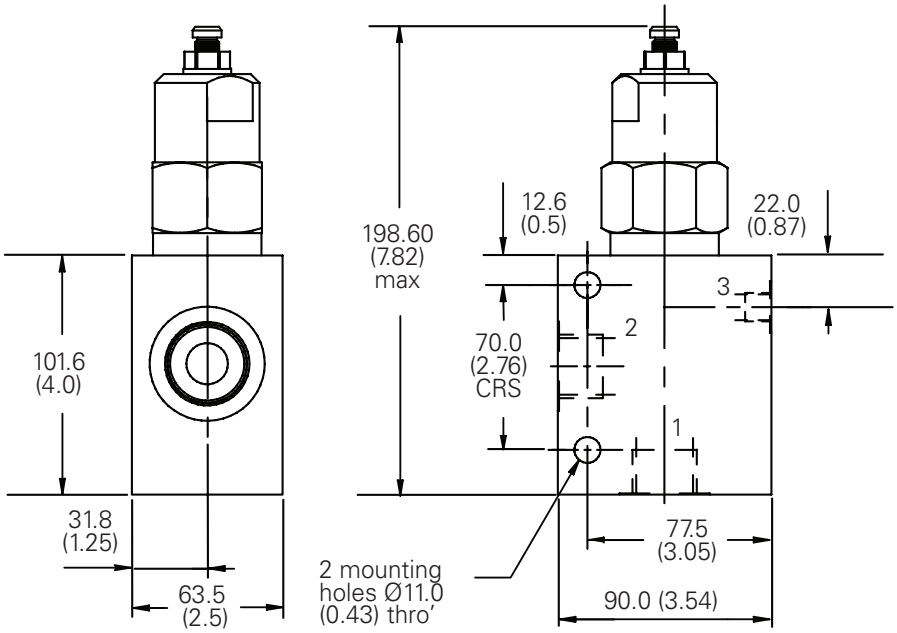
mm (inch)

Cartridge only: 1CEL140



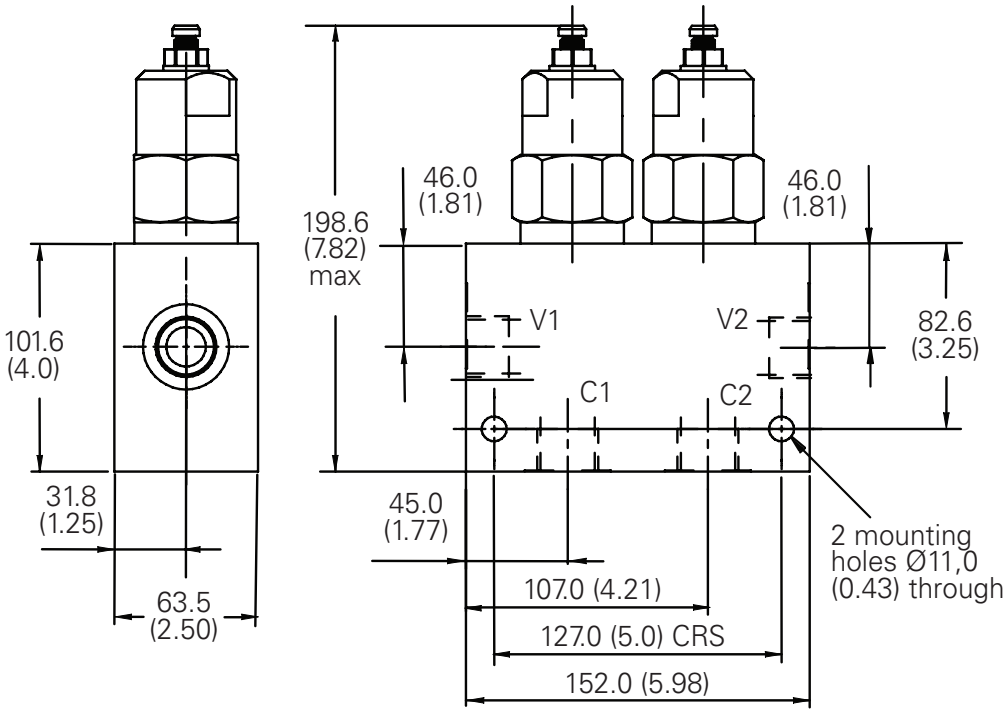
Single valve: 1CEL145

3/4" , 1" Ports



Dual valve: 1CEEL145

1" Ports
Internally Cross Piloted

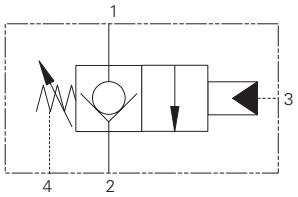


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CPBD30/90/120/300 - Overcenter valve

Zero differential with check

30 L/min (8 USgpm) • 350 bar (5000 psi)
90 L/min (23 USgpm) • 350 bar (5000 psi)
180 L/min (47 USgpm) • 400 bar (5800 psi)
300 L/min (80 USgpm) • 400 bar (5800 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

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40˚C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CPBD30: 30 L/min (8 USgpm) 1CPBD90: 90 L/min (23 USgpm)	 1CPBD120: 180 L/min (47 USgpm) 1CPBD300: 300 L/min (80 USgpm)
Max working pressure 1CPBD30: 350 bar (5000 psi) 1CPBD90: 350 bar (5000 psi)	 1CPBD120: 400 bar (5800 psi) 1CPBD300: 400 bar (5800 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity 1CPBD30: AXP20530 (See Section M) 1CPBD90: A12196 (See Section M)	 1CPBD120: A6726 (See Section M) 1CPBD300: A13098 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight 1CPBD30: 0.15 kg (0.33 lbs) 1CPBD90: 0.29 kg (0.63 lbs.)	 1CPBD120: 0.59 kg (1.30 lbs) 1CPBD300: 0.91 kg (2.00 lbs)
Seal kit 1CPBD30: SK1159 (Nitrile), SK1159V (Viton®) 1CPBD90: SK634 (Nitrile), SK634V (Viton®)	 1CPBD120: SK830 (Nitrile), SK830V (Viton®), SK830P (Polyurethane/Nitrile) 1CPBD300: SK971 (Nitrile) , SK971V (Viton®), SK971P (Polyurethane/Nitrile)
Bar per turn	1CPBD120 1CPBD300
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.

F

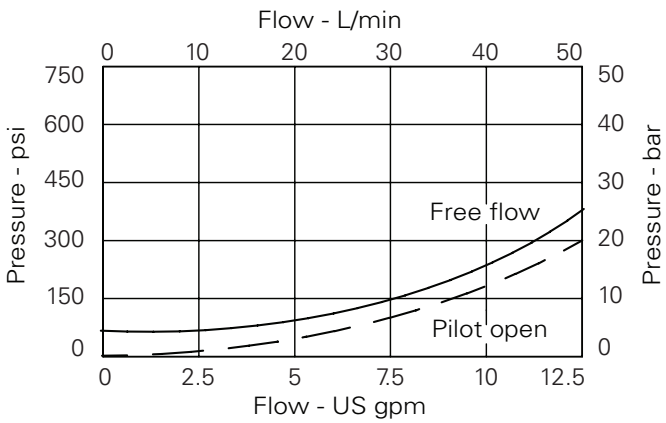
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CPBD30/90/120/300 - Overcenter valve

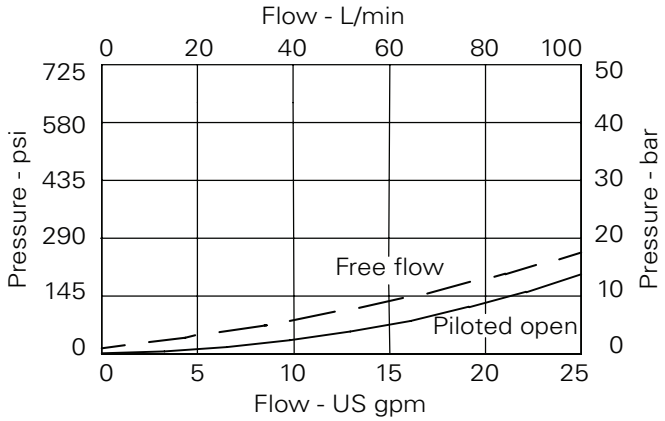
Zero differential with check

1CPBD30: 30 L/min (8 USgpm) • 350 bar (5000 psi)
1CPBD90: 90 L/min (23 USgpm) • 350 bar (5000 psi)
1CPBD120: 180 L/min (47 USgpm) • 400 bar (5800 psi)
1CPBD300: 300 L/min (80 USgpm) • 400 bar (5800 psi)

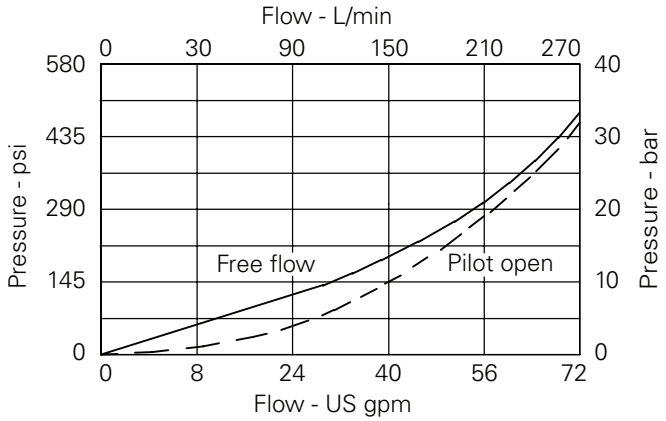
Pressure drop - 1CPBD30



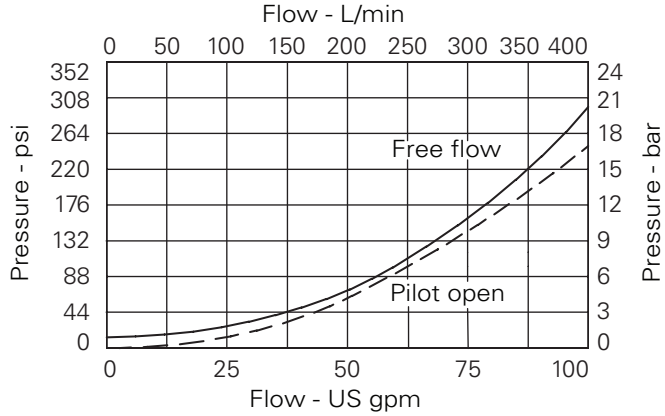
Pressure drop - 1CPBD90



Pressure drop - 1CPBD120



Pressure drop - 1CPBD300



F

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

1CPBD30/90/120/300 - Overcenter valve

Zero differential with check

30 L/min (8 USgpm) • 350 bar (5000 psi)
90 L/min (23 USgpm) • 350 bar (5000 psi)
180 L/min (47 USgpm) • 400 bar (5800 psi)
300 L/min (80 USgpm) • 400 bar (5800 psi)

Model code: 1CPBD30

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)

Model code: 1CPBD90

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)

F

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

1CPBD30/90/120/300 - Overcenter valve

Zero differential with check

30 L/min (8 USgpm) • 350 bar (5000 psi)
90 L/min (23 USgpm) • 350 bar (5000 psi)
180 L/min (47 USgpm) • 400 bar (5800 psi)
300 L/min (80 USgpm) • 400 bar (5800 psi)

Model code: 1CPBD120

1CPBD120 – F – 2 P

1 2 3 4

1 Function

1CPBD120 - Cartridge only

2 Adjustment means

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 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)

Model code: 1CEBD300

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)

F

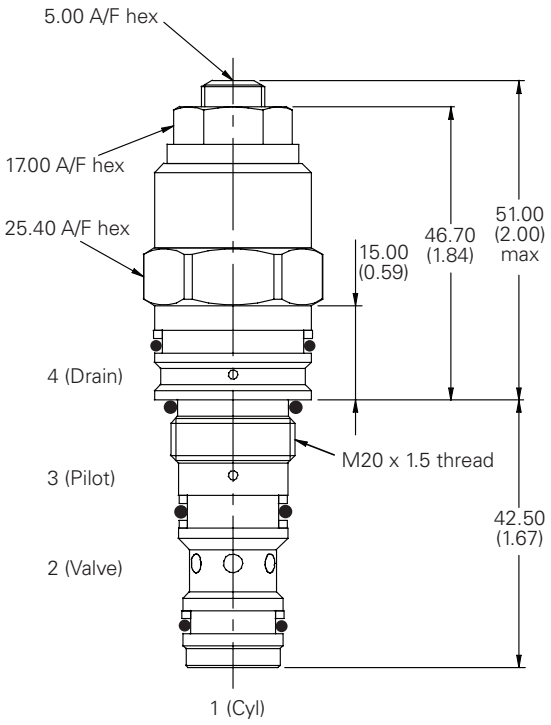
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

30 L/min (8 USgpm) • 350 bar (5000 psi)
90 L/min (23 USgpm) • 350 bar (5000 psi)
180 L/min (47 USgpm) • 400 bar (5800 psi)
300 L/min (80 USgpm) • 400 bar (5800 psi)

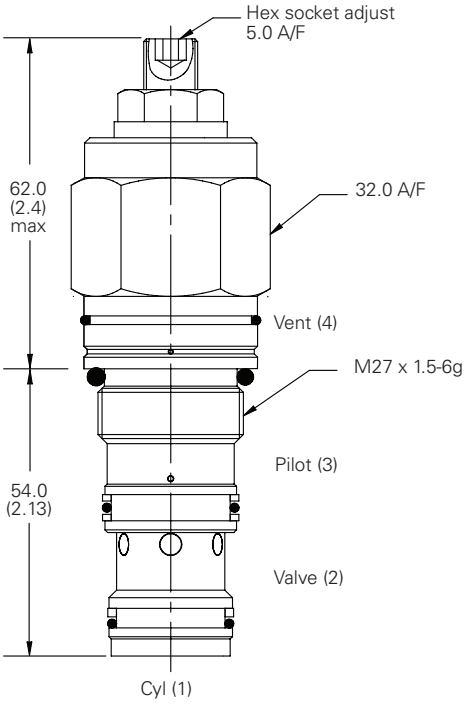
Dimensions

mm (inch)

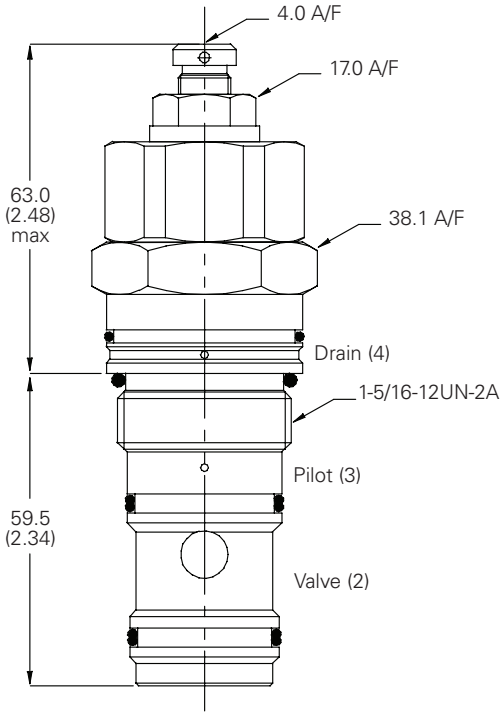
Cartridge only: 1CPBD30



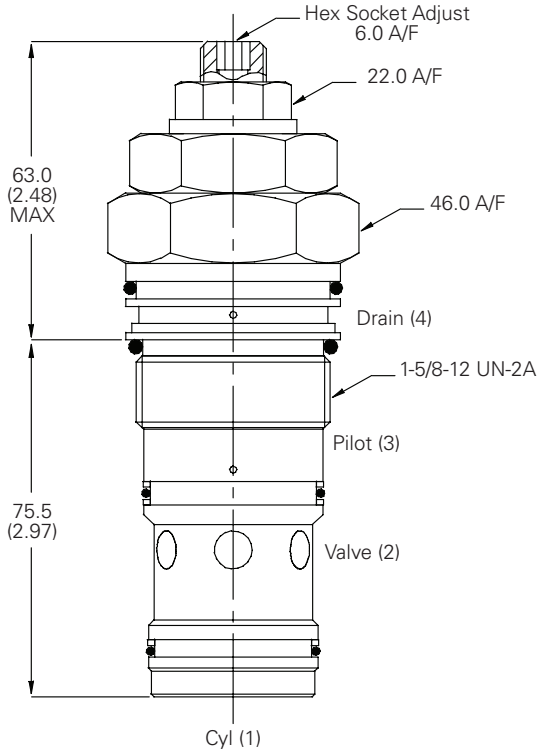
Cartridge only: 1CPBD90



Cartridge only: 1CPBD120



Cartridge only: 1CPBD300



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

1CE Series - Overcenter valve

Alternative body arrangements for 30 L/min valves

Model code: 1CE36/1CEB36 1CER36/1CEL36

1C*****	–	F	3W	–	35	S	5	230	/	50
1		2	3		4	5	6	7		8

1 Function

1CE36/1CEB36/1CER36/1CEL36 - Cartridge & Body Through Ported

1CBE35/1CBEB35/1CBER35/1CBEL35 - Cartridge & Body Banjo

1CEG35/1CEBG35/1CERG35/1CELG35 - Cartridge & BodyGasket

1CEE35/1CEEB35/1CEER35/1CEEL35 - Cartridges & 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	
		Aluminium	**Steel**
Through Ported			
3W	3/8" BSP - Body ONLY	B13542	B13543
Banjo Mounted			
3W	3/8" BSP - Sub Assembly	AXP13617-3W-S	
Gasket Mounted			
3W	3/8" BSP - Sub Assembly	BXP13621-3W-S	
Dual Overcenter (Internally Cross Piloted)			
3W	3/8" BSP - Sub Assembly	BXP24147-3W-S	BXP24147-3W-S-377
6T	3/4" SAE - Sub Assembly	BXP24147-6T-S	

4 Pressure range @ 4.8 L/min

See cartridge data sheet

5 Seals

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

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

6 Pilot ratio

(omit for 1CEL30 based options)

2 - 2.5:1 **4** - 4:1
5 - 5:1 **10** - 10:1
(See cartridge details)

7 High pressure setting

(1CEL30 based options only)

bar in 10 bar increments.

8 Counterbalance setting

(1CEL30 based options only)

bar in 10 bar increments.

F

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

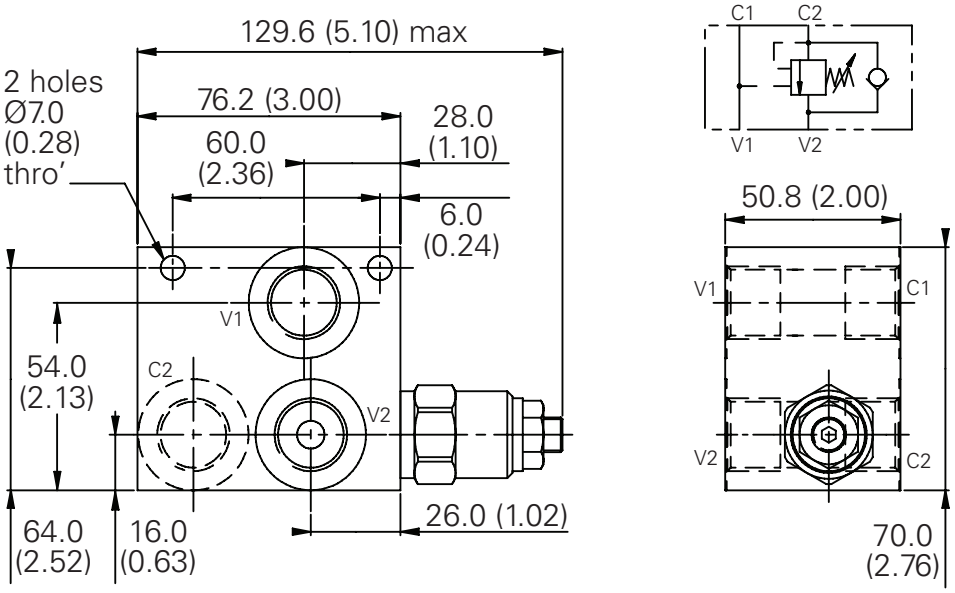
Dimensions mm (inch)

Complete valve - through ported

3/8" Ports
Basic Code

1CE36/1CEB36/1CER36/1CEL36

Banjo Bolt torque - 47 Nm

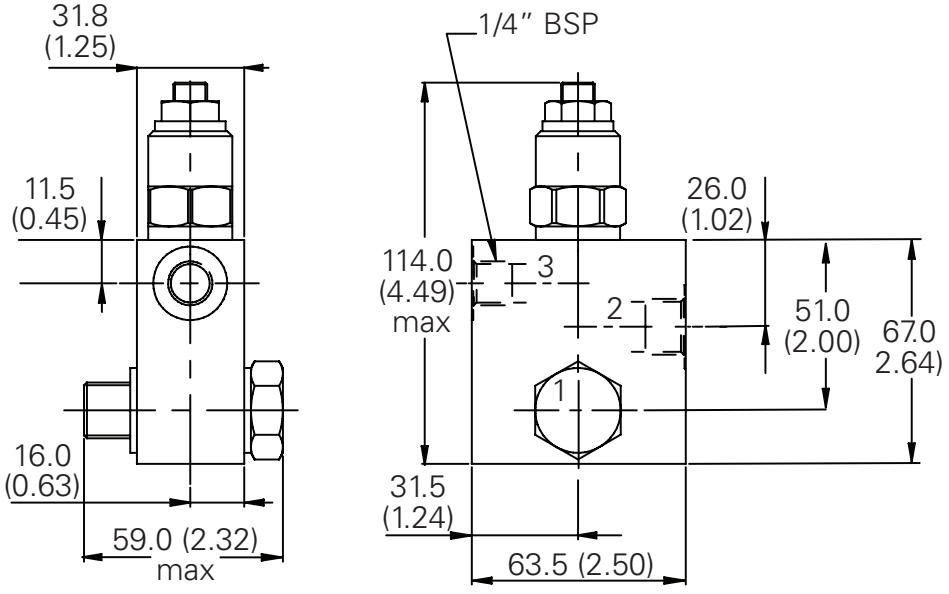


Complete valve - banjo mounted

3/8" Ports
Basic Code

1CBE35 / 1CBEB35 / 1CBER35 / 1CBEL35

Banjo Bolt torque - 47 Nm



F

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

1CE Series - Overcenter valve

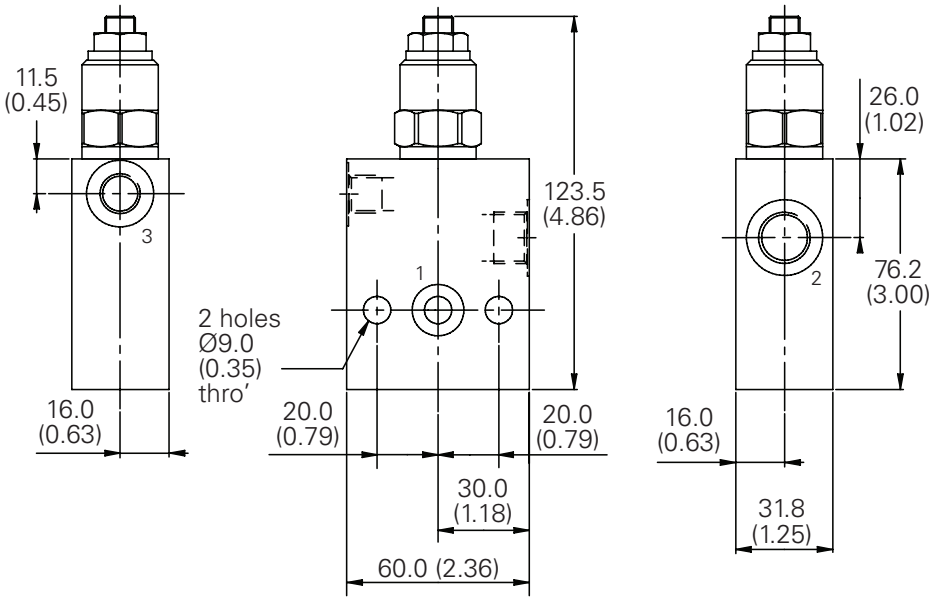
Alternative body arrangements for 30 L/min valves

Dimensions mm (inch)

Complete valve - gasket mounted

3/8" Ports
Basic Code

1CEG35/1CEBG35/1CERG35/1CELG35

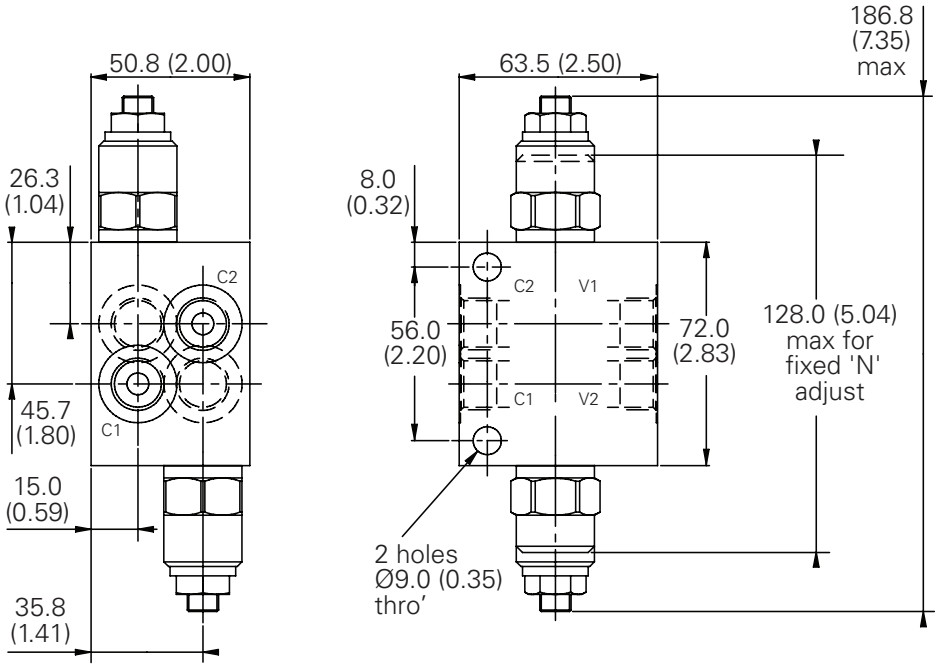


Complete valve - dual overcenter

3/8" Ports
Basic Code

1CEE35/1CEEB35/1CEER35/1CEEL35

(Internally Cross-Piloted)



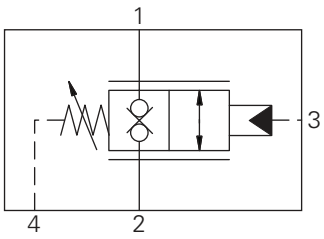
Note: Tightening torque of "F" adjuster locknut= 20-25 Nm.

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

1CPPD90/300 - Piloted Bi-directional poppet valve

Poppet, pilot operated, normally closed, zero differential

1CPPD90: 90 L/min (23 USgpm) • 350 bar (5000 psi)
1CPPD300: 300 L/min (80 USgpm) • 350 bar (5000 psi)



Operation

By the application of pilot pressure to the pilot port the poppet moves back against the main spring opening. 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.

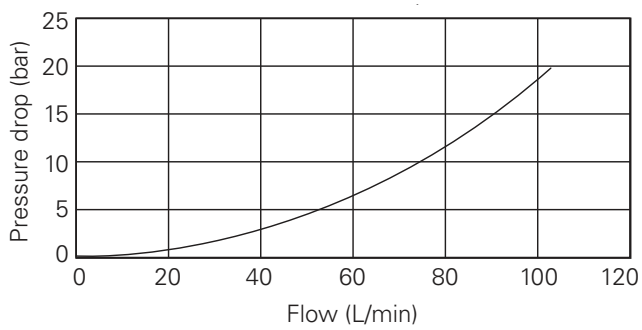
Performance data

Ratings and Specifications

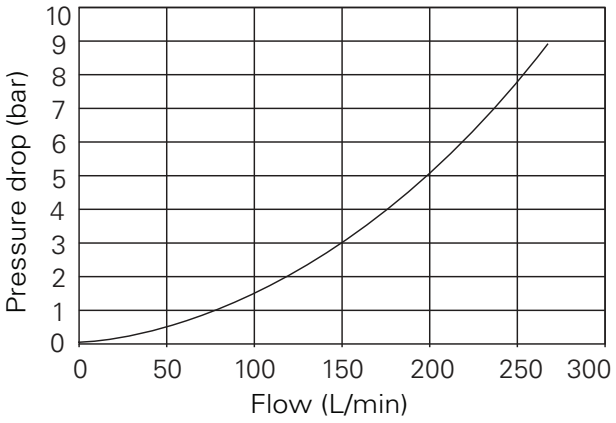
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	1CPPD90: 90 L/min (23 USgpm) 1CPPD300: 300 L/min (80 USgpm)
Maximum working pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	1CPPD90: A12196 (See Section M) 1CPPD300: A13098 (See Section M)
Torque cartridge into cavity	60 Nm (44 ft. lbs.)
Weight	1CPPD90: 0.37 kg (0.82 lbs.) 1CPPD300: 1.02 kg (2.25 lbs)
Seal kit number	SK1453 (Nitrile) SK1453V (Viton*) SK1453P (Polyurethane/ Nitrile)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Temperature	-30° C to +90° C (-22° to +194°F)
Internal leakage	1CPPD90: 0.3 milliliters/min nominal (5 dpm) 1CPPD300: 4 milliliters/min nominal (60 dpm)
Nominal viscosity range	5 to 500 cSt

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

Pressure drop - 1CPPD90



Pilot open pressure drop - both directions - 1CPPD300



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

1CPPD90/300 - Piloted Bi-directional poppet valve

Poppet, pilot operated, normally closed, zero differential
1CPPD90: 90 L/min (23 USgpm) • 350 bar (5000 psi)
1CPPD300: 300 L/min (80 USgpm) • 350 bar (5000 psi)

Model code: 1CPPD90

1CPPD90 – F – 2 P

1 2 3 4

1 Function
1CPPD90 - Cartridge Only

Line body available on request.

2 Adjustment means
F - Screw Adjustment
G - Tamperproof Cap
N - Fixed - State pressure setting required

3 Pilot adjustment range @ 4.8 L/min
Note: Code based on pressure in bar.
2 - 8 - 25 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)

Model code: 1CPPD300

1CPPD300 N 2 P

1 2 3 4

1 Function
1CPPD300 - Cartridge only

2 Adjustment
N - Fixed - State pressure setting required

3 Pilot pressure
Note: Code based on pressure in bar.
2 - 14 bar.
Std setting made at 4.8 L/min

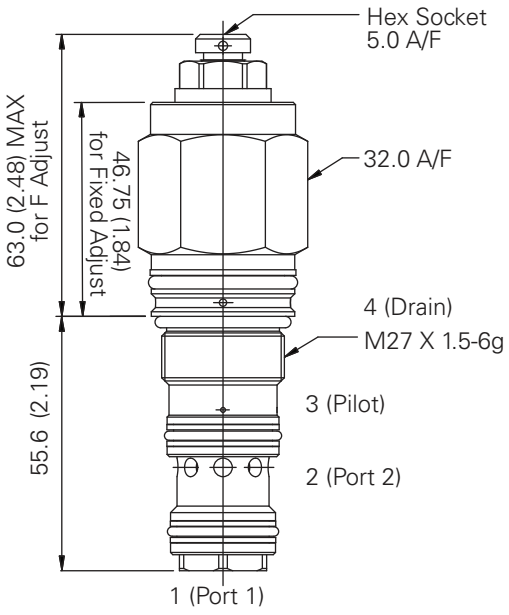
4 Seal material
S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton® (For high temperature and most special fluid applications)
P - Polyurethane/Nitrile (For arduous applications)

F

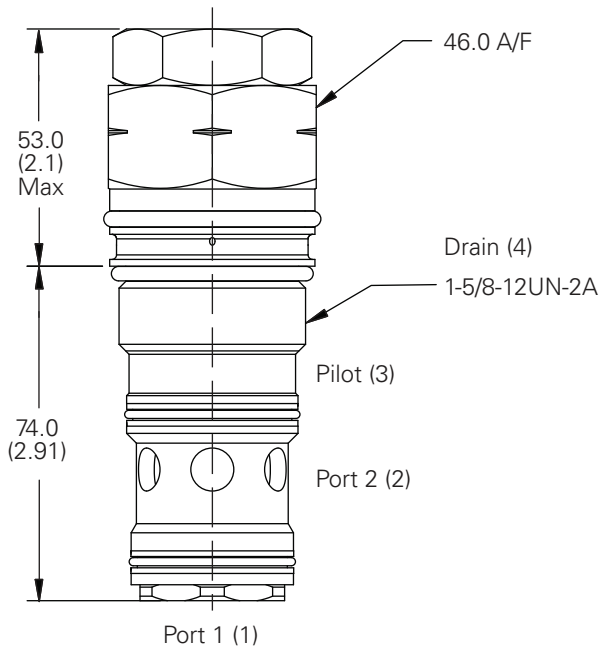
Dimensions

mm (inch)

Cartridge only: 1CPPD90



Cartridge only: 1CPPD300



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

Model code: 1CE156/1CEB156

1C** **– F** **6W** **– 35** **S** **3**

1 2 3 4 5 6

1 Function

1CE156/1CEB156 - Cartridge & Body Through Ported

1CBE150/1CBEB150 - Cartridge & Body Banjo Mounted

1CEG150/1CEBG150 - Cartridge & Body Gasket Mounted

2 Adjustment means

P - Leakproof Screw Adjust (1CEB156/1CBEB150/ 1CEBG150)

F - Screw Adjust (1CE156/1CBE150/ 1CEG150

3 Port sizes

Code	Port size	Housing number - body only	
		Aluminum	Steel
1CE156/1CE156 Complete Valve Body ONLY part numbers			
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B13629	B13630
1CBE150/1CBEB150 Sub-assembly part numbers			
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	AXP13565-6W-S	
1CEG150/1CEBG150 Gasket Mounted numbers			
6W	3/4" SAE 6000 PSI Flange Ports	BXP13634-6W-S	BXP13634-6W-S-377

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)

P - Polyurethane/Nitrile (For arduous applications)

6 Pilot ratio

3 - 3.5:1 - 1CE156/1CBE150/ 1CEG150

3 - 3:1 - 1CEB156/1CBEB150/ 1CEBG150 (Standard)

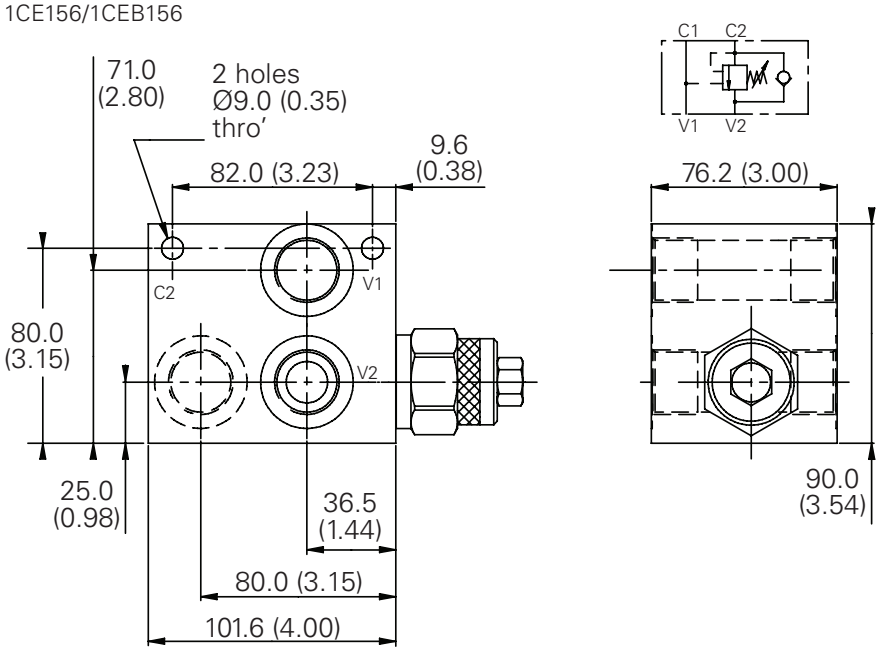
8 - 8:1 - 1CEB156/1CBEB150/ 1CEBG150

Dimensions

mm (inch)

Complete valve

Through Ported
3/4" Ports
Basic Code
1CE156/1CEB156



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

1CE - Overcenter valve

Alternative body arrangements
for 100 Liters/min valves

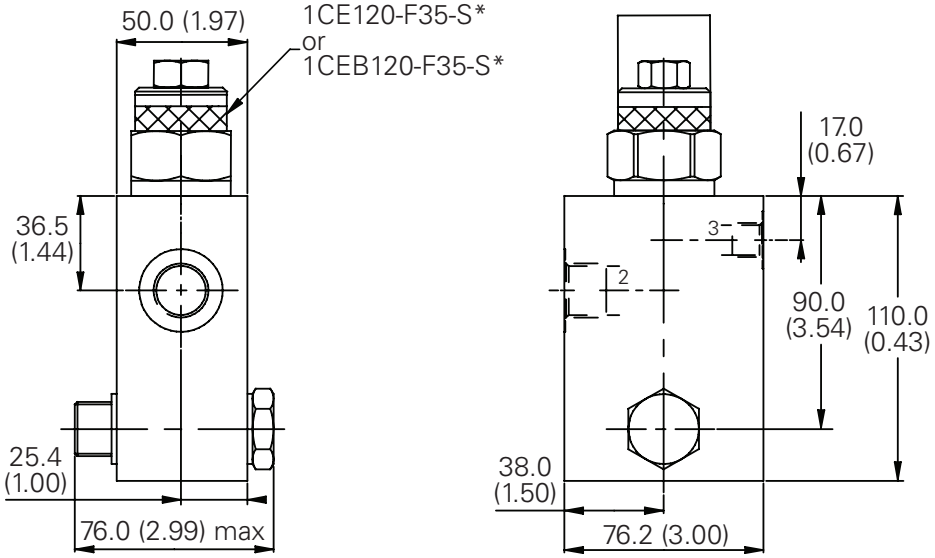
Dimensions

mm (inch)

Complete valve

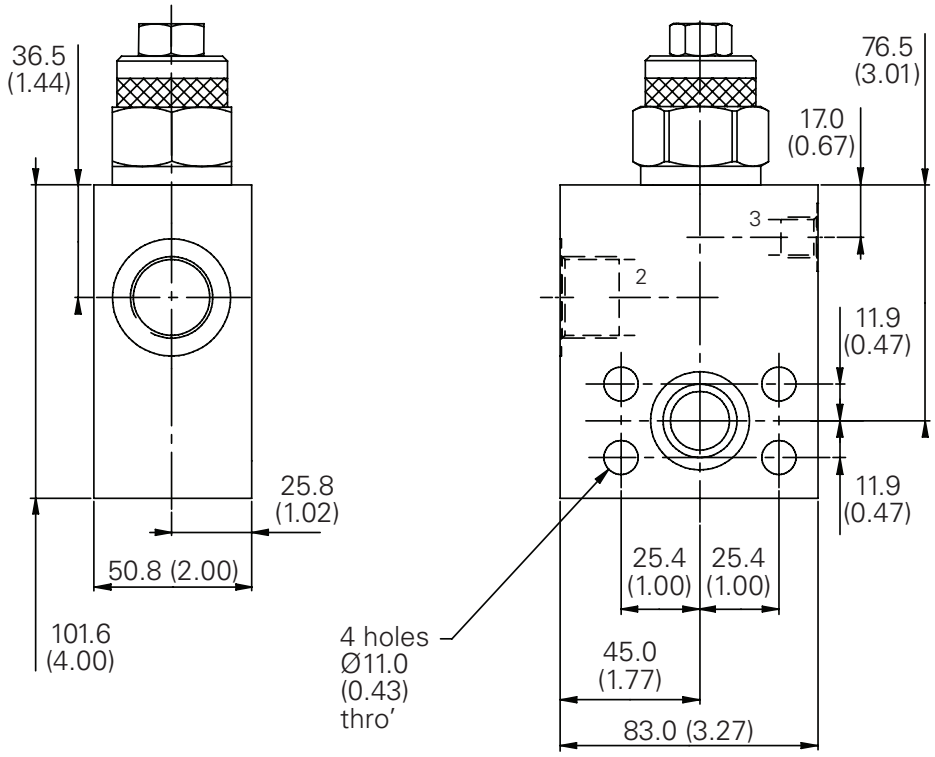
3/4" Ports

Banjo Mounted
Basic Code
1CBE150/1CBEB150



Complete valve

3/4" Ports SAE 6000 PSI Flange Ports
1CEG150/1CEBG150
Gasket Mounted



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

Model code: 1CE356

1CE****	F	10W	35	S	3
1	2	3	4	5	6

1 Function

1CE356 - Cartridge and Body Through Ported

1CEG350 - Cartridge and Body Gasket Mounted

2 Adjustment

F - Screw adjustment

3 Port size - bodied valves only

Code	Port size	Housing number	
1CE356 Through Ported, Body Only		**Aluminium**	**Steel**
10W	1 1/4" BSP Valve & Cyl Port 1/4" BSP Pilot Port	C13637	C13638
1CEG356 Gasket Mounted, Sub Assembly			
10W	1 1/4" BSP Valve & Cyl Port 1/4" BSP Pilot Port	CXP20647-10W-S	CXP20647-10W-S-377

4 Pressure range

Note: Code based on pressure in bar.

35 - 70-350 bar.
Std setting 210 bar
(10:1): 100-210 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

F

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

1CE356 Series - Overcenter valve

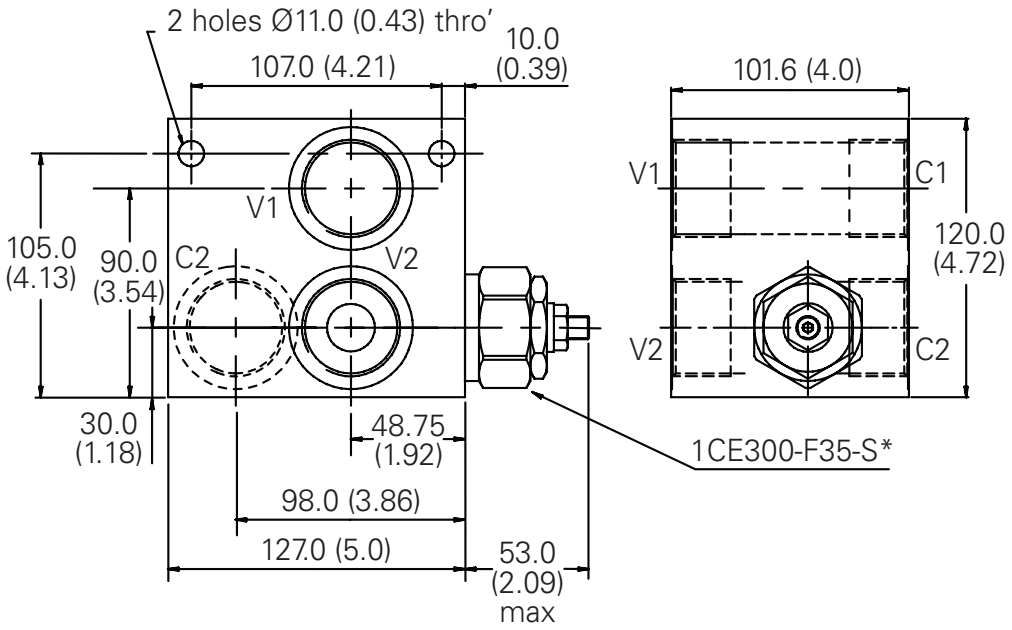
Alternative body arrangements for 300 L/min valves

Dimensions

mm (inch)

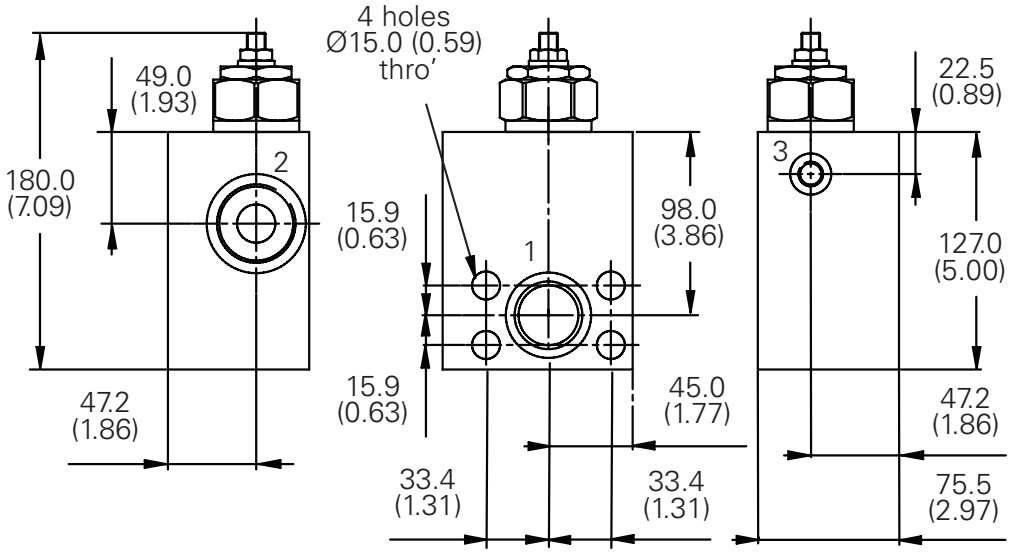
Complete valve - through ported

1 1/4" Ports
Basic Code: 1CE356



Complete valve - gasket mounted

1 1/4" Ports
Basic Code: 1CEG350

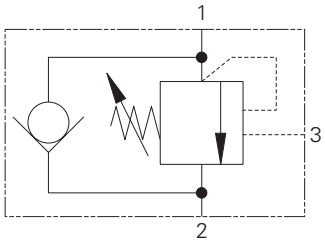


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1SE30/90/140 - Overcenter valve

Pilot assisted relief with check

1SE30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SE140: 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:

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

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	1SE30: 30 L/min (8 USgpm) 1SE90: 90 L/min (23 USgpm) 1SE140: 140 L/min (37 USgpm)
Max relief setting	1SE30/1SE90:350 bar (5000 psi) 1SE140: 420 bar (6090 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External steel surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	1SE30: A20090-T11A 1SE90: A20092-T2A 1SE140: A20094-T17A
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1SE30: 0.15 kg (0.33 lbs) 1SE90: 0.42 kg (0.92 lbs) 1SE140: 1.2 kg (2.5 lbs)
Seal kit number	1SE30: SK1079 (Nitrile), SK1079V (Viton®) 1SE90: SK1093 (Nitrile) ,SK1093V (Viton®) 1SE140: SK1116 (Nitrile) SK1116V (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

Pilot Ratio	1SE30	1SE90	1SE140
Best suited for extremely unstable applications such as long booms or flexible frameworks.	2.5:1	-	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	-	4:1
Best suited for applications where the load remains relatively constant.	10:1	4:1	6:01

F

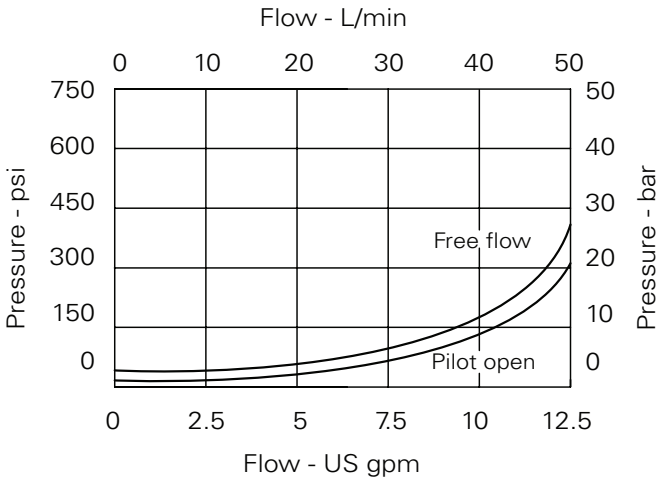
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1SE30/90/140 - Overcenter valve

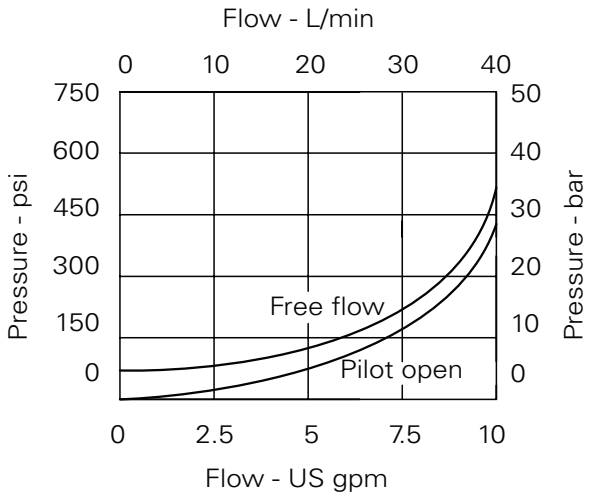
Pilot assisted relief with check

1SE30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Pressure drop - 1SE30

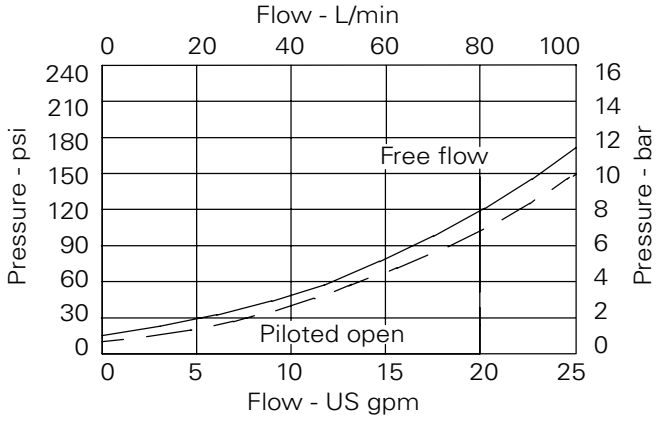


2:5:1 and 5:1 version

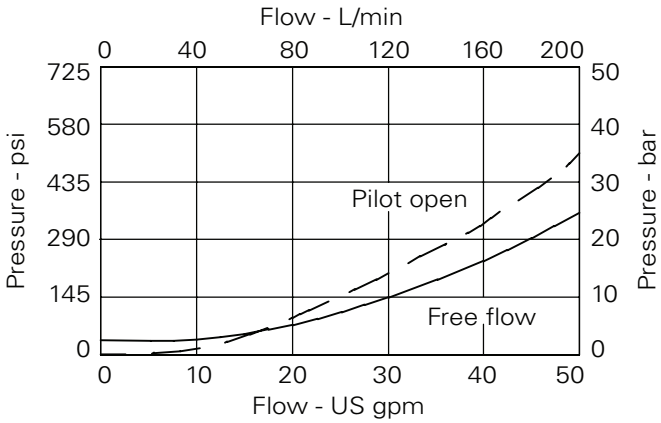


10:1 version

Pressure drop - 1SE90



Pressure drop -1SE140



F

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

1SE30/90/140 - Overcenter valve

Pilot assisted relief with check

1SE30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Model code: 1SE30

1SE30 – F – 35 S 5
1 2 3 4 5

1 Function
1SE30

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 Pressure range
Note: Code based on pressure in bar.h
20 - (All pilot ratios): 70-225 bar. Std setting 100 bar
35 - (2.5:1 and 5:1): 70-350 bar. Std setting 210 bar (10:1): 90-350 bar. Std setting 210 bar
Std setting made at 4.8 L/min
Other pressure ranges available on request

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

5 Pilot ratio
2 - 2.5:1
5 - 5:1
10 - 10:1

Model code: 1SE90

1SE90 – F – 35 S 4
1 2 3 4 5

1 Function
1SE90

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 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

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

5 Pilot ratio
4 - 4:1
8 - 8:1
Other ratios available upon request

Model code: 1SE140

1SE** – F – 40 S 4**
1 2 3 4 5

1 Basic code
1SE140

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 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

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

5 Pilot ratio
4 - 4:1
6 - 6:1
Other ratios available upon request

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

1SE30/90/140 - Overcenter valve

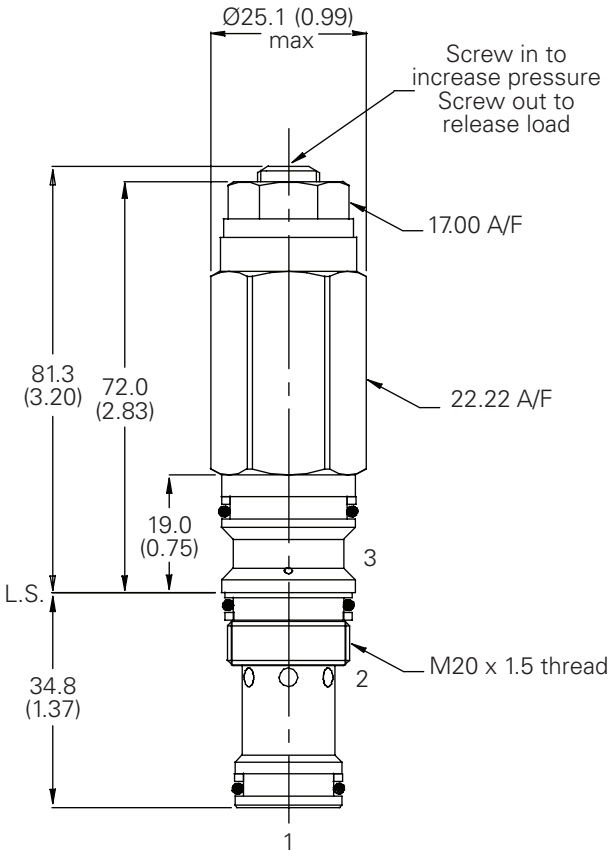
Pilot assisted relief with check

1SE30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SE90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SE140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Dimensions

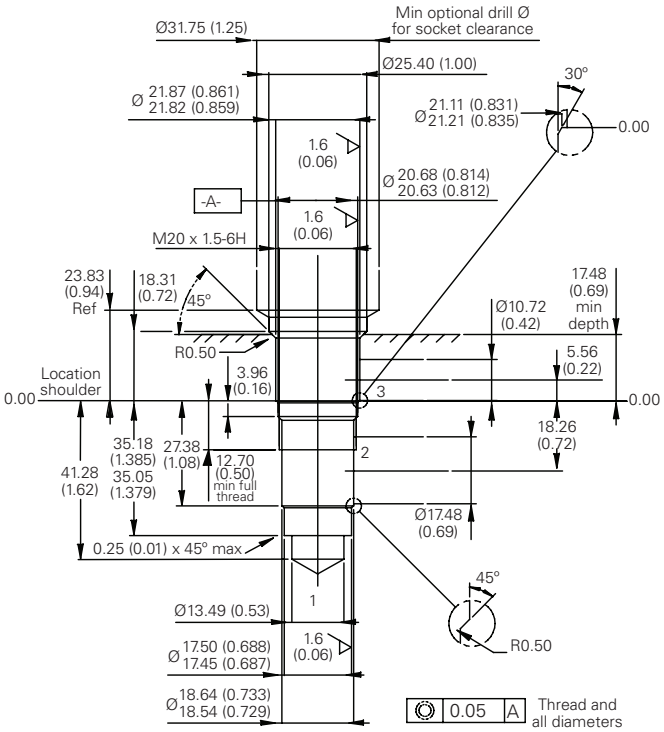
mm (inch)

Cartridge only: 1SE30



Cavity

Model	A20090-T11A
Form Drill	TD-11A
Form Reamer	TD-11A



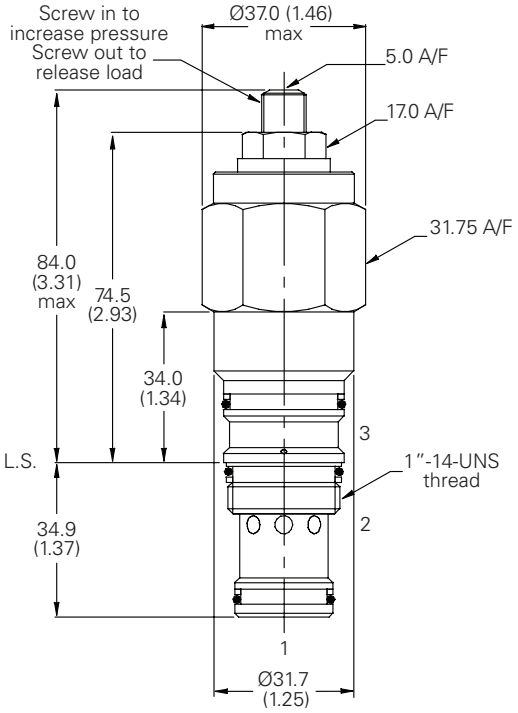
F

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

Dimensions

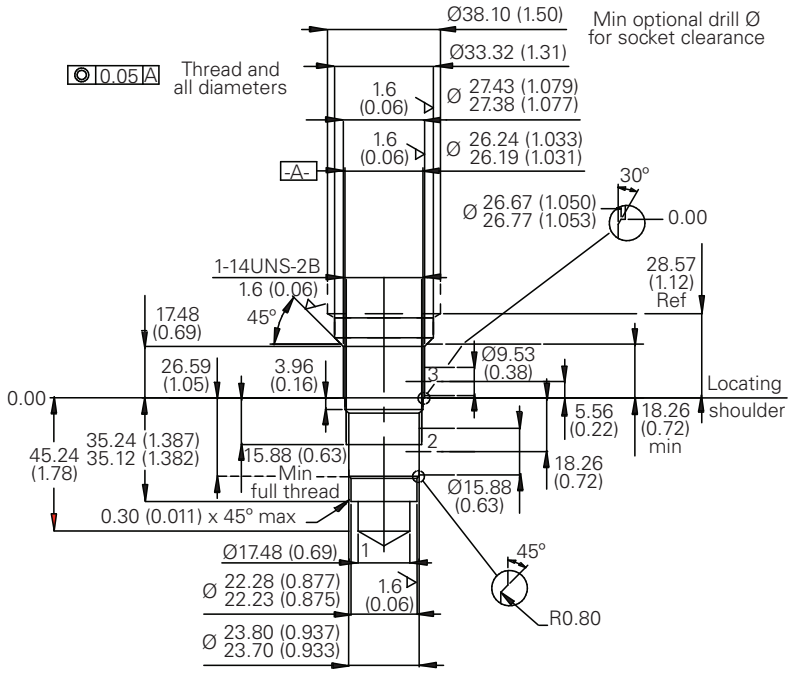
mm (inch)

Cartridge only: 1SE90

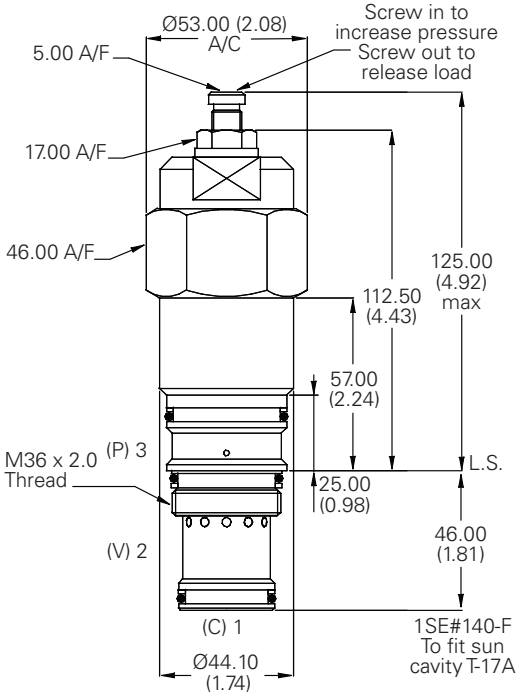


Cavity

Model	A20092-T2A
Form Drill	TD-2A
Form Reamer	TR-2A

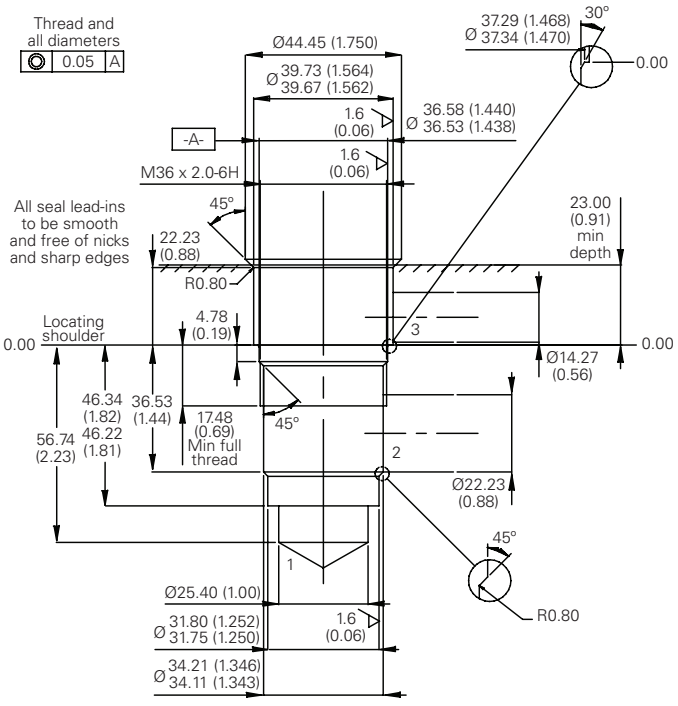


Cartridge only: 1SE140



Cavity

Model	A20094-T17A
Form Drill	TD-17A
Form Reamer	TR17A

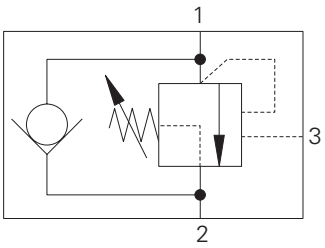


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1SER30/90/140 - Overcenter valve

Part balanced, pilot assisted relief with check

1SER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SER140: 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:

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

Performance data

Ratings and specifications

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

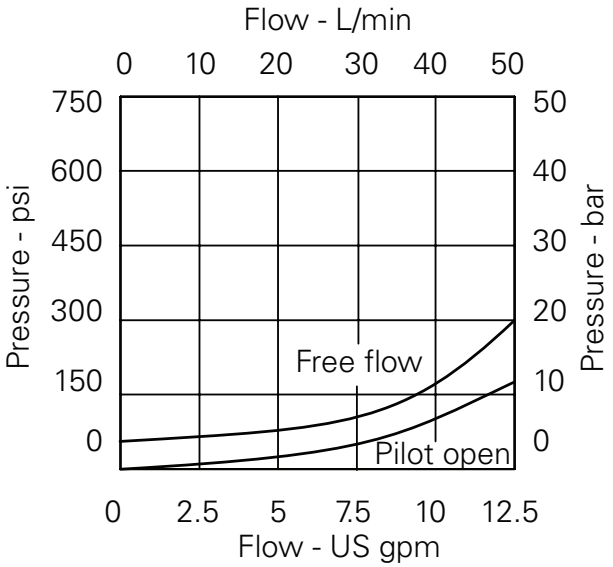
Rated flow	1SER30: 30 L/min (8 USgpm) 1SER90: 90 L/min (23 USgpm) 1SER140: 140 L/min (37 USgpm)
Rated relief pressure 1SER140	420, For rest it is same 350
Max relief setting	350 bar (5000 psi)
Max load induced pressure:	1SER30/1SER90: 270 bar (4000 psi) 1SER140: 340 340 bar (4930 psi)
Cartridge material	Working parts hardened and ground steel. External steel surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	1SER30: A20090-T11A 1SER90:A20092-T2A 1SER140: A20094-T17A
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1SER30: 0.15 kg (0.33 lbs) 1SER90: 0.42 kg (0.92 lbs) 1SER140: 1.2 kg (2.5 lbs)
Seal kit number	1SER30: SK1079 (Nitrile), SK1079V (Viton®) 1SER90: SK1093 (Nitrile) SK1093V (Viton®) 1SER140: SK1116 (Nitrile) SK1116V (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.

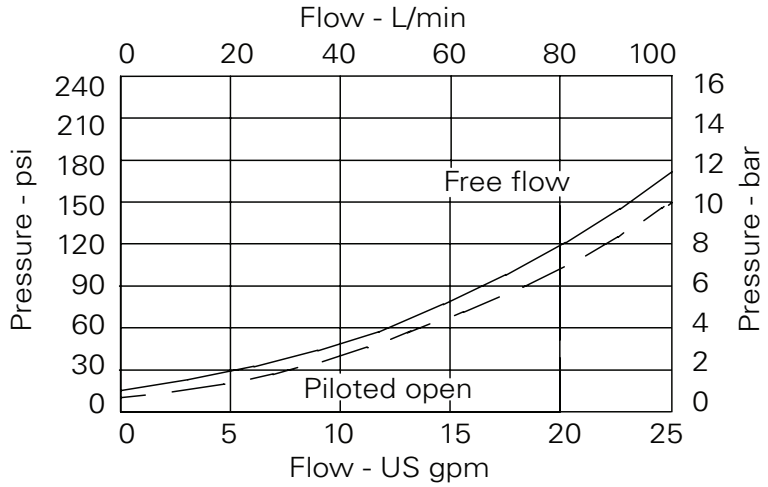
Pilot Ratio	1SER30	1SER90	1SER140
Best suited for applications where load varies and machine structure can induce instability.	4:1	-	4:1
Best suited for applications where the load remains relatively constant.	-	4:1	6:1

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

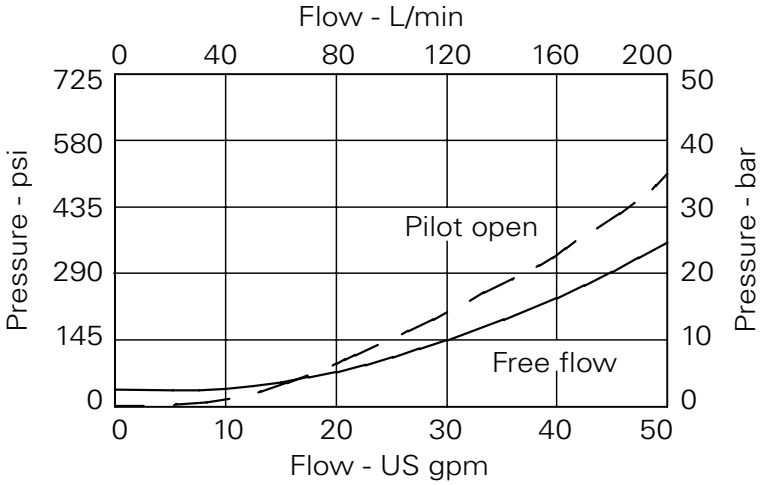
Pressure drop - 1SER30



Pressure drop - 1SER90



Pressure drop - 1SER140



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

1SER30/90/140 - Overcenter valve

Part balanced, pilot assisted relief with check

1SER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Model code: 1SER30

1SER30 – F – 35 S 4
1 2 3 4 5

1 Function
1SER30

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 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 75-350 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)

5 Pilot ratio
4 - 4:1

Model code: 1SER30

1SER90 – F – 35 S 4
1 2 3 4 5

1 Function
1SER30

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 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
20 - 70-225 bar
Std setting 100 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)

5 Pilot ratio
4 - 4:1
Other ratios available upon request

Model code: 1SER140

1SER* – F – 40 S 4**
1 2 3 4 5

1 Function
1SER140

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 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

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

5 Pilot ratio
4 - 4:1
6 - 6:1
Other ratios available upon request

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

1SER30/90/140 - Overcenter valve

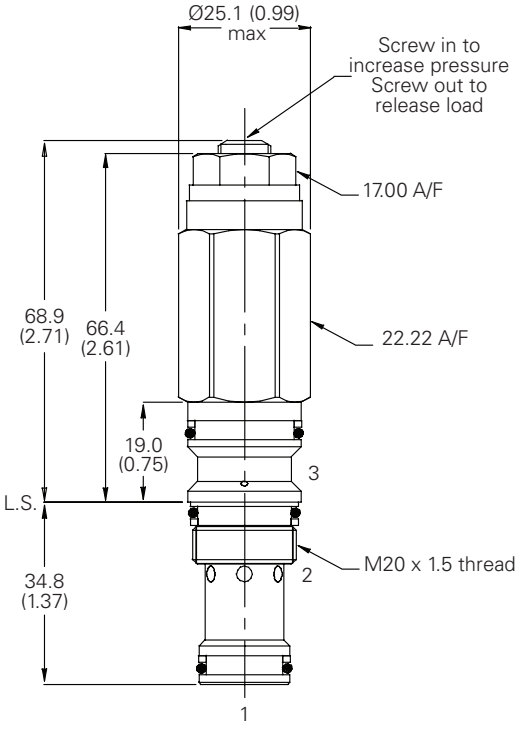
Part balanced, pilot assisted relief with check

1SER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Dimensions

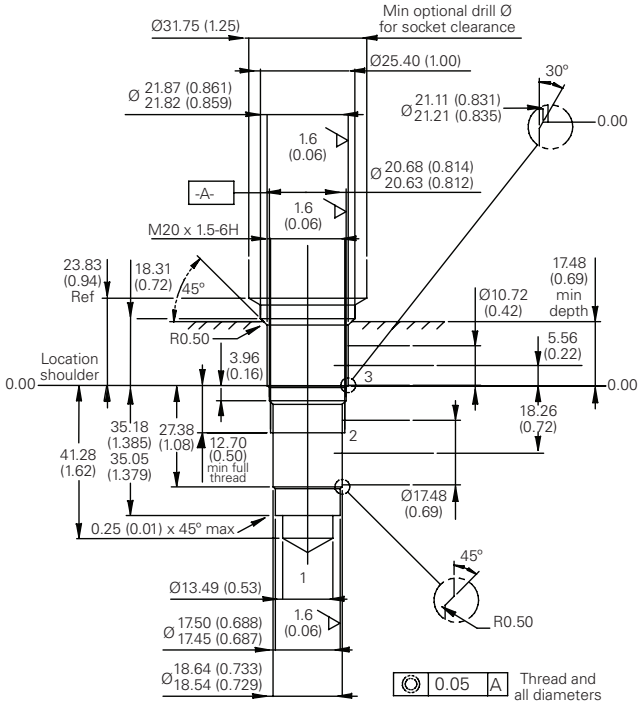
mm (inch)

Cartridge only: 1SER30

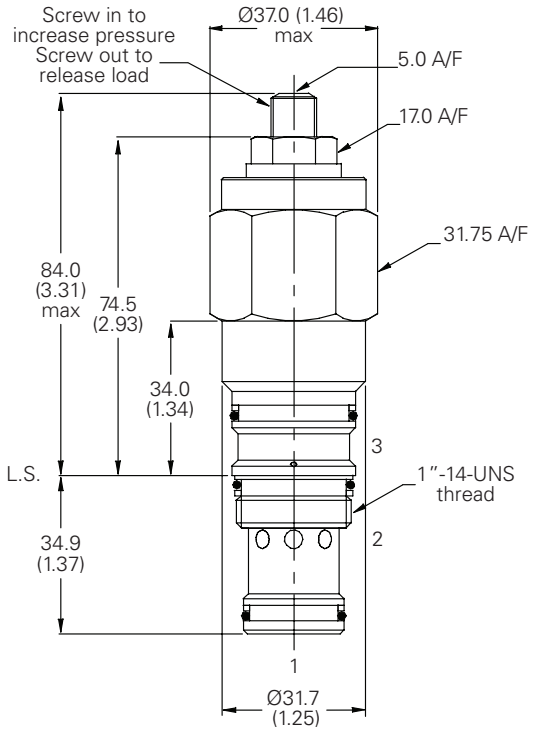


Cavity

Model A20090-T11A
Form Drill TD-11A
Form Reamer TR-11A

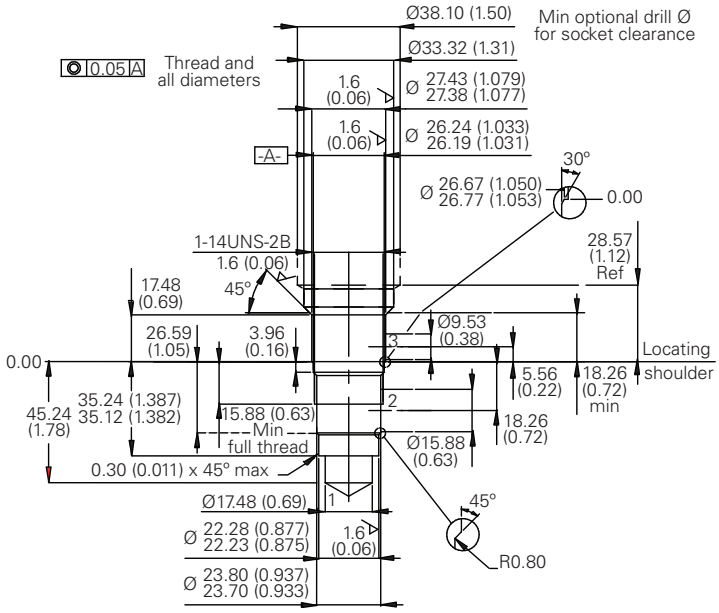


Cartridge only: 1SER90



Cavity

Model A20092-T2A
Form Drill TD-2A
Form Reamer TR-2A



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

1SER30/90/140 - Overcenter valve

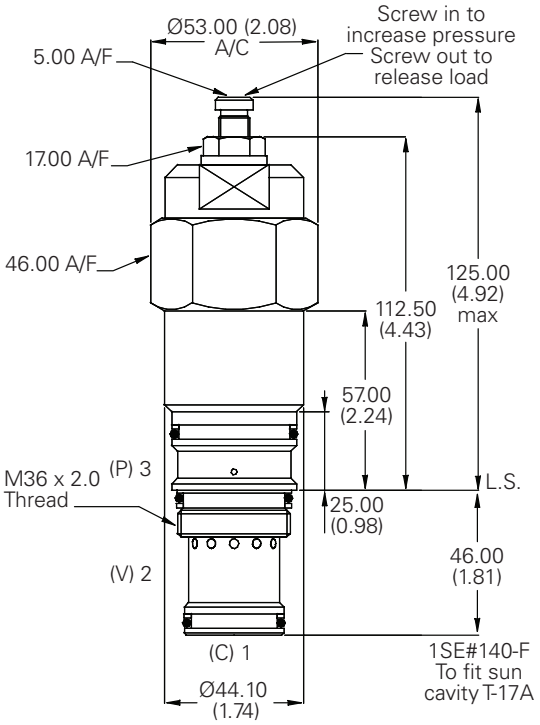
Part balanced, pilot assisted relief with check

1SER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SER140: 140 L/min (37 USgpm) • 340 bar (4930 psi)

Dimensions

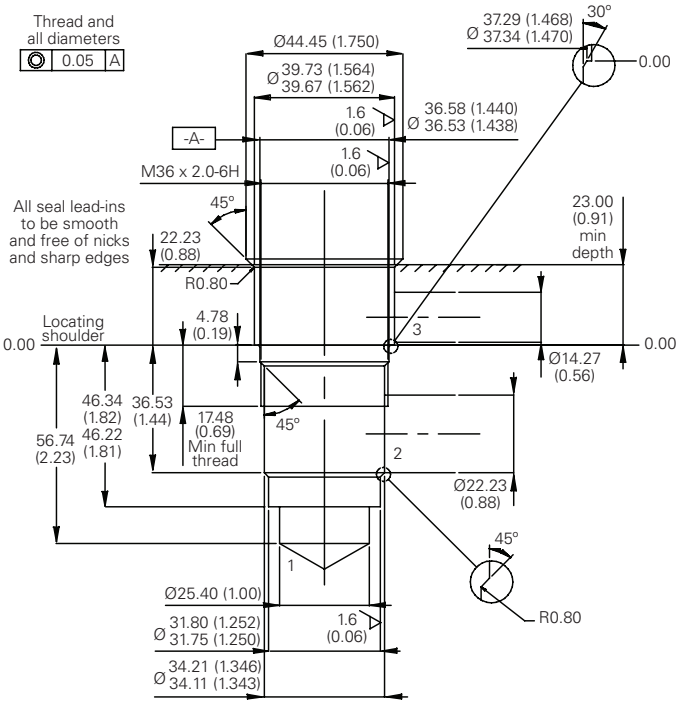
mm (inch)

Cartridge only: 1SER140



Cavity

Model	A20094-T17A
Form Drill	TD-17A
Form Reamer	TR17A

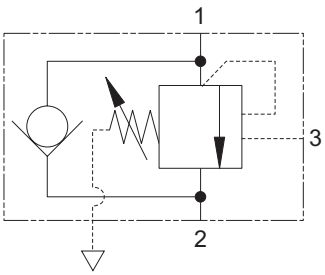


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1SEB30/90 - Overcenter valve

Part balanced, pilot assisted relief with check

1SER30: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1SER90: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1SER140: 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:

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

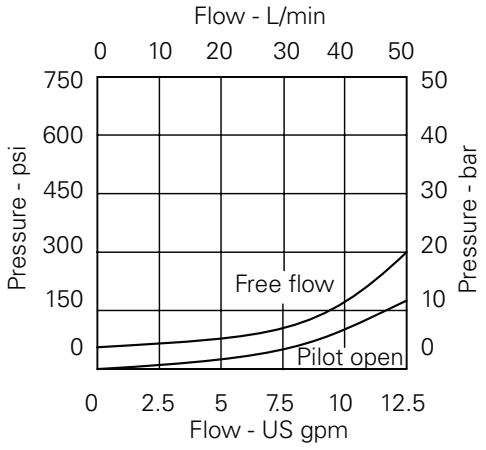
Performance data

Ratings and specifications

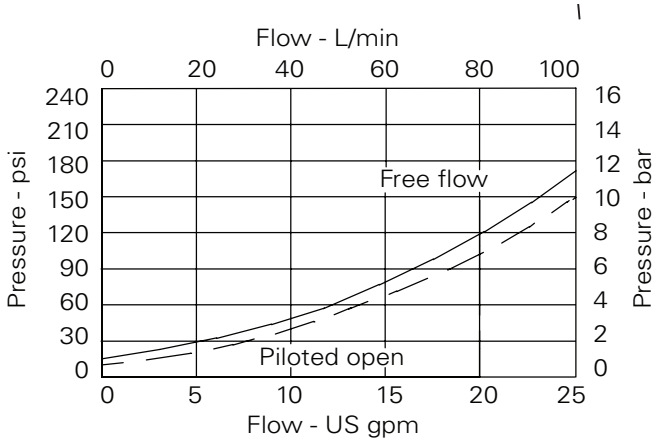
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	1SEB30: 30 L/min (8 USgpm) 1SEB90: 90 L/min (23 USgpm)
Max relief setting	350 bar (5000 psi)
Max load induced pressure	270 bar (4000 psi)
Cartridge material	Working parts hardened and ground steel. External steel surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	1SEB30: A20090-T11A 1SEB90: A20092-T2A
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1SEB30: 0.14 kg (0.30 lbs) 1SEB90: 0.42 kg (0.92 lbs)
Seal kit number	1SEB30: SK1079 (Nitrile), SK1079V (Viton®) 1SEB90: SK1096 (Nitrile), SK1096V (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

Pilot Ratio	1SEB30	1SEB90
Best suited for extremely unstable applications such as long booms or flexible frameworks.	5:1	-
Best suited for applications where the load remains relatively constant.	-	4:1

Pressure drop - 1SEB30



Pressure drop - 1SEB90



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

1SEB30/90 - Overcenter valve

Fully balanced, pilot assisted relief with check

1SEB30: 30 L/min (8 USgpm) • 270 bar (4000 psi)

1SEB90: 90 L/min (23 USgpm) • 270 bar (4000 psi)

Model code: 1SEB30

1SEB30	–	F	–	35	S	5
1		2		3	4	5

1 Function

1SEB30

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 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

35 - 75-350 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)

5 Pilot ratio

5 - 5:1

Model code: 1SEB90

1SEB90	–	F	–	35	S	4
1		2		3	4	5

1 Basic code

1SEB90

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 Pressure range

Note: Code based on pressure in bar.

20 - 70-225 bar.
Std setting 100 bar

35 - 75-350 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)

5 Pilot ratio

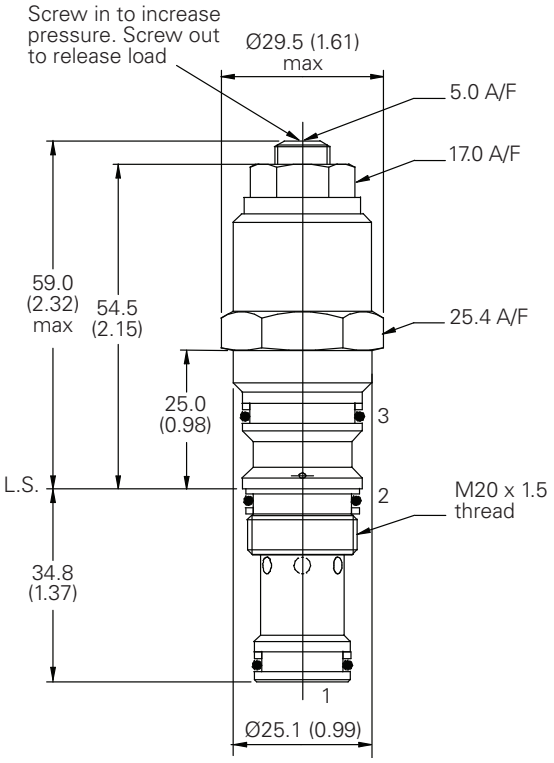
4 - 4:1

Other ratios available upon request

Dimensions

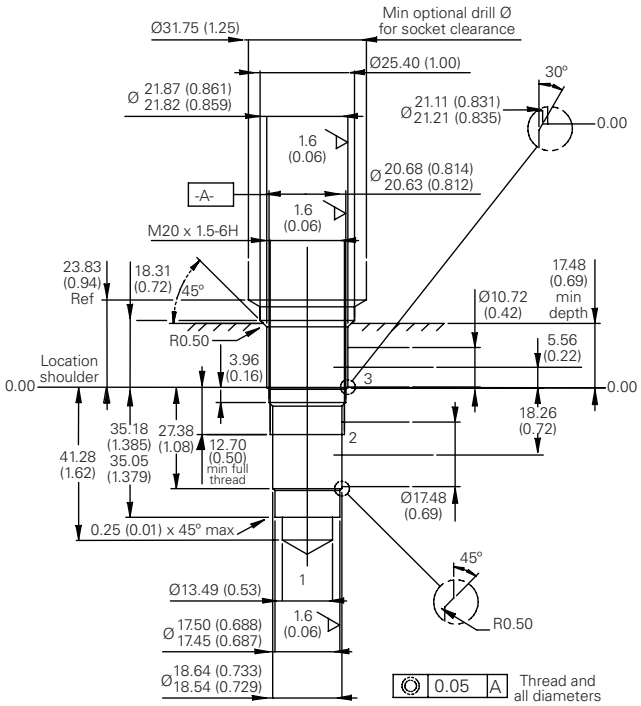
mm (inch)

Cartridge only: 1SEB30

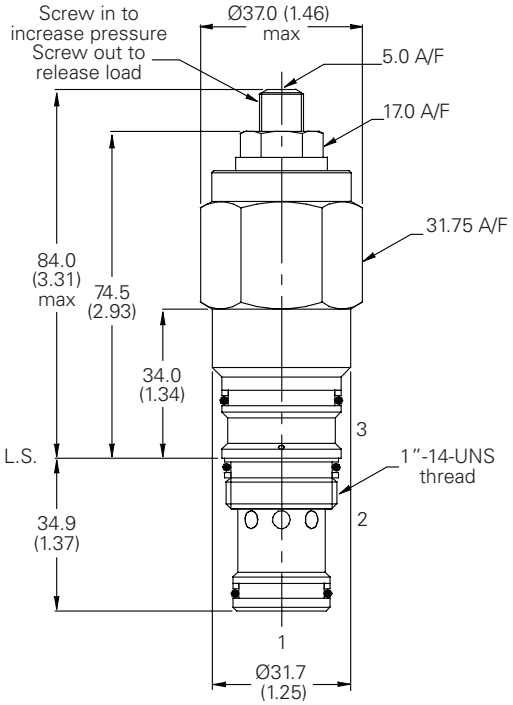


Cavity

Model	A20090-T11A
Form Drill	TD-11A
Form Reamer	TR-11A

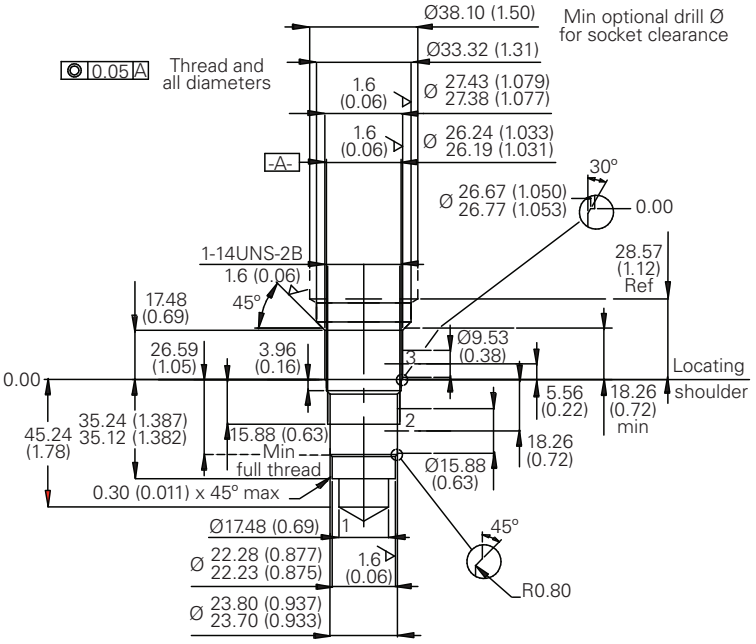


Cartridge only: 1SEB90



Cavity

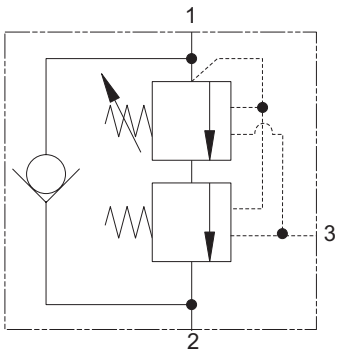
Model	A20092-T2A
Form Drill	TD-2A
Form Reamer	TR-2A



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

1SEL30/90/140 - Overcenter valve

Counterbalanced, pilot assisted relief with check
1SEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1SEL90: 90 L/min (23 USgpm) • 380 bar (5510 psi)
1SEL140: 140 L/min (37 USgpm) • 380 bar (5310 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.

Pilot ratio

1SEL30:
Primary 4.3:1
Secondary 0.4:1

1SEL90:
Primary 5.6:1
Secondary 0.7:1

1SEL140:
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	1SEL30: 30 L/min (8 USgpm) 1SEL90: 90 L/min (23 USgpm) 1SEL140:140 L/min (37 USgpm)
Max setting	380 bar (5510 psi)
Cartridge material	Working parts hardened and ground steel. External steel surfaces zinc plated.
Mounting position	Unrestricted
Cavity number	1SEL30: A20090-T11A 1SEL90: A20092-T2A 1SEL140: A20094-T17A
Torque cartridge into cavity	45 Nm (33 lbs ft)
Weight	1SEL30: 0.15 kg (0.33 lbs) 1SEL90: 0.42 kg (0.92 lbs) 1SEL140: 1.2 kg (2.5 lbs)
Seal kit number	1SEL30: SK1079 (Nitrile) SK1079V (Viton®) 1SEL90: SK1093 (Nitrile) SK1093V (Viton®) 1SEL140: SK1116 (Nitrile) SK1116V (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

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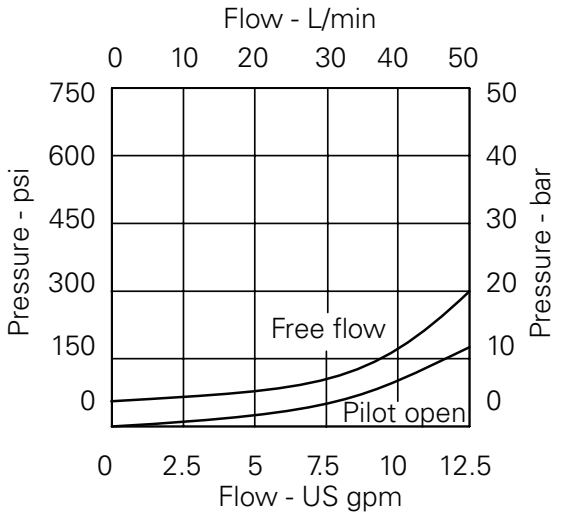
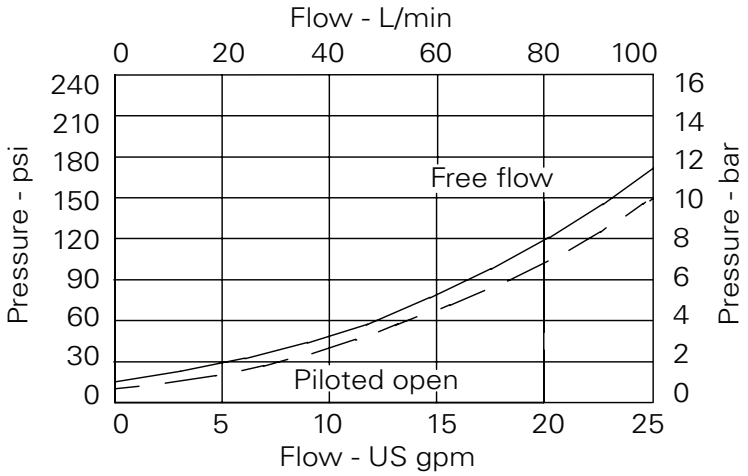
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

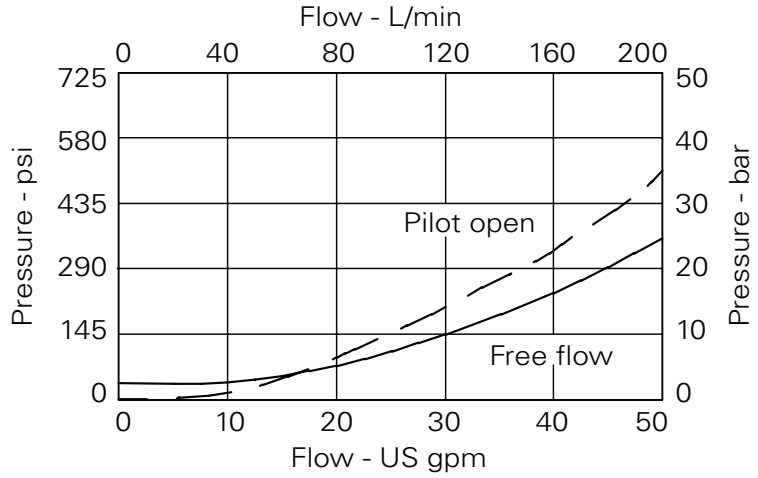
Pressure drop - 1SEL30



Pressure drop - 1SEL90



Pressure drop - 1SEL140



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 porduction 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.

1SEL30/90/140 - Overcenter valve

Counterbalanced, pilot assisted relief with check

1SEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1SEL90: 90 L/min (23 USgpm) • 380 bar (5510 psi)
1SEL140: 140 L/min (37 USgpm) • 380 bar (5310 psi)

Model code: 1SEL30

1SEL30 – F – 30 S 230 / 50
(1 – 2 – 3 – 4 – 5 – 6)

1 Function
1SEL30

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 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
20 - 170-300 bar Std setting 220 bar (170/50)
30 - 240-370 bar Std setting 280 bar (230/50)
40 - 270-380 bar Std setting 350 bar (300/50)
Std setting 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)

5 High pressure setting bar
(10 bar increments)
130 to 310 bar (2175 to 5000 psi)

6 Counterbalance setting bar
(10 bar increments)
20 to 120 bar (300 to 1740 psi)

Model code: 1SEL90

1SEL90 – F – 30 S 220 60
(1 – 2 – 3 – 4 – 5 – 6)

1 Function
1SEL90 -

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 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
20 - 170-350 bar Std setting 220 bar (160/60)
35 - 210-380 bar Std setting 250 bar (220/60)
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)

5 High pressure setting bar
(10 bar increments).
150 to 650 bar (2175 to 3335 psi)

6 Counterbalance setting bar
(10 bar increments).
20 to 170 bar (100 to 250 psi)

Model code: 1SEL140

1SEL140 – F – 30 S 220 / 60
(1 – 2 – 3 – 4 – 5 – 6)

1 Basic code
1SEL140 - Cartridge and 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 Pressure range 4.8 L/min
Note: Code based on pressure in bar.
20 - 170-320 bar. Std setting 220 bar (160/60)
30 - 230-380 bar. Std setting 280 bar (220/60)
40 - 310-380 bar. Std setting 350 bar (290/60)

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

5 High pressure setting bar
(10 bar increments).
150 to 350 bar (2175 to 5000 psi)

6 Counter balance setting bar
(10 bar increments).
20 to 100 bar (300 to 1500 psi)

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

1SEL30/90/140 - Overcenter valve

Counterbalanced, pilot assisted relief with check

1SEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)

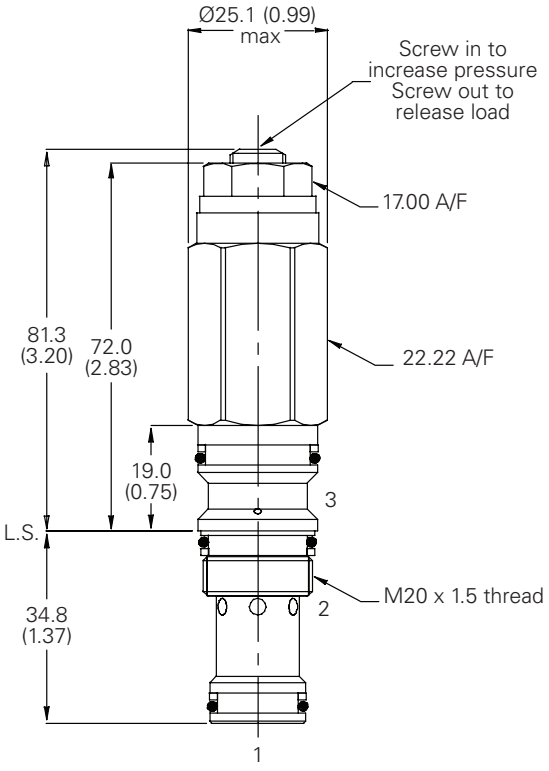
1SEL90: 90 L/min (23 USgpm) • 380 bar (5510 psi)

1SEL140: 140 L/min (37 USgpm) • 380 bar (5310 psi)

Dimensions

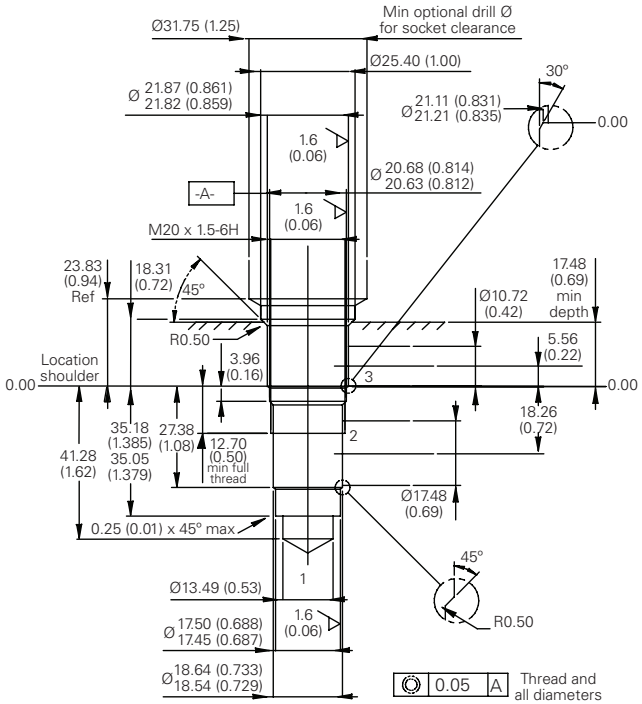
mm (inch)

Cartridge only: 1SEL30

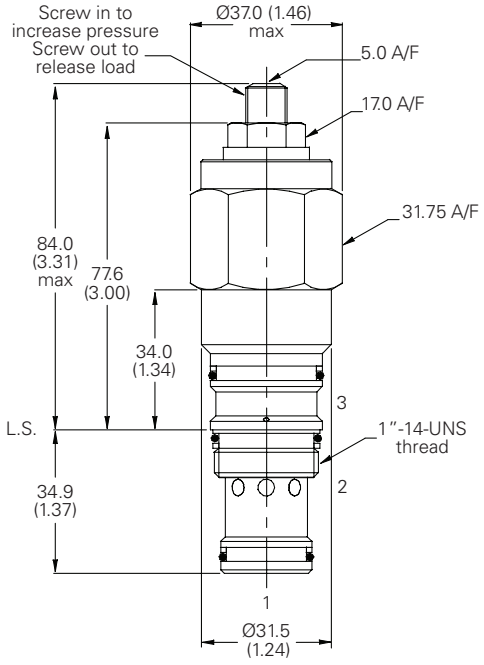


Cavity

Model	A20090-T11A
Form Drill	TD-11A
Form Reamer	TR-11A

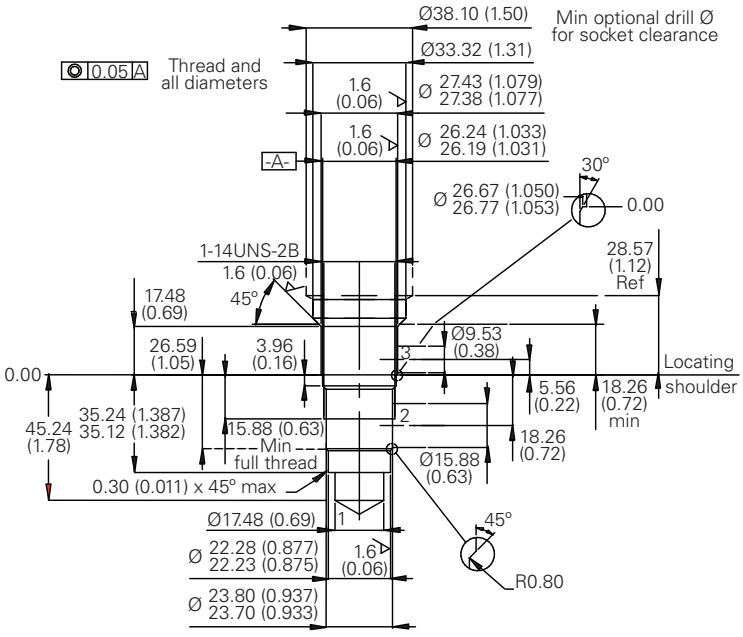


Cartridge only: 1SEL90



Cavity

Model	A20092-T2A
Form Drill	TD-2A
Form Reamer	TR-2A



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

1SEL30/90/140 - Overcenter valve

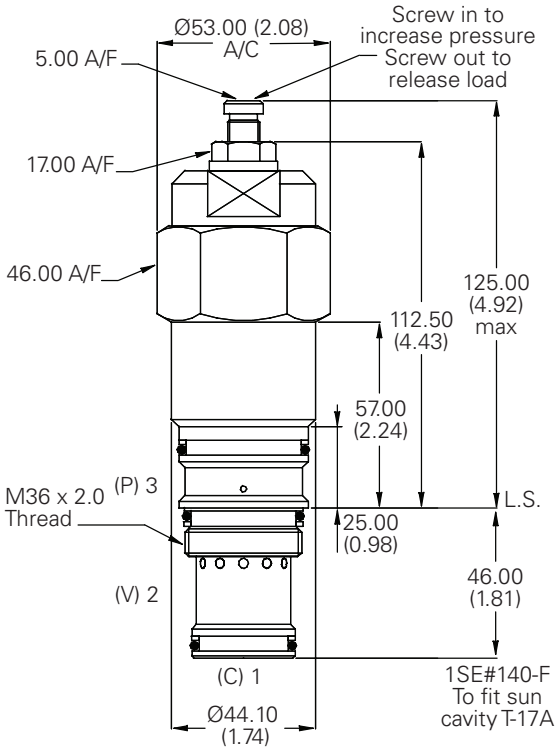
Counterbalanced, pilot assisted relief with check

1SEL30: 30 L/min (8 USgpm) • 380 bar (5510 psi)
1SEL90: 90 L/min (23 USgpm) • 380 bar (5510 psi)
1SEL140: 140 L/min (37 USgpm) • 380 bar (5310 psi)

Dimensions

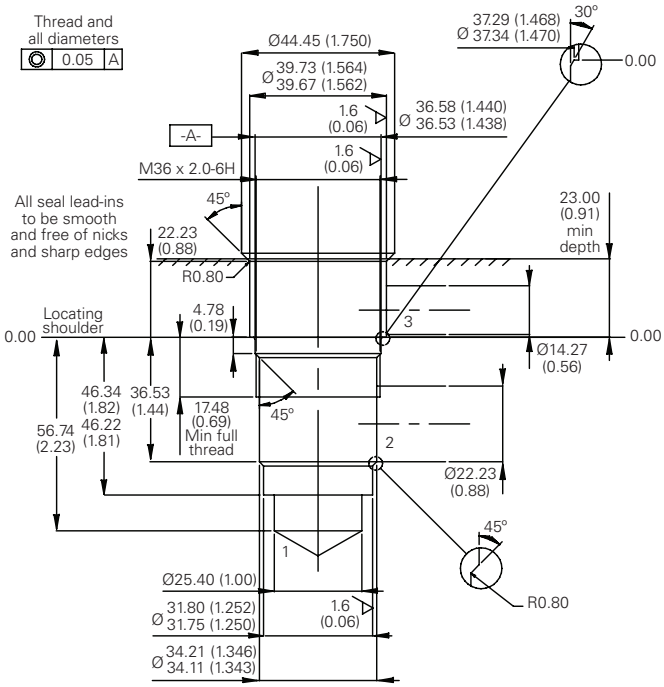
mm (inch)

Cartridge only: 1SEL140



Cavity

Model	A20094-T17A
Form Drill	TD-17A
Form Reamer	TR17A

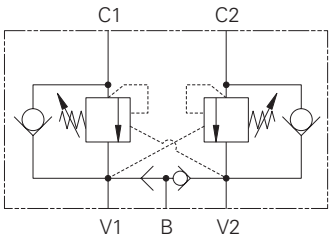


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEESH35/95/150/350 - Dual overcenter valve

Pilot assisted relief with brake shuffle

1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 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:

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

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CEESH35: 30 L/min (8 USgpm) 1CEESH95: 30 L/min (8 USgpm)	1CEESH150: 150 L/min (40 USgpm) 1CEESH350: 300 L/min (80 USgpm)
Max relief pressure:	1CEESH35/1CEESH150/1CEESH350: 350 bar (5000 psi) 1CEESH95: 350 & 225 bar
Max load induced pressure:	1CEESH35/1CEESH150/1CEESH350: 270 bar (4000 psi) 1CEESH95: 270 & 160 bar
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated.
Standard housing material	Steel
Mounting position	Line Mounted
Weight 1CEESH35: 2.20 kg (4.84 lbs) 1CEESH95: 2.20 kg (4.84 lbs)	1CEESH150: 3.50 kg (7.70 lbs) 1CEESH350: 5.42 kg (11.94 lbs)
Seal kit 1CEESH35: SK816 (Nitrile) SK816V (Viton®) 1CEESH95: SK817 (Nitrile) SK817V (Viton®)	1CEESH150: SK818 (Nitrile) SK818V (Viton®) 1CEESH350: SK688 (Nitrile) SK688V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	1CEESH35/1CEESH95/1CEESH150: 0.3 milliliters/min nominal (5 dpm) 1CEESH350: 4 millilites
Nominal viscosity range	5 to 500 cSt

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Pilot Ratio	1CEESH35	1CEESH95	1CEESH150	1CEESH350
Best suited for extremely unstable applications such as long booms or flexible frameworks.	2.5:1	-	-	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	4:1	3.5:1	3:1
Best suited for applications where the load remains relatively constant.	10:1	8:1	-	8:1

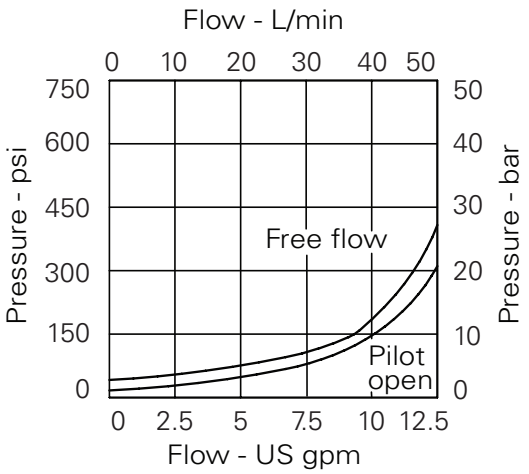
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEESH35/95/150/350 - Dual overcenter valve

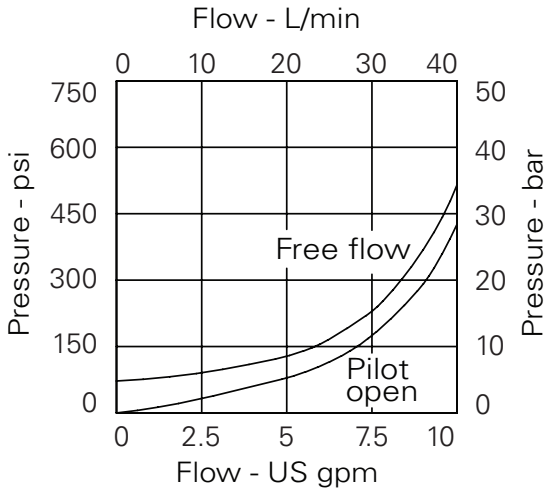
Pilot assisted relief with brake shuffle

1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Pressure drop - 1CEESH35

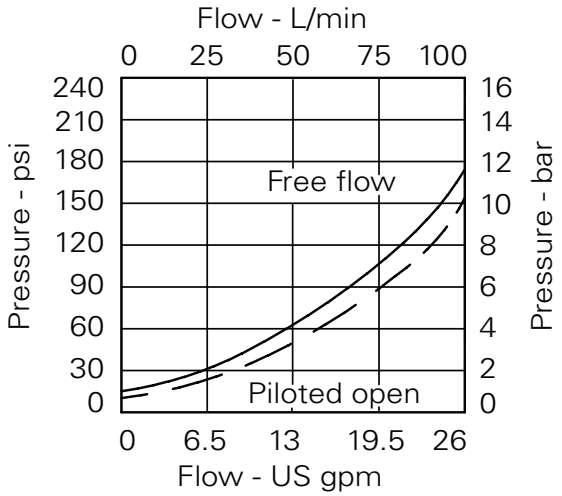


2:5:1 and 5:1 version

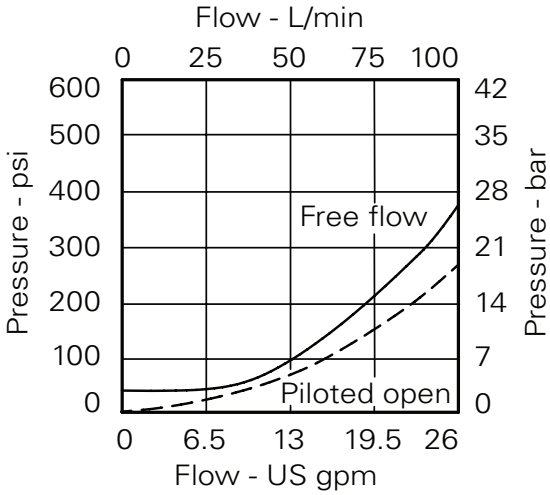


10:1 version

Pressure drop - 1CEESH95

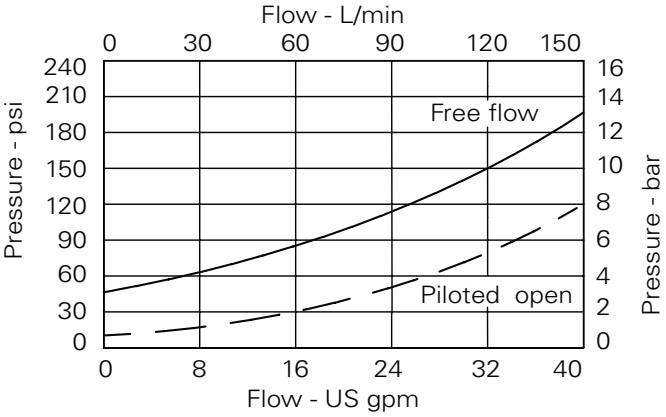


4:1 version

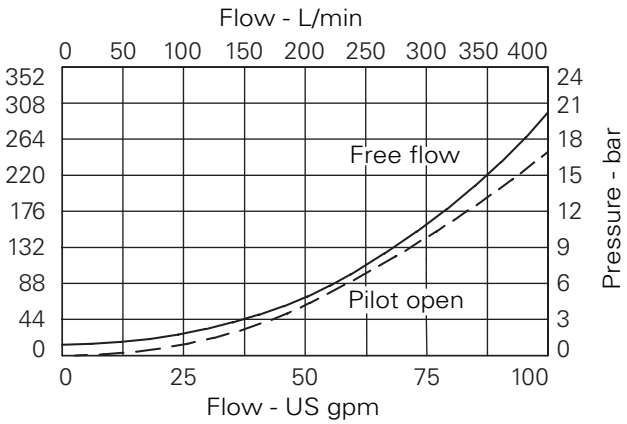


8:1 version

Pressure drop - 1CEESH150



Pressure drop - 1CEESH350



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

1CEESH35/95/150/350 - Dual overcenter valve

Pilot assisted relief with brake shuffle

1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEESH35

1		2		3		4		5		6		7
1CEESH35	–	F		3W	–	35		S		3	–	377

1 Basic code

1CEESH35 - Cartridge 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 - sub assembly
		Steel single
3W	3/4" BSP Valve & Cyl Port 1/4" BSP Brake Port	BXP15939-3W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

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

2 - 2.5:1

5 - 5:1 (Standard)

10 - 10:1

7 Body material

377 - Steel

Model code: 1CEESH95

1		2		3		4		5		6		7
1CEESH95	–	F		6W	–	35		S		4		377

1 Function

1CEESH95 - Cartridge and Body

2 Adjustment means

F - Screw adjustment

N - 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
		Steel
6W	3/4" BSP Valve & Cyl Port 1/4" BSP Brake Port	BXP17429-6W-S-377

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

7 Body material

377 - Steel

F

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

1CEESH35/95/150/350 - Dual overcenter valve

Pilot assisted relief with brake shuffle

1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEESH150

1		2		3	4		5		6		7
1CEESH150	–	F		8W	35	–	S		3		377

1 Function

1CEESH150 - Cartridges and Body

2 Adjustment means

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only
		Steel
8W	1" BSP Valve & Cyl Port 1/4" BSP Pilot Port	CXP15933-8W-377

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 Seal material

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

7 Body material

377 - Steel

Model code: 1CEESH350

1		2		3	4		5		6		7
1CEESH350	–	F		10W	35	–	S		3		377

1 Basic code

1CEESH350 - Cartridges and Body

2 Adjustment means

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only
		Steel
10W	1 1/4" BSP Valve & Cyl Port 1/4" BSP Pilot Port	CXP22297-10W-S-377

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
8 - 8:1

7 Body material

377 - Steel

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

1CEESH35/95/150/350 - Dual overcenter valve

Pilot assisted relief with brake shuffle

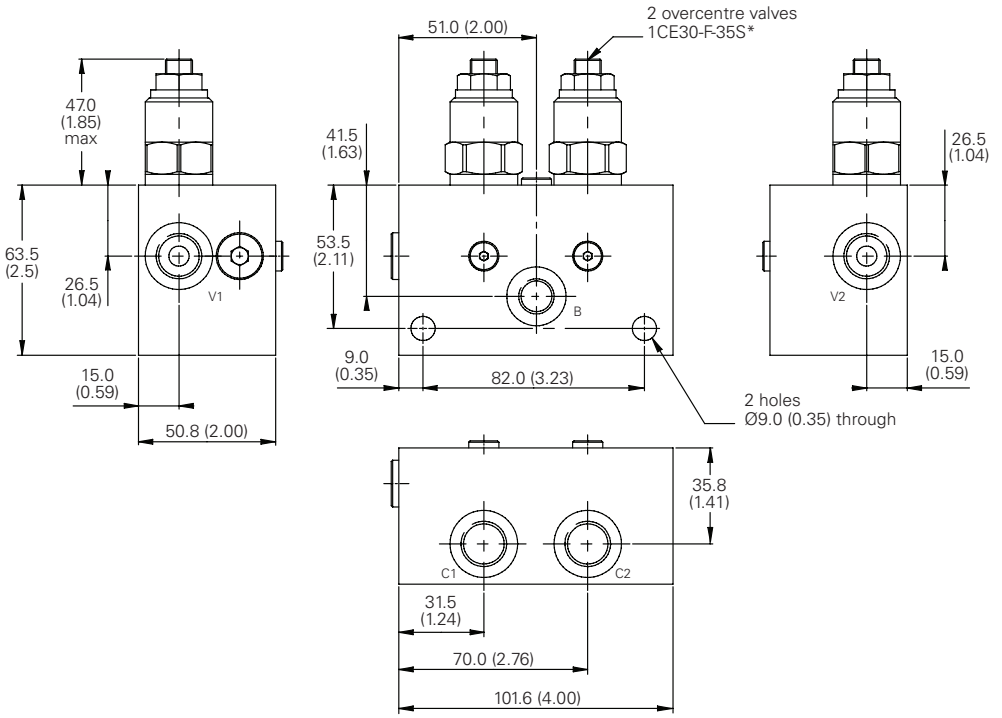
1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

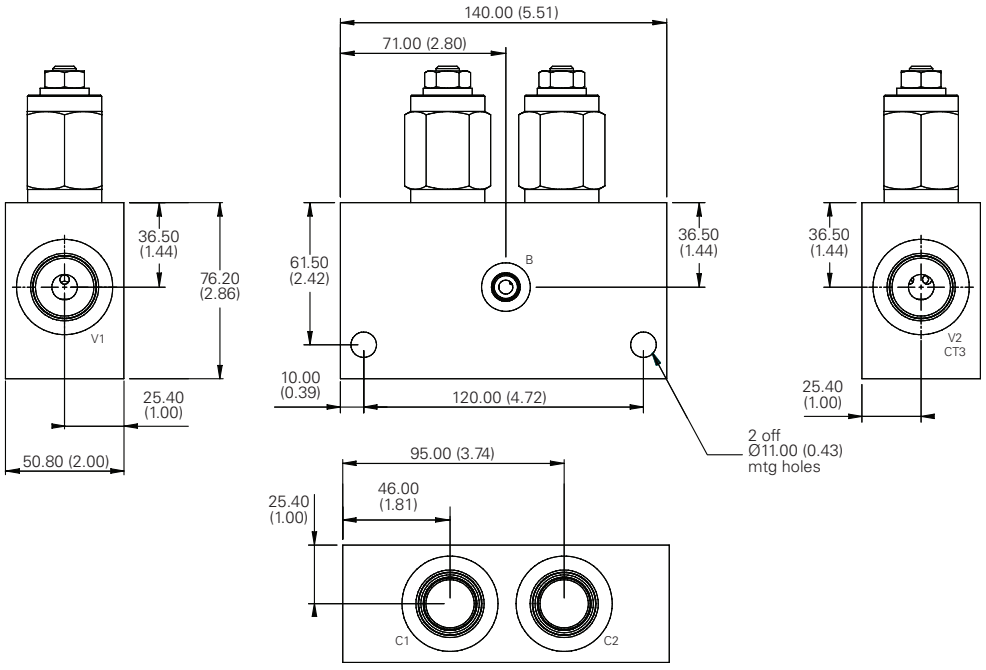
Complete valve

3/8" Ports
Basic Code - 1CEECSH35
Internally Cross Piloted



Complete valve

3/4" Ports
basic code - 1CEESH95



F

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

1CEESH35/95/150/350 - Dual overcenter valve

Pilot assisted relief with brake shuffle

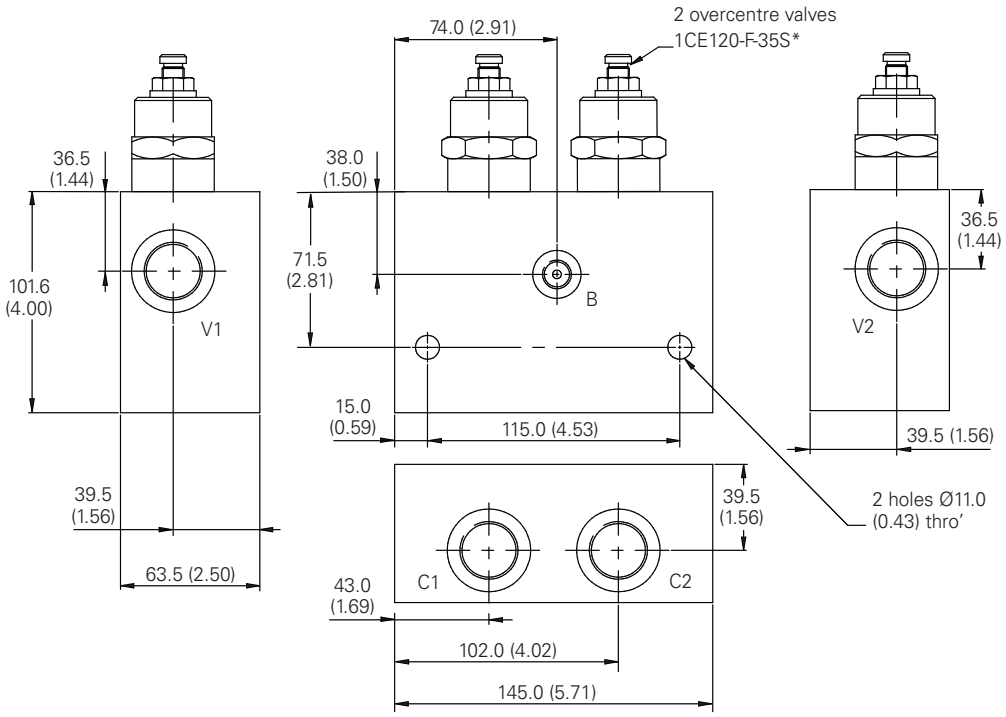
1CEESH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEESH95: 90 L/min (23 USgpm) • 270 bar (4000 psi)
1CEESH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEESH350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

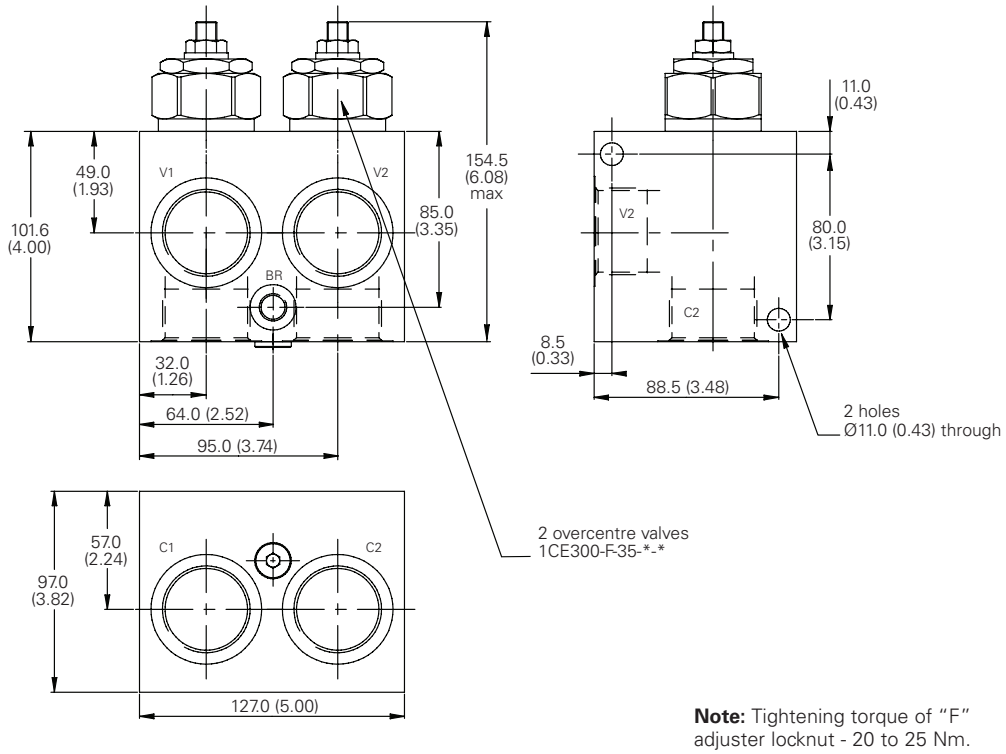
Complete valve

1" Ports
Basic Code - 1CEESH150
Internally Cross Piloted



Complete valve

1 1/4" Ports
Basic Code - 1CEESH350
Internally Cross Piloted



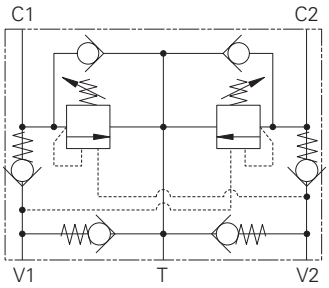
Note: Tightening torque of "F" adjuster locknut - 20 to 25 Nm.

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

1CEEC35/95/150/350 - Motion control and lock valve

Pilot assisted relief

1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 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:

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

A system of check valves allows crossline relief for dynamic applications with the optional make up facility to compensate for any change in system volume.

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CEEC35: 30 L/min (8 USgpm) 1CEEC95: 95 L/min (25 USgpm)	 1CEEC150: 150 L/min (40 USgpm) 1CEEC350: 300 L/min (80 USgpm)
Max relief pressure	1CEEC35 / 1CEEC95: 350 bar (5000 psi) (35), 225 bar (3260 psi) (20) 1CEEC150 / 1CEEC350: 350 bar (5000 psi) (35)
Max load induced pressure	1CEEC35 / 1CEEC95: 270 bar (4000 psi) (35), 160 bar (2300 psi) (20) 1CEEC150 / 1CEEC350: 270 bar (4000 psi) (35)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated.
Standard housing material	Steel
Mounting position	Line mounted
Weight 1CEEC35: 2.03 kg (4.50 lbs) 1CEEC95: 3.70 kg (8.20 lbs)	 1CEEC150: 3.7 kg (8.2 lbs) 1CEEC350: 8.2 kg (18.0 lbs)
Seal kit 1CEEC35: SK815 (Nitrile) SK815V (Viton®) 1CEEC95: SK814 (Nitrile) SK814V (Viton®)	 1CEEC150: SK813 (Nitrile) SK813V (Viton®) 1CEEC350: SK635 (Nitrile) SK635V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal Leakage	1CEEC35 / 1CEEC95 / 1CEEC150: 0.3 milliliters/min nominal (5 dpm) 1CEEC350: 4 millilites
Nominal viscosity range	5 to 500 cSt

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

Pilot Ratio	1CEEC35	1CEEC95	1CEEC150	1CEEC350
Best suited for extremely unstable applications such as long booms or flexible frameworks.	2.5:1	-	-	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	4:1	3.5:1	3:1
Best suited for applications where the load remains relatively constant.	10:1	8:1	-	8:1

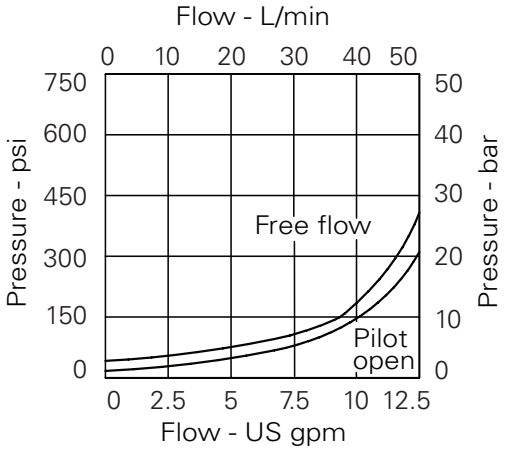
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEEC35/95/150/350 - Motion control and lock valve

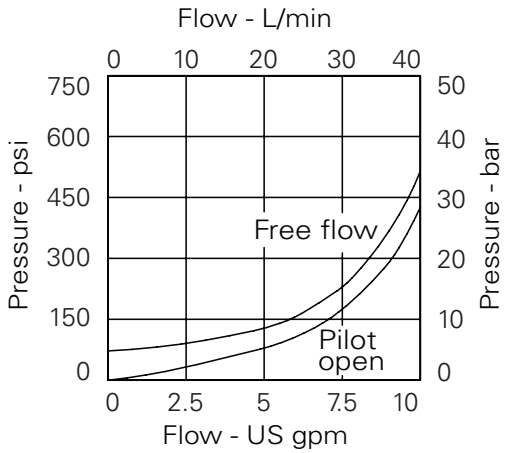
Pilot assisted relief

1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Pressure drop - 1CEEC35

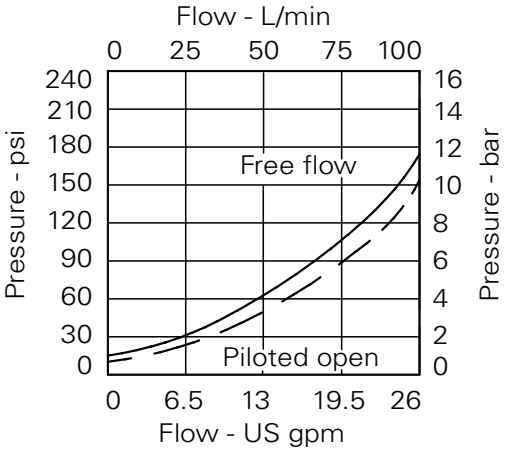


2:5:1 and 5:1 version

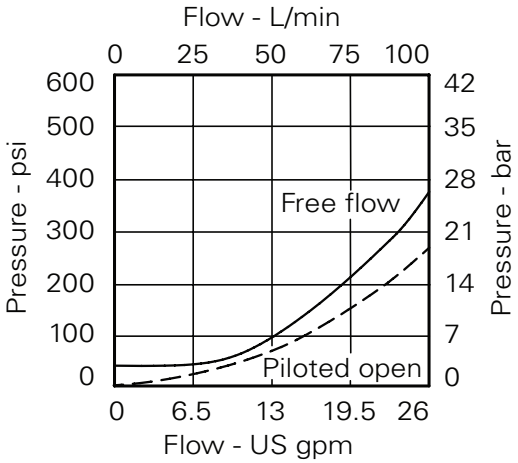


10:1 version

Pressure drop - 1CEEC95

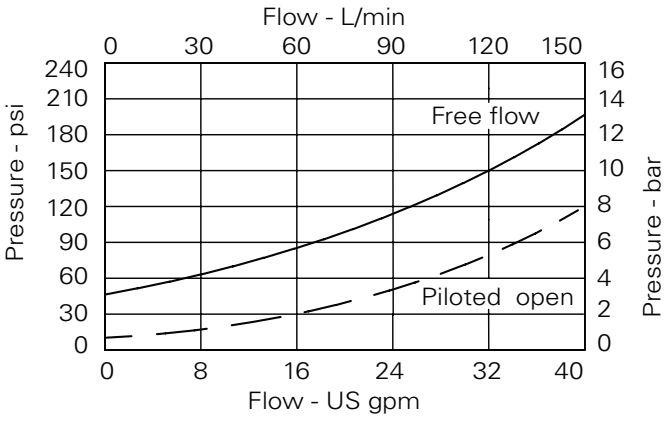


4:1 version

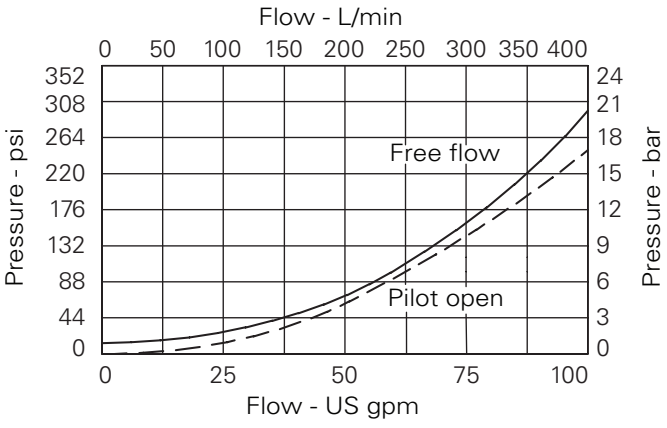


8:1 version

Pressure drop - 1CEEC150



Pressure drop - 1CEEC350



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

1CEEC35/95/150/350 - Motion control and lock valve

Pilot assisted relief

1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEEC35

1CEEC35	–	F	3W	–	35	S	5	377
1		2	3		4	5	6	7

1 Basic code

1CEEC35 - Cartridge and 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 size - bodied valves only

Code	Port size	Housing number
		Steel
3W	**3/8"** BSP	BXP16247-3W-S-377

4 Pressure range @ 4.8 L/min

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

Std setting made a 4.8 L/min 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

2 - 2.5:1
5 - 5:1
10 - 10:1

Other ratios available upon request

7 Body material

377 - Steel

Model code: 1CEEC95

1CEEC95	–	F	3W	–	35	S	5	377
1		2	3		4	5	6	7

1 Basic code

1CEEC95 - Cartridge and 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 size

Code	Port size	Housing number- body only
		Steel
6W	**3/4"** BSP	BXP16248-6W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.

35 - (4:1 and 8:1)
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 made at 4.8 L/min

6 Pilot ratio

4 - 4:1
8 - 8:1

Other ratios available upon request

7 Body material

377 - Steel

F

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

1CEEC35/95/150/350 - Motion control and lock valve

Pilot assisted relief

1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEEC150

1CEEC150 – F 8W – 35 S 3 377
1 2 3 4 5 6 7

1 Basic code

1CEEC150 - Cartridges and body

2 Adjustment means

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
		Steel
8W	1" BSP Valve & Cyl Port. 1/4" BSP Brake Port	BXP15687-8W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
35 - 70-35 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 made at 4.8 L/min

6 Pilot ratio

3 - 3.5:1

7 Body material

377 - Steel

Model code: 1CEEC350

1CEEC350 – F 10W – 35 S 3 377
1 2 3 4 5 6 7

1 Basic code

1CEEC350 - Cartridges and body

2 Adjustment means

F - Screw adjustment

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
		Steel Single
10W	1 1/4" BSP valve & cyl port. 1/4" BSP brake port	DXP16844-10W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
35 - 70-35 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 made at 4.8 L/min

6 Pilot ratio

3 - 3:1
8 - 8:1

7 Housing material

377 - Steel

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

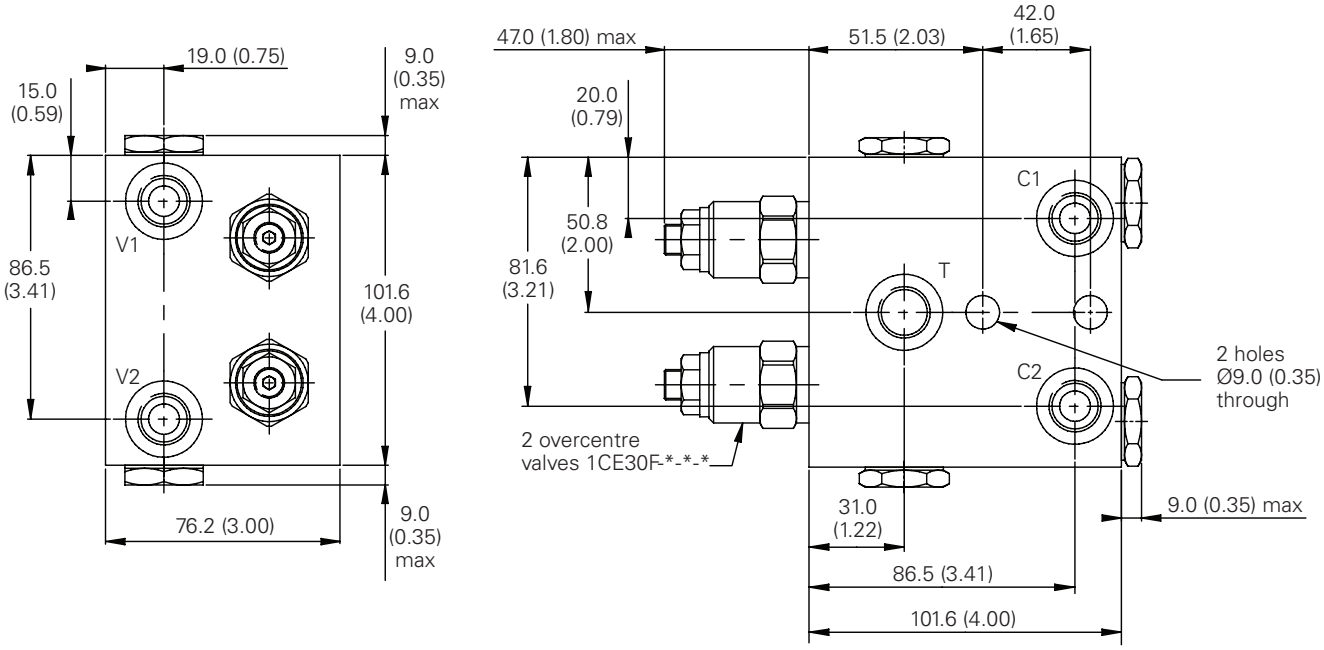
1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

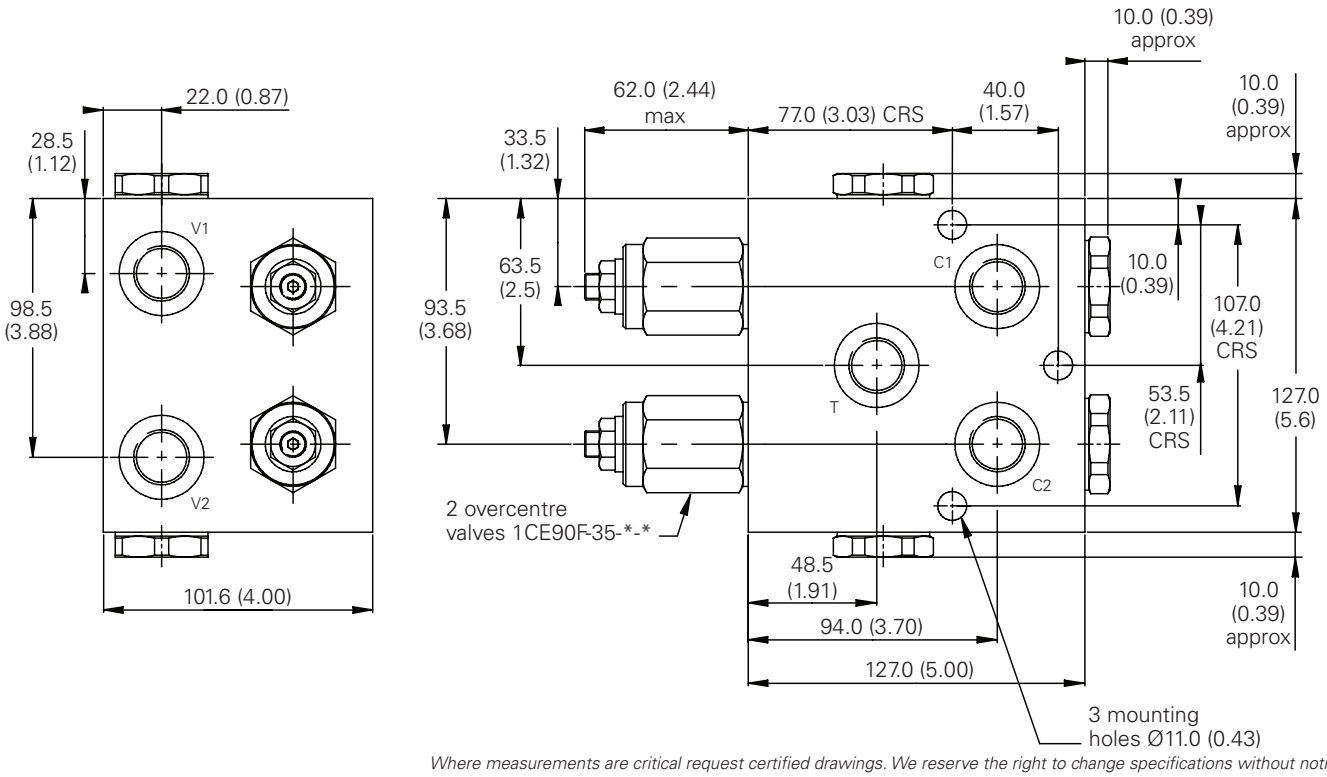
Complete valve

3/8" Ports Ports
Basic Code - 1CEEC35



Complete valve

3/4" Ports
Basic Code - 1CEEC95
Internally Cross Piloted



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

1CEEC35/95/150/350 - Motion control and lock valve

Pilot assisted relief

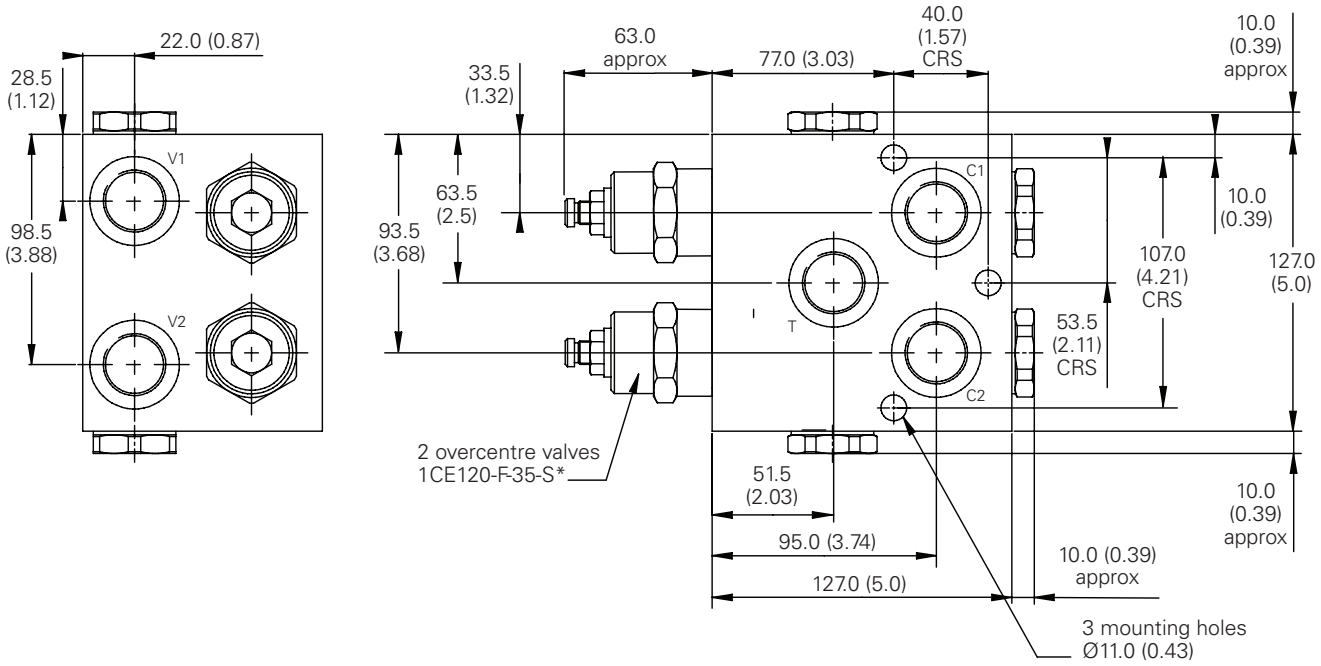
1CEEC35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEEC95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEEC150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEEC350: 300 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

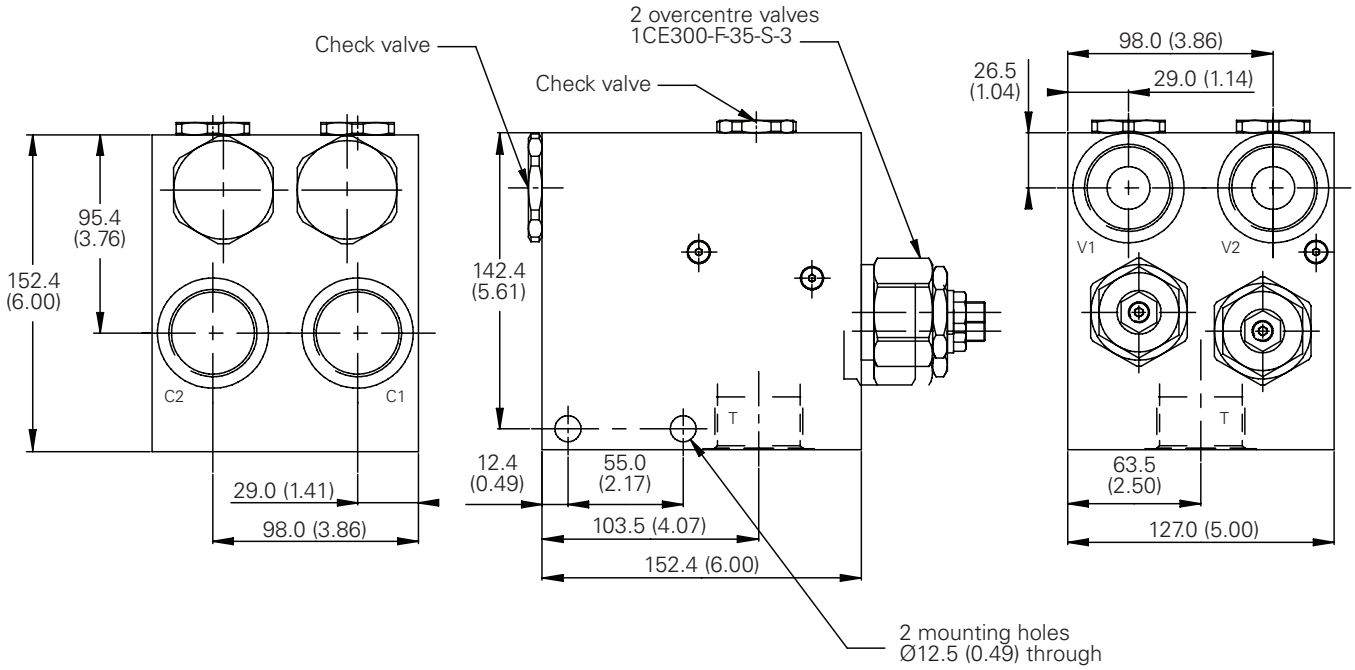
Complete valve

1" Ports
Basic Code - 1CEEC150



Complete valve

1 1/4" Ports
Basic Code - 1CEEC350

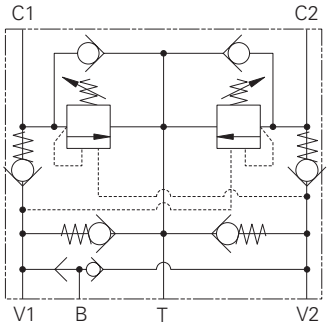


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEECSH35/95/150/350 - Motion control & lock valve

Pilot assisted relief with brake shuttle

1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 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:

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

A system of check valves allows crossline relief for dynamic applications with the optional make up facility to compensate for any change in system volume.

Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow 1CEECSH35: 30 L/min (8 USgpm) 1CEECSH95: 95 L/min (25 USgpm)	 1CEECSH150: 150 L/min (40 USgpm) 1CEECSH350: 350 L/min (80 USgpm)
Max relief pressure	1CEECSH35/1CEECSH150/1CEECSH350: 350 bar (5000 psi) 1CEECSH95: 350 bar (5000 psi) (35), 225 bar (3260 psi) (20)
Max load induced pressure:	1CEECSH35/1CEECSH150/1CEECSH350: 270 bar (4000 psi) 1CEECSH95: 270 bar (4000 psi) 160 bar (2300 psi) (20)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated.
Standard housing materials	Steel
Mounting position	Line mounted
Weight 1CEECSH35: 2.03 kg (4.5 lbs) 1CEECSH95: 3.70 kg (8.20 lbs)	 1CEECSH150: 3.7 kg (8.2 lbs) 1CEECSH350: 8.2 kg (18.0 lbs)
Seal kit 1CEECSH35: SK815 (Nitrile) SK815V (Viton®) 1CEECSH95: SK814 (Nitrile) SK814V (Viton®)	 1CEECSH150: SK813 (Nitrile) SK813V (Viton®) 1CEECSH350: SK635 (Nitrile) SK635V (Viton®)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	1CEECSH35/1CEECSH95/1CEECSH150: 0.3 ml/min (5 dpm) 1CEECSH350: 4 millilites
Nominal viscosity range	5 to 500 cSt

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

Pilot Ratio	1CEECSH35	1CEECSH95	1CEECSH150	1CEECSH350
Best suited for extremely unstable applications such as long booms or flexible frameworks.	2.5:1	-	-	-
Best suited for applications where load varies and machine structure can induce instability.	5:1	4:1	3.5:1	3:1
Best suited for applications where the load remains relatively constant.	10:1	8:1	-	8:1

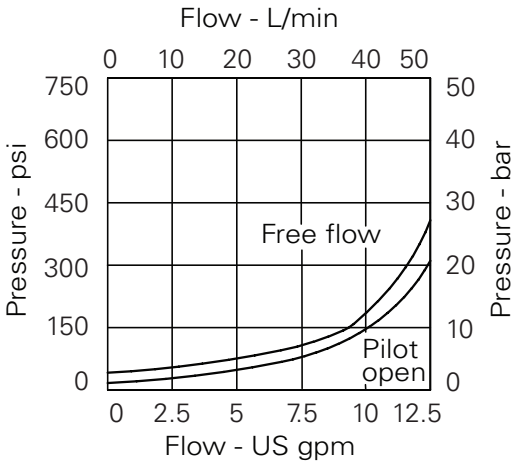
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEECSH35/95/150/350 - Motion control & lock valve

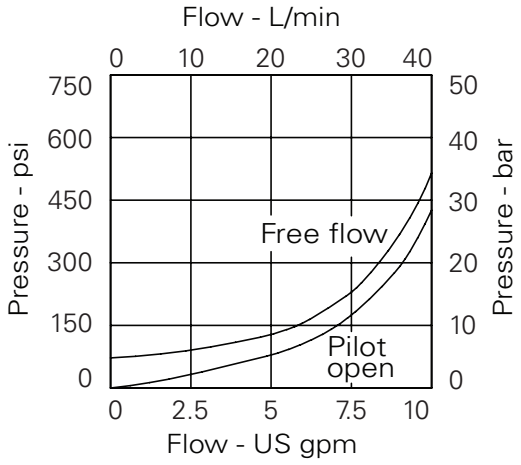
Pilot assisted relief with brake shuttle

1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 USgpm) • 270 bar (4000 psi)

Pressure drop - 1CEECSH35

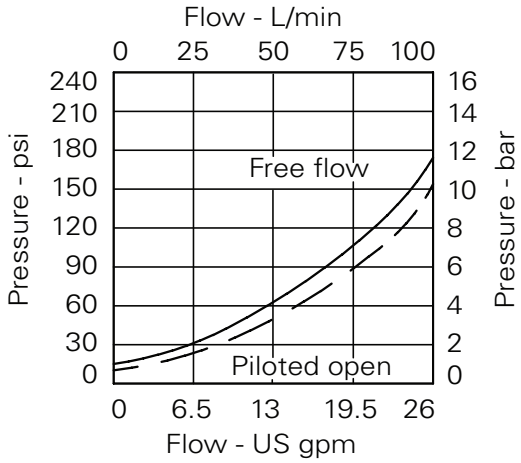


2:5:1 and 5:1 version

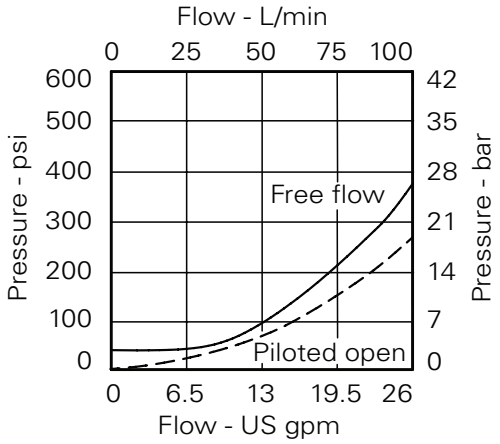


10:1 version

Pressure drop - 1CEECSH95

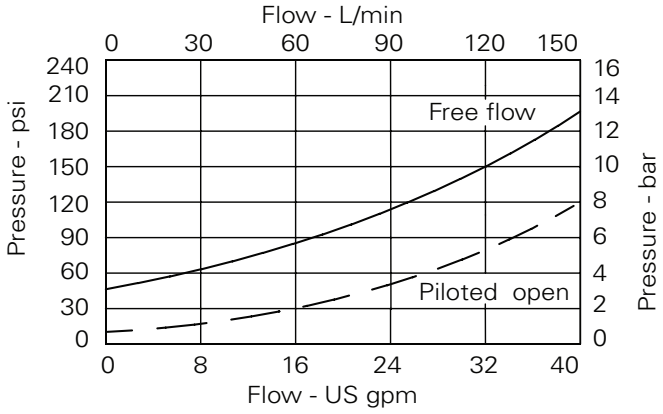


4:1 version

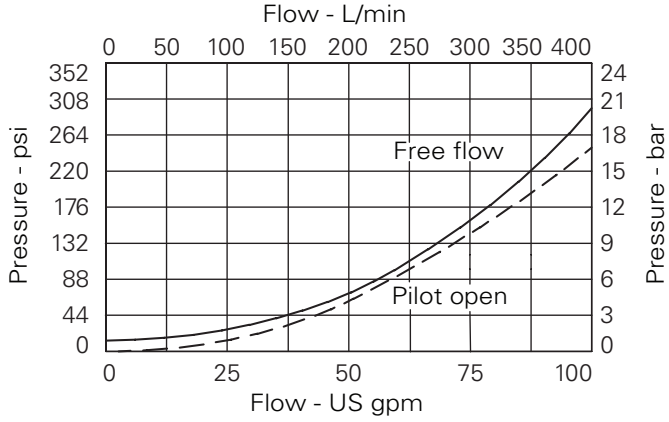


8:1 version

Pressure drop - 1CEECSH150



Pressure drop - 1CEECSH350



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

1CEECSH35/95/150/350 - Motion control & lock valve

Pilot assisted relief with brake shuttle

1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEECSH35

1CEECSH35 – F 3W – 35 S 5 377

1 2 3 4 5 6 7

1 Function

1CEECSH35 - Cartridges and 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 - bodied valves only

Code	Port size	Housing number - sub assembly
		Steel
3W	3/8" BSP Valve & Cyl Port. 1/4" BSP Brake Port	CXP15947-3W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
35 - (2.5:1 and 5:1) 100-350 bar Std setting 210 bar (10:1) 120-350 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 made at 4.8 L/min

6 Pilot ratios

2 - 2.5:1
5 - 5:1 (Standard)
10 - 10:1

7 Body material

377 - Steel

Model code: 1CEECSH95

1CEECSH95 – F 6W – 35 S 4 377

1 2 3 4 5 6 7

1 Basic code

1CEECSH95 - Cartridges and 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 size

Code	Port size	Housing number - body only
		Steel
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Brake Port	BXP15936-6W-S-377

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 made at 4.8 L/min

6 Pilot ratio

4 - 4:1 (Standard)
8 - 8:1

7 Body material

377 - Steel

F

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

1CEECSH35/95/150/350 - Motion control & lock valve

Pilot assisted relief with brake shuttle

1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 USgpm) • 270 bar (4000 psi)

Model code: 1CEECSH150

1		2	3		4	5	6	7
1CEECSH150	–	F	8W	–	35	S	3	377

1 Basic code

1CEECSH150 - Cartridges and body

2 Adjustment means

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only
		Steel
8W	1" BSP valve & cyl port. 1/4" BSP brake port	BXP15930-8W-S-377

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
35 - 70-35 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 made at 4.8 L/min

6 Pilot ratio

3 - 3.5:1

7 Body material

377 - Steel

Model code: 1CEECSH350

1		2	3		4	5	6	7
1CEECSH350	–	F	10W	–	35	S	3	377

1 Basic code

1CEECSH350 - Cartridges and body

2 Adjustment means

F - Screw adjustment

3 Port size

Code	Port size	Housing number - body only
		Steel
10W	1 1/4" BSP valve & cyl port. 1/4" BSP brake port	DXP22047-10W-S-377

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 Seals

S - Nitrile (For use with most industrial hydraulic oils.
SV - Viton (For high temperature and most special fluid applications made at 4.8 L/min

6 Pilot ratio

3 - 3:1 Standard
8 - 8:1

7 Body material

377 - Steel

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

1CEECSH35/95/150/350 - Motion control & lock valve

Pilot assisted relief with brake shuttle

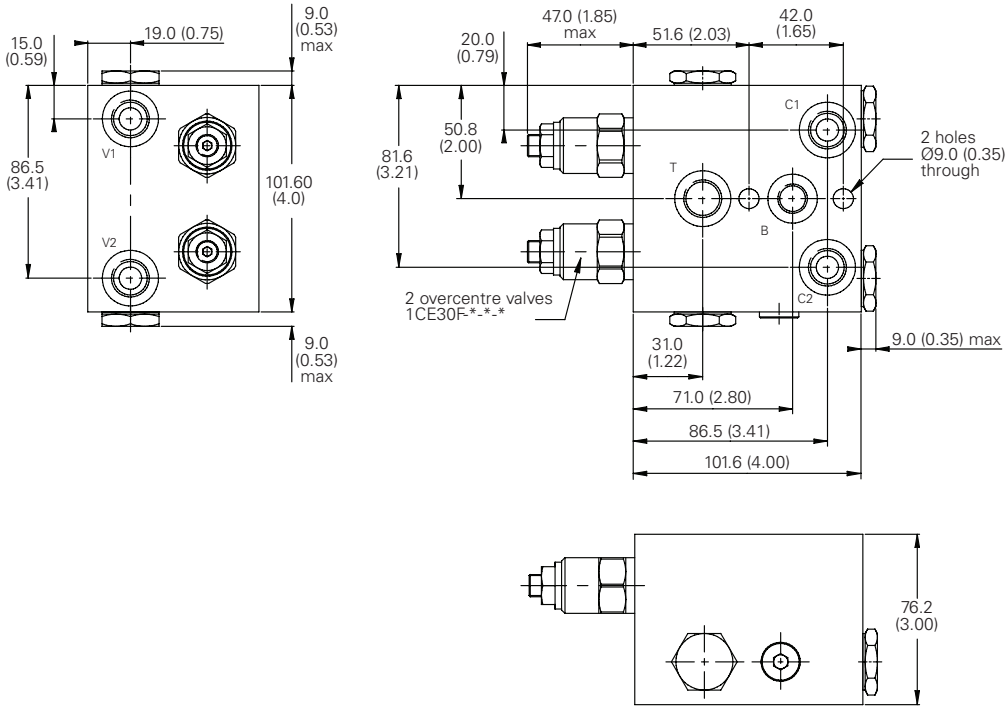
1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

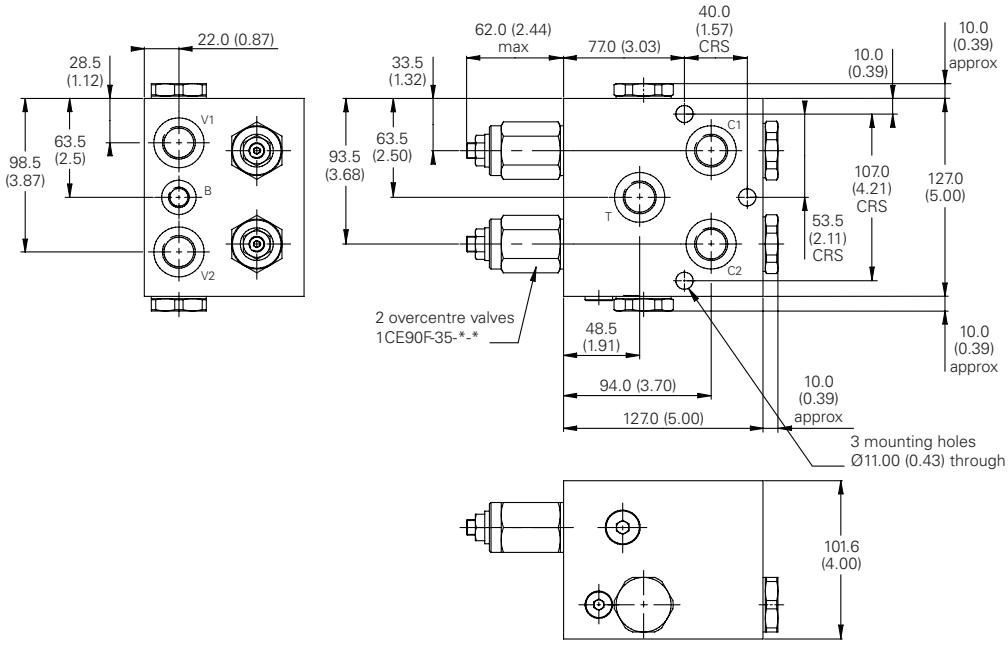
Complete valve

3/8" Ports
Basic Code - 1CEECSH35
Internally Cross Piloted



Complete valve

3/4" Ports
Basic Code - 1CEECSH95
Internally Cross Piloted



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

F

1CEECSH35/95/150/350 - Motion control & lock valve

Pilot assisted relief with brake shuttle

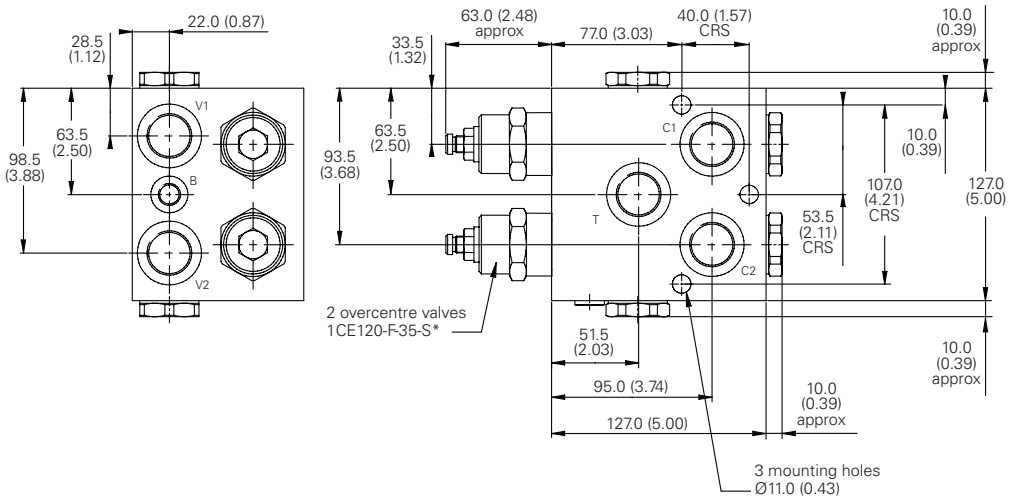
1CEECSH35: 30 L/min (8 USgpm) • 270 bar (4000 psi)
1CEECSH95: 95 L/min (25 USgpm) • 270 bar (4000 psi)
1CEECSH150: 150 L/min (40 USgpm) • 270 bar (4000 psi)
1CEECSH350: 350 L/min (80 USgpm) • 270 bar (4000 psi)

Dimensions

mm (inch)

Complete valve

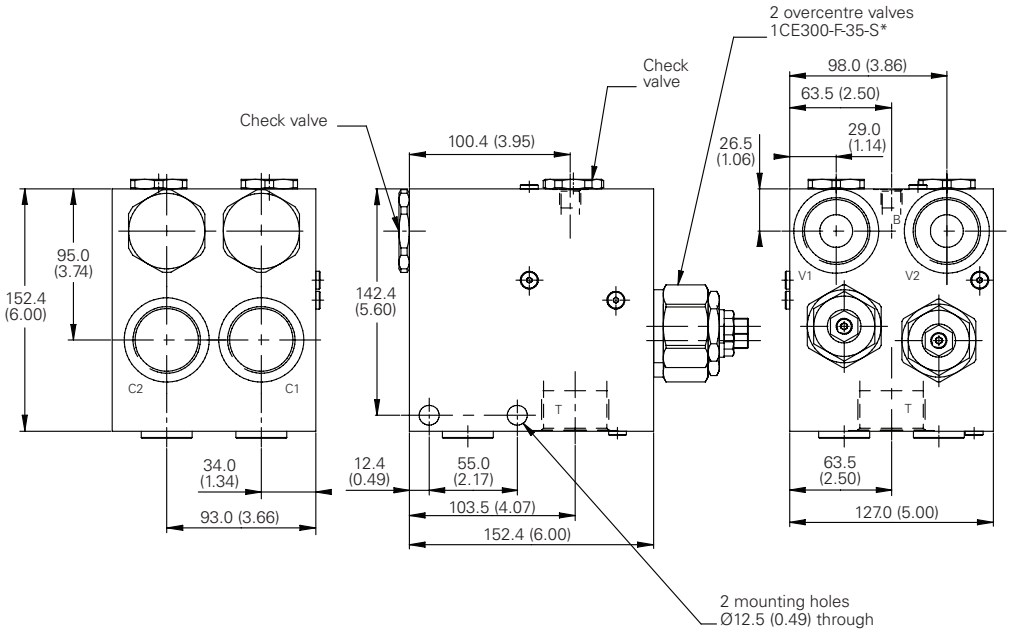
1 Port
Basic Code - 1CEECSH150
Internally Cross Piloted



F

Complete valve

1 1/4" Ports
Basic Code - 1CEECSH350
Internally Cross Piloted



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

The valves function is to prevent uncontrolled lowering of the boom in the event of hose rupture.

These valves comply with International Standard ISO8643 for hydraulic excavators and backhoe loaders incorporating servo pilot systems. The valves' function is to prevent uncontrolled towering of the boom in the event of hose rupture. Closure of the valve is activated by bringing the main control valve lever to the neutral position.
By separating the relief and pilot function into two individual cartridges, the pilot cartridge has no relieving function, hence any load on the valve does not affect its opening characteristics. Consequently, the valve will always open at the same pilot pressure/joystick position, regardless of load. This feature enables the valve to be tuned to open in harmony with the machine's own main control valve, giving better control.

The pilot cartridge is generally set to dwell 1 to 2 bar behind the main control valve, therefore the Integrated Hydraulics valve takes control in the event of hose failure.

When fitted to the arm/dipper cylinder, this dwell behind the main control valve prevents acceleration when 'arm down' is selected.

Fig. 1 and 2 show typical circuits utilizing these components.

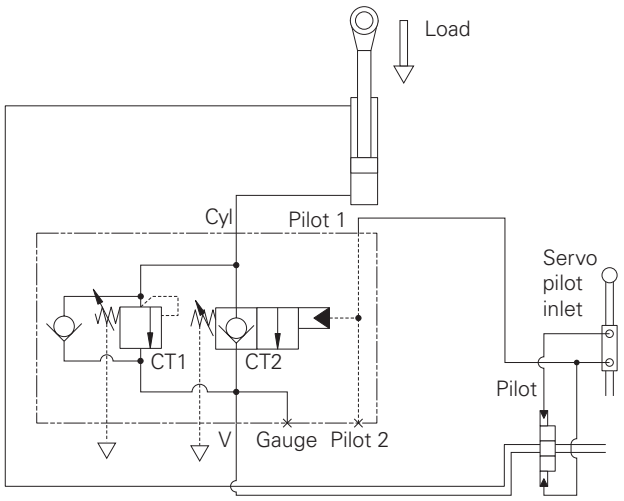
Line mountings or SAE flange mountings are available for direct fitment to the actuator. Where line mounted models are used it is essential that steel pipes are used between the valve and the actuator.

All components are manufactured in steel and are electroplated for corrosion protection.

Typical circuit

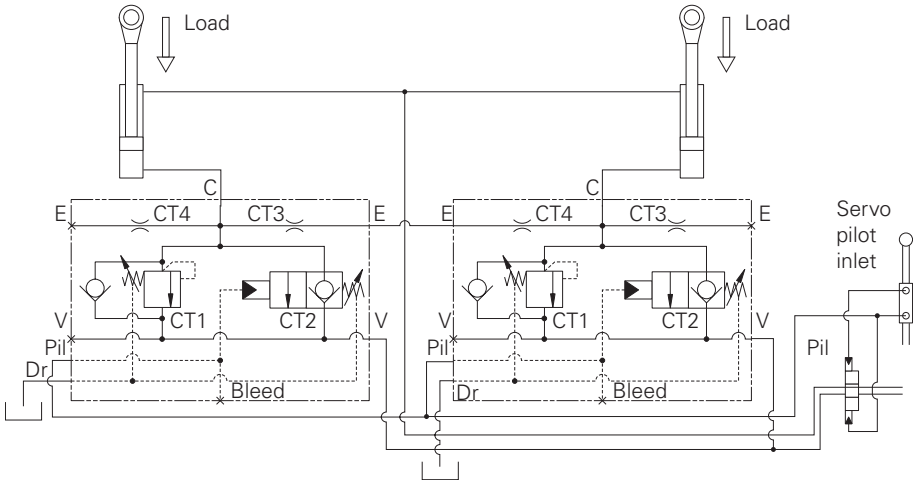
Compact machinery

(see page F-640 to F-650)
For flows up to 30 and 40 L/min
Fig. 1



Heavy machinery

(see page F-600 to F-630)
For flows up to 250, 350 and 550 L/min
Fig. 2

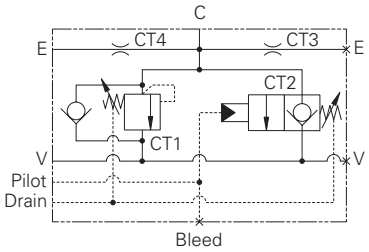


1CEBL256/356 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)

1CEBL256: 250 L/min (66 USgpm) • 350 bar (5000 psi)

1CEBL356: 350 L/min (92 USgpm) • 350 bar (5000 psi)



Operation

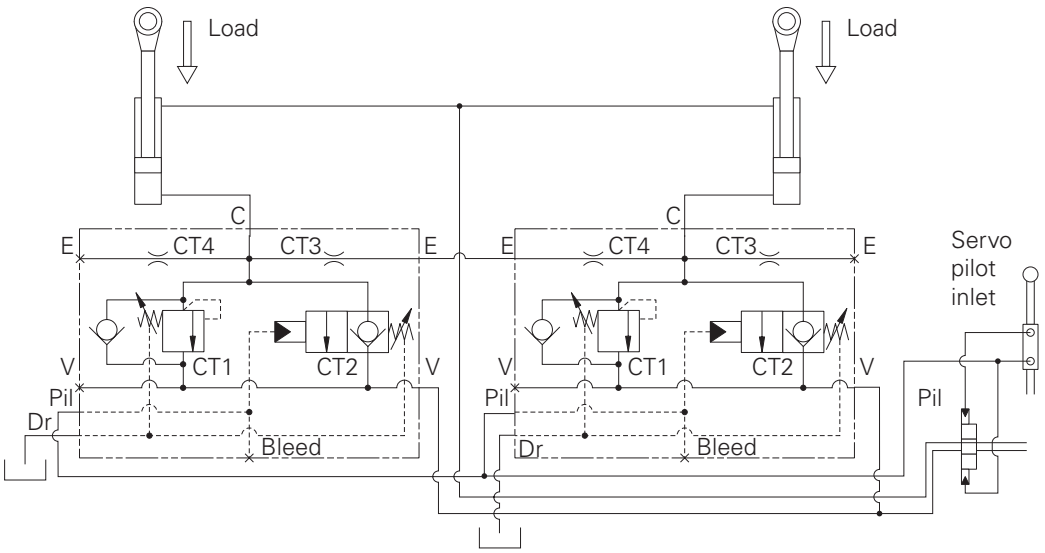
By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine.

Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by back pressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	1CEBL256: 250 L/min (66 USgpm) 1CEBL356: 350 L/min (92 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn mild steel bar. Zinc plated and passivated.
Mounting position	Flange mounted
Weight	7.5 kg (16.5 lbs)
Seal kit	SK1162P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL256/356 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)
1CEBL256: 250 L/min (66 USgpm) • 350 bar (5000 psi)
1CEBL356: 350 L/min (92 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL256

1CEBL256 – F 3/4 6 – 35 P
1 2 3 4 5 6

1 Basic code
1CEBL256 - Cartridges and body

2 Adjustment means
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
3/4 - 3/4" SAE flange cylinder port slotted for 3000 & 6000)
3/4" SAE Flange valve port (thread G1/2)
1/8" BSP bleed port
1/4" BSP all other ports

4 SAE port type
6 - SAE 6000 (Valve port)

5 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 350 bar
Std setting made at 4.8 L/min

6 Seals
P - Contains polyurethane and standard seal.

Model code: 1CEBL256

1CEBL356 – F 1 6 – 35 P
1 2 3 4 5 6

1 Basic code
1CEBL356 - Cartridges and body

2 Adjustment means
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
1 - 1" SAE Flange cylinder port (slotted for 3000 & 6000)
1" SAE Flange valve port (thread G3/4)
1/8" BSP bleed port
1/4" BSP all other ports

4 SAE port type
6 - SAE 6000 (valve port)

5 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 350 bar
Std setting made at 4.8 L/min

6 Seals
P - Contains polyurethane and standard seal.

F

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

1CEBL256/356 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)

1CEBL256: 250 L/min (66 USgpm) • 350 bar (5000 psi)

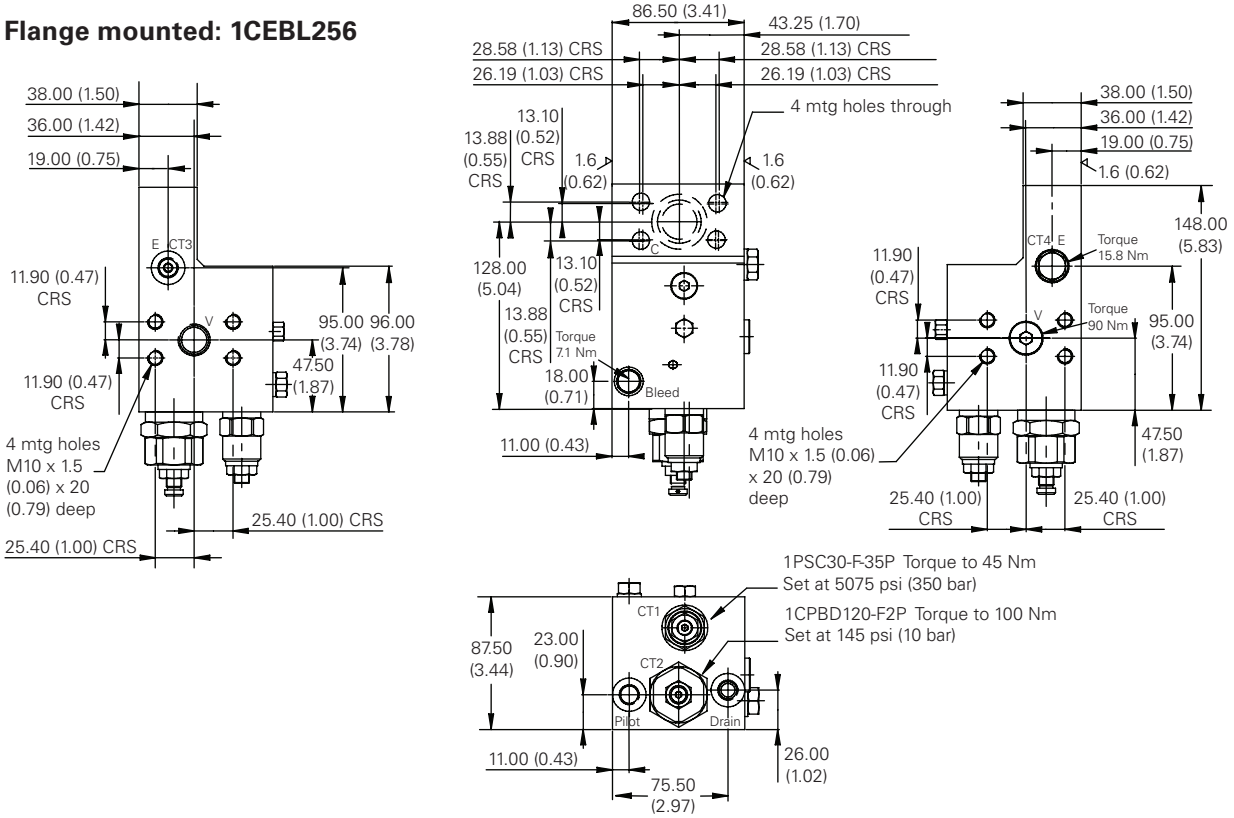
1CEBL356: 350 L/min (92 USgpm) • 350 bar (5000 psi)

Dimensions

mm (inch)

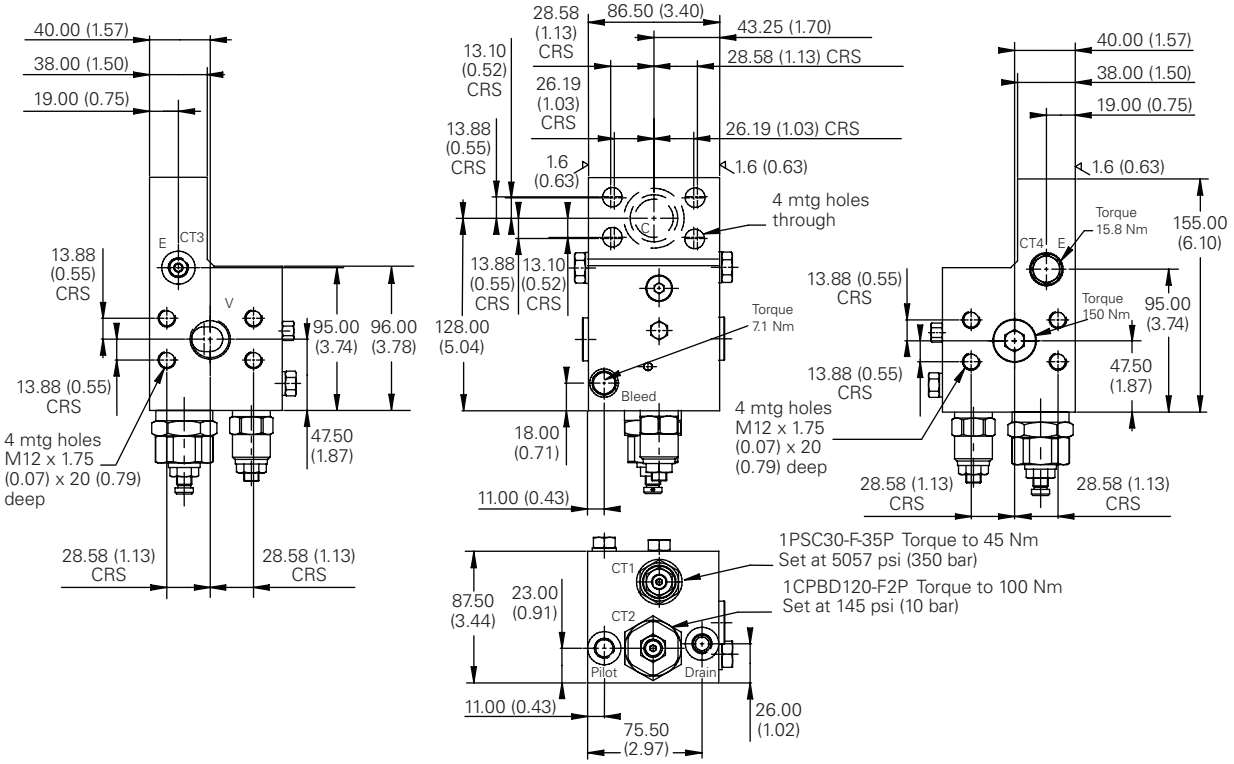
Note: Cylinder port bolt holes are slotted for fitment to both SAE 3000 & SAE 6000 mounting faces.

Flange mounted: 1CEBL256



Flange Mounted:1CEBL356

Note: Cylinder port bolt holes are slotted for fitment to both SAE 3000 & SAE 6000 mounting faces.

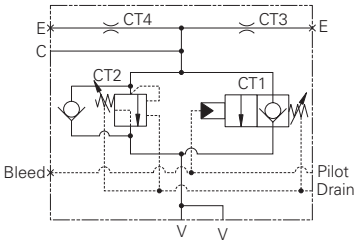


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL556 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)

550 L/min (145 USgpm) • 400 bar (5800 psi)



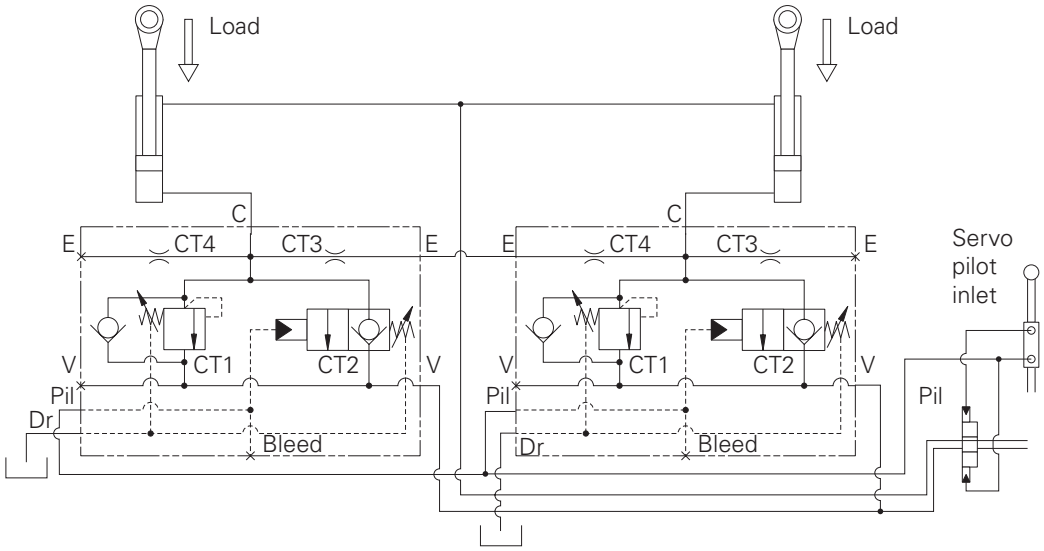
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	550 L/min (145 USgpm)
Max setting	400 bar (5800 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Flange mounted
Weight	21 kg (46.2 lbs)
Seal kit	SK1163P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	4.3 ml/min (70 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL556 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)
550 L/min (145 USgpm) • 400 bar (5800 psi)

Model code: ICEBL556

1CEBL556 – F 5/4 6 – 40 P

1 2 3 4 5 6

1 Basic code

ICEBL556 - Cartridges and body

2 Adjustment means

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

5/4 - 1 1/4" SAE Flange cylinder port
1 1/4" SAE Flange valve port
1/4" BSP all other ports

4 SAE port type

6 - SAE 6000

5 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
40 - 70-400 bar.
Std setting 350 bar

Std setting made at 4.8 L/min

6 Seals

P - Contains polyurethane and standard seal.

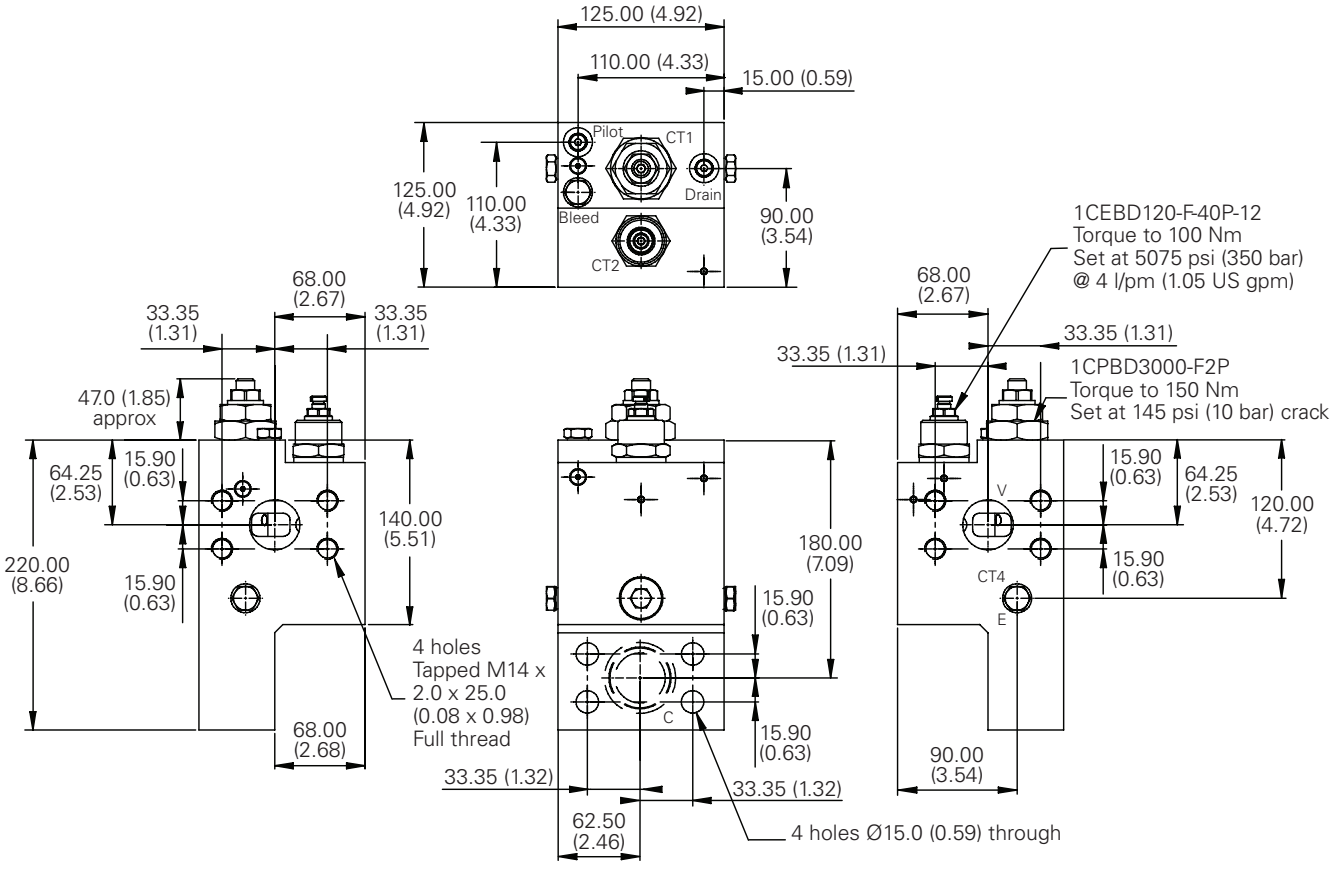
F

Dimensions

mm (inch)

Flange Mounted: 1CEBL356

Note: Cylinder port bolt holes are slotted for fitment to both SAE 3000 & SAE 6000 mounting faces.

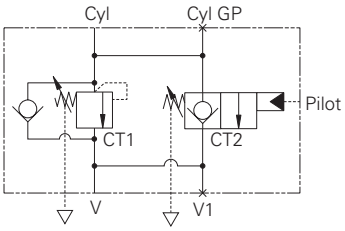


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL31 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)

30 L/min (8 USgpm) • 350 bar (5000 psi)



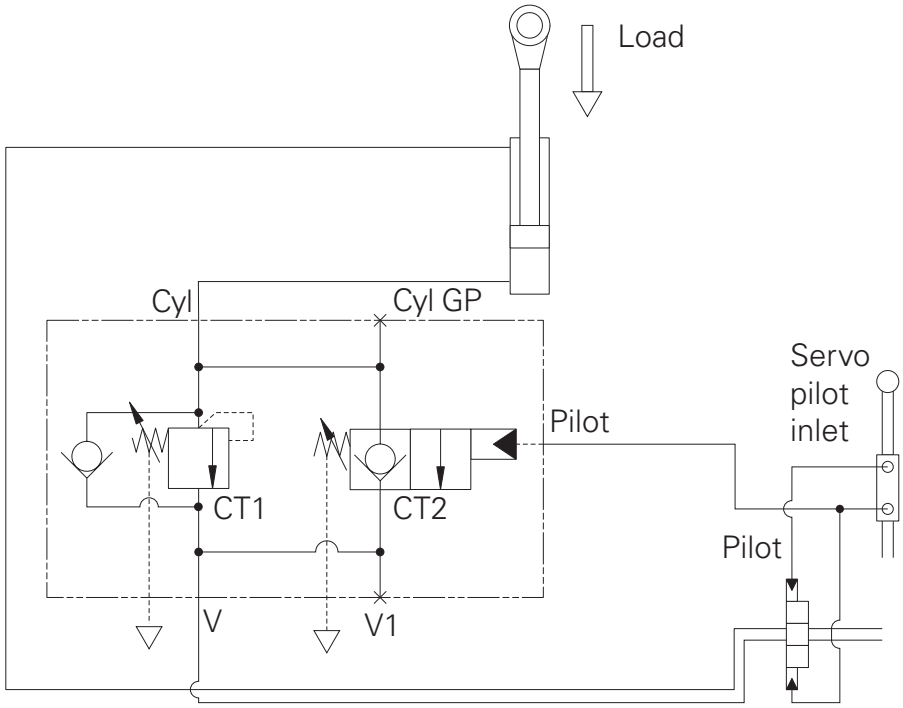
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Line mounted
Weight	2 kg (4.4 lbs)
Seal kit	SK1164P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to 90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL31 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL31

1CEBL31 – F 3W – 35 P

1 2 3 4 5

1 Basic code
1CEBL31 - Cartridges and body

2 Adjustment means
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
3W - 3/8" BSP cylinder port
3/8" BSP valve port
1/4" BSP all other ports

4 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 240 bar

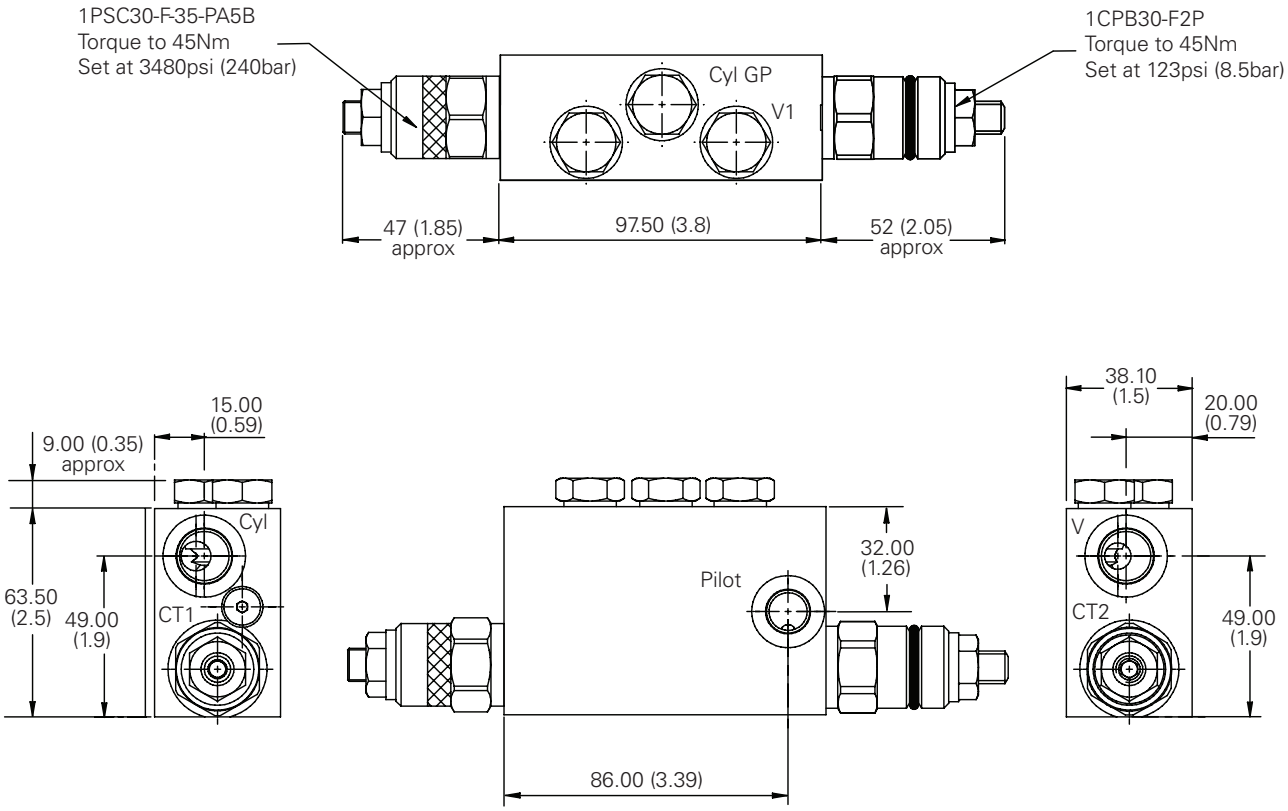
5 Seals
P - Contains polyurethane and standard seal.

Dimensions

mm (inch)

F

Line Mounted (Ref ISO 8643): 1CEBL31

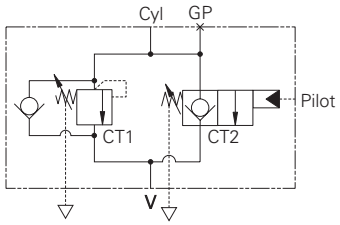


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL31 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)

30 L/min (8 USgpm) • 350 bar (5000 psi)



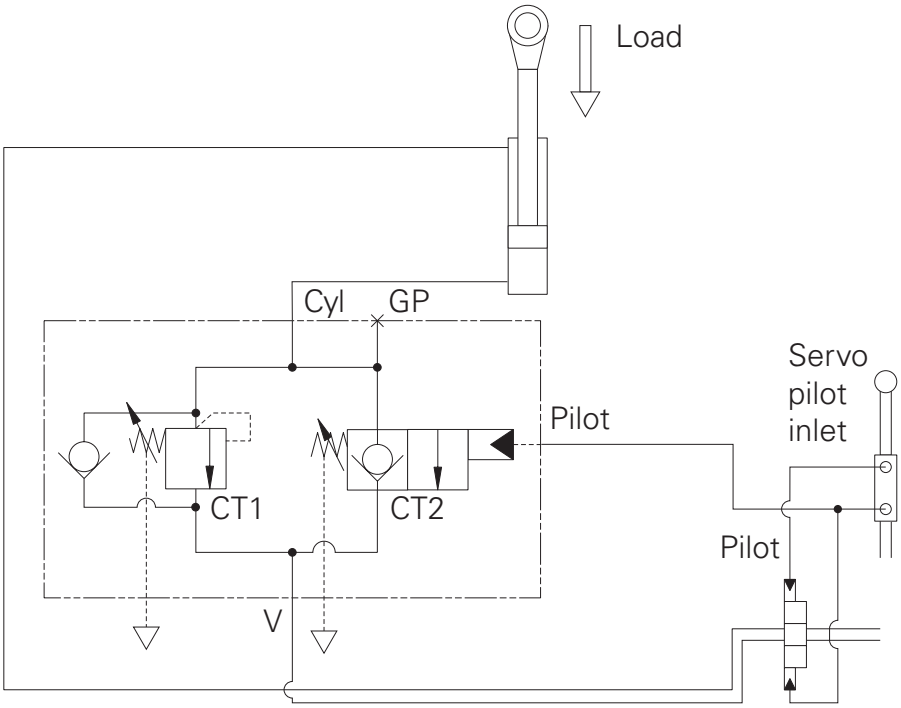
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuits



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Flange mounted
Weight	2 kg (4.4 lbs)
Seal kit	SK1165P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL31 - BoomLoc valve

Hose burst protection, flange mounted with independent pilot control (Ref. ISO 8643)
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL31

1CEBL31 – F 1/2 – 6 – 35 P

1 2 3 4 5 6

1 Basic code
1CEBL31 - Cartridges and body

2 Adjustment means
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
1/2 - 1/2" SAE flange
3/8" BSP valve port
1/4" BSP all other ports

4 SAE port type
6 - SAE 6000

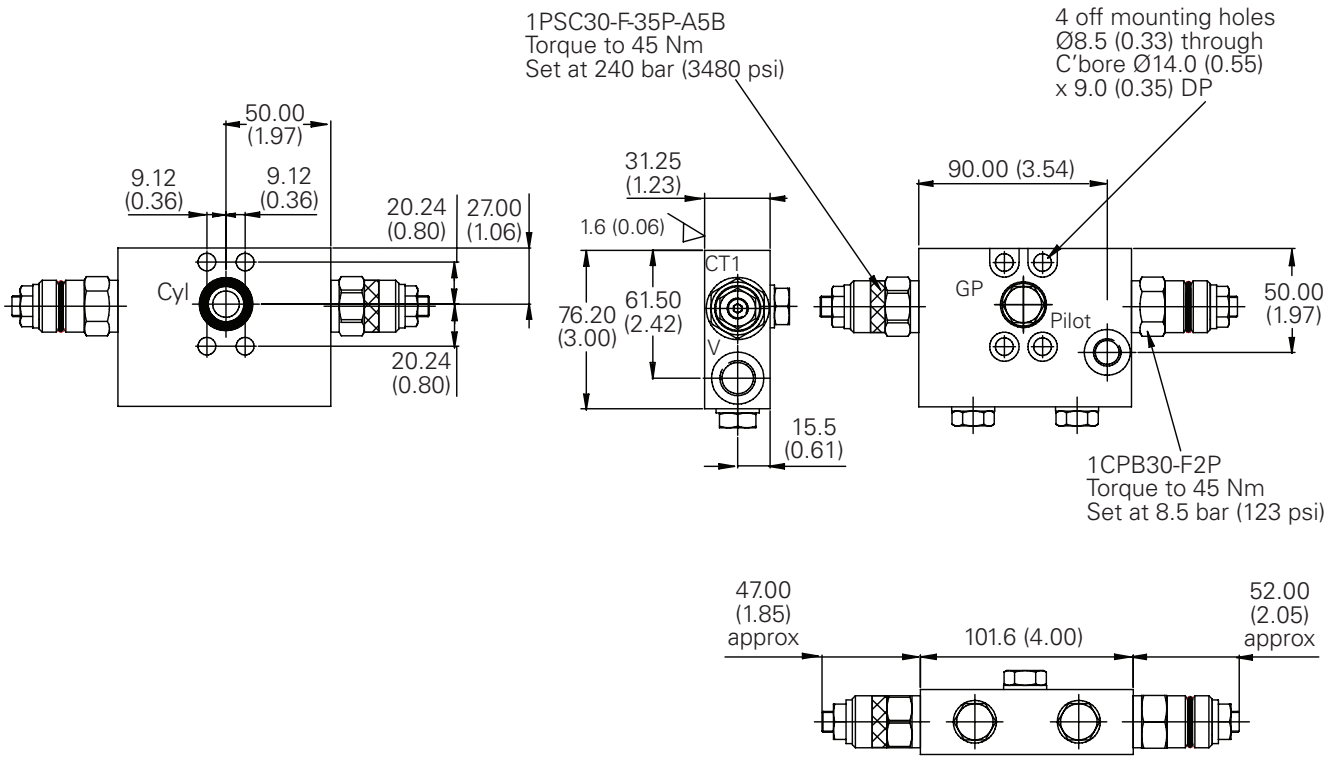
5 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 240 bar
Std setting made at 4.8 L/min

6 Seals
P - Contains polyurethane and standard seal.

Dimensions

mm (inch)

Flange Mounted: 1CEBL31

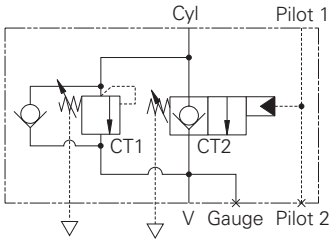


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL31 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)

30 L/min (8 USgpm) • 350 bar (5000 psi)



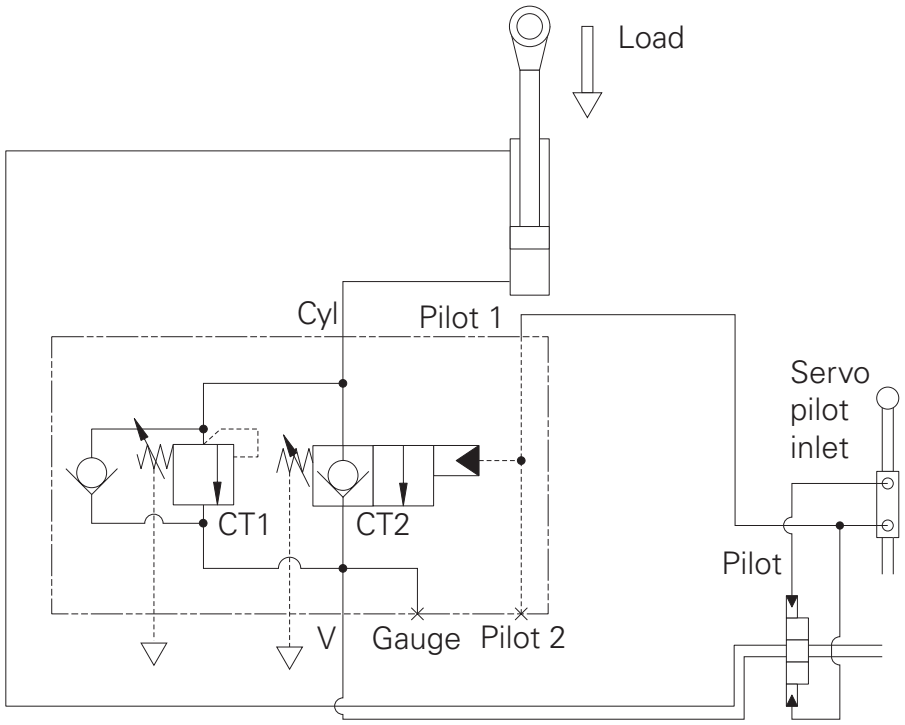
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	30 L/min (8 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Line mounted
Weight	2 kg (4.4 lbs)
Seal kit	SK1164P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to 90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL31 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL31

1CEBL31 – F 4W – 35 P

1 2 3 4 5

1 Basic code
1CEBL31 - Cartridges and body

2 Adjustment means
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
4W - 1/2" BSP cylinder port
1/2" BSP valve port
1/4" BSP all other ports

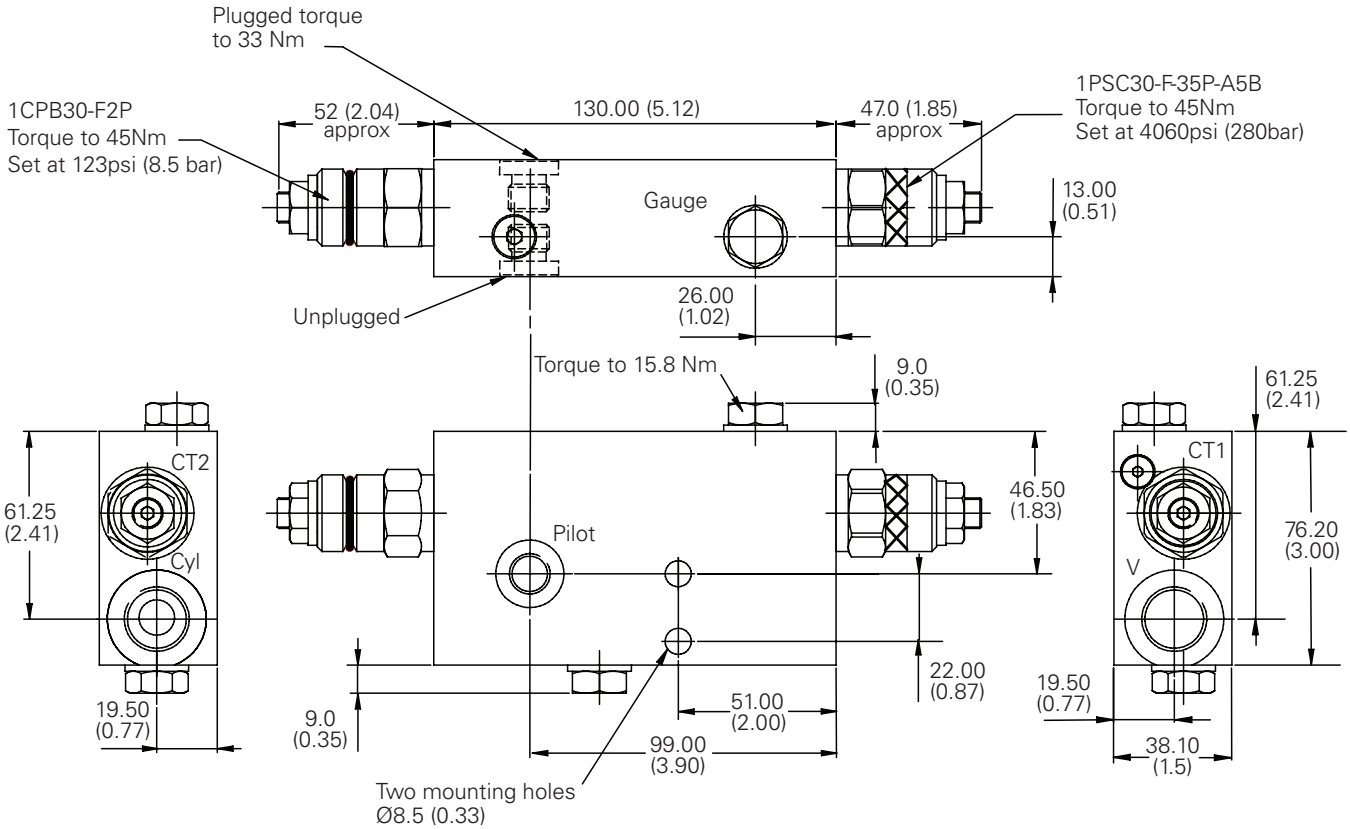
4 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 280 bar
Std setting made at 4.8 L/min

5 Seals
P - Contains polyurethane and standard seal.

Dimensions

mm (inch)

Line Mounted: 1CEBL31

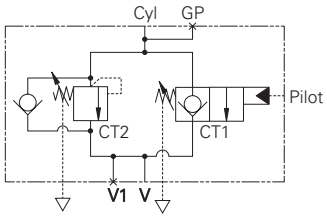


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL91 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)

90 L/min (24 USgpm) • 350 bar (5000 psi)



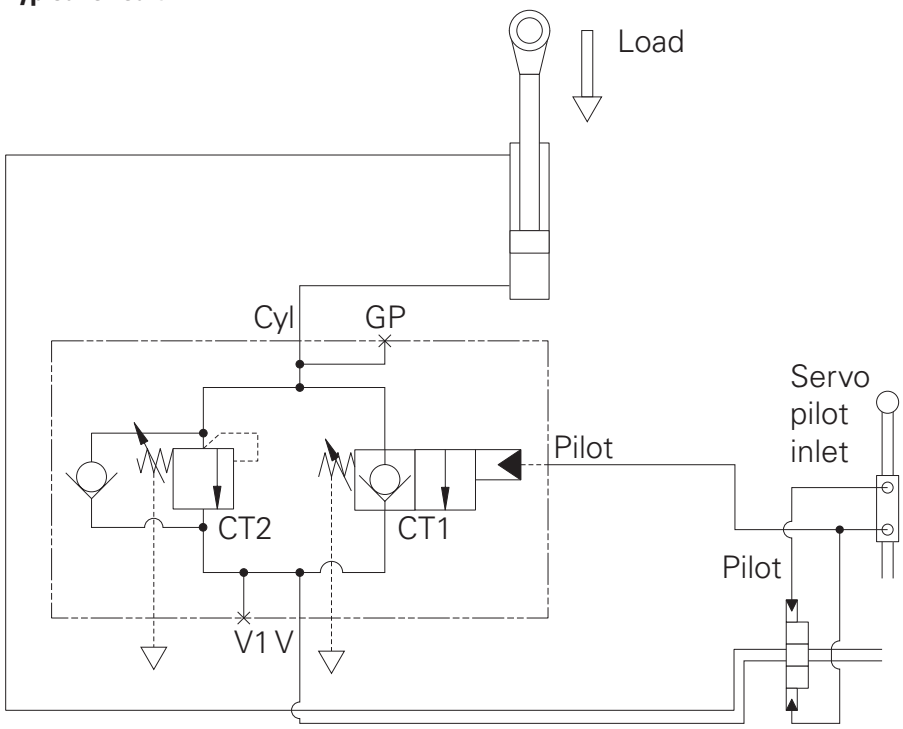
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	90 L/min (24 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Line mounted
Weight	3.5 kg (7.7 lbs)
Seal kit	SK1166P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to 90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

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

1CEBL91 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)
90 L/min (24 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL91

1CEBL91 – F 4W – 35 P

1 2 3 4 5

1 Basic code

1CEBL91 - Cartridges and body

2 Adjustment means

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

4W - 1/2" BSP cylinder port
1/2" BSP valve port "V"
1/4" BSP "V1" & all other ports

4 Pressure range @ 4.8 L/min

Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 280 bar

Std setting made at 4.8 L/min

5 Seals

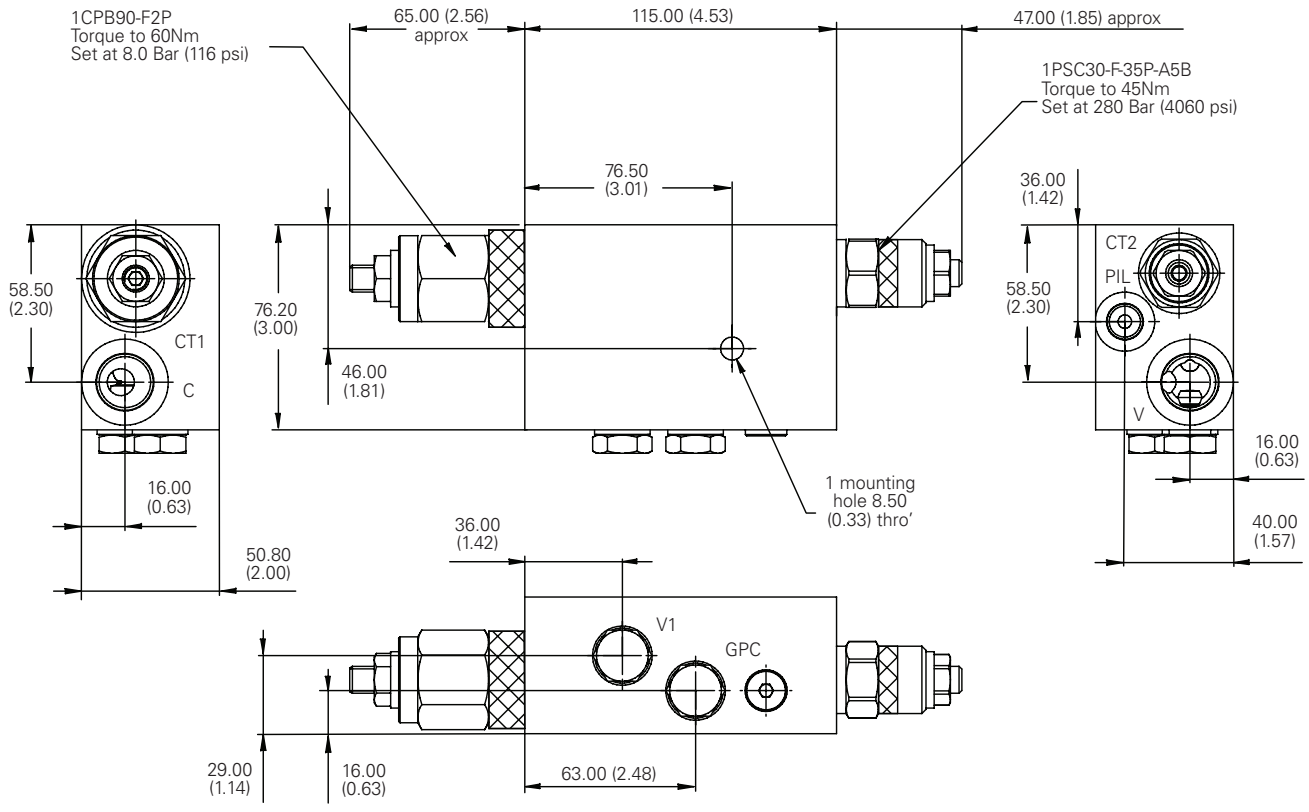
P - Contains polyurethane and standard seal.

F

Dimensions

mm (inch)

Line Mounted: 1CEBL91

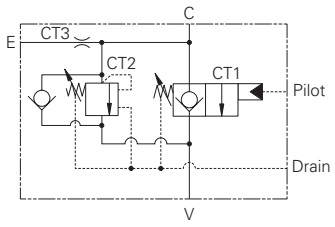


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL151 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)

150 L/min (40 USgpm) • 350 bar (5000 psi)



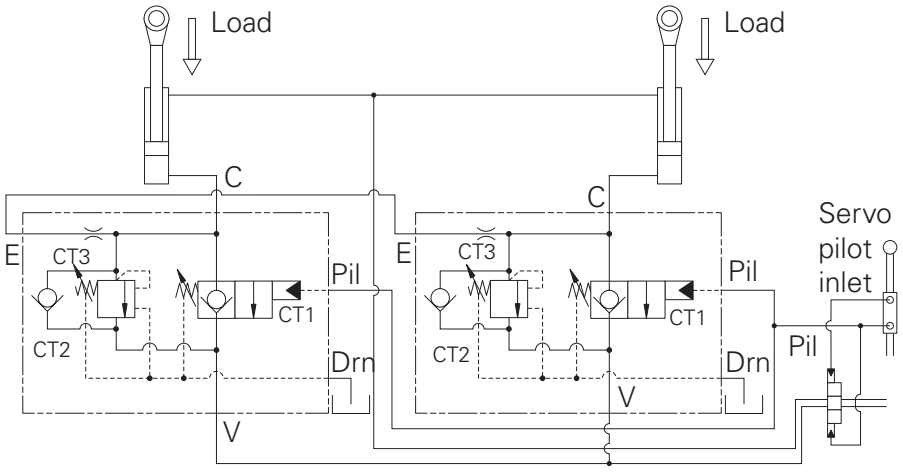
Operation

By connecting the hose rupture valve pilot in parallel with the directional spool valve pilot, and adjusting the opening characteristics of the hose rupture valve to suit that of the spool valve "BoomLoc" may be set so as not to interfere with the normal operation of the machine. Fine adjustment of the pilot pressure permits the optimum setting to be made in differing operating systems.

Both the pilot and the relief sections are unaffected by backpressure, enabling the service line relief's to operate normally. In the event of hose failure, the control will be passed from the main spool to the "BoomLoc" valve, maintaining control of the cylinder.

Regardless of the load the pilot pressure requirement remains constant as the valve is unaffected by load induced pressure, the poppet being fully balanced with zero differential area.

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	150 L/min (40 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Line mounted
Weight	3 kg (6.6 lbs)
Seal kit	SK947P (Polyurethane/Nitrile)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	0.6 ml/min (10 dpm)
Nominal viscosity range	5 to 500 cSt

F

1CEBL151 - BoomLoc Valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)
150 L/min (40 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL151

1CEBL151 – F 4W – 35 P

1 2 3 4 5

1 Basic code
1CEBL151 - Cartridges and body

2 Adjustment means
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
4W - 1/2" BSP cylinder port
1/2" BSP valve port
G1/8" all other ports

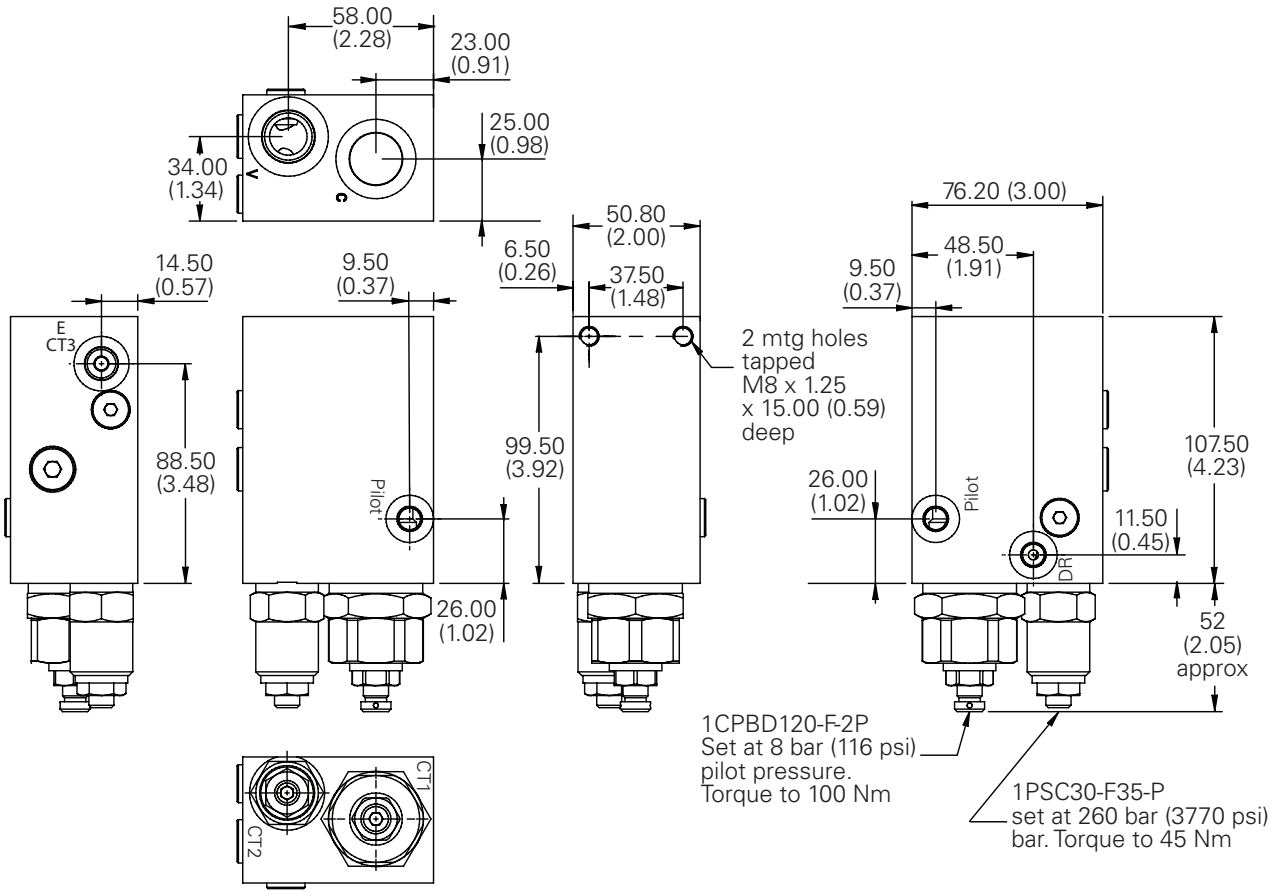
4 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 260 bar
Std setting made at 4.8 L/min

5 Seals
P - Contains polyurethane and standard seal.

Dimensions

mm (inch)

Line Mounted: 1CEBL151

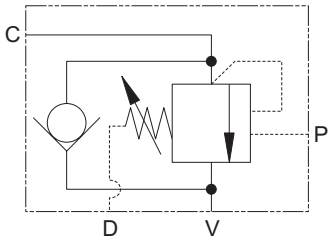


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEBL153 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)

150 L/min (40 USgpm) • 350 bar (5000 psi)



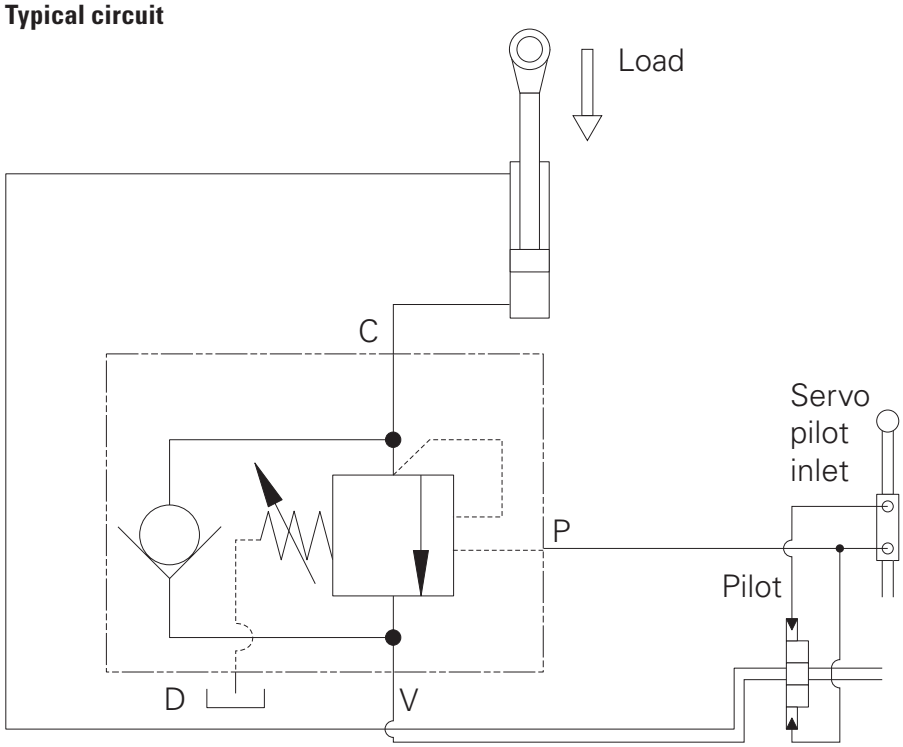
Operation

By connecting the pilot line in parallel with the spool valve pilot, the high pilot ratio allows the valve to open just prior to the spool valve, ensuring that the valve does not interfere with the normal operation of the machine. Both the pilot and the relief sections are unaffected by back pressure, enabling the service line reliefs to operate normally, without interfering with the spool valve control as it meters the return flow. In the event of hose failure, the control will be passed from the main spool to the overcenter valve, maintaining control of the cylinder.

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

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

Typical circuit



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated flow	150 L/min (40 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened and ground steel. External surfaces electroless nickel plated and passivated.
Standard housing materials	Bright drawn M.S. bar zinc plated and passivated
Mounting position	Mount directly to cylinder using steel pipe
Weight	1.5 kg (3.3 lbs)
Seal kit	SK924P
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Temperature range	-30° to +90°C (-22° to +194°F)
Internal leakage	1.5 ml/min
Nominal viscosity range	5 to 500 cSt

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

1CEBL153 - BoomLoc valve

Hose burst protection, line mounted with independent pilot control (Ref. ISO 8643)
150 L/min (40 USgpm) • 350 bar (5000 psi)

Model code: 1CEBL153

1CEBL153 – F 4W – 35 P

1 2 3 4 5

1 Basic code
1CEBL153 - Cartridges and body

2 Adjustment means
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
4W - 1/2" BSP cylinder port
1/2" BSP valve port
1/4" BSP pilot port/drain port

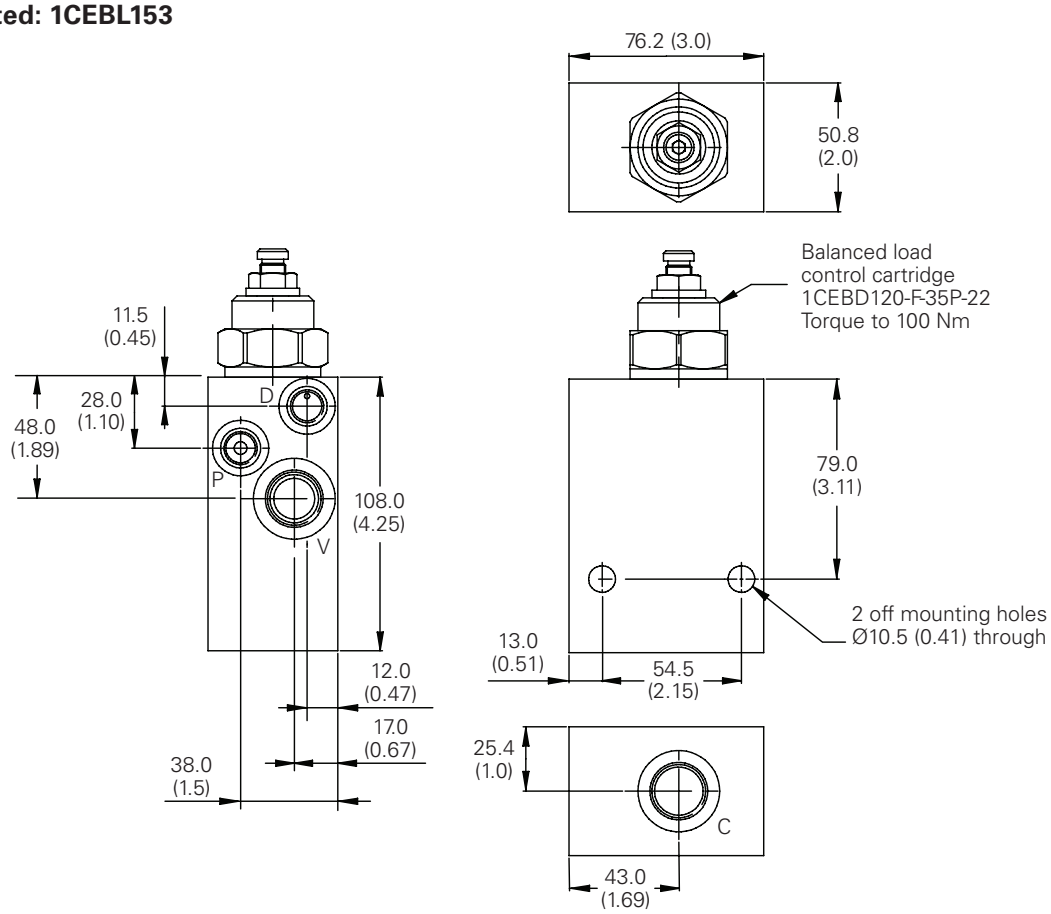
4 Pressure range @ 4.8 L/min
Note: Code based on pressure in bar.
35 - 70-350 bar.
Std setting 350 bar
Std setting made at 4.8 L/min

5 Seals
P - Contains polyurethane and standard seal.

Dimensions

mm (inch)

Line Mounted: 1CEBL153



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