

# Dual cross-over relief package for H&T series motors

Cartridge valves & manifolds for spool valve motors

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Eaton 1CESHHT35A,B, Eaton 1CEESHHT35A, B  
 Eaton 1CESH2K35A,B, Eaton 1CEESH2K35A, B

## Dual crossover relief valve assembly

This valve assembly provides motor over-pressure protection in both directions of rotation, while supplying the return or lower pressure side of the motor with makeup oil. If closed center valving is used, an additional function is controlled braking.

Typical applications are vehicle propulsion and motor work circuits in which pressure limiting is required.

## How to order

Complete pre-assembled packages are specified using the RV3A-10 model code. Option "A" must be

selected for the cage seals, position 6 of the model code is "H". To order the manifold separately,

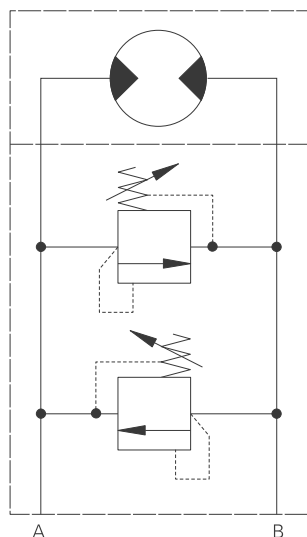
without the two RV3A cartridges, order the part number 4997062-001.

## Ratings and specifications

Rated flow	76 L/min(20USgpm)
Rated pressure	210 bar (3000psi)
Internal leakage (maximum)	less than 5 drops/min @ 85% of nominal setting
Manifold sub-assembly only	4997060
Installation kit (includes cap screws, washers and o-rings)	02-372492

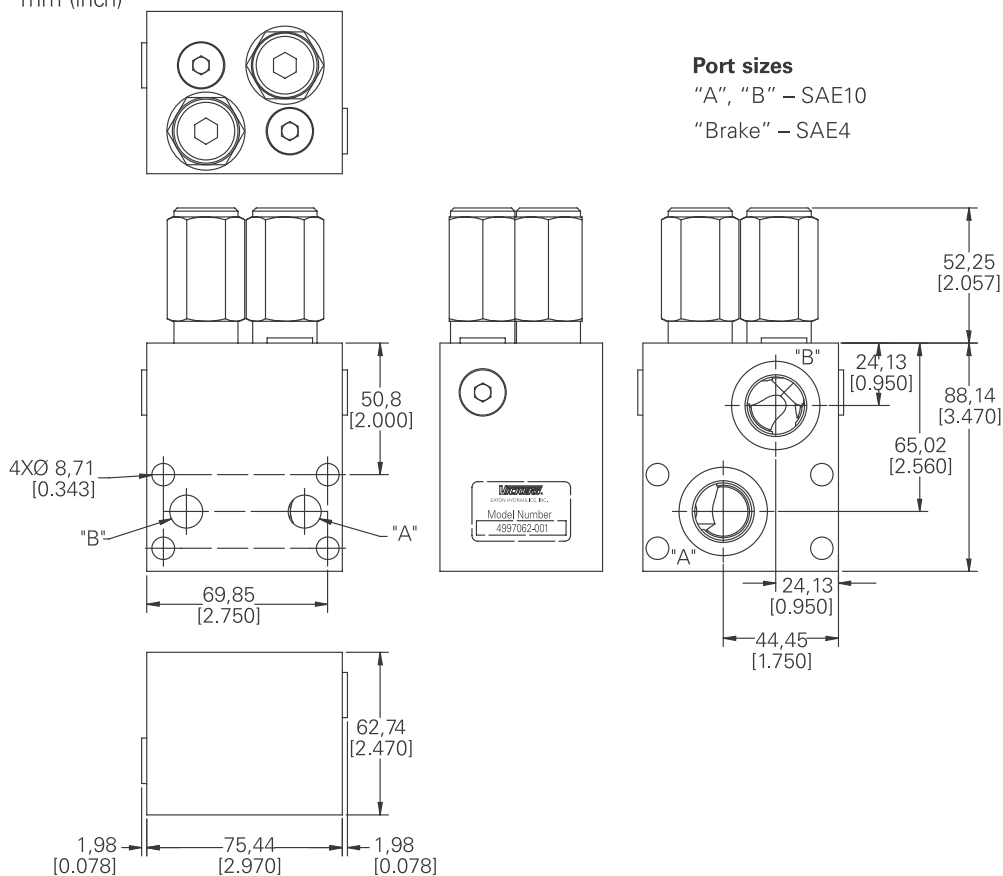
For detailed specifications refer to the RV3A-10 data sheet on page E-210

## Functional symbol



## Dimensions

mm (inch)



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

# Dual cross-over relief package for 2000 series disc valve motors

Cartridge valves & manifolds for spool valve motors

## Dual crossover relief valve assembly

This valve assembly provides motor over-pressure protection in both directions of rotation, while supplying the return or lower pressure side of the motor with makeup oil. If closed center valving is used, an additional function is controlled braking.

Typical applications are vehicle propulsion and motor work circuits in which pressure limiting is required.

## How to order

Complete pre-assembled packages are specified using the RV3A-10 model code. Option "A" must be selected for the cage seals, position 6 of the model code is "2K".

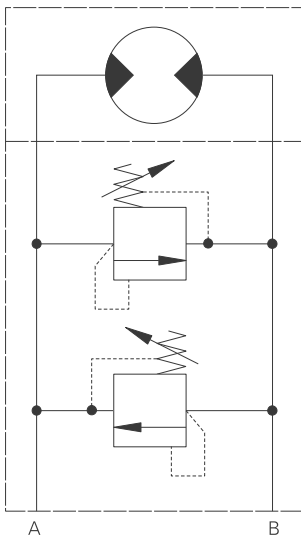
To order the manifold separately, without the two RV3A cartridges, order 4997060-001

## Ratings and specifications

Rated flow	76 L/min(20USgpm)
Rated pressure	210 bar (3000psi)
Internal leakage (maximum)	less than 5 drops/min @ 85% of nominal setting
Manifold sub-assembly only	4997060-001
Installation kit (includes cap screws, washers and o-rings)	02-372492

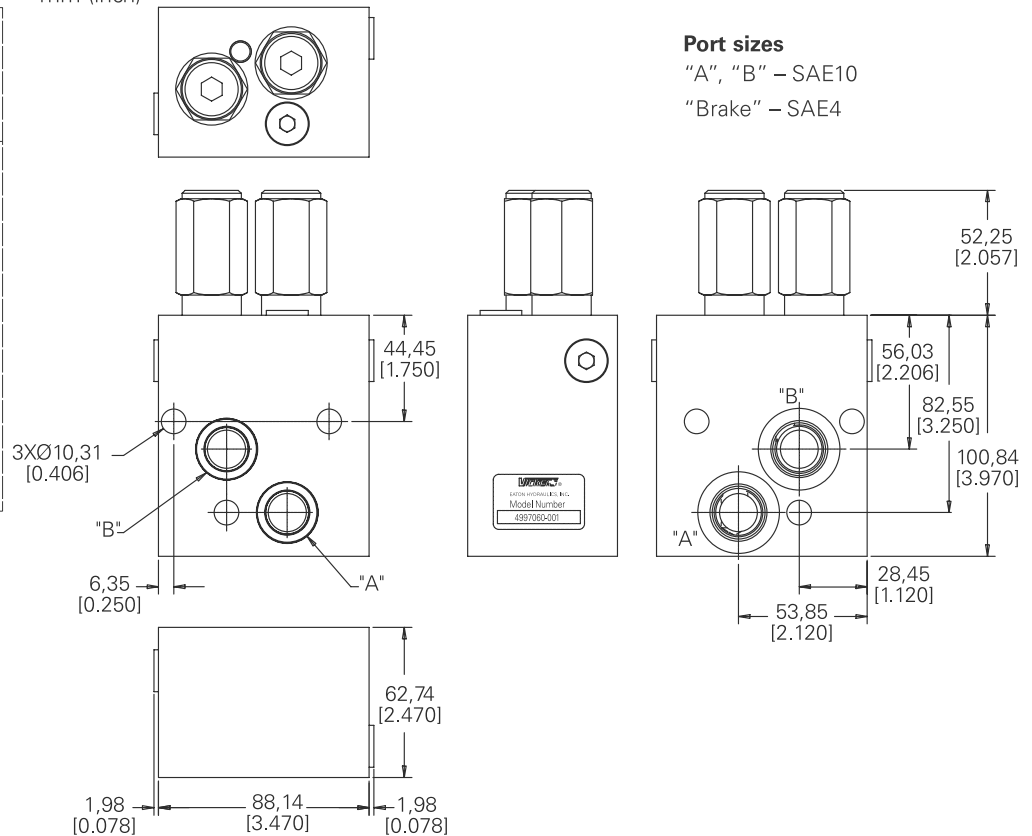
For detailed specifications refer to the RV3A-10 data sheet on page E-14

## Functional symbol



## Dimensions

mm (inch)



## Port sizes

"A", "B" – SAE10

"Brake" – SAE4

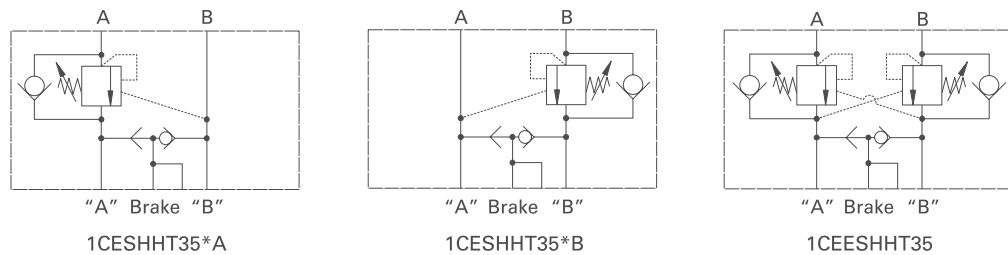
## Warning

This manifold package may not be suitable for application with all 2000 series motors - please check installation dimensions carefully.

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

# 1CESHHT35/1CEESHHT35 - Motor mounted valves

H & T mounting pattern single and dual overcenter valve with brake release shuttle



## Description

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

These dual overcenter valves also contain a brake release shuttle valve which ensures that pressure is applied to a brake release circuit regardless of whether pressure is applied to ports "A" or "B". These multifunction valves are normally used for the static and dynamic control of systems using motors or semi-rotaryactuators.

## Operation

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

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

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

## Pilot ratios

- 2.5:1 Best suited for extremely unstable applications such as long booms or flexible frameworks.
- 5:1 Best suited for applications where load varies (Standard) and machine structure can induce instability
- 10:1 Best suited for applications where the load remains relatively constant.

## Performance data

### Ratings and specifications

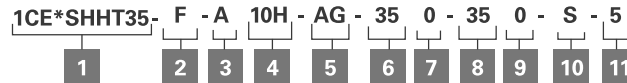
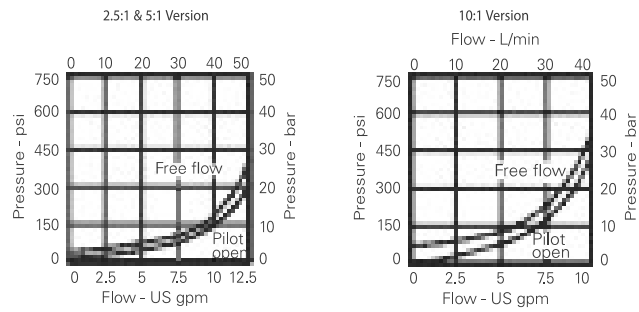
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)		
Max setting	Max load induced Pressure: 270 bar (4000 psi) Relief setting: 350 bar (5000 psi)		
Cartridge material	Working parts hardened & ground steel External surface zinc plated		
Body material	Standard aluminium (up to 210 bar*) Steel (up to 350 bar)		
Mounting position	Unrestricted		
Cavity Number	A6610 (See section M)		
Torque cartridge into cavity	45 Nm (33 lbs ft)		
Weight (inc cartridges)	1CESHHT35	2.29 kg (5.04 lbs)	
	1CEESHHT35	2.34 kg (5.15 lbs)	
Seal kit number	1CESHHT35	9900828-000 (Buna-N)	9900829-000 (Viton)
	1CEESHHT35	9900828-000 (Buna-N)	9900829-000 (Viton)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)		
Operating Temp	-30°C to +90°C (-22° to 194°F)		
Leakage	0.3 millil/min nominal (5 dpm)		
Nominal viscosity range	5 to 500 cSt		
Installation Kit (includes cap screws, washers, and o-rings)	9900834-000 (Buna-N) 9900835-000 (Viton)		

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

# ICESHHT35/ICEESHHT35 - Motor mounted valves

H & T mounting pattern single and dual overcenter valve with brake release shuttle



## 1 Basic code

**1CEESHHT35** – Double Cartridge and Body  
**1CESHHT35\*A** – Single overcenter in line A-“A”  
**1CESHHT35\*B** – Single overcenter in line B-“B”

## 2 Adjustment means

**F** – Screw Adjustment

## 3 Housing material

**A** – Aluminum  
**S** – Steel

## 4

Code	Port size		Dual housing number	
	“A” & “B”	Brake	Aluminum	Steel
<b>4W</b>	1/2" BSP	1/4" BSP	6025216-001	6025216-003
<b>10H</b>	SAE 10	SAE 4	6025216-002	
<b>10T</b>	SAE 10	SAE 4		6025216-004

## 5 Port acted upon

**A** – A Port  
**B** – B Port  
**AB** – A & B Ports (dual)

## 6 Pressure range (cart A)

**Note:** Code Based on pressure in bar.  
**20** – (2.5:1 and 5:1): 70-210 bar. Std setting 100 bar.  
 (10:1): 100-210 bar. Std setting 100 bar.  
**35** – (2.5:1 and 5:1): 100-350 bar. Std setting 210 bar. (10:1):  
 120-350 bar. Std setting 210 bar.

## 7 Pressure setting (cart A)

**0** – Std factory setting  
**1500** – 1500 psi

## 8 Pressure range (cart B)

**Note:** Code Based on pressure in bar.  
**20** – (2.5:1 and 5:1): 70-210 bar. Std setting 100 bar.  
 (10:1): 100-210 bar. Std setting 100 bar.  
**35** – (2.5:1 and 5:1): 100-350 bar. Std setting 210 bar.  
 (10:1): 120-350 bar. Std setting 210 bar.

## 9 Pressure setting (cart B)

**0** – Std factory setting  
**1500** – 1500 psi

## 10 Seals

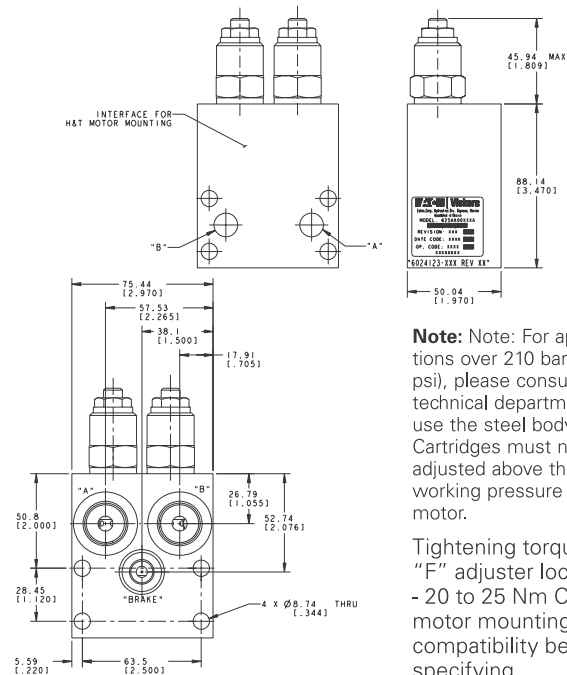
**S** – Buna-N  
**SV** – VitoN

## 11 Pilot ratio

**2** – 2.5:1  
**5** – 5:1  
**10** – 10:1

Cavity plug part number

Nitrile  
 AXP13032-01-N  
 AXP13032-01-V



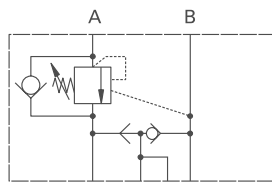
**Note:** Note: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option. Cartridges must not be adjusted above the safe working pressure of the motor.

Tightening torque of “F” adjuster locknut - 20 to 25 Nm Check motor mounting compatibility before specifying.

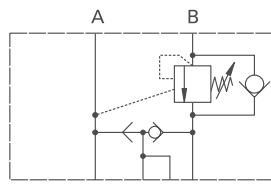
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

# 1CESH2K95/1CEESH2K95 - Motor mounted valves

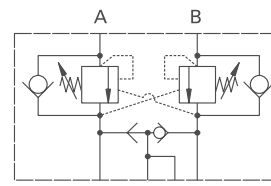
2k mounting pattern single and dual overcenter valves with brake release shuttle



"A" Brake "B"  
1CESH2K95\*A



"A" Brake "B"  
1CESH2K95\*A



"A" Brake "B"  
1CEESH2K95

## Description

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

These dual overcenter valves also contain a brake release shuttle valve which ensures that pressure is applied to a brake release circuit regardless of whether pressure is applied to ports "A" or "B". These multifunction valves are normally used for the static and dynamic control of systems using motors or semi-rotary actuators.

## Operation

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

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

Pilot Pressure =

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

## Pilot Ratios

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

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

Other ratios available upon request

## Performance data

### Ratings and specifications

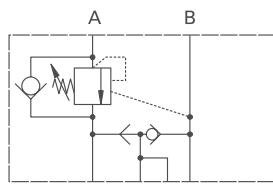
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	90 L/min (23 USgpm)		
Max setting	Max load induced Pressure: 270 bar (4000 psi) Relief setting: 350 bar (5000 psi)		
Cartridge material	Working parts hardened & ground steel External surface zinc plated		
Body material	Standard aluminium (up to 210 bar*) Steel (up to 350 bar)		
Mounting position	Unrestricted		
Cavity Number	A12336 (See section M)		
Torque cartridge into cavity	60 Nm (44 lbs ft)		
Weight (inc cartridges)	1CESH2K95	2.32 kg (5.10 lbs)	
	1CEESH2K95	2.42 kg (5.32 lbs)	
Seal kit number	1CESH2K95	9900826-000 (Buna-N)	9900827-000 (Viton)
	1CEESH2K95	9900826-000 (Buna-N)	9900827-000 (Viton)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)		
Operating Temp	-30°C to +90°C (-22° to 194°F)		
Leakage	0.3 millil/min nominal (5 dpm)		
Nominal viscosity range	5 to 500 cSt		
Installation Kit (includes cap screws, washers, and o-rings)	9900830-000 (Buna-N) 9900831-000 (Viton)		

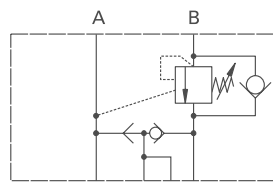
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# 1CESH2K95/1CEESH2K95 - Motor mounted valves

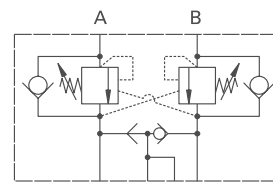
2K Mounting pattern single and dual overcenter valves with brake release shuttle



"A" Brake "B"  
1CESH2K95\*A



"A" Brake "B"  
1CESH2K95\*A



"A" Brake "B"  
1CEESH2K95

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Body material	Standard aluminium (up to 210 bar*) Steel (up to 350 bar)		
Mounting position	Unrestricted		
Cavity Number	A12336 (See section M)		
Torque cartridge into cavity	60 Nm (44 lbs ft)		
Weight (inc cartridges)	1CESH2K95	2.32 kg (5.10 lbs)	
	1CEESH2K95	2.42 kg (5.32 lbs)	
Seal kit number	1CESH2K95	9900834-000 (Buna-N)	9900835-000 (Viton)
	1CEESH2K95	9900836-000 (Buna-N)	9900837-000 (Viton)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)		
Operating Temp	-30°C to +90°C (-22° to 194°F)		
Leakage	0.3 millil/min nominal (5 dpm)		
Nominal viscosity range	5 to 500 cSt		
Installation Kit (includes cap screws, washers, and o-rings)	9900828-000 (Buna-N) 9900829-000 (Viton)		

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