MC

# **Motion Control Valves**





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# Motion Control Valves Application Notes



#### **Basic Operation Motion Control Valves**

Motion control valves, often called counterbalance or overcenter valves, are pilot assisted relief valves with an integral bypass check. These simple devices are used to stop a load from running away from a pump, hold a load in position, and when mounted onto, or into an actuator, provide load safety in the event of a hose failure. The valve is made up of a direct acting or differential area type relief valve and a separate pilot area or a pilot piston. Pressure on this area is used to open the valve in normal operation. The poppet will sit on a spring-loaded seat to provide a free flow function from the valve port to the cylinder port. The relief valve function should be set at 1.3 times the maximum load induced pressure to make sure the load is held in the case of a hose failure. The pilot area is larger than the relief pressure area by a factor called the pilot ratio. Variations in pilot pressure during normal operation will cause the valve to meter the flow between the cylinder port and the valve port.

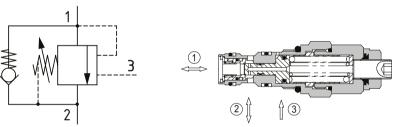
Pilot pressure to open the valve - <u>Relief setting – induced load pressure</u> Pilot ratio

Depending on the design of the valve, back pressure in the valve port can affect the relief pressure and the pilot pressure required to keep the valve open. The relief function is normally used for thermal pressure or shock protection. Care should be taken if the relief valve is required to take full flow.

There are various designs available, each covering a different set of applications.

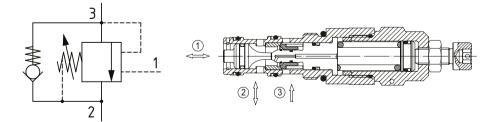
#### **Standard Direct Acting Poppet**

The check section allows free flow into the actuator from port 2 to port 1, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 1 to 2 when pilot pressure is applied at port 3. The direct acting relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot 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 spring chamber is connected to the valve port 2, so any back pressure will affect the relief pressure by a factor of the pilot ratio plus 1. The pilot pressure required will also be increased on a 1:1 basis.



#### **Standard Differential Area Poppet Port 1 Pilot**

The check section allows free flow into the actuator from port 2 to port 3, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 3 to 2 when pilot pressure is applied at port 1. The direct acting relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot 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 spring chamber is connected to the valve port 2, so any back pressure will affect the relief pressure by a factor of the pilot ratio plus 1. The pilot pressure required will also be increased on a 1:1 basis.



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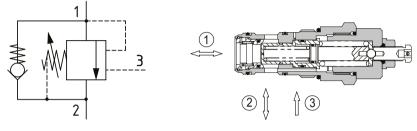
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# Motion Control Valves Application Notes



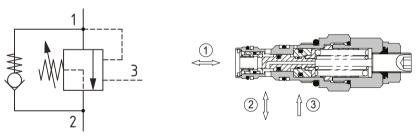
#### **Differential Area Poppet**

The check section allows free flow into the actuator from port 2 to port 1, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 1 to 2 when pilot pressure is applied at port 3. The differential area relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot 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 spring chamber is connected to the valve port 2, so any back pressure will affect the relief pressure by a factor of the pilot ratio plus 1. The pilot pressure required will also be increased on a 1:1 basis.



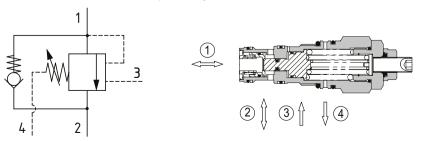
#### **Part Balanced Direct Acting Poppet**

The check section allows free flow into the actuator from port 2 to port 1, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 1 to 2 when pilot pressure is applied at port 3. The direct acting relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot 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 spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required on a 1 to 1 basis, but due to a balanced poppet design the relief pressure will not increase. This valve is ideal for closed centre directional valves with service line relief valves that are required to open when the actuator is mechanically overloaded.



#### **Fully Balanced Direct Acting Poppet**

The check section allows free flow into the actuator from port 2 to port 1, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 1 to 2 when pilot pressure is applied at port 3. The direct acting relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot 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 spring chamber is connected to a drain port 4 or to atmosphere, so back pressure will not affect the pilot pressure required or the relief pressure required to open the valve. The valve is ideal for meter out proportional systems where the valve port pressure varies or in the rod side of a cylinder in regenerative circuits. They are available to fit 4 ported cavities, which is preferred, or 3 ported cavities with an atmospheric vent. In this case, leakage from the atmospheric vent port will occur at some stage depending on the condition of oil, the number of cycles or ingress of airborne contamination.



# Motion Control Valves Application Notes

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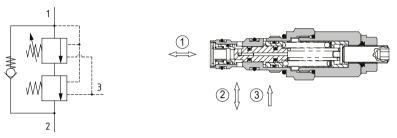


#### **Two Stage Counterbalance Direct Acting Poppet**

Quick Reference

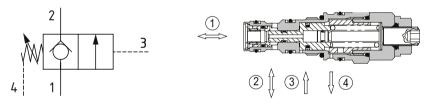
The check section allows free flow into the actuator from port 2 to port 1, and then holds and locks the load against movement. The pilot assisted relief valve section will give controlled movement from port 1 to 2 when pilot pressure is applied at port 3. The direct acting relief section is normally set to open at a pressure at least 1.3 times the maximum load induced pressure. The pilot pressure required to open the valve and allow movement depends on the pilot ratio of the valve. These valves perform all duties of a standard overcenter valve, but it initially maintains a counterbalance pressure to provide dampening of cylinders when there is a rapid loss in stored pressure. This counterbalance pressure reduces as the pilot pressure increases. Typical applications include extension cylinders on telehandlers, where it is important to have a smooth operation when retracting from full extension. Note: This valve has been designed to eliminate instability from flexible boom applications or where the load induced pressure varies greatly. For optimal results, the settings should be adjusted for each application and then factory set for production quantities. Please contact our Technical Department for more information.

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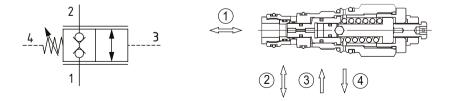
#### **Zero Differential Pilot Operated Metered Poppet**

The check section allows free flow into the actuator from port 2 to 1, and then holds and locks the load against movement. The poppet is balanced so that pressure in port 1 will not open the valve. Pilot pressure is applied at port 3 to open the valve, with the flow metered across the angled seat. The valve is used in conjunction with a remote pilot source to provide hose failure protection, load control and load holding functions. If over-pressure or shock pressure protection is required, then a separate relief valve should be used. The drain line allows the valve to be used in corrosive atmospheres preventing the ingestion of airborne contamination.



#### Zero Differential Pilot Operated Metered Bi-Directional Poppet

The poppet is balanced so that pressure in port 1 or 2 will not open the valve. Pilot pressure is applied to port 3 to open the valve with the flow metered across the angled seat. The valve is used in conjunction with a remote pilot source to provide hose failure protection, load control and load holding functions. If over- pressure or shock pressure protection is required, then a separate relief valve should be used. This can be used in many applications where a pressure line needs to be closed at the removal of a pilot pressure.



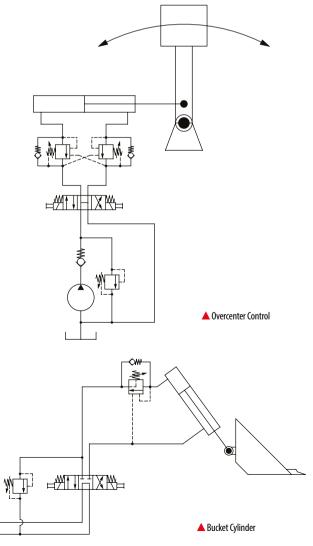
# Motion Control Valves Application Notes

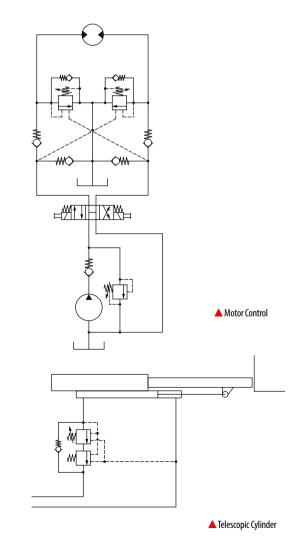


#### **Application Recommendations**

- For standard valves, pressure in the valve port adds to the setting of the relief valve by a factor of the (pilot ratio) + 1.
- For standard valves, pressure in the valve port adds to the pilot pressure by a factor of 1 + 1/(pilot ratio).
- · Standard valves are suitable for most applications and provide excellent stability.
- Direct acting valves are intrinsically more stable than the differential area direct acting product due to the high rate of spring.
- The hysteresis on the direct acting valves is very low.
- The direct acting, high-pressure override on the relief function makes it suitable as a surge relief or a thermal relief but brings extra stability.
- Differential area type valve will offer a lower pressure override when open as a relief valve.
- Part balanced valves remove the need for a vent line to allow the relief valve to remain open if the inlet pressure exceeds the setting.
- For part balanced valves, pilot pressure is increased on a 1:1 ratio when there is back pressure in the valve port.
- The balanced valve with the atmospheric vent will leak eventually to atmosphere. The rate is approximately 1 drop after 40K cycles and more frequently thereafter, depending on the atmosphere and contamination ingress. It is recommended to use the 4 ported valve with the drain port connected separately to tank where possible.
- The counterbalance, two stage valve is ideal for the control of long flexible booms especially if the cylinder bottoms out and a high pressure is trapped. The valve prevents the initial instability and therefore the induced instability.
- The zero differential valves are ideal in a boom lock circuit where the pilot pressure comes from the pilot line to the directional valve. It will provide good control at low speed and minimum pressure drop at high speed.
- Use caution when applying overcenter valves with closed-center directional valves, as the back pressure could cause performance issues. For further information, contact technical support.

#### **Typical Applications**





# Motion Control Valves Quick Reference



Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP448-1	CP08-3L	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	19 l/min [5 US gpm]	350 bar [5000 psi]	10
	1CE30	A6610	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	12
	1CEH30	A6610	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	430 bar [6200 psi]	14
	1CE90	A12336	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	16
	1CEH90	A12336	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	430 bar [6200 psi]	18
3	1CE120	A877	Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot	120 l/min [32 US gpm]	350 bar [5000 psi]	20
	1CE140	A20081	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	140 l/min [37 US gpm]	420 bar [6100 psi]	22
	1CE300	A6935	Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot	300 l/min [80 US gpm]	350 bar [5000 psi]	24
	1SE30	A20090-T11A	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	26
	1SE90	A20092-T2A	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	27
	1SE140	A20094-T17A	Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot	140 l/min [37 US gpm]	420 bar [6100 psi]	28
Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	VCB 06-EN	NCS06/3	Overcenter Valve, Standard, Differential Area, Internal Drain, Port 1 Pilot	60 l/min [16 US gpm]	350 bar [5000 psi]	29

# Motion Control Valves Quick Reference



Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	1CER30	A6610	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	31
	1CERH30	A6610	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	430 bar [6200 psi]	33
	1CER90	A12336	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	35
₹	1CERH90	A12336	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	430 bar [6200 psi]	37
2	1CER140	A20081	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	140 l/min [37 US gpm]	420 bar [6100 psi]	39
	1SER30	A20090-T11A	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	41
	1SER90	A20092-T2A	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	42
	1SER140	A20094-T17A	Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot	140 l/min [37 US gpm]	420 bar [6100 psi]	43
Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Pag
	1CEB30	A6610	Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	44
	1CEB90	A12336	Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	46
	1CEB120	A877	Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot	120 l/min [32 US gpm]	350 bar [5000 psi]	48
	1CEB300	A6935	Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot	300 l/min [80 US gpm]	350 bar [5000 psi]	50
	1SEB30	A20090-T11A	Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	52
	1SEB90	A20092-T2A	Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	53
Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Pag
	1CEBD30	A20530	Overcenter Valve, Fully Balanced, Direct Acting, External Drain, Port 3 Pilot	30 l/min [8 US gpm]	350 bar [5000 psi]	54
	1CEBD90	A12196	Overcenter Valve, Fully Balanced, Direct Acting, External Drain, Port 3 Pilot	90 l/min [24 US gpm]	350 bar [5000 psi]	55
4 2	1CEBD120	A6726	Overcenter Valve, Fully Balanced, Differential Area, External Drain, Port 3 Pilot	180 l/min [47 US gpm]	400 bar [5800 psi]	56
	1CEBD300	A13098	Overcenter Valve, Fully Balanced, Differential Area, External Drain,	300 l/min [80 US gpm]	350 bar	57

# Motion Control Valves Quick Reference



Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	1CEL30	A6610	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	30 l/min [8 US gpm]	380 bar [5500 psi]	58
1	1CEL90	A12336	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	90 l/min [24 US gpm]	380 bar [5500 psi]	60
	1CEL140	A20081	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	140 l/min [37 US gpm]	380 bar [5500 psi]	62
	1SEL30	A20090-T11A	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	30 l/min [8 US gpm]	380 bar [5500 psi]	64
2	1SEL90	A20092-T2A	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	90 l/min [24 US gpm]	380 bar [5500 psi]	65
	1SEL140	A20094-T17A	Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot	140 l/min [37 US gpm]	380 bar [5500 psi]	66
Overcenter Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
Overcenter Valve	Model No.	Cavity A20530	Description Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot	Flow* 30 l/min [8 US gpm]	Pressure 350 bar [5000 psi]	Page 67
2			Overcenter Valve, Zero Differential, Poppet Type, External Drain,	30 l/min	350 bar	
	1CPBD30	A20530	Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain,	30 l/min [8 US gpm] 90 l/min	350 bar [5000 psi] 350 bar	67
	1CPBD30 1CPBD90	A20530 A12196	Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain,	30 l/min [8 US gpm] 90 l/min [24 US gpm] 180 l/min	350 bar [5000 psi] 350 bar [5000 psi] 400 bar	67
	1CPBD30 1CPBD90 1CPBD120	A20530 A12196 A6726	Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot Overcenter Valve, Zero Differential, Poppet Type, External Drain,	30 l/min [8 US gpm] 90 l/min [24 US gpm] 180 l/min [47 US gpm] 300 l/min	350 bar [5000 psi] 350 bar [5000 psi] 400 bar [5800 psi] 400 bar	67 68 69

Dual Overcenter Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
<u> </u>	1CEEC35	Catalog HIC	Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks	30 l/min [8 US gpm]	350 bar [5000 psi]	72
	1CEEC95	Catalog HIC	Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks	90 l/min [24 US gpm]	350 bar [5000 psi]	73
	1CEEC150	Catalog HIC	Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks	120 l/min [32 US gpm]	350 bar [5000 psi]	74
V1 V2	1CEEC350	Catalog HIC	Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks	300 l/min [80 US gpm]	350 bar [5000 psi]	75

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# Motion Control Valves Quick Reference



Dual Overcenter Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
<u>c1</u> <u>c2</u>	1CEECSH35	Catalog HIC	Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks and Shuttle Valve	30 l/min [8 US gpm]	350 bar [5000 psi]	76
	1CEECSH95	Catalog HIC	Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks and Shuttle Valve	90 l/min [24 US gpm]	350 bar [5000 psi]	77
	1CEECSH150	Catalog HIC	Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks and Shuttle Valve	120 l/min [32 US gpm]	350 bar [5000 psi]	78
L][B[T]_ V1 V2	1CEECSH350	Catalog HIC	Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks and Shuttle Valve	300 l/min [80 US gpm]	350 bar [5000 psi]	79

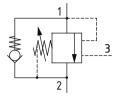
# Motion Control Valves CP448-1

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 350 bar [5000 psi] • 19 l/min [5 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



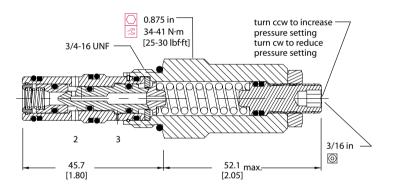
### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	19 l/min [5 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 4.5:1, 8:1
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.16 kg [0.36 lb]
Cavity	CP08-3L

<u>Danfoss</u>

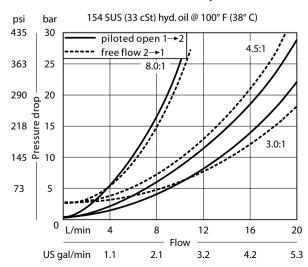
### DIMENSIONS

mm [in]



### PERFORMANCE CURVES

### Pressure Drop

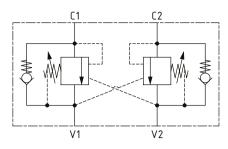


# Motion Control Valves CP448-1

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 350 bar [5000 psi] • 19 l/min [5 US gpm]

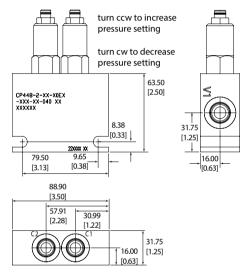
# SCHEMATIC

CP448-2 (dual)



# DIMENSIONS

mm [in]



								Free F	ow Che	ck Cra	ck Pressure	
Basic Code	e							Code	Bar	Psi		
	Cartridge and Hous Cartridges and Dua							040	2.76	[40]		
Seal Optio	n						Pilot Ratio	1				
Code	Seal kit						<b>3.0</b> - 3.0:1					
<b>B</b> -Buna - N	120238						4.5 - 4.5:1					
<b>V</b> -Viton	120239						<b>8.0</b> - 8.0:1					
Housing												
Housing						Pressure Set						
Code	Ports & Material	Housing Model Code	Dual Housing Model Code			Code x10 - Pro XXX-Standard						lessure no
Code 0						<b>XXX</b> -Standard Example:	d setting (see	Pressure	Range fo			lessure na
	Material					XXX-Standard Example: Code	d setting (see	Pressure Bar	Range fo <b>Psi</b>			ressure no
0	Material No housing	Model Čode				<b>XXX</b> -Standard Example:	d setting (see	Pressure	Range fo			ressure na
0 2B	Material No housing AL, 1/4 BSP	Model Čode CP08-3L-2B	Model Code		Pressure R	XXX-Standard Example: Code 075	d setting (see	Pressure Bar	Range fo <b>Psi</b>			
0 2B 3B	Material No housing AL, 1/4 BSP AL, 3/8 BSP	Model Čode CP08-3L-2B CP08-3L-3B	Model Code CP448-2-3B			XXX-Standard Example: Code 075 ange Pilot R	d setting (see	Pressure Bar 52 Pilot	Range fo Psi [750]	or value)  <b>4.5</b>	) ' Pilot Ra	ntio 8.0
0 2B 3B 53B	Material No housing AL, 1/4 BSP AL, 3/8 BSP Steel, 3/8 BSP	Model Čode (P08-3L-2B (P08-3L-3B (P08-3L-53B	Model Code (P448-2-3B (P448-2-53B		Code	XXX-Standard Example: Code 075 ange Pilot R Psi	d setting (see latio 3.0 Bar	Pressure Bar 52 Pilot Psi	Range fo Psi [750] Ratio 4	or value)  4.5 Bar	) Pilot Ra Psi	ntio 8.0 Bar
0 2B 3B 53B 45	Material No housing AL, 1/4 BSP AL, 3/8 BSP Steel, 3/8 BSP AL, #4 SAE	Model Čode CP08-3L-2B CP08-3L-3B CP08-3L-53B CP08-3L-45	Model Code (P448-2-3B (P448-2-53B (P448-2-45			XXX-Standard Example: 075 ange Pilot R Psi 600-1800	d setting (see atio 3.0 Bar [41-124]	Pressure Bar 52 Pilot Psi 800-270	Psi           [750]           Ratio           Batio           0	or value) 	) Pilot Ra Psi 1500-5000	ntio 8.0 Bar [103-31
0 2B 3B 53B 4S 6S 56S	Material           No housing           AL, 1/4 BSP           AL, 3/8 BSP           Steel, 3/8 BSP           AL, #4 SAE           AL, #6 SAE           Steel, #6 SAE	Model Čode (P08-3L-2B (P08-3L-3B (P08-3L-53B (P08-3L-4S (P08-3L-6S (P08-3L-6S	Model Code (P448-2-3B (P448-2-53B (P448-2-45		Code A Standard Setting	XXX-Standard Example: 075 ange Pilot R Psi 600-1800 1000	atio 3.0 Bar [41-124] [69]	Pressure Bar 52 Pilot Psi 800-270 1500	<b>Psi</b> [750] <b>Ratio</b> 0 [55- [1	or value) — <b>4.5</b> Bar -186] 103]	) Pilot Ra Psi	ntio 8.0 Bar [103-3! [172]
0 2B 3B 53B 4S 6S 56S * Aluminum	Material           No housing           AL, 1/4 BSP           AL, 3/8 BSP           Steel, 3/8 BSP           AL, #4 SAE           AL, #6 SAE           Steel, #6 SAE	Model Čode (P08-3L-2B (P08-3L-3B (P08-3L-53B (P08-3L-4S (P08-3L-6S (P08-3L-6S	Model Code (P448-2-3B (P448-2-53B (P448-2-45 (P448-2-65		Code A Standard Setting B	XXX-Standard Example: 075 ange Pilot R Psi 600-1800 1000-3500	atio 3.0 Bar [41-124] [69] [269-240]	Pressure 3ar 52 Pilot Psi 800-270 1500-50	Psi           [750]           • Ratio           • E           0         [55-           [1]           00         [10]	or value) 	) Pilot Ra Psi 1500-5000	ntio 8.0 Bar [103-3]
0 2B 3B 53B 4S 6S 56S * Aluminum * Additional	Material No housing AL, 1/4 BSP AL, 3/8 BSP Steel, 3/8 BSP AL, #4 SAE AL, #6 SAE Steel, #6 SAE bodies are to be use housings available	Model Čode (P08-3L-2B (P08-3L-3B (P08-3L-53B (P08-3L-4S (P08-3L-6S (P08-3L-6S	Model Code (P448-2-3B (P448-2-53B (P448-2-45 (P448-2-65		Code A Standard Setting	XXX-Standard Example: 075 ange Pilot R Psi 600-1800 1000	atio 3.0 Bar [41-124] [69]	Pressure Bar 52 Pilot Psi 800-270 1500	Psi           [750]           • Ratio           • E           0         [55-           [1]           00         [10]	or value) — <b>4.5</b> Bar -186] 103]	) Pilot Ra Psi 1500-5000	ntio 8.0 Bar [103-3.
0 2B 3B 53B 4S 6S 56S * Aluminum	Material No housing AL, 1/4 BSP AL, 3/8 BSP Steel, 3/8 BSP AL, #4 SAE AL, #6 SAE Steel, #6 SAE bodies are to be use housings available <b>nt Option</b>	Model Čode (P08-3L-2B (P08-3L-3B (P08-3L-53B (P08-3L-4S (P08-3L-6S (P08-3L-6S	Model Code (P448-2-3B (P448-2-53B (P448-2-45 (P448-2-65		Code A Standard Setting B Standard	XXX-Standard Example: 075 ange Pilot R Psi 600-1800 1000-3500	atio 3.0 Bar [41-124] [69] [269-240] [103]	Pressure 3ar 52 Pilot Psi 800-270 1500-50	Psi           [750]           • Ratio           • E           0         [55-           [1]           00         [10]	or value) 	) Pilot Ra Psi 1500-5000	ntio 8.0 Bar [103-31



# Motion Control Valves 1CE30

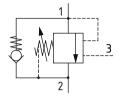
Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



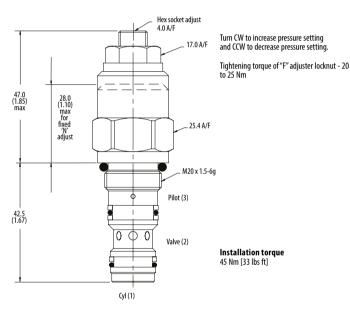
# PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	2.5:1, 5:1, 10:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A6610

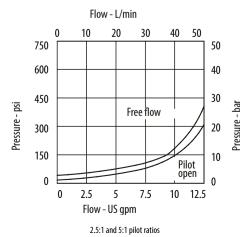
Danfoss

#### DIMENSIONS

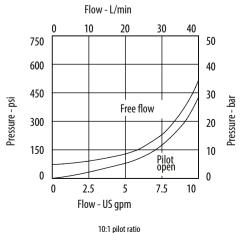
mm [in]



### PERFORMANCE CURVES







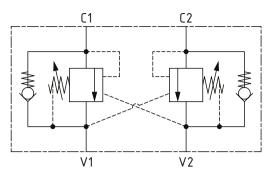


# Motion Control Valves 1CE30

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 30 l/min [8 US gpm]** 

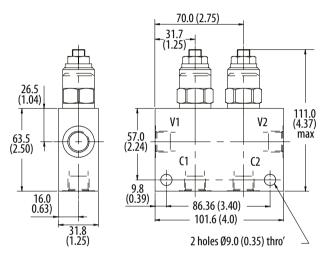
### SCHEMATIC

1CEE34 (dual)



#### DIMENSIONS

mm [in]



### MODEL CODE

								Pressure	Setting		
1CE35-	<mark>Code</mark> •No housing •Cartridge and ho <b>1</b> -Cartridge and d	using ual housing						specified Pr	sure setting in b ressure Range) ard setting (see		
	· ·····j·····							Coc	de B	lar	Psi
_	ment Option							21	0 2	10 [	3000]
F - Exte G - Tam	rnal per Resistant						Housing Ma	iterial			
N - Non	-adjustable optior	n, contact technica	l support				Omit - Alum	inum/No ho	ousing		
						Pilot Rati	377 - Steel				
Housin	a					<b>2</b> - 2.5:1	•				
nousin	9					<b>5</b> - 5:1					
<u>.</u>		Aluminum	Steel	Aluminum	Steel	<b>10</b> -10:1					
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual						
	<b>Ports</b> No housing					<b>10</b> -10:1 Seal Option	eal kit				
Omit						<b>10</b> -10:1 Seal Option Code Se	eal kit (395	-			
Code Omit 3W 6T	No housing	single	single	dual	dual	10 -10:1Seal OptionCodeSealS-Buna - NSeal		-			
Omit 3W	No housing 3/8" BSP	single B6743	single	dual B6836	dual	10 -10:1 Seal Option Code Se S-Buna - N St	395	-			
Omit 3W 6T 8T * Alumi	No housing 3/8" BSP #6 SAE #8 SAE num bodies are to	single B6743 B10536 B7884 be used for pressure	single B12823	dual B6836 B10805 B30237	dual	10 -10:1 Seal Option Code Se S-Buna - N St	395	-			
Omit 3W 6T 8T * Alumi	No housing 3/8" BSP #6 SAE #8 SAE	single B6743 B10536 B7884 be used for pressure	single B12823	dual B6836 B10805 B30237	dual	10 -10:1       Seal Option       Code     Se       S-Buna - N     Se       SV-Viton     Se       Pressure Range	395	- - Pilot	Ratio 5	Pilot	Ratio 10
Omit 3W 6T 8T * Alumi	No housing 3/8" BSP #6 SAE #8 SAE num bodies are to	single B6743 B10536 B7884 be used for pressure	single B12823	dual B6836 B10805 B30237	dual	10 -10:1       Seal Option       Code     Se       S-Buna - N     Se       SV-Viton     Se       Pressure Range	(395 (395V	- - Pilot Bar	Ratio 5 Psi	Pilot	Ratio 10 Psi
Omit 3W 6T 8T * Alumi	No housing 3/8" BSP #6 SAE #8 SAE num bodies are to	single B6743 B10536 B7884 be used for pressure	single B12823	dual B6836 B10805 B30237	dual	10 -10:1       Seal Option       Code     Seal Option       S-Buna - N     SH       SV-Viton     SH       Pressure Range     Pilo	(395 (395V t Ratio 2				
Omit 3W 6T BT	No housing 3/8" BSP #6 SAE #8 SAE num bodies are to	single B6743 B10536 B7884 be used for pressure	single B12823	dual B6836 B10805 B30237	dual	10-10:1       Seal Option       Code     Site       S-Buna - N     Site       SV-Viton     Site       Pressure Range     Pilo       Code     Bar	(395 (395V t Ratio 2 Psi	Bar	Psi	Bar	Psi

Standard setting

Std setting made at 4.5 l/min

[3000]

210

[3000]

210

210

[3000]



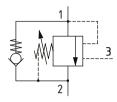
# **Motion Control Valves** 1CEH30

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 30 l/min [8 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

# SCHEMATIC



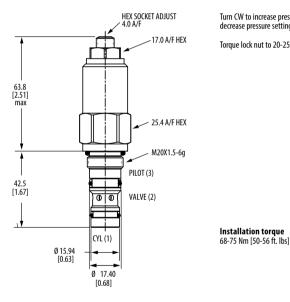
### PERFORMANCE DATA

Rated pressure	430 bar [6200 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	430 bar [6200 psi]
Max recommended load pressure at max setting	350 bar [5000 psi]
Pilot Ratio	3:1, 5:1
Leakage	5 drops/min at 85% of Crack Pressure
Weight	0.25 kg [0.55 lbs]
Cavity	A6610

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#### DIMENSIONS

mm [in]

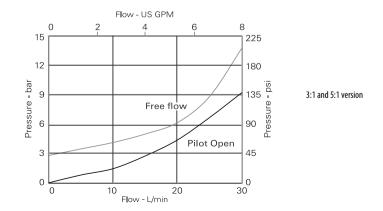


Turn CW to increase pressure setting and CCW to decrease pressure setting.

Torque lock nut to 20-25 Nm [15-18 ft lbs]

### **PERFORMANCE CURVES**

### Pressure Drop

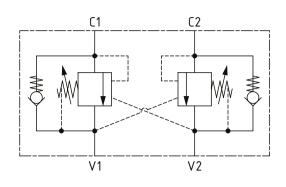


# Motion Control Valves 1CEH30

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 30 l/min [8 US gpm]

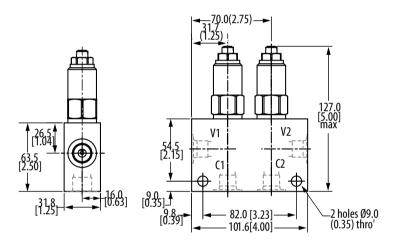
### 

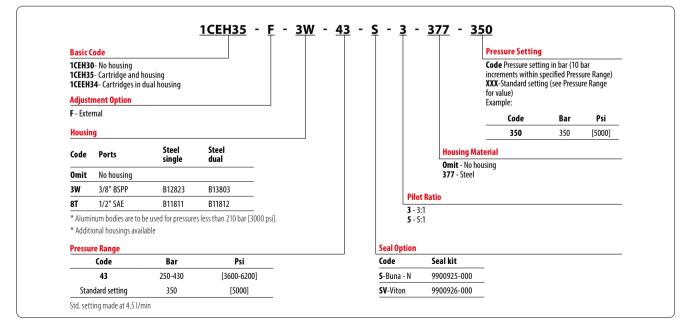
1CEEH34 (dual)



### DIMENSIONS

mm [in]







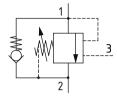
# Motion Control Valves 1CE90

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 90 I/min [24 US gpm]** 

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### 



### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1, 8:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12336

Danfoss

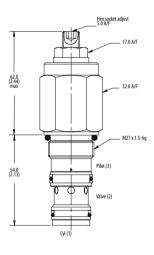
Turn CW to increase pressure setting and CCW to decrease pressure setting.

Torque lock nut to 20-25 Nm [15-18 ft lbs]

Installation torque

60 Nm [44 ft. lbs]

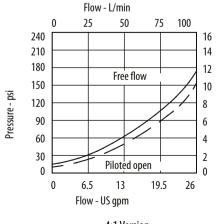
mm [in]



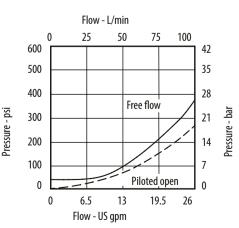
**PERFORMANCE CURVES** 



Pressure - bar







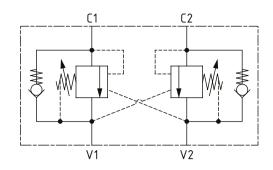
8:1 Pilot Ratio

# Motion Control Valves 1CE90

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 90 l/min [24 US gpm]** 

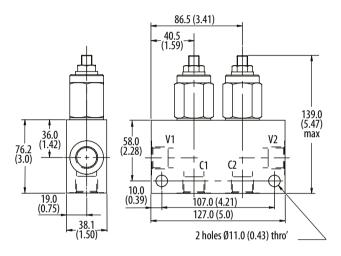
### SCHEMATIC

1CEE95 (dual)



### DIMENSIONS

mm [in]



Basic C	ode										
1 <b>CE95</b> -	No housing Cartridge and housin - Cartridges and dua	g I housing									
Adjustment Option F - External N - Non-adjustable option, contact technica Housing									<b>Pressure Settin</b>	g	
		ntact technical s	nical support.						<b>Code</b> Pressure set within specified Pr <b>XXX</b> -Standard set Example:	ressure Range)	bar increments re Range for value)
Code	Ports	Aluminum	Steel	Aluminum	Steel				Code	Bar	Psi
		single	single	dual	dual				200	200	[2900]
Omit	No housing										
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628		_	lousing M			
8T	1/2" SAE Valve & Cyl Port 1/4″ SAE Pilot Port	B10806	B10922	C10807	C11561			<b>Dmit</b> - Alun 8 <b>77</b> - Steel	ninum/No housing		
* Alumi	num bodies are to be us	ed for pressures	ess than 210 bi	ar [3000 psi].		Pilo	t Ratio				
	onal housings available					<b>4</b> - 4 <b>8</b> - 8					
Pressu	re Range					2 0					
	Code	Bar	I	Psi							
	20	70-225	[1015	5-3260]							
Star	idard Setting	100	[1-	450]		Option	Seal	L:+			
	35	200-350	[2900	)-5000]		na-N	SK63				
	idard Setting	210	[2]	0001		10-11	24022	3V			



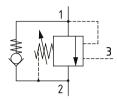
# Motion Control Valves 1CEH90

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 90 l/min [24 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



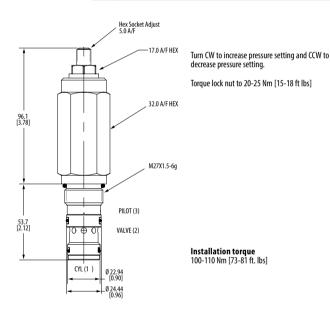
# PERFORMANCE DATA

Rated pressure	430 bar [6200 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	430 bar [6200 psi]
Max recommended load pressure at max setting	350 bar [5000 psi]
Pilot Ratio	4:1
Leakage	5 drops/min @ 85% of crack pressure
Weight	0.6 kg [1.32 lb]
Cavity	A12336

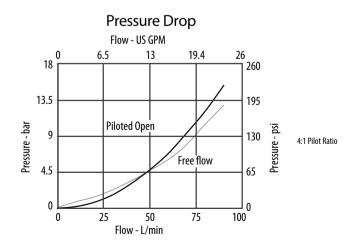
Danfoss



mm [in]



#### PERFORMANCE CURVES

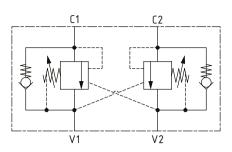


# Motion Control Valves 1CEH90

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 90 l/min [24 US gpm]

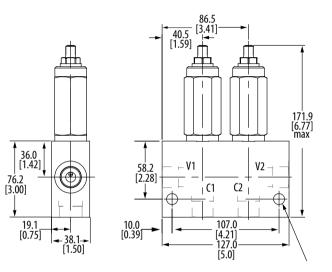
### SCHEMATIC

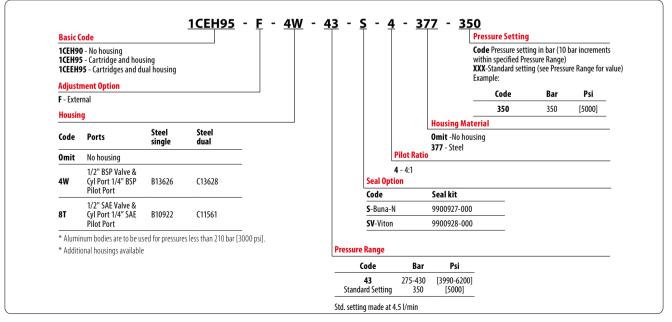
1CEEH95 (dual)



### DIMENSIONS

mm [in]







# **Motion Control Valves** 1CE120

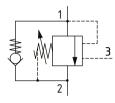
Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### 

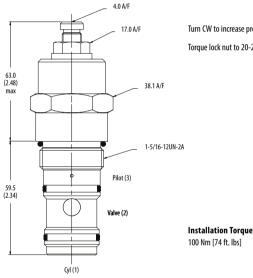


### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	120 l/min [32 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3.5:1, 8:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.59 kg [1.30 lb]
Cavity	A877

#### DIMENSIONS

mm [in]



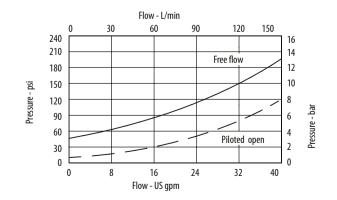
Turn CW to increase pressure setting and CCW to decrease pressure setting.

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Torque lock nut to 20-25 Nm [15-18 ft lbs]

PERFORMANCE CURVES

# **Pressure Drop**

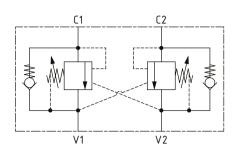


# Motion Control Valves 1CE120

Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot 350 bar [5000 psi] • 120 I/min [32 US gpm]

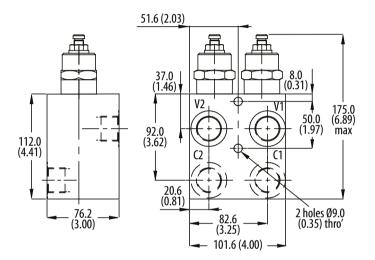
### SCHEMATIC

1CEE150 (dual)



### DIMENSIONS

mm [in]



Basic Co	ode									
1CE120	- No housing	_						Pressure Setting		
1CEE150	- Cartridge and housin ) - Cartridges and dual ment Option	g housing						Code Pressure settin within specified Pres XXX-Standard settin	sure Range)	
F - Extern								Example:		
								Code	Bar	Psi
Housing	I							210	210	[3000]
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual		Housing M	laterial		
Omit	No housing							ninum/No housing		
6W	3/4" BSP Valve & Cyl Port. 1/4" BSP Pilot Port	B6898	B5544	C2543	C1200	Pilot R	377 - Steel atio	-		
12T	3/4" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B8200		C10629	C16434	3 - 3.5: 8 - 8:1 Seal Option	1			
	1" SAE Valve & Cyl					Code		Seal kit		
16T	Port. 1/4″ SAE Pilot Port	B10708	B11814			S-Buna-N		SK417		
* Alumin <sup>,</sup>	um bodies are to be used	for pressures le	ess than 210 ba	r [3000 psi].		SV-Viton		SK417V		
* Additio	nal housings available					Pressure Range				
						Code	Bar	Psi		
						35	70-350	[3015-5000]		
						Standard Setting	210	[3000]		



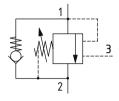
# Motion Control Valves 1CE140

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 420 bar [6100 psi] • 140 l/min [37 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

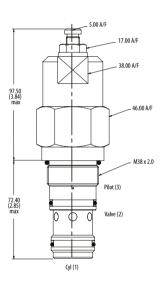


### PERFORMANCE DATA

Rated pressure	420 bar [6100 psi]
Rated flow	140 l/min [37 US gpm]
Max total relief pressure	420 bar [6100 psi]
Max recommended load pressure at max setting	340 bar [4900psi]
Pilot Ratio	4:1.6:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	1.2 kg [2.5 lb]
Cavity	A20081

### DIMENSIONS

mm [in]



Turn CW to increase pressure setting and CCW to decrease pressure setting.

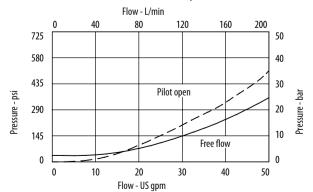
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Torque lock nut to 20-25 Nm [15-18 ft lbs]

Installation Torque

#### PERFORMANCE CURVES

### Pressure Drop

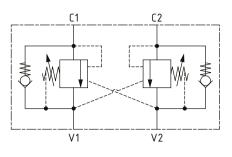


# Motion Control Valves 1CE140

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 420 bar [6100 psi] • 140 l/min [37 US gpm]

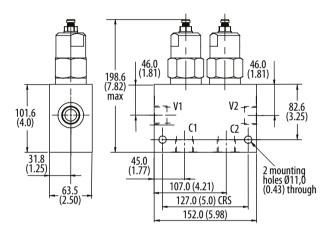
### **SCHEMATIC**

1CEE145 (dual)



### DIMENSIONS

mm [in]



Basic Co	ode						Pressure Setting	9	
1CE145	- No housing - Cartridge and housin 5 - Cartridges and dual	g housing					<b>Code</b> Pressure sett within specified Pr <b>XXX</b> -Standard sett value) Example:	essure Range)	
-	nent Option						Code	Bar	Psi
F - Exteri	nal						350	350	[5000]
Housing	3					Housing	Material		
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual	<b>Omit</b> - Alu <b>377</b> - Stee	ıminum/No housing I		
0mit	No housing					Pilot Ratio			
6W	3/4″ BSP Valve & Cyl Port. 1/4″ BSP Pilot Port	B20105	B20106			l - 4:1 5 - 6:1 n			
8W	1″ BSP Va Ive & Cyl Port. 1/4″ BSP Pilot Port	B20107	B20108	C20285	C20287	Seal Kit SK1108	-		
	1" SAE Valve & Cyl					SK1108V	_		
16T	Port. 1/4″ SAE Piĺot Port	B11946	B11947	C30105	C30106				
* Alumin	um bodies are to be used	for proceuros	locs than 21	0 har [2000 pci]		Bar	Psi		
	nal housings available	1 IOI PIESSUIES		o ngi (2000 hzi)		140-250	[2000-3600]		
						190	[2750]		
						220-330	[3200-4800]		
						270	[3900]		
						310-420	[4500-6100]		
						370	[5400]		
						l/min			



# Motion Control Valves 1CE300

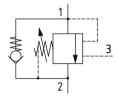
Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



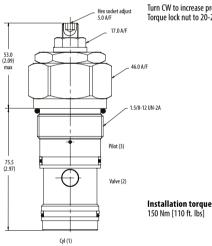
### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 8:1
Leakage	4 ml/min nominal [60 drops/min]
Weight	0.91 kg [2.0 lb]
Cavity	A6935

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DIMENSIONS

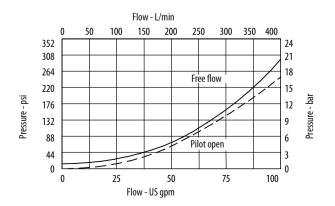
mm [in]



Turn CW to increase pressure setting and CCW to decrease pressure setting. Torque lock nut to 20-25 Nm [15-18 ft lbs]

#### **PERFORMANCE CURVES**

### Pressure Drop

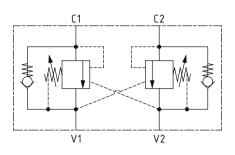


# Motion Control Valves 1CE300

Overcenter Valve, Standard, Differential Area, Internal Drain, Port 3 Pilot 350 bar [5000 psi] • 300 l/min [80 US gpm]

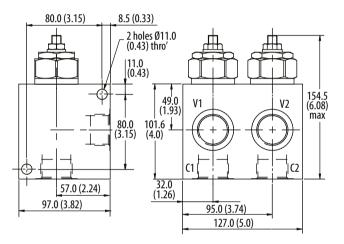
#### SCHEMATIC

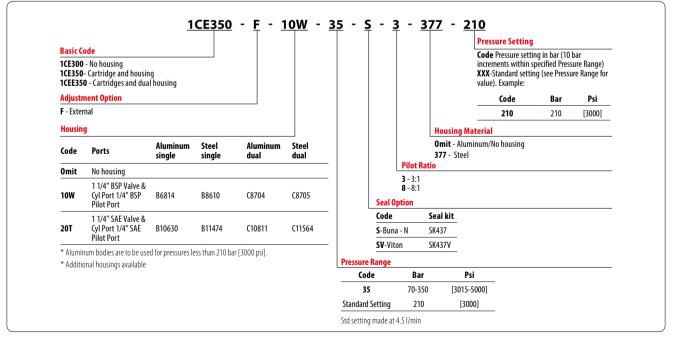
1CEE350 (dual)



#### DIMENSIONS

mm [in]







# Motion Control Valves 1SE30

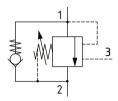
Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

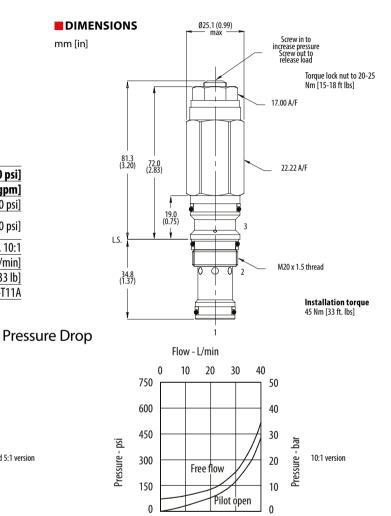
This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve.

#### SCHEMATIC



#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	2.5:1, 5:1, 10:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A20090-T11A

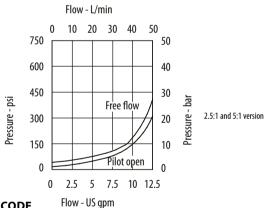


0 2.5 5 7.5 10

Flow - US gpm

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### PERFORMANCE CURVES



### MODEL CODE

Adjustment Optio	n				Ī	- <u> </u>	<u>S</u> - <u>5</u>		Pressure Setting	1		
F - External N - Non-adjustable Pressure Range	option, coi	ntact technical s	upport					Pilot Ratio	Pressure Range)	5 .	bar increments within s re Range for value)	pecified
	Pilot	Ratio 2	Pilot	Ratio 5	Pilot I	Ratio 10	l	<b>2</b> - 2.5:1	Code	Bar	Psi	
Code	Bar	Psi	Bar	Psi	Bar	Psi		<b>5</b> - 5:1 <b>10</b> - 10:1	210	210	[3000]	
20	70-225	[1015-3260]	70-225	[1015-3260]	70-225	[1015-3260]	Seal Opti	on				
Standard setting	100	[1450]	100	[1450]	100	[1450]	Code	Seal ki	t			
35	70-350	[1015-5000]	70-350	[1015-5000]	[120-350]	[1300-5000]	S-Buna-N	SK1079				
Standard setting	210	[3000]	210	[3000]	[210]	[3000]	SV-Viton	SK1079	/			

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# Motion Control Valves 1SE90

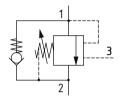
Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot

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

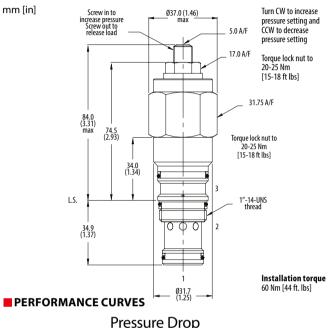
### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve.

#### SCHEMATIC



### DIMENSIONS

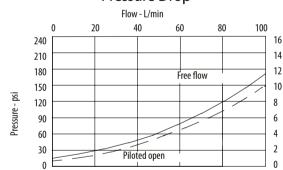


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Pressure - bar

### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1, 8:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.42 kg [0.92 lb]
Cavity	A20092-T2A



10

Flow - US gpm

15

20

25

5

0

Adjustment Option					D	ressure Setting				
<b>F</b> - External <b>N</b> - Non-adjustable o			Co sp XX	de Pressure setting in bar (10 bar increments with cified Pressure Range) K-Standard setting (see Pressure Range for value) mple:						
Pressure Range						_	Code	Bar	Psi	
Code	Bar	Psi				_	210	210	[3000]	
20	70-225	[1015-3260]	Seal Option							
Standard Setting	100	[1450]	Code	Seal kit	Pilot	Ratio				
	200-350	[2900-5000]	<b>S</b> -Buna-N	SK1093	<b>4</b> - 4;					
35										

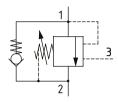
# Motion Control Valves 1SE140

Overcenter Valve, Standard, Direct Acting, Internal Drain, Port 3 Pilot 420 bar [6100 psi] • 140 l/min [37 US qpm]

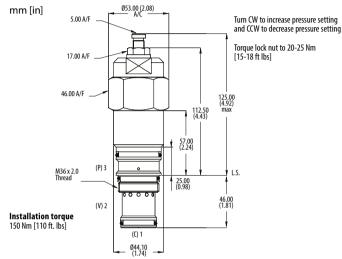
### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at approximately 1.3 times the maximum load induced pressure, the valve will prevent flow from port 1 to 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 1 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve.

#### SCHEMATIC







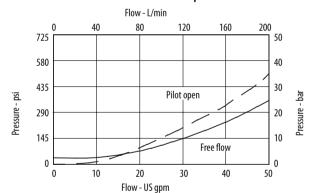
Danfoss

### PERFORMANCE DATA

Rated pressure	420 bar [6100 psi]
Rated flow	140 l/min [37 US gpm]
Max total relief pressure	420 bar [6100 psi]
Max recommended load pressure at max setting	340 bar [4900 psi]
Pilot Ratio	4:1, 6:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	1.2 kg [2.5 lb]
Cavity	A20094-T17A
Cavity	A20094-117

### PERFORMANCE CURVES

Pressure Drop



### MODEL CODE

			Pres	sure Setting	J	
Adjustment Option F - External N - Non-adjustable optic Pressure Range	on, contact technica	l support	withi	in specified Pre Standard setti 2)	ing in bar (10 essure Range) ing (see Pressu	bar increments re Range for
Code	Bar	Psi		Code	Bar	Psi
20	140-250	[2000-3600]	Pilot Ratio	210	210	[3000]
Standard Setting	190	[2750]	4 - 4:1			
30	220-330	[3200-4800]	<b>6</b> - 6:1			
Standard Setting	270	[3900]	Collocation .			
40	310-420	[4500-6100]	Seal Option Code Seal kit			
Standard Setting	370	[5400]	S-Buna-N SK1116			

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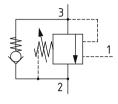
# Motion Control Valves VCB 06-EN

Overcenter Valve, Standard, Differential Area, Internal Drain, Port 1 Pilot 350 bar [5000 psi] • 60 l/min [16 US qpm]

### DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 3 and 2. When pilot pressure is applied to port 1, the valve will meter the flow from port 3 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow takes place from port 2 to port 3 through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2, so any back pressure will increase the pilot pressure required to keep the valve open and the pressure at which the valve will open as a relief valve.

### 



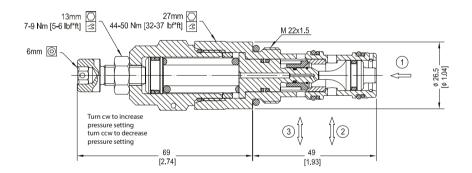
### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	60 l/min [16 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at maximum setting	270 bar [3900 psi]
Pilot ratio	4:1, 7:1
Leakage	10 drops/min @ at 70% of crack pressure
Weight	0.21 kg [0.47 lb]
Cavity	NCS06/3

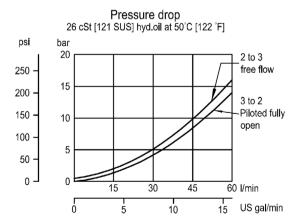
Danfoss

### DIMENSIONS

mm [in]



### **PERFORMANCE CURVES**

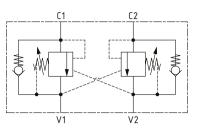


# Motion Control Valves VCB 06-EN

Overcenter Valve, Standard, Differential Area, Internal Drain, Port 1 Pilot **350 bar [5000 psi] • 60 l/min [16 US gpm]** 

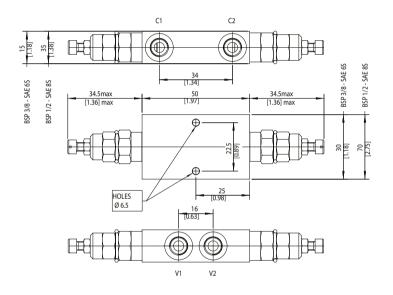
### SCHEMATIC

VCB 06-EN-DL (dual)



### **DIMENSIONS**

mm [in]



Pressur	e Range								
Code	Bar	Psi	Pilot Rat	tia		essure Setting			
1	25-140	[360-2030]	A - 7.1:1	10		de Pressure setting cified Pressure Ran		bar increments v	vithin
2	70-210	[1015-3000]	<b>B</b> - 4.1:1		XX	X-No factory settin			
3	105-350	[1520-5000]			Exa	imple:			
	_				_	Code	Bar	Psi	
Housing	9				_	70	70	[1015]	
Code	Ports & Material	Housing Number	Dual Housing Code	Dual Housing Number					
00	No housing								
SE3B	AL, 3/8 BSP	NCS06-3-SE3B	DL3B	NCS06/3-DL3/8	Carlonting				
SE4B	AL, 1/2 BSP	NCS06-3-SE4B	DL4B	NCS06/3-DL1/2	Seal Option Code	Seal kit			
SE6S	AL, #6 SAE	NCS06-3-SE6S	DL6S	NCS06/3-DL6S	B-Buna-N				
SES6S	ST,#6SAE	NCS06-3-SES6S				23000007			
SE8S	AL, #6 SAE	NCS06-3-SE8S	DL8S	NCS06/3-DL8S	<b>V</b> -Viton	230000110	)		



# **Motion Control Valves** 1CER30

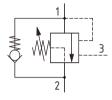
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



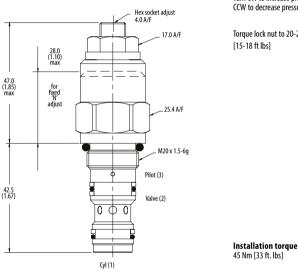
### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	2.5:1, 4:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A6610

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#### DIMENSIONS

mm [in]

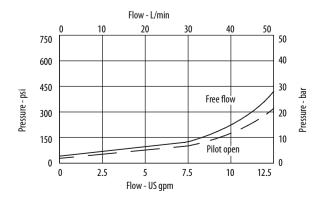


Turn CW to increase pressure setting and CCW to decrease pressure setting

Torque lock nut to 20-25 Nm . [15-18 ft lbs]

#### PERFORMANCE CURVES

### Pressure Drop



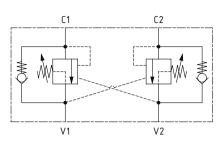
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# Motion Control Valves 1CER30

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 30 l/min [8 US gpm]** 

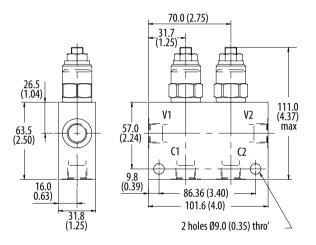
### **SCHEMATIC**

1CEER34 (dual)



### DIMENSIONS

mm [in]



	ode								Pressure	Settin	g
1CER35 1CEER3 Adjustn	- No housing - Cartridge and housi 4 - Cartridges and dua nent Option						Housing Materi Omit - Aluminum/N 377 - Steel		Code Pres (10 bar in specified XXX-Stan Pressure F Example:	crement Pressure dard sett Range for	Range) ting (see
F - Exter N - Non-	naı adjustable option, con	itact technical su	pport						Code	Bar	Psi
									210	210	[3000]
Housin	9					Pilot Ra	tio				
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual	<b>2</b> - 2.5:1 <b>4</b> - 4:1					
Omit	No Housing					Seal Option					
	3/8" BSP Valve &	0.740	<b>D</b> 42022	D.co.	Diagon	Code	Seal kit				
3W	Cyl Port 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803	Buna-N	SK395				
	3/8" SAE Valve &					SV-Viton	SK395V				
	Cyl Port 1/4″ SAE Pilot Port	B10536		B10805		re Range					
6T						Code B	ar P	Psi	-		
6T  8T	1/2" SAE Valve & Cyl Port 1/4" SAE	B7884	B11811	B30237	B11812	35 100	-350 [1450				



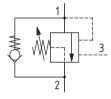
# Motion Control Valves 1CERH30

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 30 l/min [8 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting. This is also available in a dual housing for bi-directional control.

### SCHEMATIC



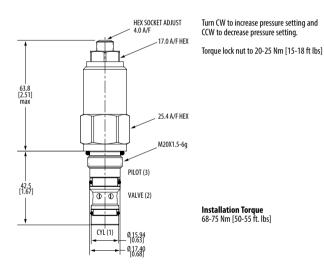
### PERFORMANCE DATA

Rated pressure	430 bar [6200 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	430 bar [6200 psi]
Max recommended load pressure at max setting	350 bar [5000 psi]
Pilot Ratio	3:1, 5:1
Leakage	5 drops/min @ 85% of Cracking
Weight	0.2 kg [0.55 lb]
Cavity	A6610

<u>Danfoss</u>

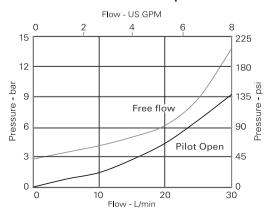
#### DIMENSIONS

mm [in]



#### **PERFORMANCE CURVES**

# Pressure Drop

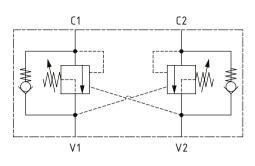


# Motion Control Valves 1CERH30

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 30 l/min [8 US gpm]

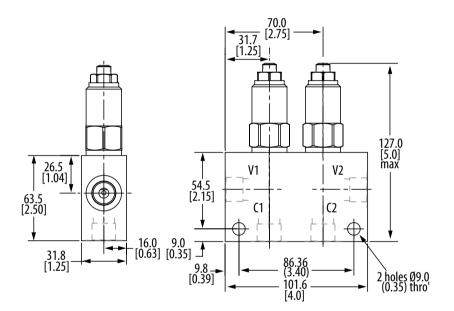
### **SCHEMATIC**

1CEERH34 (dual)



### DIMENSIONS

mm [in]



Basic C	ode			Press	sure Settir	ng
1CERH3 1CEERH	80 - No housing 85- Cartridge and hou 134 -Cartridges and c <mark>nent Option</mark> nal	using lual housing		(10 ba specifi <b>rial XXX</b> -S	Pressure se ar incremen fied Pressure Standard set ure Range fo ple:	ts within Range) tting (see
Housin				Cod	le Bar	Psi
	-	Steel	Steel	350	<b>0</b> 350	[5000]
Code	Ports	single	dual			
0mit	No housing					
3W	3/8" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B12823	B13803			
	1/2" SAE Valve &					
8T	Cyl Port 1/4" SAE	B11811	B11812			
	Pilot Port					
				Psi	_	
				[3600-6200]		
				[5000]		



# **Motion Control Valves** 1CER90

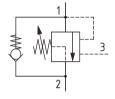
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting. This is also available in a dual housing for bi-directional control.

#### SCHEMATIC



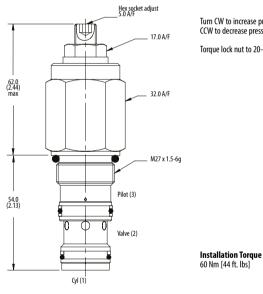
DIMENSIONS

mm [in]

### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12336

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Turn CW to increase pressure setting and CCW to decrease pressure setting.

Torque lock nut to 20-25 Nm [15-18 ft lbs]

#### PERFORMANCE CURVES

Pressure Drop Flow - L/min 25 50 75 100 240 16 14 210 180 12 Free flo 150 10 Pressure - psi Pressure - bar 120 8 90 6 60 4 30 2 Piloted one 0 ٥ 0 6.5 13 19.5 26 Flow - US gpm



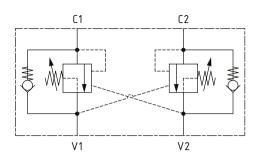
Danfoss

# Motion Control Valves 1CER90

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 90 l/min [24 US gpm]** 

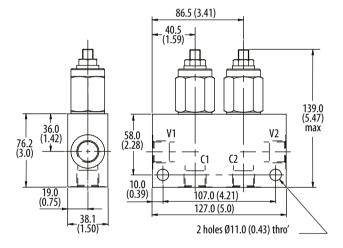
### **SCHEMATIC**

1CEER95 (dual)



### DIMENSIONS

mm [in]



Basic Co	do							Pressure Setting		
1CER90 1CER95	- No housing - Cartridge and housin 5-Cartridges and dual	ng I housing						<b>Code</b> Pressure sett within specified Pre <b>XXX</b> -Standard setti value) Example:	essure Range)	
Adjustn	ent Option							Code	Bar	Psi
F - Exter	nal •adjustable option, cor	ntact tochnical cu	innort					210	210	[3000]
N - NUI			ιμμοιτ				Housing	Material		
							Omit - Al	uminum/No housing		
Housing						P	377 - Stee ilot Ratio	2		
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual		- 4:1			
Omit	No housing		5			Seal Optio	n			
Unit	1/2" BSP Valve &					Code	Seal kit			
4W	Cyl Port 1/4" BSP	B13625	B13626	C13627	C13628	<b>S</b> -Buna-N	SK633			
	Pilot Port					SV-Viton	SK633V			
8T	1/2" SAE Valve & Cyl Port 1/4" SAE	B10806	B10922	C10807	C11561	ressure Range				
••	Pilot Port	510000	010722			Code	Bar	Psi		
* Alumin	um bodies are to be use	ed for pressures le	ess than 210 ba	r [3000 psi].		20	70-225	[1015-3260]		
* Additio	nal housings available					Standard Setting	100	[1450]		
Auuitiu						35	200-350	[2900-5000]		
Additio						55	200 330	[2700 5000]		

# Motion Control Valves 1CERH90

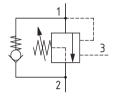
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot

430 bar [6200 psi] • 90 l/min [24 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

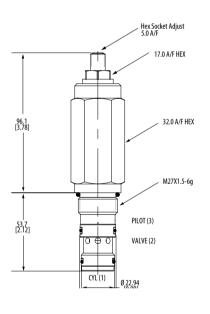


### PERFORMANCE DATA

Rated pressure	430 bar [6200 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	430 bar [6200 psi]
Max recommended load pressure at max setting	350 bar [5000 psi]
Pilot Ratio	4:1
Leakage	5 drops/min @ 85% of Cracking
Weight	0.6 kg [1.32 lb]
Cavity	A12336

#### DIMENSIONS

mm [in]



Turn CW to increase pressure setting and CCW to decrease pressure setting

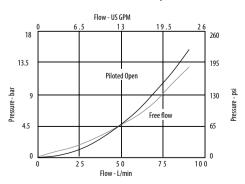
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Torque lock nut to 20-25 Nm [15-18 ft lbs]

Installation Torque 100-110 Nm [73-81 ft. lbs]

#### PERFORMANCE CURVES

# **Pressure Drop**

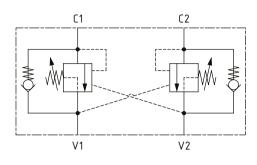


# Motion Control Valves 1CERH90

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot 430 bar [6200 psi] • 90 l/min [24 US gpm]

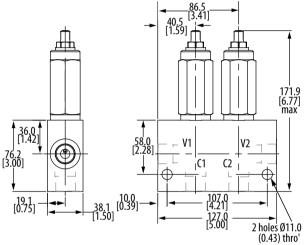
### SCHEMATIC

1CEERH95 (dual)



### DIMENSIONS

mm [in]



### MODEL CODE

(

Basic C	ode									Pressure	e Settir	Ig
1CERH90 - No housing 1CERH95- Cartridge and housing 1CEERH95 - Cartridges and dual housing Adjustment Option								Housing Material Omit - No housing 377 - Steel	(10 bar in Pressure I <b>XXX</b> -Stan Range for Example:	icrement Range) Idard set r value)	tting in bar ts within specifi ting (see Pressu	
F - Exter	mal									Code	Bar	Psi
										350	350	[5000]
Housin	g							<b>Pilot Ratio</b> <b>4</b> - 4:1	D			
	-	Steel	Steel				Seal O					
Code	Ports	single	dual				Code	Sea	kit			
Omit	No housing			_			<b>S</b> -Buna	-N 9900	0927-000			
	1/2" BSP Valve &			_			SV-Vito	on 9900	928-000			
4W	Cyl Port 1/4" BSP Pilot Port	B13626	C13628			Pressure	Range					
	1/2" SAE Valve &			_		Cod	e	Bar	Psi			
8T	Cyl Port 1/4″ SAE Pilot Port	B10922	C11561			43		275-430	[4000-6200]			
* Alumir	num bodies are to be us	sed for pressure	es less than 210 bar	 [3000 psi]		Standard	Setting	350	[5000]			
						Std. settin						





# **Motion Control Valves** 1CER140

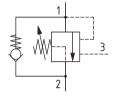
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot

420 bar [6100 psi] • 140 l/min [37 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

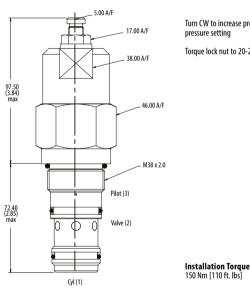


# **PERFORMANCE DATA**

Rated pressure	420 bar [6100 psi]
Rated flow	140 l/min [37 US gpm]
Max total relief pressure	420 bar [6100 psi]
Max recommended load pressure at max setting	340 bar [4900 psi]
Pilot Ratio	4:1, 6:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	1.2 kg [2.6 lb]
Cavity	A20081

#### DIMENSIONS

mm [in]



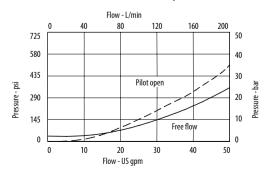
Turn CW to increase pressure setting and CCW to decrease pressure setting

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Torque lock nut to 20-25 Nm [15-18 ft lbs]

#### PERFORMANCE CURVES

# **Pressure Drop**

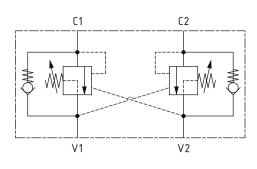


# Motion Control Valves 1CER140

Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot **420 bar [6100 psi] • 140 l/min [37 US gpm]** 

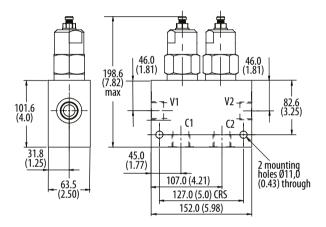
### **SCHEMATIC**

1CEER145 (dual)



### DIMENSIONS

mm [in]



											Pressure	Settin	g
1CER14	<b>ode</b> O - No housing S - Cartridge and hous 4S - Cartridges and du							L	Housing M		Code Pre (10 bar in specified XXX-Stan Pressure I Example:	crement Pressure dard set Range fo	Range) ting (see
Adjustn	nent Option								<b>Omit</b> - Alumii <b>377</b> - Steel	num/No housing	Code	Bar	Psi
F - Exter	nal										210	210	[3000]
Housin							L	Pilot Ratio			-		
Code	Ports	Aluminum	Steel	Aluminum	Steel	S		<b>6</b> - 6:1					
	10103	single	single	dual	dual		ode	Seal	kit				
Omit	No housing					S	-Buna-I	N SK11	08				
6W	3/4″ BSP Valve & Cyl Port. 1/4″ BSP	B20105	B20106			S	<b>V</b> -Viton	sK11	08V				
	Pilot Port					Pressure R	ange						
8W	1″ BSP Valve & Cyl Port. 1/4″ BSP Pilot	B20107	B20108	C20285	C20287	Cod	e	E	Bar	Psi			
OW	Port Port	02010/	DZU100	C20203	C2020/	20	1	140	0-250	[2000-3600]	]		
	3/4" SAE Valve &					Standard	Setting		190	[2750]			
12T	Cyl Port. 1/4" SAE Pilot Port	B11952	B11953			30			0-330	[2200-4800]	]		
	1" SAE Valve & Cyl					Standard	,		270	[3900]			
16T	Port. 1/4″ SAE Piĺot	B11946	B11947	C30105	C30106	40			0-420	[4500-6100]	]		
	Port					Standard	Setting		370	[5400]			



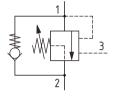
# Motion Control Valves 1SER30

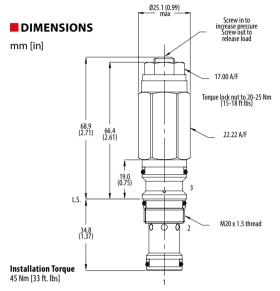
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot **350 bar [5000 psi] • 30 l/min [8 US gpm]** 

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting.

#### SCHEMATIC



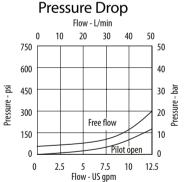


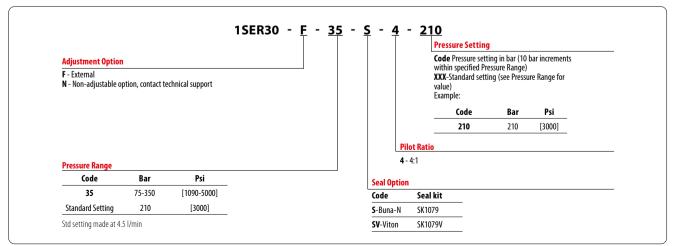
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### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A20090-T11A

# PERFORMANCE CURVES





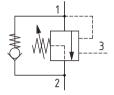
# **Motion Control Valves 1SER90**

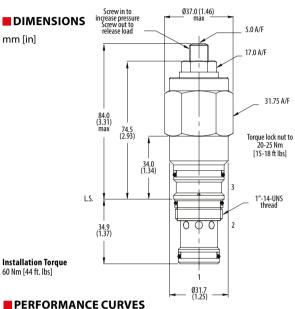
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot 350 bar [5000 psi] • 90 l/min [24 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting.

### SCHEMATIC



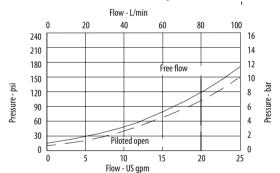


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# **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.42 kg [0.92 lb]
Cavity	A20092-T2A

**Pressure Drop** 



						Pr	essure Setting	J		
Adjustment Option						Co	de Pressure sett	ing in bar (10	bar increr	ments
<b>F</b> - External <b>N</b> - Non-adjustable optio	on, contact technic	cal support				X) va	thin specified Pr <b>X</b> -Standard sett ue) ample:			for
							Code	Bar	Psi	
Deserves Deserves						_		244	[2000	
Pressure kange							210	210	[3000	J
Code	Bar	Psi			Pilot	Ratio	210	210	[3000	ו
	<b>Bar</b> 75-225	<b>Psi</b> [1090-3260]	-				210	210	[3000	J]
Code			-		<b>4</b> - 4:		210	210	[3000	<u>]</u>
20	75-225	[1090-3260]	-	Sea	<b>4</b> - 4: Il Option			210	[3000	<u>]</u>

# Motion Control Valves 1SER140

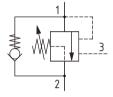
Overcenter Valve, Part Balanced, Direct Acting, Internal Drain, Port 3 Pilot

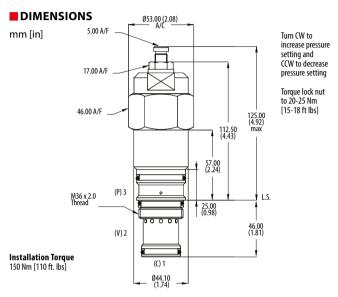
420 bar [6100 psi] • 140 l/min [37 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to the valve port 2 so any back pressure will increase the pilot pressure required to keep the valve open. However, the balanced poppet design allows the relief valve to remain open provided the inlet pressure is higher than the setting.

### SCHEMATIC





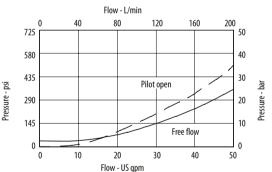
Danfoss

### PERFORMANCE DATA

420 bar [6100 psi]
140 l/min [37 US gpm]
420 bar [6100 psi]
340 bar [4900 psi]
4:1, 6:1
0.3 ml/min nominal [5 drops/min]
1.2 kg [2.5 lb]
A20094-T17A

### PERFORMANCE CURVES

# Pressure Drop



# MODEL CODE

N - Non-adjustable option, contact technical support within specified Pressure Range ( XXX-Standard setting (see Pressure Range for value) Example:	Adjustment Optio	n				Pressure Setting	9	
Code         Bar         Psi           20         140-250         [2030-3600]           Standard Setting         190         [2750]           30         220-330         [3200-4800]           Standard Setting         270         [3900]           40         310-420         [4500-6100]             Code         Seal kits	<b>F</b> - External <b>N</b> - Non-adjustable	option, contact	t technical support			within specified Pr XXX-Standard sett value)	essure Range)	
20         140-250         [2030-3600]           Standard Setting         190         [2750]           30         220-330         [3200-4800]           Standard Setting         270         [3900]           40         310-420         [4500-6100]         Code         Seal kits	Pressure Range					Code	Bar	Psi
Standard Setting         190         [2750]         Pilot Ratio           30         220-330         [3200-4800]         4 - 4:1         6 - 6:1           Standard Setting         270         [3900]         Seal Option           40         310-420         [4500-6100]         Code         Seal kits	Code	Bar	Psi			350	350	[5000]
Standard Setting         190         [2750]           30         220-330         [3200-4800]         4-4:1           5tandard Setting         270         [3900]         5eal Option           40         310-420         [4500-6100]         Code         Seal kits	20	140-250	[2030-3600]		Dilat			
30         220-330         [3200-4800]         6 - 6:1           Standard Setting         270         [3900]         Seal Option           40         310-420         [4500-6100]         Code         Seal kits	Standard Setting	190	[2750]			atio		
40         310-420         [4500-6100]         Code         Seal kits	30	220-330	[3200-4800]					
40         310-420         [4500-6100]           Code         Seal kits	Standard Setting	270	[3900]		Seal Option			
Standard Setting 370 [5400] S-Buna-N SK1116	40	310-420	[4500-6100]			Seal kits		
	Standard Setting	370	[5400]		S-Buna-N	SK1116	_	

# **Motion Control Valves** 1CEB30

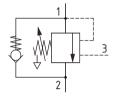
Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot

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

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3 the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere, so any back pressure will have no effect on the opening of the valve. Over time, there may be leakage past the seals to atmosphere. For valves with a separate drain port, reference the 1CEBD products. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

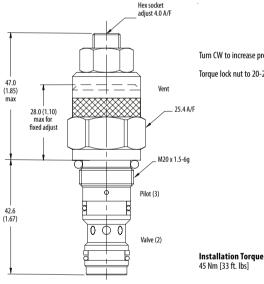


### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	5:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.14 kg [0.30 lb]
Cavity	A6610

#### DIMENSIONS

mm [in]

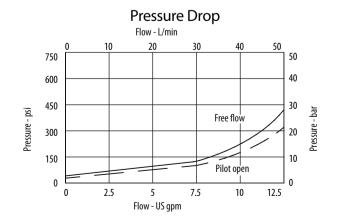


Turn CW to increase pressure setting and CCW to decrease pressure setting

Danfoss

Torque lock nut to 20-25 Nm [15-18 ft lbs]

### PERFORMANCE CURVES

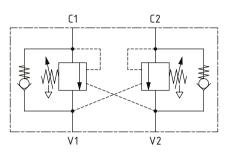


# Motion Control Valves 1CEB30

Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot **350 bar [5000 psi] • 30 l/min [8 US gpm]** 

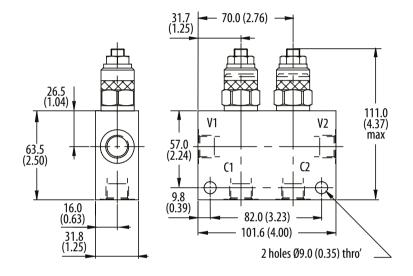
### **SCHEMATIC**

1CEEB34 (dual)



### DIMENSIONS

mm [in]



Code       Ports       Aluminum single       Steel dual       Steel dual       Steel dual       Pilot Ratio         Omit       No housing       5 - 5:1       Seal Option         3W       Cyl Port 1/4" BSP Pilot Port       B12823       B6836       B13803         3/8" SAE Valve & 6T       GYl Port 1/4" SAE       B10536       B10805         1/2" CA Valve 8       Code       Seal Ait         1/2" CA Valve 8       B10805       SV-Viton         1/2" CA Valve 8       B10805       Pressure Range	e Range <b>Psi</b>
F - External N - Non-adjustable option, contact technical support.         Housing         Code       Ports       Aluminum single       Steel dual       Multiple       Multiple <t< th=""><th></th></t<>	
N - Non-adjustable option, contact technical support.         Housing         Code       Ports       Aluminum steel dual       Omit - Aluminum/No housing 377 - Steel         Omit       No housing       5 - 5:1         Single       B12823       B6836       B13803         Pilot Port       3/8" SAE Valve & 61       Code Seal kit         3/8" SAE Valve & 61       Gyl Port 1/4" SAE       B10805         Pilot Port       Pressure Range	[0000]
Housing Material         Housing       Steel single       Aluminum dual       Steel dual       Omit - Aluminum/No housing         3/8" SSP Valve & 6/1       5 - 5:1       Seal Option         3/8" SSP Valve & B6743       B12823       B6836       B13803       Seal Option         3/8" SSP Valve & 6/1       Grade Seal kit       S-5:1       Seal Option         3/8" SSP Valve & B10536       B10805       SV-Viton       SK3955         SV-Viton       SK395V       Pressure Range	[3000]
Housing     Omit - Aluminum, Steel dual       Code     Ports     Aluminum single       3/8" BSP Valve & 3/8" SAE Valve & 6/1 Cyl Port 1/4" SAE     B10805       3/8" SAE Valve & 6/1 Cyl Port 1/4" SAE     B10536     B10805       1/0" CAL Valve & 1     Plote 9	
Bousing     377 - Steel       Code     Ports     Aluminum single     Steel dual     Aluminum dual     Steel dual       Omit     No housing     5 - 5:1       3/8" BSP Valve & 3W     GYI Port 1/4" BSP     B12823     B6836     B13803       Pilot Port     3/8" SAE Valve & 61     GYI Port 1/4" SAE     B10536     B10805       1/0" ZAE Valve 8     1000 S     Pressure Range	
Code       Ports       Aluminum single       Steel dual       Steel dual       Steel dual       Pilot Ratio         Omit       No housing       5 - 5:1       Seal Option         3W       Cyl Port 1/4" BSP Pilot Port       B12823       B6836       B13803         3/8" SAE Valve & 6T       GYl Port 1/4" SAE       B10536       B10805         1/2" CA Valve 8       Code       Seal Ait         1/2" CA Valve 8       B10805       SV-Viton         1/2" CA Valve 8       B10805       Pressure Range	
Code         Ports         single         dual         dual           Omit         No housing         5 - 5:1           3W         Cyl Port 1/4" BSP         B12823         B6836         B13803           Pilot Port         3/8" SAE Valve &         5         -5:1           3/8" SAE Valve &         5         -5:1         Seal Option           3/8" SAE Valve &         B10805         SV-Viton         SK395V           SV-Viton SK395V         SV-Viton         SK395V           1/0" SAE Valve &         Pressure Range         Pressure Range	
3/8" BSP Valve & Sym         Seal Option           3W         Cyl Port 1/4" BSP Pilot Port         B6743         B12823         B6836         B13803           3/8" SAE Valve & Cyl Port 1/4" SAE         B10536         B10805         SV-Viton         SK395V           1/0" SAE Valve & Pilot Port         Pilot Port         Pressure Range         Pressure Range	
3/8" BSP Valve &         3W       Cyl Port 1/4" BSP         BSP Valve &         3/8" SAE Valve &         6T       Cyl Port 1/4" SAE         B10805         Pilot Port         1/2" SAE Valve &         1/2" SAE Valve &         Pilot Port	
Site         Site <th< td=""><td></td></th<>	
3/8" SAE Valve &     SVE Valve &       6T     Cyl Port 1/4" SAE     B10536       Pilot Port     SV-Viton       1/0" SAE Valve &     Pressure Range	
1/2" SAL Volue 2	
I/2 SAE Valve &         Code         Bar         Psi           8T         Cyl Port 1/4" SAE         B7884         B11811         B30237         B11812         Code         Bar         Psi           Pilot Port         35         100-350         [1450-5000]	
* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi]. Standard Setting 210 [3000]	



# Motion Control Valves 1CEB90

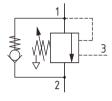
Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot

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

## DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3 the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere, so any back pressure will have no effect on the opening of the valve. Over time, there may be leakage past the seals to atmosphere. For valves with a separate drain port, reference the 1CEBD products. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

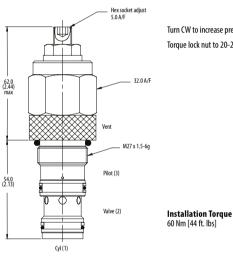


# PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12336

#### DIMENSIONS

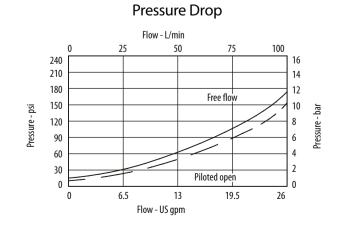
mm [in]



Turn CW to increase pressure setting and CCW to decrease pressure setting Torque lock nut to 20-25 Nm [15-18 ft lbs

Danfoss

#### PERFORMANCE CURVES

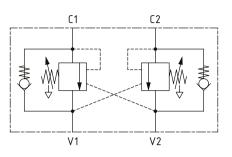


# Motion Control Valves 1CEB90

Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot **350 bar [5000 psi] • 90 l/min [24 US gpm]** 

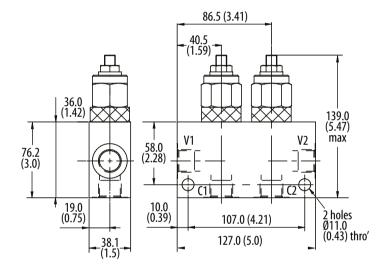
### SCHEMATIC

1CEEB95 (dual)



### DIMENSIONS

mm [in]



### MODEL CODE

Basic C	ode								Pressure Code Press		a in har
1CEB90 1CEB95 1CEEB9	- No housing - Cartridge and hous <b>5</b> - Cartridges and du	ing al housing					Housin	ng Material	(10 bar inc specified P XXX-Stand Pressure Ra Example:	rements v ressure Ra lard settin	within ange) ig (see
Adjustn F - Exter	nent Option							Aluminum/No housing	Code	Bar	Psi
	adjustable option, con	tact technical su	pport.				<b>377</b> - S	teel	210	210	[3000]
Housin	g					P	ilot Ratio				
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual	4	- 4:1				
0mit	No housing					Seal Optio	n				
4W	1/2" BSP Valve & Cyl Port 1/4" BSP	B13625	B13626	C13627	C13628	Code	Seal kit				
	Pilot Port	015025	015020	(1502)	015020	S-Buna-N	SK634 SK634V				
8T	1/2" SAE Valve & Cyl Port 1/4" SAE	B10806	B10922	C10807	C11561	SV-Viton Pressure Range	3K034V				
	Pilot Port	14		[2000 1]		Code	Bar	Psi			
	num bodies are to be use onal housings available	ea tor pressures le	ess than 210 ba	r [3000 psi].		20	70-225	[1015-3260]			
Auuitit	shar nousings available					Standard Setting	100	[1450]			
						35	200-350	[2900-5000]			
						Standard Setting	210	[3000]			

47



# Motion Control Valves 1CEB120

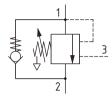
Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere so any back pressure will have no effect on the opening of the valve. At some point there will be leakage past the seals to atmosphere so the 4 ported valve should be considered as the best option. This is also available in a dual housing for bi-directional control.

### SCHEMATIC

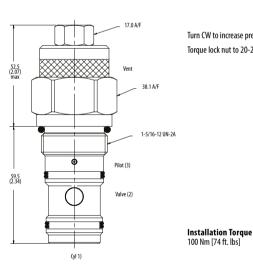


# PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	120 l/min [32 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 8:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.59 kg [1.30 lb]
Cavity	A877

#### DIMENSIONS

mm [in]

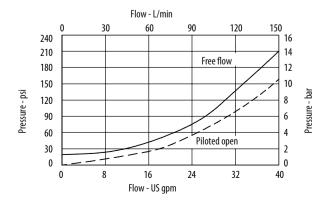


Turn CW to increase pressure setting and CCW to decrease pressure setting Torque lock nut to 20-25 Nm [15-18 ft lbs

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### PERFORMANCE CURVES

### Pressure Drop

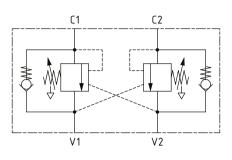


# Motion Control Valves 1CEB120

Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot **350 bar [5000 psi] • 120 I/min [32 US gpm]** 

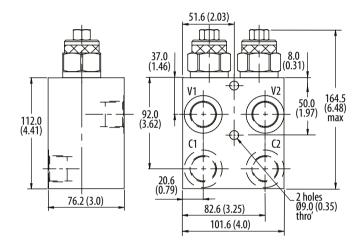
### **SCHEMATIC**

1CEEB150 (dual)



### DIMENSIONS

mm [in]



Basic Co	de								Pressure Setting		
1CEB150 1CEEB15	- No housing - Cartridge and hous <b>0</b> - Cartridges and dua <b>19 - Cartridges</b> and dua	ng al housing							Code Pressure setti increments within s XXX-Standard settin value). Example:	ng in bar (10 pecified Press	sure Range)
P - Exteri	•								Code	Bar	Psi
Housing	I								210	210	[3000]
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual						[]
0mit	No Housing										
6W	3/4" BSP Valve & Cyl Port. 1/4″ BSP Pilot Port	B6898	B5544	C2543	C1200		L	Housing Ma Omit - Alum 377 - Steel	<b>iterial</b> inum/No housing		
12T	3/4" SAE Valve & Cyl Port. 1/4" SAE Pilot Port	B8200		C10629	C16434	Pi	lot Ratio				
16T	1" SAE Valve & Cyl Port. 1/4″ SAE Pilot Port	B10708	B11814				- 3:1 - 8:1				
* Alumin	um bodies are to be use	d for pressures le	ss than 210 b	ar [3000 psi].		Seal Optio	on				
* Additio	nal housings available					Code		S	ieal kit		
Pressure	Range					<b>S</b> -Buna-N		2	K417		
Co	de Bar		Psi			SV-Viton		5	K417V		
3	<b>5</b> 70-35	0 [101	5-5000]			<b>P</b> -Polyuret	thane/Bu	na-N S	K417-P		
	d Setting 210	[3	000]								



# **Motion Control Valves** 1CEB300

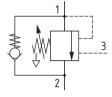
Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot

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

# DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere so any back pressure will have no effect on the opening of the valve. At some point there will be leakage past the seals to atmosphere so the 4 ported valve should be considered as the best option. This is also available in a dual housing for bi-directional control.

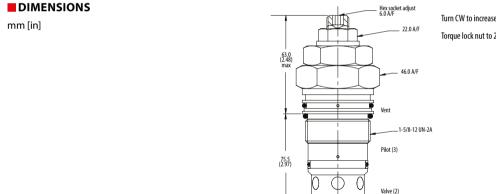
### SCHEMATIC



# PERFORMANCE DATA

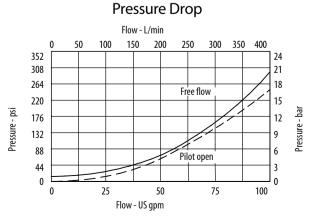
Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 8:1
Leakage	4 ml/min nominal [60 drops/min]
Weight	0.91 kg [2.00 lb]
Cavity	A6935

Installation Torque 150 Nm [110 ft. lbs]



Turn CW to increase pressure setting and CCW to decrease pressure setting Torque lock nut to 20-25 Nm [15-18 ft lbs]

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Cyl (1)

**PERFORMANCE CURVES** 

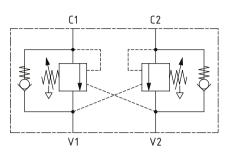
Danfoss

# Motion Control Valves 1CEB300

Overcenter Valve, Fully Balanced, Differential Area, Atmospheric Vent, Port 3 Pilot **350 bar [5000 psi] • 300 I/min [80 US gpm]** 

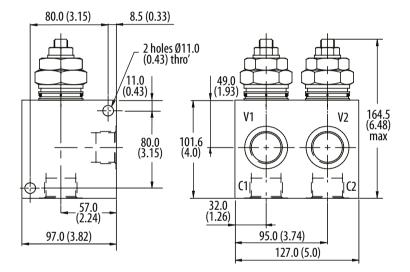
### **SCHEMATIC**

1CEEB350 (dual)



### DIMENSIONS

mm [in]



Basic Co	ode							Pressure Setting		
1CEB35 1CEEB3	0 - No hous 0 - Cartridg 50 - Cartrid 1ent Optio	e and housi ges and du	ing al housing					<b>Code</b> Pressure settin increments within s <b>XXX</b> -Standard settin value). Example:	pecified Press	ure Range)
F -Extern								Code	Bar	Psi
Housing								210	210	[3000]
Code	Ports		Aluminum single	Steel single	Aluminum dual	Steel dual	Housing Ma	terial		
0mit	No housi	ng						num/No housing		
10W	1 1/4" BS Cyl Port Pilot Por		B6814	B8610	C8704	C8705	<b>377</b> - Steel			
20T	1 1/4" SA Cyl Port Pilot Por		B10630	B11474	C10811	C11564				
	um bodies a nal housing		d for pressures	less than 21	0 bar [3000 psi].					
Pressur	e Range									
Co	de	Bar	Psi	i			Seal kit			
3	5	70-350	[1015-5	5000]			SK686			
<i>c</i> , ,	d Setting	210	[300	01			SK686V			



# Motion Control Valves 1SEB30

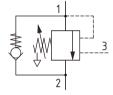
Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot

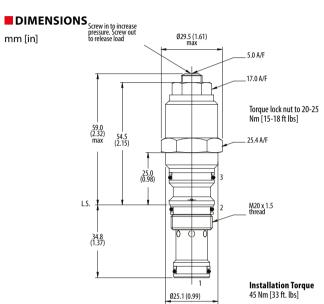
350 bar [5000 psi] • 30 l/min [8 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3 the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere, so any back pressure will have no effect on the opening of the valve. Over time, there may be leakage past the seals to atmosphere. For valves with a separate drain port, reference the 1CEBD products.

### SCHEMATIC



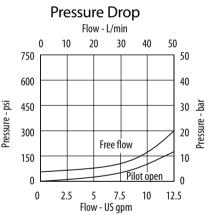


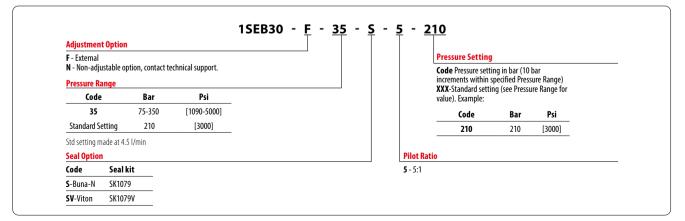
Danfoss

# PERFORMANCE DATA

350 bar [5000 psi]
30 l/min [8 US gpm]
350 bar [5000 psi]
270 bar [3900 psi]
5:1
0.3 ml/min nominal [5 drops/min]
0.14 kg [0.30 lb]
A20090-T11A

# PERFORMANCE CURVES





# Motion Control Valves 1SEB90

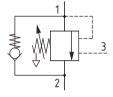
Overcenter Valve, Fully Balanced, Direct Acting, Atmospheric Vent, Port 3 Pilot

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

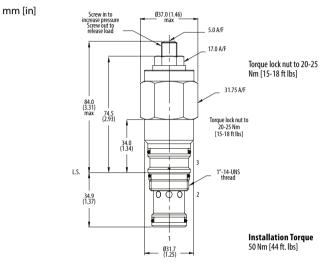
# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3 the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to atmosphere, so any back pressure will have no effect on the opening of the valve. Over time, there may be leakage past the seals to atmosphere. For valves with a separate drain port, reference the 1CEBD products.

### 



### DIMENSIONS

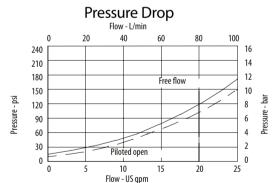


Dantoss

### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.42 kg [0.92 lb]
Cavity	A20092-T2A





						Pressure Setting		-
Adjustment Option F - External N - Non-adjustable op	tion, contact tee	chnical support.				<b>Code</b> Pressure setti increments within s <b>XXX</b> -Standard settin value). Example:	pecified Press	sure Range)
						Code	Bar	Psi
						210	210	[3000]
Pressure Range					Pilot Rati	0		
Code	Bar	Psi			<b>4</b> - 4:1	-		
20	70-225	[1015-3260]			•			
Standard Setting	100	[1450]		Seal O	ption			
35	75-350	[1090-5000]		Code			Seal ki	t
Standard Setting	210	[3000]		<b>S</b> -Buna	I-N		SK1096	
	l/min			SV-Vito			SK1096	

# Motion Control Valves 1CEBD30

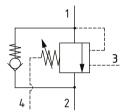
Overcenter Valve, Fully Balanced, Direct Acting, External Drain, Port 3 Pilot

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

### DESCRIPTION AND OPERATION

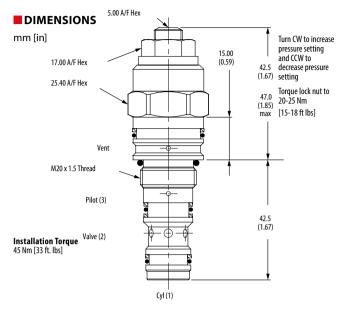
This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection, when the valve is mounted onto or into the actuator. The spring chamber is connected to a drain port 4, so any back pressure in port 2 will have no effect on the pilot pressure required to open the valve.

### SCHEMATIC

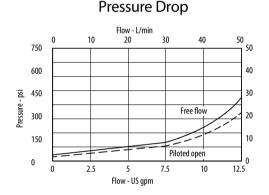


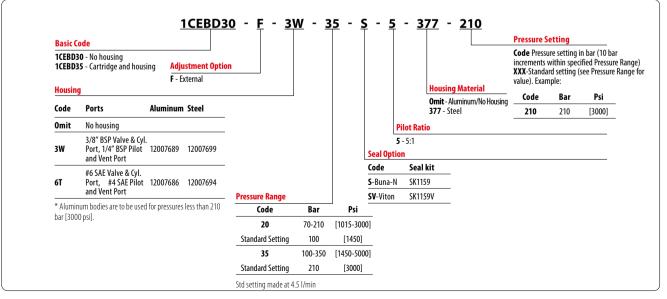
### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	5:1
Leakage	0.3 ml/min [5 drops/min]
Weight	0.14 kg [0.30 lb]
Cavity	A20530



### PERFORMANCE CURVES







# Motion Control Valves 1CEBD90

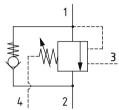
Overcenter Valve, Fully Balanced, Direct Acting, External Drain, Port 3 Pilot

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

# DESCRIPTION AND OPERATION

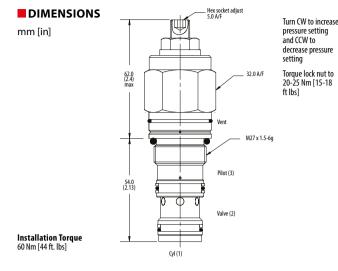
This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection, when the valve is mounted onto or into the actuator. The spring chamber is connected to a drain port 4, so any back pressure in port 2 will have no effect on the pilot pressure required to open the valve.





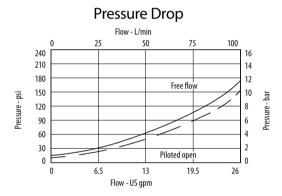
#### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1
Leakage	0.3 ml/min [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12196



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### PERFORMANCE CURVES



# MODEL CODE

Basic Co	de				Pressur	ire Setting		
1CEBD95	) - No housin 5 - Cartridge ent Option				incremer XXX-Sta	Pressure setting i ents within speci andard setting ( Example:	ified Press	ure Range)
F - Extern	al					Code	Bar	Psi
Housing						210	210	[3000]
Code	Ports		Aluminum	Steel				
Omit	No housing				Housing Material			
4W	1/2″ BSP Valve & Cyl. Port, 1/4″ BSP Pilot and Vent Port			B23615	Omit - Aluminum/No 377 - Steel	o Housing		
8T		re & Cyl. Port, t and Vent Port	12007706	12007708				
* Alumin	um bodies are	to be used for press	ures less than 2	10 bar [3000 psi].				
Pressure	Range				Pilot Ratio 4 - 4:1			
	de	Bar	Psi		<b>4</b> - 4:1			
	20	70-225	[1015-3260	]	Seal Option			
Standar	d Setting	100	[1450]		Code Seal kit			
3	85	200-350	[2900-5000	]	S-Buna-N SK634			
Standar	d Setting	210	[3000]		SV-Viton SK634V			
Std cottin	g made at 4.5	l/min			P-Polyurethane/Buna-N SK634P			

# Motion Control Valves 1CEBD120

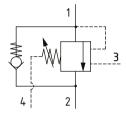
Overcenter Valve, Fully Balanced, Differential Area, External Drain, Port 3 Pilot

400 bar [5800 psi] • 180 l/min [47 US gpm]

# DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to a drain port 4, so any back pressure in port 2 will have no effect on the pilot pressure required to open the valve.

### SCHEMATIC



**PERFORMANCE DATA** 

Max recommended load pressure

**Rated pressure** 

Max total relief pressure

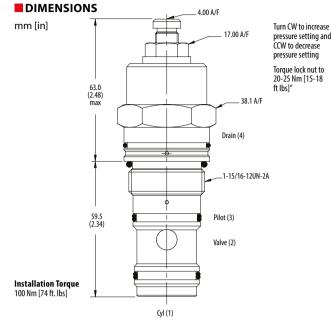
**Rated flow** 

<u>at max setting</u> Pilot Ratio

Leakage

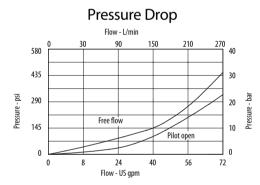
Weight

Cavity



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#### PERFORMANCE CURVES



### MODEL CODE

Basic Co	<b>20</b> - No housin	a					Pressu	re Settir	ıg
	<b>50</b> - Cartridge								tting in bar
Adjustm	nent Option							ncrement I Pressure	ts within Range)
F - Exter	nal						XXX-Sta	ndard set	tting (see
Housing	9						Pressure Example		or value).
Code	Ports		Aluminum Steel				Code	Bar	Psi
Omit	No housing						210	210	[3000]
6W	V 3/4" BSP Valve & Cyl. Port, 12007710 12007715 1/4" BSP Pilot and Vent Port						sing Material		
12T	#12 SAE Val #4 SAE Pilot	ve & Cyl. Port, and Vent Port	12007709 12007712				<b>t</b> - Aluminum/No - Steel	Housing	
* Alumin	ium bodies are t	o be used for pressu	res less than 210 bar [3000 psi].			Pilot Ratio			
	onal housings av					<b>3</b> - 3:1 <b>8</b> - 8:1			
Pressure	e Range					<b>8</b> - 8:1 <b>12</b> - 12:1			
(	ode	Bar	Psi	Pilot Ratio		<b>22</b> - 22:1			
3	35	70-350	[1015-5000]	3:1	Seal O	ption			
Standar	d Setting	350	[5000]	8:1 22:1	Code		Seal kit		
	10	70-400	[1015-5800]		<b>S</b> -Bun		SK830		
	rd Setting	350	[5000]	12:1	SV-Vit	on	SK830V		

400 bar [5800 psi]

400 bar [5800 psi]

270 bar [3900 psi]

3:1, 8:1, 12:1, 22:1

0.59 kg [1.30 lb]

A6726

180 l/min [47 US gpm]

0.3 ml/min [5 drops/min]

# Motion Control Valves 1CEBD300

Overcenter Valve, Fully Balanced, Differential Area, External Drain, Port 3 Pilot

350 bar [5000 psi]

350 bar [5000 psi]

270 bar [3900 psi]

0.59 kg [1.30 lb]

3:1.8:1

A13098

300 l/min [80 US gpm]

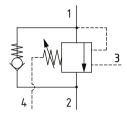
4 ml/min [60 drops/min]

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

# DESCRIPTION AND OPERATION

This is a differential area overcenter valve, which is a pilot assisted relief valve with a free flow check. With the relief valve set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. When pilot pressure is applied to port 3, the valve will meter the flow from port 1 to 2, compensating for any change in pilot pressure due to over-running or unstable loads. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in most applications bringing stability, load holding, and hose failure protection when the valve is mounted onto or into the actuator. The spring chamber is connected to a drain port 4, so any back pressure in port 2 will have no effect on the pilot pressure required to open the valve.

# SCHEMATIC



PERFORMANCE DATA

Max recommended load pressure

**Rated pressure** 

Max total relief pressure

MODEL CODE

**Rated flow** 

at max setting

**Pilot Ratio** 

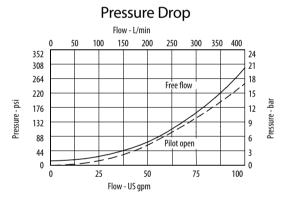
Leakage

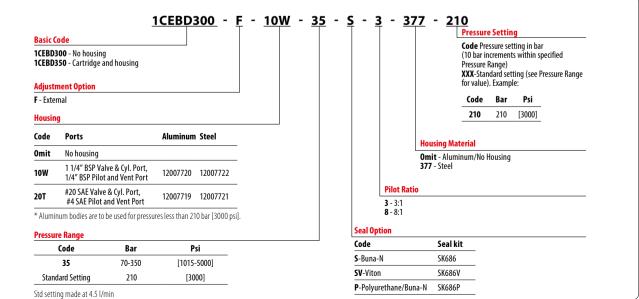
Weight

Cavity

#### mm [in] Turn CW to increase Hex Socket Adjust pressure setting and CCW to decrease 22.0 A/F pressure setting Torque lock nut to 20-25 Nm [15-18 ft lbs]" 63.0 (2.48) 46.0 A/I Drain (4) 1-5/8-12 UN-2A Pilot (3) 75.5 (2.97) ſ Valve (2) Installation Torque 150 Nm [110 ft. lbs] (vl (1)

### PERFORMANCE CURVES





DIMENSIONS

#### Stusettii

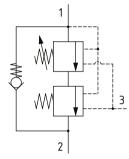
# Motion Control Valves 1CEL30

Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot 380 bar [5500 psi] • 30 l/min [8 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio poppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure will be removed allowing full cylinder force to ensue. Free flow from port 1 to port 1 co port 1 cake place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications. This is also available in a dual housing for bi-directional control.

#### **SCHEMATIC**



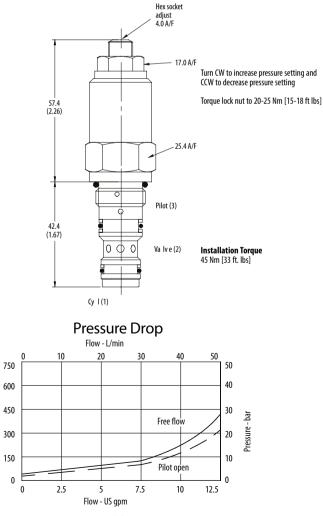
DIMENSIONS

mm [in]

#### **PERFORMANCE DATA**

Rated pressure	380 bar [5500 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	290 bar [4200 psi]
Pilot Ratio	4.3:1 (Primary); 0.4:1 (Secondary)
Leakage	0.3 ml/min [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A6610

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**PERFORMANCE CURVES** 

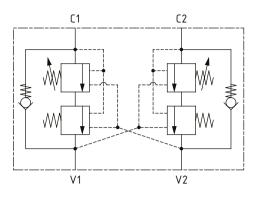
Pressure - psi

# Motion Control Valves 1CEL30

Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot 380 bar [5500 psi] • 30 l/min [8 US gpm]

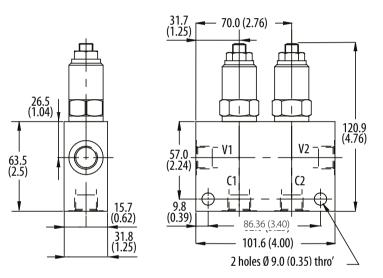
### **SCHEMATIC**

1CEEL34 (dual)



### **DIMENSIONS**

mm [in]



1CEL35	ode -No housing -Cartridge and housi								Housing Ma Omit - Alumi 377 - Steel		sing		_
1CEEL34	4 -Cartridge and dual	housing							JII Steel	Counte	rbalance	Pressure	Setting
Adjucto	nent Option						Fixed F	Pressure Setti	ing	(10 bar	Pressure s increment		
F - Exter								Pressure setting	g in bar specified Pressure Ran	(or	e Range)		
							Cod		Psi	Code		Psi	-
							23(		[3335]	50	50	[725]	-
Housin	g					Seal Op	tion		[]				
Code	Ports	Aluminum single	Steel single	Aluminum dual	Steel dual	Code		Seal Kit					
Omit	No housing					<b>S</b> -Buna-		SK395	_				
	3/8" BSP valve &					SV-Vito	1	SK395V					
3W	cylinder port. 1/4" BSP pilot port	B6743	B12823	B6836	B13803	Total Relief Press	ire Range	1	Fixed Pressu	e Range	Counter	rbalance	Pressur
	3/8" SAE valve &					Code	Bar	Psi	Bar	Psi	Ba		P
6T	cylinder port. 1/4" SAE pilot port	B10536	B10805			20	170-300	[2465-4350]	150-200 [21]	75-2900]	20-1	120	[290-
	1/2" SAE valve &					Standard Setting	220	[3190]	170 [	2465]	50	0	[7
8T	cylinder port. 1/4" SAE pilot port	B7884	B11811	B30237	B11812	30	240-370	[3480-5370]	210-280 [30	00-4060]	20-1	120	[290-
* Alumin	um bodies are to be us	ed for pressure	c less than 71	10 har [3000 nci]		Standard Setting	280	[4060]	230 [	3330]	50	0	[7]
/ uumm		cu ioi piessuie.		io nai [2000 h2i].	•	40	270-380	[3900-5500]	290-310 [42	00-4500]	20-1	120	[290-
* Additio	onal housings available												



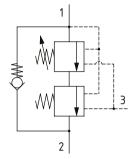
# Motion Control Valves 1CEL90

Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot 380 bar [5500 psi] • 90 I/min [24 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio poppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure will be removed allowing full cylinder force to ensue. Free flow from port 1 cont 1 can take place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications. This is also available in a dual housing for bi-directional control.

#### **SCHEMATIC**

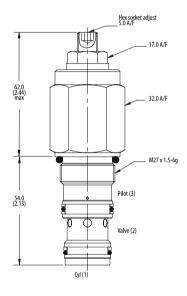


### DIMENSIONS

mm [in]

#### PERFORMANCE DATA

Rated pressure	380 bar [5500 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	280 bar [4000 psi]
Pilot Ratio	5.6:1 (Primary); 0.7:1 (Secondary)
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12336



Turn CW to increase pressure setting and CCW to decrease pressure setting

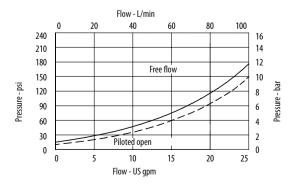
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Torque lock nut to 20-25 Nm [15-18 ft lbs]

#### Installation Torque 60 Nm [44 ft. lbs]

#### PERFORMANCE CURVES

# Pressure Drop

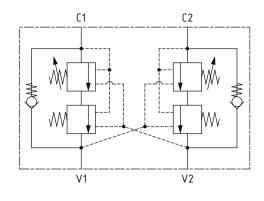


# Motion Control Valves 1CEL90

Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot 380 bar [5500 psi] • 90 l/min [24 US gpm]

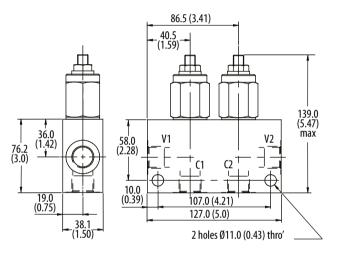
### **SCHEMATIC**

1CEEL95 (dual)



# DIMENSIONS

mm [in]



### MODEL CODE

									Housi	ng Material		
Basic C										- Aluminum/No	housing	
	- No housing - Cartridge and hou	sina							377 - 9	Counter	balance F	Pressure Setting
	5 - Cartridges and d						Fi	xed Pressur	e Setting			tting in bar
							<b>Co</b> (1)	de - Pressure ) bar incremen	setting in ba	Processo I		within specified
Adjusti	ment Option							essure Range)		Code	Bar	Psi
F - Exte							(	Code Bar	Psi	60	60	[870]
N - Non	-adjustable option, co	ontact technica	al support				_	<b>220</b> 220	[3190]			
						Seal O	ption —					
Housin	g					Code	Sea	kit				
Code	Ports	Aluminum single	Steel single	Aluminuı dual	n Steel dual	S-Bun	a-N SK63	3				
Omit	No housing					SV-Vit	on SK63	3V				
Omit	No housing 1/2″ BSP Valve &											
		B13625	B13626	C13627	C13628	SV-Vit Total Relief Pre				Fixed ure Range		nterbalance ssure Range
4W	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port 1/2" SAE Valve &									Fixed ure Range Psi		nterbalance ssure Range Psi
Omit 4W 8T	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port	B13625 B10806	B13626 B10922	C13627 C10807	C13628 C11561	Total Relief Pre	ssure Rang	e Psi	Press Bar	ure Range Psi	Pres	ssure Range Psi
4W 8T	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port 1/2" SAE Valve & Cyl Port 1/4" SAE	B10806	B10922	C10807	C11561	Total Relief Pre	ssure Rang Bar 170-350	e Psi	Press Bar	ure Range Psi	Pres Bar	ssure Range Psi
<b>4W</b> <b>8T</b> * Alumi	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port 1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561	Total Relief Pre	ssure Rang Bar 170-350	e Psi [2465-500 [3190]	Press Bar 0] 150-170 160	ure Range Psi [2175-2465]	Pres Bar 20-180	ssure Range Psi [290-2610] [870]
4W BT * Alumi	1/2" BSP Valve & Cyl Port 1/4" BSP Pilot Port 1/2" SAE Valve & Cyl Port 1/4" SAE Pilot Port num bodies are to be u	B10806	B10922	C10807	C11561	Total Relief Pre	<b>Bar</b> 170-350 g 220 210-380	e Psi [2465-500 [3190]	Press Bar 0] 150-170 160	ure Range Psi [2175-2465] [2320]	Pres Bar 20-180 60	ssure Range Psi [290-2610] [870]



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# Motion Control Valves 1CEL140

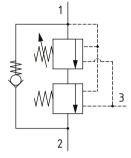
Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot

380 bar [5500 psi] • 140 l/min [37 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio oppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure increases, the counterbalance portion of the pressure will be removed allowing full cylinder force to ensue. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications. This is also available in a dual housing for bi-directional control.





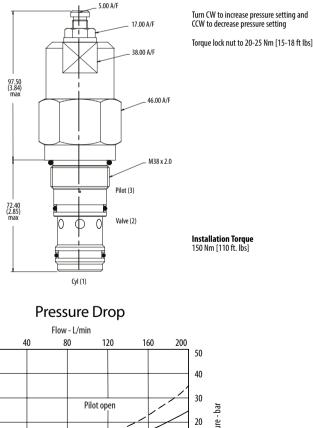
DIMENSIONS

mm [in]

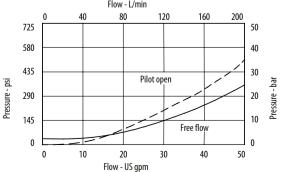
### PERFORMANCE DATA

Rated pressure	380 bar [5500 psi]
Rated flow	140 l/min [37 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	280 bar [4000 psi]
Pilot Ratio	6.1:1 (Primary); 0.5:1 (Secondary)
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	1.2 kg [2.6 lb]
Cavity	A20081

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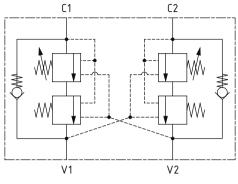


# Motion Control Valves 1CEL140

Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot 380 bar [5500 psi] • 140 l/min [37 US gpm]

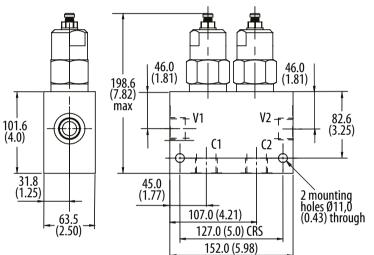
### **SCHEMATIC**

1CEEL145 (dual)



# DIMENSIONS

mm [in]



Basic C	ode									<b>ng Material</b> Aluminum/No h	iousing	
	<b>0</b> - No housing	•							377 - 9		5	
	5- Cartridge and hous 45- Cartridges and du										ance Pressure Setting	J
	, <b>,</b>	J					<b>Fixed F</b>	Pressure Sett	ing		ure setting in bar ments within specified	
							Code -	Pressure settin	g in bar	Pressure Ran		
Adiustr	ment Option						(10 bar i Pressure	ncrements withi Range)	n specified	Code B	ar Psi	
F - Exte	•						Code	Bar P	si	60	60 [870]	
							220	220 [31	90]			
						Seal Opti	on					
Housin	g					Code	Sea	al kit				
Code	Ports	Aluminum single	single	Aluminu dual	m Steel dual	<b>S</b> -Buna-N <b>SV</b> -Viton		1108 1108V				
0mit	No housing					34-11011	5/1	1100				
	3/4" BSP Valve &					<b>Total Relief Pressur</b>	e Range					
6W	Cyl Port. 1/4″ BSP Pilot Port	B20105	B20106						Fixed P	ressure Range		ress
	1" BSP Valve & Cvl					Code	Bar	Psi	Bar	Psi	Bar	
8W	Port. 1/4" BSP Pilot	B20107	B20108	C20285	C20287	20	170-300	[2465-4350]	150-200	[2175-2900]	20-120	[2
	Port					Standard Setting	220	[3190]	170	[2465]	50	
	1" SAE Valve & Cyl	P11046	B11947	C30105	C30106	30	240-370	[3480-5370]	210-280	[3000-4060]	20-120	[2
16T	Port. 1/4" SAE Pilot	D11240				Charles I.C. Market	200	[40(0]	220	*****		
16T	Port. 1/4″ SAE Pilot Port	D11940				Standard Setting	280	[4060]	230	[3330]	50	
* Alumii		ed for pressu		210 bar [300	0 psi].		280	[3900-5500]		[3330] [4200-4500]	20-120	[29



# Motion Control Valves 1SEL30

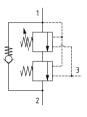
Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot

380 bar [5500 psi] • 30 l/min [8 US gpm]

### DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio poppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure increases, the counterbalance portion of the pressure will be removed allowing full cylinder force to ensue. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications.





### PERFORMANCE DATA

Rated pressure	380 bar [5500 psi]
Rated flow	30 l/min [8 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	280 bar [4000 psi]
Pilot Ratio	4.3:1 (Primary); 0.4:1 (Secondary)
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A20090-T11A

### PERFORMANCE CURVES

81.3 (3.20)

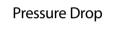
15

34.8 (1.37) 72.0

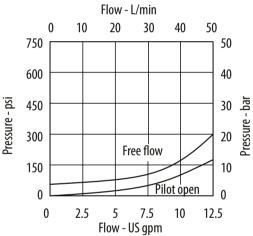
19.0 (0.75)

DIMENSIONS

mm [in]



Ø25.1 (0.99)



# MODEL CODE

									Counterba	lance Pre	essure Setting
djustment Optio	n								Code - Pres		
- External									(10 bar incre	ements w	vithin specified Pressure Range)
I - Non-adjustable	option, con	tact technical s	upport						Code	Bar	Psi
									50	50 [	[725]
otal Relief Press	ure Kange			Fixed	Count	erbalance		Fixed Pre	ssure Setti	na	
				sure Range		ure Range			ssure setting	-	
Code Bar Psi		Psi	Bar Psi		Bar	Psi					Pressure Range)
coue											
20	170-300	[2465-4350]	150-200	[2175-2900]	20-120	[290-1740]		Code	Bar		Psi
20	170-300 220	[2465-4350] [3190]	150-200 170	[2175-2900] [2465]	20-120 50	[290-1740] [725]		Code 230	<b>Bar</b> 230		<b>Psi</b> 335]
20							Seal Option	230			
<b>20</b> Standard Setting	220	[3190]	170	[2465]	50	[725]	Seal Option Code	230			
20 Standard Setting 30	220 240-370	[3190] [3480-5370]	170 210-280	[2465]	50 20-120	[725]		230	230 I kit		

BC332375678109en-000202



Turn CW to increase pressure setting and CCW to decrease pressure setting

Torque lock nut to 20-25 Nm [15-18 ft lbs]

17 00 A/I

22.22 A/F

M20 x 1.5 thread

Installation Torque

45 Nm [33 ft. lbs]

# Motion Control Valves 1SEL90

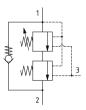
Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot

380 bar [5500 psi] • 90 l/min [24 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio poppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure increases, the counterbalance portion of the pressure will be removed allowing full cylinder force to ensue. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications.



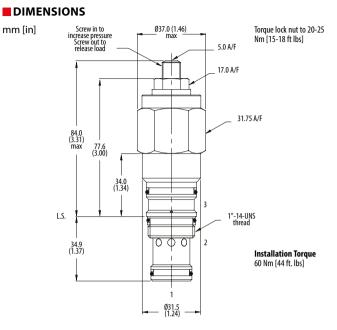


### PERFORMANCE DATA

Rated pressure	380 bar [5500 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	280 bar [4000 psi]
Pilot Ratio	5.6:1 (Primary); 0.7:1 (Secondary)
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.42 kg [0.92 lb]
Cavity	A20092-T2A

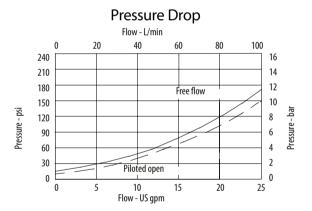
#### MODEL CODE

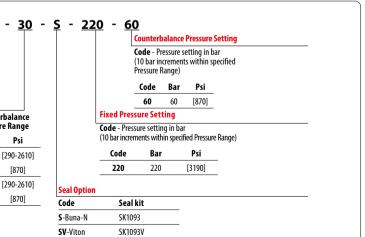
Adjustment Optic	n					
<b>F</b> - External <b>N</b> - Non-adjustable	option, con	tact technical si	upport			
Total Relief Press	ure Range	!		ixed	Count	erbalanc
Code	Bar	Psi		ure Range Psi		
Code 20	<b>Bar</b> 170-350	<b>Psi</b> [2465-5000]	Press	ure Range	Press	ure Rang Psi
			Press Bar	ure Range Psi	Press Bar	ure Rango Psi [290-26
20	170-350	[2465-5000]	Press Bar 150-170	ure Range Psi [2175-2465]	Press Bar 20-180	ure Rang



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PERFORMANCE CURVES







# Motion Control Valves 1SEL140

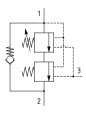
Overcenter Valve, Two Stage Counterbalance, Direct Acting, Port 3 Pilot

380 bar [5500 psi] • 140 l/min [37 US gpm]

# DESCRIPTION AND OPERATION

This is a direct acting overcenter valve, which is a pilot assisted relief valve with a free flow check. With the total relief pressure setting (fixed pressure relief setting plus counterbalance pressure setting) set at around 1.3 times the maximum load induced pressure, the valve will prevent flow from taking place between ports 1 and 2. The relationship between the two settings will be application dependent. The more unstable the application, the higher the counterbalance pressure setting should be with the fixed pressure relief setting making up the remainder of the setting. When pilot pressure is applied to port 3, it acts on two separate areas, one gives a very low pilot ratio 0.4 to 1 and the other slightly higher 4.3 to 1. When piloted, the valve will meter the flow from port 1 to 2 compensating for any change in pilot pressure due to over-running or unstable loads. If the load pressure decays very quickly, then the lower pilot ratio poppet will return at a high pilot pressure preventing total loss of control and subsequent instability. As the pilot pressure increases, the counterbalance portion of the pressure will be removed allowing full cylinder force to ensue. Free flow from port 2 to port 1 can take place freely through the check portion of the valve. These valves are ideal in the most severe applications bringing stability, load holding, and hose failure protection to long slender booms and traditionally unstable applications.



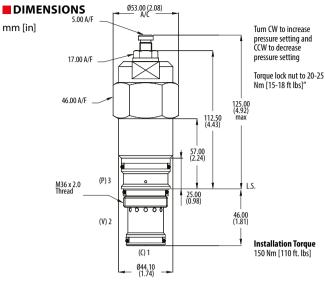


### **PERFORMANCE DATA**

Rated pressure	380 bar [5500 psi]
Rated flow	140 l/min [37 US gpm]
Max total relief pressure	380 bar [5500 psi]
Max recommended load pressure at max setting	280 bar [4000 psi]
Pilot Ratio	6.1:1 (Primary); 0.5:1 (Secondary)
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	1.2 kg [2.5 lb]
Cavity	A20094-T17A

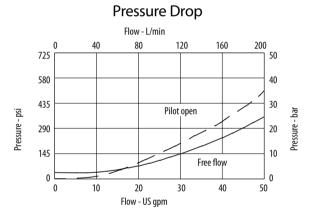
### MODEL CODE

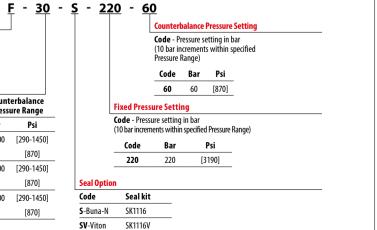
Adjustment Optic	n					
<b>F</b> - External <b>N</b> - Non-adjustable	option, con	tact technical s	upport			
Total Relief Press	ure Range		Fixed Pro	essure Range		erbalance ure Range
Code	Bar	Psi	Bar	Psi	Bar	Psi
20	170-320	[2465-4640]	150-200	[2175-2900]	20-100	[290-1450]
	220	[3190]	160	[2320]	60	[870]
Standard Setting						
Standard Setting 30	230-380	[3480-5500]	220-270	[3190-3900]	20-100	[290-1450]
,	230-380 280	[3480-5500] [4060]	220-270 220	[3190-3900] [3190]	20-100 60	[290-1450] [870]
30						



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### PERFORMANCE CURVES





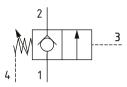
# Motion Control Valves 1CPBD30

Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot 350 bar [5000 psi] • 30 l/min [8 US gpm]

## DESCRIPTION AND OPERATION

This is a zero differential overcenter valve, which is a pilot assisted, metered poppet valve with an integral free flow check. The check section allows free flow from port 2 to 1 into the actuator then holds and locks the load in position. By applying pilot pressure on port 3, the valve will open allowing the load to be lowered with oil passing from port 1 to 2. With port 4 connected to tank back pressure will not affect the pilot pressure required to open the valve. These valves are usually used in conjunction with a remote pilot source to maintain control in the event of hose failure. They should always be mounted onto or into the actuator and they do not have a relief function.

#### **SCHEMATIC**



### 

3 (Pilot)

2 (Valve)

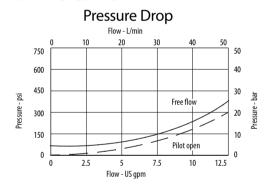
5 00 A/F hex

Installation Torque 45 Nm [33 ft. lbs]

**PERFORMANCE CURVES** 

### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	30 l/min [8 US gpm]
Leakage	0.3 ml/min [5 drops/min]
Weight	0.15 kg [0.33 lb]
Cavity	A20530



d

1 (Cyl)

### MODEL CODE

Basic Co	ode							<b>Pilot Pressure Se</b>	ttina	
1CPBD3	0-No housin 5-Cartridge nent Option							Code Pressure setti increments within s XXX-Standard setti value). Example:	ing in bar (10 l specified Press	ure Range
F - Exter	nal							Code	Bar	Psi
Housing	J							10	10	[145]
Code	Ports			Aluminun	n Steel					
Omit	No housing	1					Housing Ma			
3W	3/8″ BSP V Vent Port	alve & Cyl. Por	t, 1/4″ BSP Pilot and	12007689	12007699		<b>Omit</b> - Alun <b>377</b> - Steel	ninum/No Housing		
6T	#6 SAE Val Vent Port	ve & Cyl. Port,	#4 SAE Pilot and	12007686	12007694	Seal Opt	tion			
* Alumin	um bodies are	to be used for p	pressures less than 210	bar [3000 ps	ii].	Code			Seal kit	
* Additio	inal housings a	ivailable				S-Buna-	N		SK1159	
Pilot Pr	essure Rang	e				SV-Vitor	1		SK1159V	
C	ode	Bar	Psi			<b>P</b> -Polvu	rethane/Buna-	N	SK1159P	
	2	5-20	[73-290]							
Standa	rd Setting	10	[145]							



mm [in]



46.70 (1.84) 51.00 (2.00)

42.50

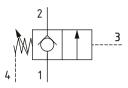
# Motion Control Valves 1CPBD90

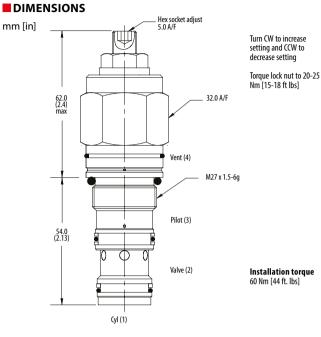
Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot 350 bar [5000 psi] • 90 l/min [24 US gpm]

# DESCRIPTION AND OPERATION

This is a zero differential overcenter valve, which is a pilot assisted, metered poppet valve with an integral free flow check. The check section allows free flow from port 2 to 1 into the actuator then holds and locks the load in position. By applying pilot pressure on port 3, the valve will open allowing the load to be lowered with oil passing from port 1 to 2. With port 4 connected to tank back pressure will not affect the pilot pressure required to open the valve. These valves are usually used in conjunction with a remote pilot source to maintain control in the event of hose failure. They should always be mounted onto or into the actuator and they do not have a relief function.

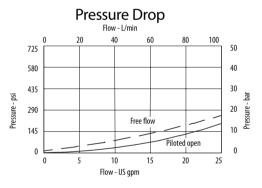
#### **SCHEMATIC**





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#### PERFORMANCE CURVES



## PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.29 kg [0.63 lb]
Cavity	A12196

### MODEL CODE

Basic C	ode									
	90-No housing									
ICPBD	95 -Cartridge and hou	5								
		-	Adjustment O	ption	J					
		F	- External							
Housin	g									
Code	Ports		Aluminum	Steel						
0mit	No housing									
4W	1/2″ BSP Valve & Cy 1/4″ BSP Pilot and V		B16357	B23615						Hou Om
8T	#8 SAE Valve & Cyl. #4 SAE Pilot and Ve		12007706	12007708						377
* Alumir	num bodies are to be use	ed for press	ures less than 2	10 bar [3000 psi						
* Additio	onal housings available									
Pilot Pr	essure Range								eal Opt	tion
	Code	Bar	F	Psi				<u> </u>	ode	
	2	5-20	[73	-290]				S-	Buna-	N
	- lard Setting	10	-	45]				SI	<b>/</b> -Vitor	ı

<u>377</u> - <u>10</u> **Pilot Pressure Setting** Code Pressure setting in bar (10 bar increments within specified Pressure Range) XXX-Standard setting (see Pressure Range for value). Example: Code Bar Psi 10 10 [145] **Housing Material** Omit - Aluminum/No Housing 377 - Steel Option Seal kit SK634 ina-N SK634V iton

SK634-P

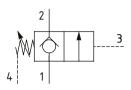
# Motion Control Valves 1CPBD120

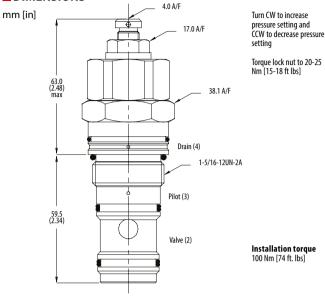
Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot 400 bar [5800 psi] • 180 l/min [47 US qpm]

### DESCRIPTION AND OPERATION

This is a zero differential overcenter valve, which is a pilot assisted, metered poppet valve with an integral free flow check. The check section allows free flow from port 2 to 1 into the actuator then holds and locks the load in position. By applying pilot pressure on port 3, the valve will open allowing the load to be lowered with oil passing from port 1 to 2. With port 4 connected to tank back pressure will not affect the pilot pressure required to open the valve. These valves are usually used in conjunction with a remote pilot source to maintain control in the event of hose failure. They should always be mounted onto or into the actuator and they do not have a relief function.

#### **SCHEMATIC**



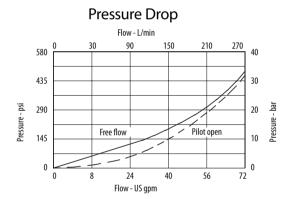


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### PERFORMANCE DATA

Rated pressure	400 bar [5800 psi]
Rated flow	180 l/min [47 US gpm]
Leakage	0.3 ml/min max [5 drops/min]
Weight	0.59 kg [1.30 lb]
Cavity	A6726

### PERFORMANCE CURVES



### MODEL CODE

Basic Co	ode							
	<b>20</b> -No hou					Pilot Pressure S	etting	
1CPBD1	<b>50</b> -Cartrid	lge and housing	Adjustment ( F - External	Option		<b>Code</b> Pressure set within specified P <b>XXX</b> -Standard set value). Example:	ressure Range)	)
Housing	1					Code	Bar	Psi
Code	Ports		Aluminur	n Steel		10	10	[145]
0mit	No housi	ng						
6W	3/4" BSP	Valve & Cyl. Port,	12007710	12007715		Housing Material		
		Pilot and Vent Por	[			Omit - Aluminum/No Housing 377 - Steel		
12T	#12 SAE \ #4 SAE Pi	/alve & Cyl. Port, ilot and Vent Port	12007709	12007712				
* Alumin	um bodies a	re to be used for pre	ssures less than 2	10 bar [3000 psi].				
* Additio	nal housing	s available						
Pilot Pr	essure Ran	ige			Seal Option Code	n Seal kit		
Co	de	Bar	Psi		S-Buna-N	SK830		
2		5-20 []	73-290]			SK830 SK830V		
	Setting	10	[145]		SV-Viton	SK83UV		

### DIMENSIONS

Quick Reference

Index

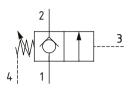
# Motion Control Valves 1CPBD300

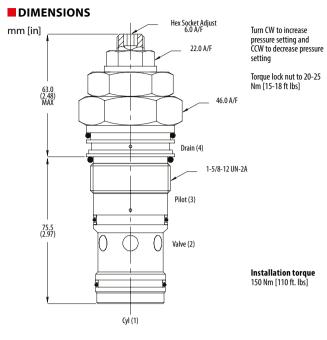
Overcenter Valve, Zero Differential, Poppet Type, External Drain, Port 3 Pilot 400 bar [5800 psi] • 300 l/min [80 US qpm]

## DESCRIPTION AND OPERATION

This is a zero differential overcenter valve, which is a pilot assisted, metered poppet valve with an integral free flow check. The check section allows free flow from port 2 to 1 into the actuator then holds and locks the load in position. By applying pilot pressure on port 3, the valve will open allowing the load to be lowered with oil passing from port 1 to 2. With port 4 connected to tank back pressure will not affect the pilot pressure required to open the valve. These valves are usually used in conjunction with a remote pilot source to maintain control in the event of hose failure. They should always be mounted onto or into the actuator and they do not have a relief function.

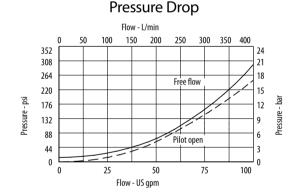
#### **SCHEMATIC**





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#### **PERFORMANCE CURVES**



#### PERFORMANCE DATA

Rated pressure	400 bar [5800 psi]
Rated flow	300 l/min [80 US gpm]
Leakage	4 ml/min nominal [60 drops/min]
Weight	0.91 kg [2.00 lb]
Cavity	A13098

### MODEL CODE

Basic Co	de									
	<b>00</b> -No hou: <b>50</b> -Cartrid	sing ge and housi	ng					Pilot Pressure S	etting	
Adjustm	ent Optio	n						Code Pressure set		
F - Extern Housing								within specified Pr XXX-Standard sett value)		
Code	Ports			Aluminum	Steel			Example:	_	
Omit	No housi	ng						Code	Bar	Psi
10W		P Valve & Cyl Pilot and Ver		12007720	12007722			10	10	[145]
20T	#20 SAE #4 SAE P	Valve & Cyl. P 'ilot and Vent	ort, Port	12007719	12007721			<mark>ing Material</mark> : - Aluminum/No Housing		
* Alumin	um bodies a	re to be used	or pressure	es less than 21	0 bar [3000 psi].		377 -			
Pilot Pre	essure Ran	ge					Seal Option			
Co	de	Bar	Ps	i _			 Code	Seal kit		
2		5-20	[73-2	90]			S-Buna-N	SK971		
Standard	Setting	10	[14	5]			SV-Viton	SK971V		
Std settin	g made at 4	5 l/min					<b>P</b> -Polyurethane/			

DIMENSIONS

# **Motion Control Valves 1CPPD90**

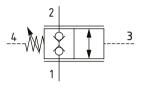
Zero Differential Valve, Normally Closed, Poppet Type, External Drain, Port 3 Pilot

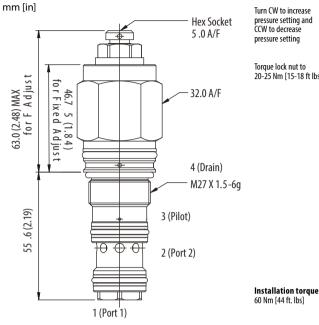
350 bar [5000 psi] • 90 l/min [24 US gpm]

# DESCRIPTION AND OPERATION

This is a normally closed zero differential valve, which is a pilot assisted metered, bi-directional poppet valve. By applying pilot pressure on port 3 the valve will open allowing the load to be lowered with oil passing from port 1 to 2 or port 2 to 1. With port 4 connected to tank, back pressure will not affect the pilot pressure required to open the valve. These valves are usually used in conjunction with a remote pilot source to maintain control in the event of hose failure. They should always be mounted on to or into the actuator. These valves do not have a relief function.

### SCHEMATIC





Turn CW to increase pressure setting and CCW to decrease pressure setting

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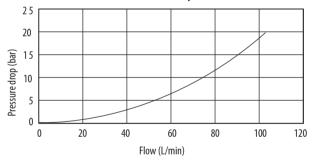
Torque lock nut to 20-25 Nm [15-18 ft lbs]

#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	0.37 kg [0.82 lbs]
Cavity	A12196

# PERFORMANCE CURVES





Basic Co	ode									Pilot Pressure Se	etting	
1CPPD9		ing je and housing	F - E G - 1	<b>ustment Op</b> External Tamper resist Non-adjustab	tant	act technical sup	port			Code Pressure sett within specified Pre XXX-Standard setti value) Example:	essure Range)	
Housing	]									Code	Bar	Psi
Code	Ports			Aluminum	Steel					10	10	[145]
Omit	No housi	ng						-	lousing Ma	terial		
4W		Valve & Cyl. Por Pilot and Vent F		B16357	B23615				<b>Dmit</b> - Alum 877 - Steel	inum/No Housing		
8T		alve & Cyl. Port, ilot and Vent Po	rt	12007706	12007708							
* Alumin	um bodies a	ire to be used for	oressure	s less than 21	0 bar [3000 ps	i].						
Pilot Pr	essure Rar	ige						Seal Option	1			
Co	de	Bar	Psi	i				 Code		Seal kit		
;	2	8-25	[116-3	863]				<b>S</b> -Buna-N		SK1453		
Standard	l Setting	10	[145	5]				SV-Viton		SK1453V		
Std settir	ng made at 4	4.5 l/min						<b>P</b> -Polyureth	ane/Buna-N	SK1453P		

# Motion Control Valves 1CEEC35

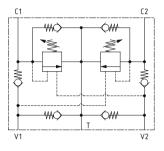
Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks

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

# DESCRIPTION AND OPERATION

This is a dual motion control and lock valve, with make-up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and then through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and then through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection.

### 



PERFORMANCE DATA

**Rated** pressure

Max total relief pressure

Max recommended load

pressure at max setting

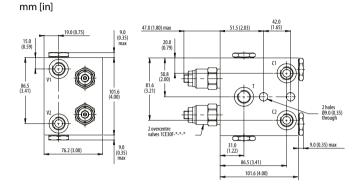
**Rated flow** 

**Pilot Ratio** 

Leakage

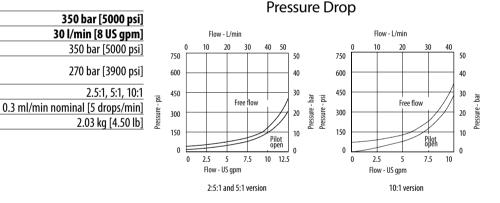
Weight

# DIMENSIONS



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### PERFORMANCE CURVES



MODEL CODE

#### 1CEEC35 - F - 3W - 35 - 5 - 5 - 377 - 210 **Pressure Setting** Code x100 - Pressure setting in psi (10 psi **Adjustment Option** increments within specified Pressure Range) F - External XXX-Standard setting (see Pressure Range N - Non-adjustable option, contact technical support for value) Example Housing Psi Code Bar Code Ports Steel 210 210 [3000] BXP16247-3WS377 3/8" BSP 3W **Housing Material** 377 - Stee **Pressure Range Pilot Ratio** Pilot Ratio 2 **Pilot Ratio 5 Pilot Ratio 10 2** - 2.5:1 **5** - 5:1 Code Bar Psi Baı Psi Baı Psi **10** - 10:1 20 70-210 [1015-3000] 70-120 [1015-3000] 100-210 [1450-3000] Seal Option Standard setting 100 [1450] 100 [1450] 100 [1450] Code Seal kit 35 100-350 [1450-5000] 100-350 [1450-5000] 120-350 [1740-5000] S-Buna-N SK815 Standard setting 210 [3000] 210 [3000] 210 [3000] SV-Viton SK815V Std setting made at 4.5 l/min

# **Motion Control Valves 1CEEC95**

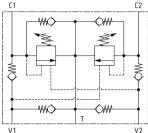
Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks

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

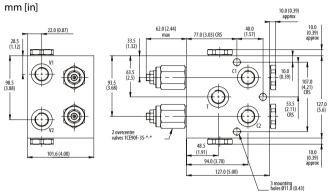
# DESCRIPTION AND OPERATION

This is a dual motion control and lock valve, with make-up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and then through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection.

### **SCHEMATIC**



# DIMENSIONS



100

42

35

28

21

14

7

0

bar

Pressure -

8:1 version

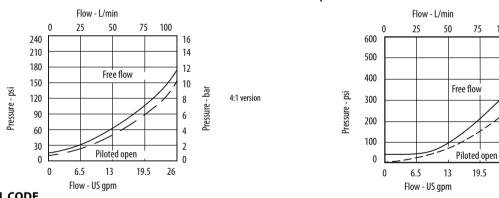
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### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1, 8:1
Leakage	0.3 ml/min nominal [5 drops/min]
Weight	3.70 kg [8.20 lb]

### PERFORMANCE CURVES



# **Pressure Drop**

# MODEL CODE

Adjustment Option						Pressure Setting		
<b>F</b> - External <b>N</b> - Non-adjustable optior <b>Housing</b>	n, contact technical supp	ort				Code Pressure sett within specified Pr XXX-Standard sett	ing in bar (10 essure Range)	
Code Ports	Steel					value) Example:		
<b>6W</b> 3/4" BSP	BXP16248-6WS3	77			Housing Material	Code	Bar	Psi
Pressure Range				Pilot Rati	377 - Steel	210	210	[3000]
Code	Bar	Psi		<b>4</b> - 4:1	•			
20	70-225	[1015-3260]		<b>8</b> - 8:1				
Standard Setting	100	[1450]	Seal Op	tion				
35	200-350	[2900-5000]	Code		Seal kit			
Standard Setting	210	[3000]	<b>S</b> -Buna-	N	SK814			
Std setting made at 4.5 L/r			SV-Vitor	1	SK814V			

# Motion Control Valves 1CEEC150

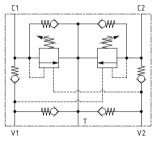
Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks

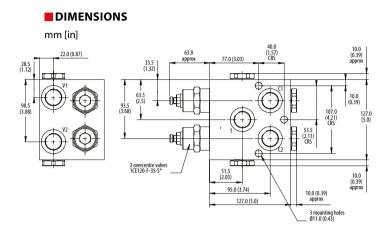
350 bar [5000 psi] • 120 l/min [32 US gpm]

# DESCRIPTION AND OPERATION

This is a dual motion control and lock valve, with make-up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and then through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection.

# SCHEMATIC



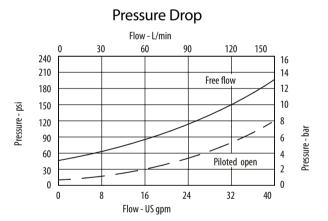


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### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	120 l/min [32 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3.5:1, 8:1
Leakage	0.3 ml/min [5 drops/min]
Weight	3.70 kg [8.20 lb]

### PERFORMANCE CURVES



### MODEL CODE

							<b>Pressure Setting</b>	I	
<b>F</b> - Exte							<b>Code</b> Pressure sett within specified Pre <b>XXX</b> -Standard setti value) Example:	essure Range)	
Housin	g						Code	Bar	Psi
Code	Ports	Steel					210	210	[3000]
8W	1" BSP Valve & Cyl Port 1/4" BSP Brake Port	BXP15687-8WS377				Housing Mat	terial		
			_		Pilot Ratio	<b>377</b> - Steel			
Pressu	re Range				<b>3</b> - 3.5:1				
	Code Bar	Psi		Seal O	<b>8</b> - 8:1 ption				
	<b>35</b> 70-35	0 [1015-5000]	_	Code		Seal kit			
Stand	ard Setting 210	[3000]		S-Buna	a-N	SK813			
	ing made at 4.5 l/min		-	SV-Vit		SK813V			

# Motion Control Valves 1CEEC350

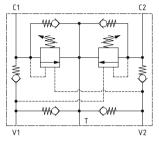
Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks

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

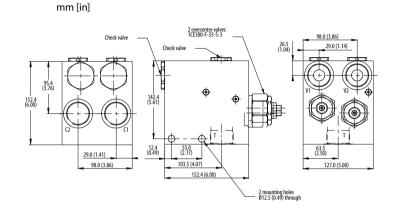
# DESCRIPTION AND OPERATION

This is a dual motion control and lock valve, with make-up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and then through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection.

### 



# DIMENSIONS

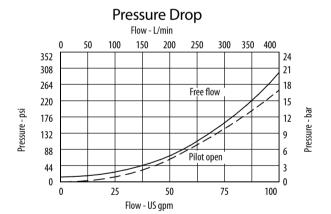


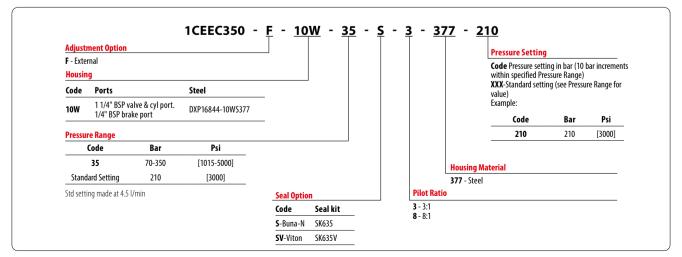
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### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 8:1
Leakage	4 ml/min [60 drops/min]
Weight	8.2 kg [18.0 lb]

### PERFORMANCE CURVES





# Motion Control Valves 1CEECSH35

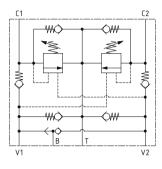
Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks and Shuttle Valve

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

### DESCRIPTION AND OPERATION

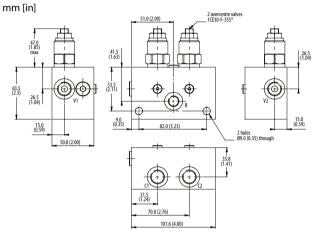
This is a dual motion control and lock valve with a shuttle valve, make up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and returns through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Check valves between T, V1 and V2 provide anti-cavitation protection. A shuttle valve is provided between ports V1 and V2 to provide pressure to remove a spring applied brake.

#### SCHEMATIC



# DIMENSIONS

PERFORMANCE CURVES

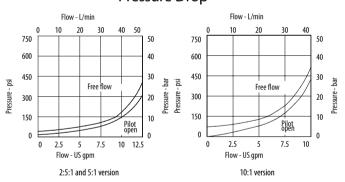


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#### **PERFORMANCE DATA**

Rated pressure	350 bar [5000 psi]			
Rated flow	30 l/min [8 US gpm]			
Max total relief pressure	350 bar [5000 psi]			
Max recommended load pressure at max setting	270 bar [3900 psi]			
Pilot Ratio	2.5:1, 5:1, 10:1			
Leakage	0.3 ml/min [5 drops/min]			
Weight	2.03 kg [4.5 lb]			

# Pressure Drop



											Pressure S	etting	
Adjustment Option												in bar (10 bar incr	
F - Exter											within speci XXX-Standa		re Range) see Pressure Ranc
N - Non-	adjustable op	otion, conta	ct technical sup	port							value)	J.	-
											Example:	_	
Housing	J										Code	Bar	Psi
Code	Ports		Stee	l single							210	210	[3000]
3W	3/4" BSP Va BSP Brake		ort 1/4" BXP1	15939-3WS	377					Housing Ma	aterial		
Pressur	e Range									377 - Steel			
								L	Pilot Rat	0			
				Pilot	Ratio 5	Pilot	Ratio 10		<b>2</b> - 2.5:1				
		Pilot	RALIO Z	1 100									
(	ode	Pilot Bar	Psi	Bar	Psi	Bar	Psi		<b>5</b> - 5:1 <b>10</b> - 10:1				
	ode 20					<b>Bar</b> 100-210	<b>Psi</b> [1450-3000]		<b>5</b> - 5:1 <b>10</b> - 10:1				
		Bar	Psi	Bar	Psi				<b>5</b> - 5:1 <b>10</b> - 10:1 ion	al kit			
Standa	20	<b>Bar</b> 70-210	<b>Psi</b> [1015-3000]	<b>Bar</b> 70-120	<b>Psi</b> [1015-3000]	100-210	[1450-3000]	Seal Opt	5 - 5:1 10 - 10:1 ion Se	<b>al kit</b>			

# Motion Control Valves 1CEECSH95

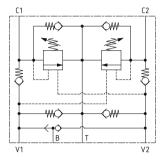
Dual Counterbalance Valve, Standard, Direct Acting with Makeup Checks and Shuttle Valve

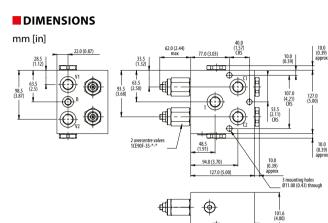
350 bar [5000 psi] • 90 l/min [24 US gpm]

### DESCRIPTION AND OPERATION

This is a dual motion control and lock valve with a shuttle valve, make up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and returns through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Check valves between T, V1 and V2 provide anti-cavitation protection. A shuttle valve is provided between ports V1 and V2 to provide pressure to remove a spring applied brake.

### SCHEMATIC

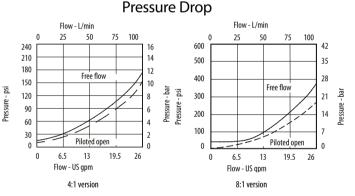




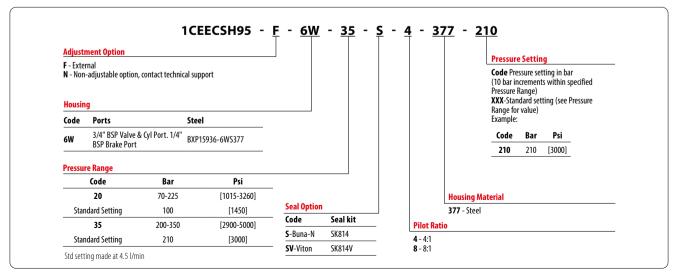
#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	90 l/min [24 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	4:1, 8:1
Leakage	0.3 ml/min [5 drops/min]
Weight	3.70 kg [8.20 lb]

# PERFORMANCE CURVES



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# Motion Control Valves 1CEECSH150

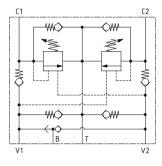
Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks and Shuttle Valve

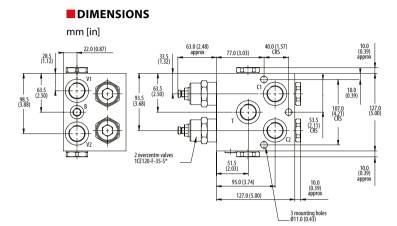
350 bar [5000 psi] • 120 l/min [32 US gpm]

# DESCRIPTION AND OPERATION

This is a dual motion control and lock valve with a shuttle valve, make up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and returns through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator, providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection. A shuttle valve is provided between ports V1 and V2 to provide pressure to remove a spring applied brake.

### SCHEMATIC





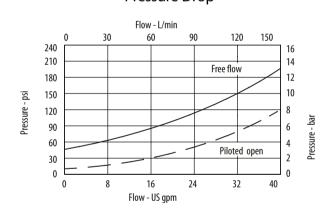
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#### **PERFORMANCE DATA**

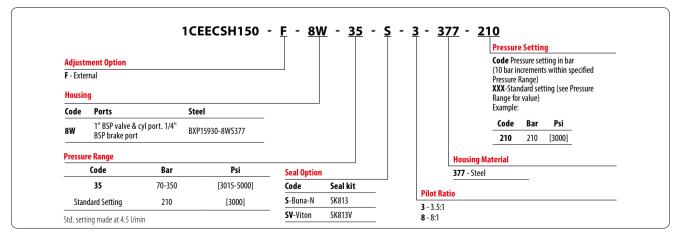
Rated pressure	350 bar [5000 psi]			
Rated flow	120 l/min [32 US gpm]			
Max total relief pressure	350 bar [5000 psi]			
Max recommended load pressure at max setting	270 bar [3900 psi]			
Pilot Ratio	3.5:1, 8:1			
Leakage	0.3 ml/min [5 drops/min]			
Weight	3.70 kg [8.20 lb]			

# Pressure Drop

PERFORMANCE CURVES



#### MODEL CODE



# Motion Control Valves 1CEECSH350

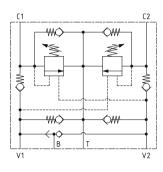
Dual Counterbalance Valve, Standard, Differential Area with Makeup Checks and Shuttle Valve

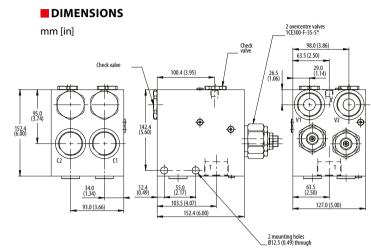
350 bar [5000 psi] • 300 l/min [80 US gpm]

## DESCRIPTION AND OPERATION

This is a dual motion control and lock valve with a shuttle valve, make up check valves and cross line shock and thermal relief functions built into an HIC. Flow passes through a check valve from V1 to C1 to the actuator and returns through C2 to V2 or to T. Pilot pressure raised before the check valve in line V1 to C1 pilots open the overcenter valve on the outlet of the actuator, providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator and returns through C1 to V1 or to T. Pilot pressure raised before the check valve in line V2 to C2 pilots open the overcenter valve on the outlet of the actuator. Providing load control. In the reverse direction, flow passes through a check valve from V2 to C2 to the actuator, providing load control. Check valves between T, V1 and V2 provide anti-cavitation protection. A shuttle valve is provided between ports V1 and V2 to provide pressure to remove a spring applied brake.

#### SCHEMATIC



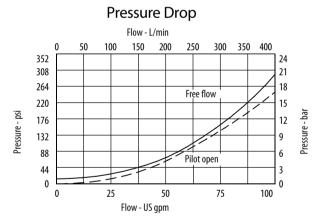


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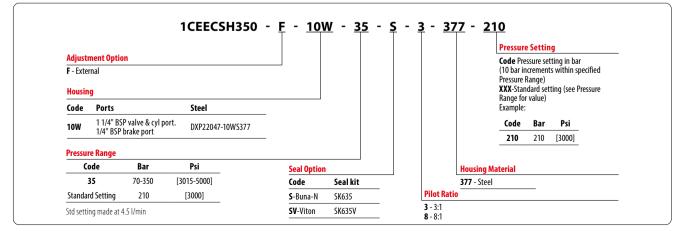
#### PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	300 l/min [80 US gpm]
Max total relief pressure	350 bar [5000 psi]
Max recommended load pressure at max setting	270 bar [3900 psi]
Pilot Ratio	3:1, 8:1
Leakage	4 ml/min [60 drops/min]
Weight	8.2 kg [18.0 lb]

### PERFORMANCE CURVES



### MODEL CODE



Danfoss