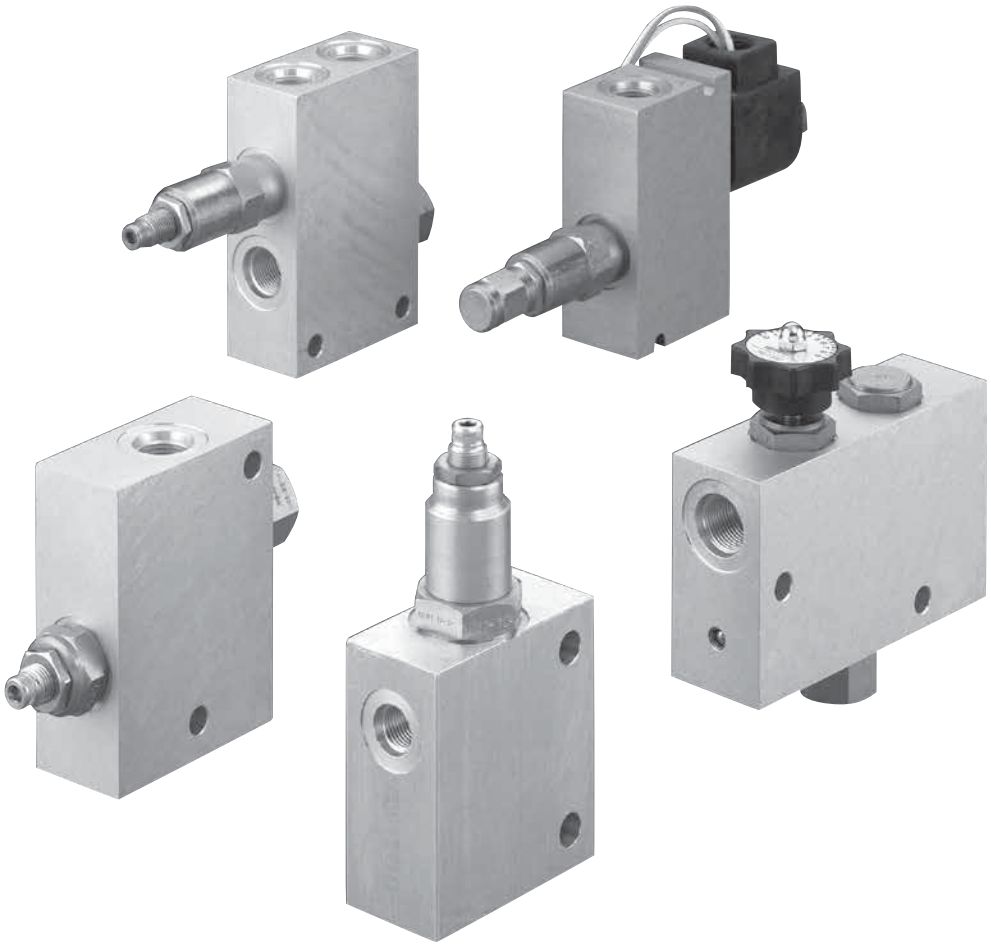
Circuit maker solutions

Screw-in cartridge valve packages for applications up to 350 bar (5000 psi) and 300 L/min (80 USgpm)



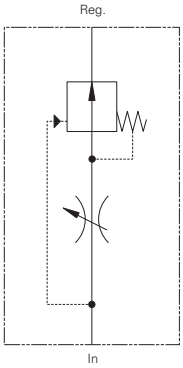
Powering Business Worldwide

Circuit maker solutions

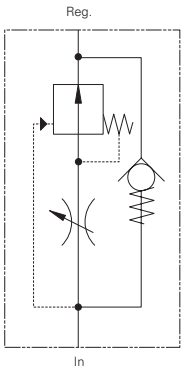
Circuit maker solutions

Valve locator

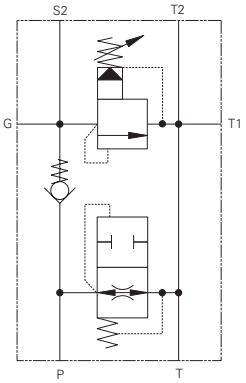
Functional symbol



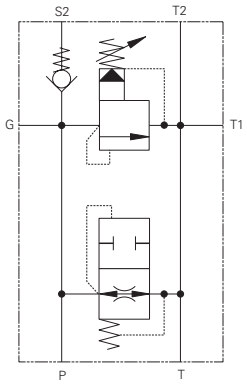
Model	Cavity	Flow rating	Typical pressure	Page
Flow control, full range adjustable		**L/min (USgpm)**	**bar (psi)**	
FC-1	Inline	36 (9)	210 (3000)	K-10
FC-2	Inline	57 (15)	210 (3000)	K-12
FC-3	Inline	114 (30)	210 (3000)	K-14
FC-4	Inline	190 (50)	210 (3000)	K-16



Model	Cavity	Flow rating	Typical pressure	Page
Flow control, full range adjustable		**L/min (USgpm)**	**bar (psi)**	
FRC-1	Inline	36 (9)	210 (3000)	K-18
FRC-2	Inline	57 (15)	210 (3000)	K-20
FRC-3	Inline	114 (30)	210 (3000)	K-22
FRC-4	Inline	190 (50)	210 (3000)	K-24



Model	Cavity	Flow rating	Typical pressure	Page
Pump control, single pump circulation		**L/min (USgpm)**	**bar (psi)**	
PCC1-12	Inline	114 (30)	210 (3000)	K-26
PCC1-16	Inline	228 (60)	210 (3000)	K-28

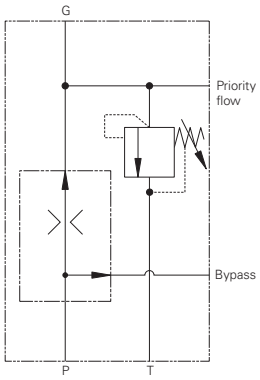


Model	Cavity	Flow rating	Typical pressure	Page
Pump control, single pump circulation		**L/min (USgpm)**	**bar (psi)**	
PCC2-12	Inline	114 (30)	5-210 (3000)	K-30
PCC2-16	Inline	228 (60)	10-210 (3000)	K-32

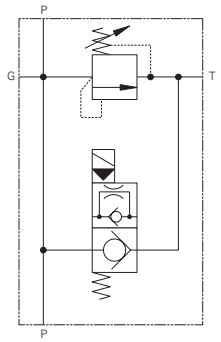
K

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

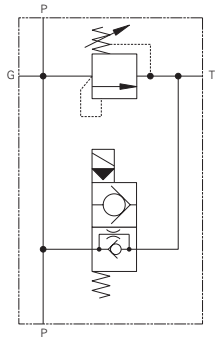
Functional symbol

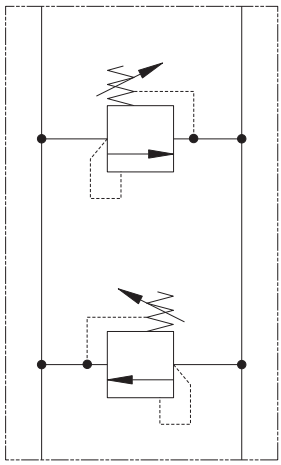


Model	Cavity	Flow rating	Typical pressure	Page
Flow control, relief on priority flow		**L/min (USgpm)**	**bar (psi)**	
PFRR-8	Inline	15 (4)	7-210 (3000)	K-34
PFRR-10	Inline	57 (15)	7-210 (3000)	K-36
PFRR-16	Inline	152 (40)	7-210 (3000)	K-38



Model	Cavity	Flow rating	Typical pressure	Page
Relief valve, solenoid actuated		**L/min (USgpm)**	**bar (psi)**	
SRV-8	Inline	23 (6)	210 (3000)	K-40
SRV-10	Inline	57 (15)	210 (3000)	K-42
SRV-12	Inline	114 (30)	210 (3000)	K-44
SRV-16	Inline	225 (60)	210 (3000)	K-46
SRV-20	Inline	300 (80)	210 (3000)	K-48





Model	Cavity	Flow rating	Typical pressure	Page
Cross port relief		**L/min (USgpm)**	**bar (psi)**	
CRV-10	Inline	26 (20)	210 (3000)	K-50
CRV-16	Inline	303 (80)	172 (2500)	K-52

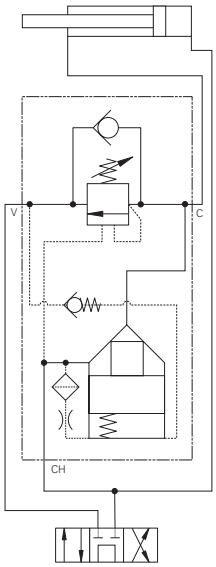
K

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

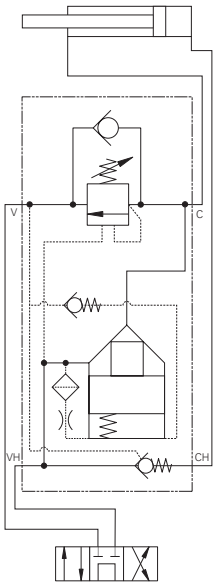
Circuit maker solutions

Valve locator

Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
Regenerative valve, pressure		**L/min (USgpm)**	**bar (psi)**	
RGV-30	Inline	57 (15)	210 (3000)	K-54
RGV-90	Inline	114 (30)	210 (3000)	K-56

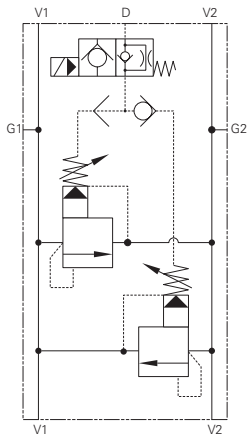


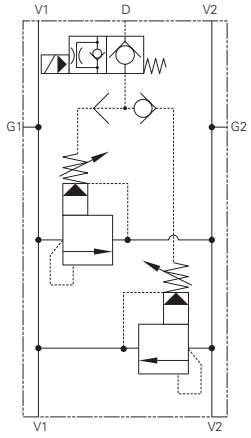
Model	Cavity	Flow rating	Typical pressure	Page
Regenerative valve, pressure		**L/min (USgpm)**	**bar (psi)**	
RLV-30	Inline	57 (15)	210 (3000)	K-58
RLV-90	Inline	114 (30)	210 (3000)	K-60

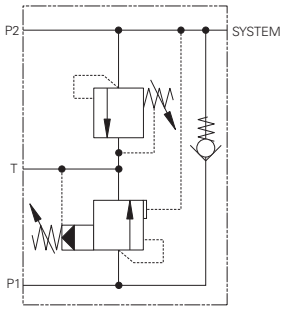
K

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

Functional symbol







Model	Cavity	Flow rating	Typical pressure	Page
Relief valve, cross port solenoid		**L/min (USgpm)**	**bar (psi)**	
SCR-1		114 (30)	210 (3000)	K-62

Model	Cavity	Flow rating	Typical pressure	Page
Unloading valve		**L/min (USgpm)**	**bar (psi)**	
1UL255		200 (52)	350 (5000)	K-64

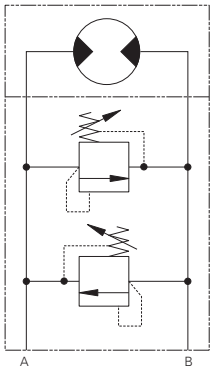
K

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

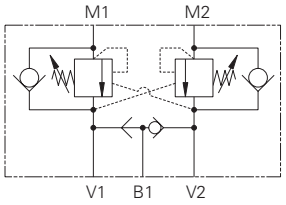
Circuit maker solutions

Valve locator

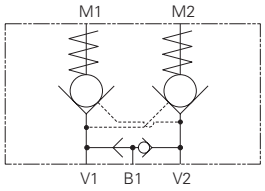
Functional symbol



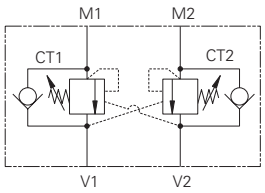
Model	Cavity	Flow rating	Typical pressure	Page
Motor mounted relief		**L/min (USgpm)**	**bar (psi)**	
H & T Motors		76 (20)	210 (3000)	K-68
2000 Motors		76 (20)	210 (3000)	K-69
OMP		150 (40)	350 (5000)	K-74
OMS		150 (40)	350 (5000)	K--



Model	Cavity	Flow rating	Typical pressure	Page
Motor mounted OCV with brake shuttle		**L/min (USgpm)**	**bar (psi)**	
H & T Motors		60 (15)	210 (3000)	K-70
2000 Motors		60 (15)	210 (3000)	K-72
OMP		30 (8)	270 (4000)	K-74
OMS		90 (23)	270 (4000)	K-76



Model	Cavity	Flow rating	Typical pressure	Page
Motor mounted P.O. check with brake shuttle		**L/min (USgpm)**	**bar (psi)**	
H & T Motors		60 (15)	210 (3000)	K-78
2000 Motors		60 (15)	210 (3000)	K-80



Model	Cavity	Flow rating	Typical pressure	Page
Motor mounted OCV		**L/min (USgpm)**	**bar (psi)**	
OMP		30 (8)	270 (4000)	K-83
OMS		90 (23)	270 (4000)	K-85

K

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

What are circuit makers?

Circuit Maker Products are pre-engineered packages. These packages are designed with from 2 to 4 screw–in cartridge valves for generic, repetitive circuit control functions.

All of the products in this catalog are rated at 210 bar (3000 psi) and have either SAE or BSPP port options. Our selection of Circuit Maker pre-engineered packages consists of the following basic units:

- Single and multiple pump control packages
- Solenoid actuated relief valve packages
- Flow control packages
- Cross port relief packages
- Cross port relief with shuttle and solenoid vent
- Pressure sensitive regeneration packages with and without load locking
- Motor mounted counterbalance valve
- Motor mounted PO check valves
- Motor mounted relief valves

Typical applications

Circuit Maker packages can be used in a wide variety of stationary and, on and off highway applications. The are designed to solve a multitude of repeatable, generic application requirements that are encountered in day to day hydraulic circuits. These packages are ideal solutions for specialty machine requirements and low volume options on high volume applications.

Pump control packages –

These are suitable for any single or multiple pump application where individual pump output flow does not exceed 228 l/min (60 USgpm). They are used to provide air-bleed, start-up and relief protection.

Solenoid actuated relief valve packages –

These can be used wherever remote relief or venting control is required for flows up to 300 L/min (80 USgpm). Normally open versions lend themselves to markets where fail safe and "dead man" control are important. Normally closed versions lend themselves to markets such as machine tool, where energy savings can be obtained by selective unloading of pump flow.

Flow control packages –

These packages are used with both fixed and variable pump systems to provide constant output flow for the main or branch circuits. Packages offered provide for maintaining either:

- Cylinder or motor speed; free reverse flow for table positioning, conveyor systems and presses.
- Controlled flow for steering systems.

Cross port relief valve packages –

These packages are used with bi-directional actuators. The circuit maker provides actuator protection from overload conditions.

Pressure sensitive regeneration packages –

Pressure sensitive regeneration packages provide a means of extending a cylinder as fast as possible without additional pump flow by diverting rod end flow to the head end to accelerate the load. When the pressure in the head end reaches a predetermined level related to the load, the valve closes off and the cylinder returns to normal speed. Typical applications are for outriggers/ stabilizers in mobile markets and machine tool traverse in industrial markets.

Pressure sensitive regeneration packages with load locking –

Pressure sensitive regeneration packages provide a means of extending a cylinder as fast as possible without additional pump flow by diverting rod end flow to the head end to accelerate the load. When the pressure in the head end reaches a predetermined level related to the load, the valve closes off and the cylinder returns to normal speed. The load locking feature provides stability as the system is now working with an oil column under pressure in addition to the mechanical structure. Typically used with mobile crane and other similar vehicles to ensure stability when swinging loads. This package has an advantage over alternative systems that use solenoid actuated blocking pins. In the event of a power failure, it is still possible to lower the vehicle/load.

Features and Benefits

- Quick solutions that are ready to use
- Quick delivery at low cost
- Flexibility

Quick solutions:

Circuit Maker packages are pre-engineered packaged solutions for generic, repeatable requirements. They have specific coil voltage, coil connector, flow settings adjustment and pressure setting adjustment options that permit tailoring to application requirements.

Quick delivery/low cost:

Circuit Maker packages have already been engineered to satisfy generic, repetitive circuit needs. There are no scheduling or time related problems, or engineering charges to be recovered.

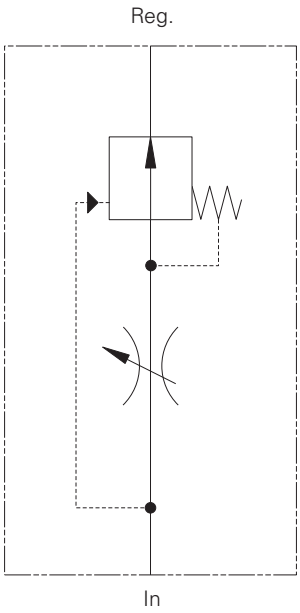
Flexibility:

Screw-in cartridge valves and housings are sold either separately or as pre–assembled packages. This permits last minute assembly of packages and local tailoring of individual valve options.

K

FC-1 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 36 L/min (9 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

Ratings and specifications

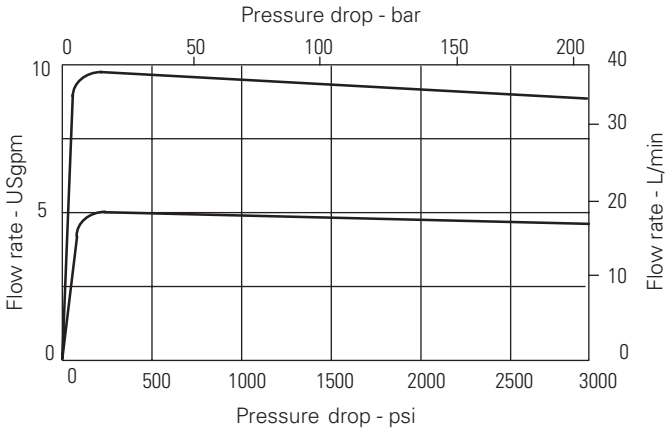
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49° C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 36 L/min (9 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Viton is a registered trademark of E. I. DuPont

Description

Full range adjustable restrictive pressure compensated flow control package

Performance characteristics



K

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

FC-1 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 36 L/min (9 USgpm) • 210 bar (3000 psi)

Model code

FC	–	1	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FC - Fully adjustable pressure compensated flow control

2 Maximum rated flow

1 - 34 L/min (9 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®
Viton is a registered trademark of E. I. DuPont.

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
4G	1/2" BSPP	02-178279
8T	SAE 8	02-178280

6 Adjustment type

	Flow rate
K1 - Knob*	19 L/min (5 USgpm)
K2 - Knob	34 L/min (9 USgpm)
S1 - Screw	34 L/min (9 USgpm)
H1 - Handwheel	34 L/min (9 USgpm)

*180˚ rotation

7 Special features

00 - None

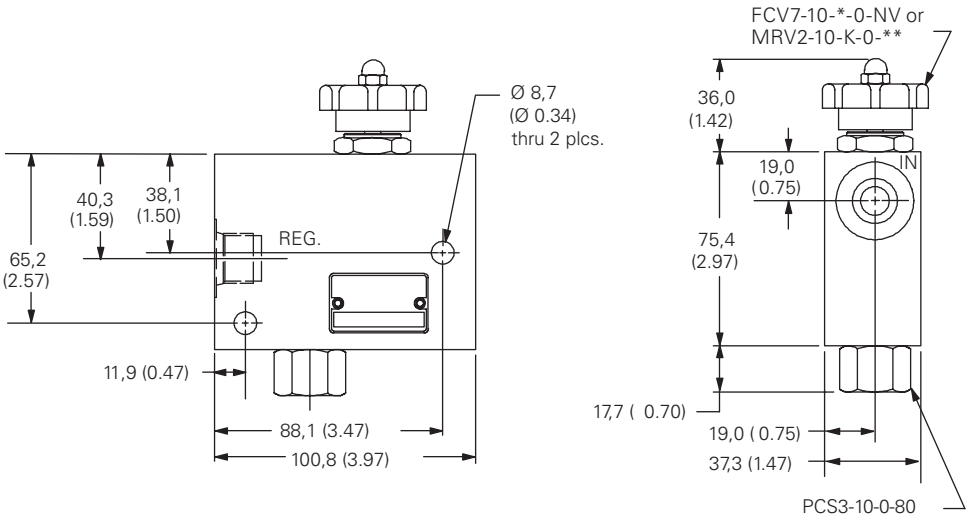
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 Knob	MRV2-10-K-0-05	Flow restrictor, adjustable, semi-rotary spool	19 L/min (5 USgpm)
K2 - Knob	MRV2-10-K-0-10	Flow restrictor, adjustable, semi-rotary spool	34 L/min (9 USgpm)
S1 - Screw	FCV7-10-S-0-NV	Flow restrictor, adjustable, needle type	34 L/min (9 USgpm)
H1 - Hand Knob	FCV7-10-K-0-NV	Flow restrictor, adjustable, needle type	34 L/min (9 USgpm)
–	PCS3-10-0-80	Pressure compensator, spool type	40 L/min (12 USgpm)

Dimensions

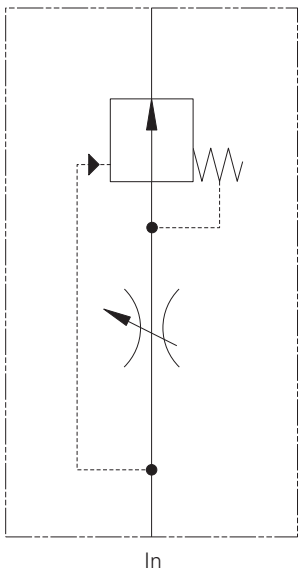
mm (inch)



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

FC-2 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 57 L/min (15 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

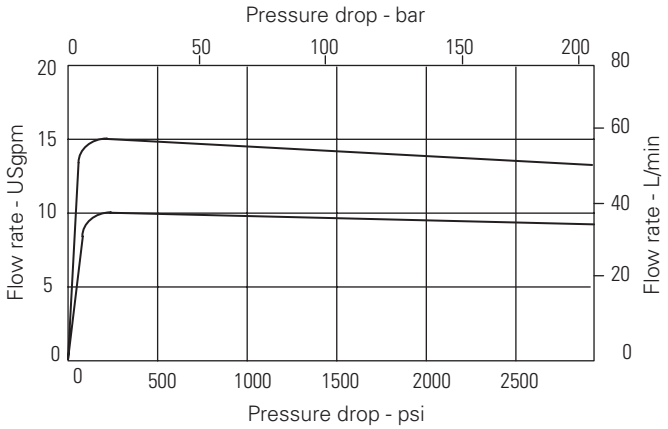
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 57 L/min (15 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package.

Performance characteristics



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

FC-2 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 57 L/min (15 USgpm) • 210 bar (3000 psi)

Model code

FC	–	2	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FC - Fully adjustable pressure compensated flow control

2 Maximum rated flow

2 - 57 L/min (15 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
6G	3/4" BSPP	02-178281
12T	SAE 12	02-178282

6 Adjustment type

	Flow rate
K1 - Knob*	38 L/min (10 USgpm)
K2 - Knob	57 L/min (15 USgpm)
S1 - Screw	57 L/min (15 USgpm)
H1 - Handwheel	57 L/min (15 USgpm)

*180° rotation

7 Special features

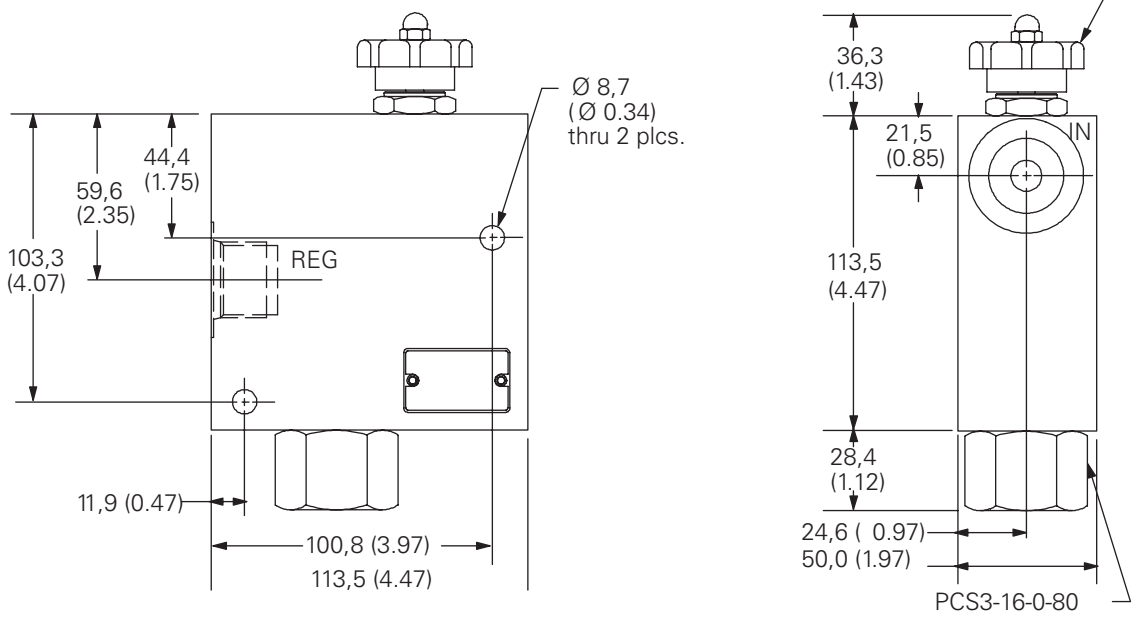
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 Knob	MRV2-10-K-0-10	Flow restrictor, adjustable, semi-rotary spool	38 L/min (10 USgpm)
K2 - Knob	MRV2-10-K-0-15	Flow restrictor, adjustable, semi-rotary spool	57 L/min (15 USgpm)
S1 - Screw	FCV7-10-S-0-NV	Flow restrictor, adjustable, needle type	57 L/min (15 USgpm)
H1 - Hand Knob	FCV7-10-K-0-NV	Flow restrictor, adjustable, needle type	57 L/min (15 USgpm)
–	PCS3-16-0-80	Pressure compensator, spool type	114 L/min (30 USgpm)

Dimensions

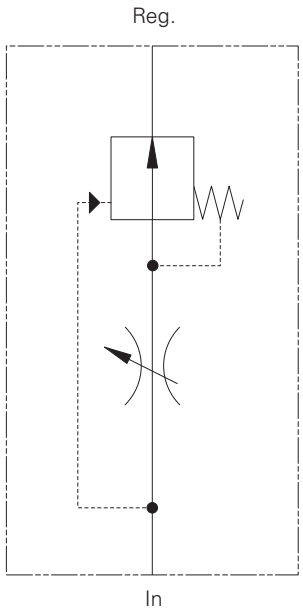
mm (inch)



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

FC-3 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 114 L/min (30 USgpm) • 210 bar (300 psi)



Operation

This standard valve package is used in a circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

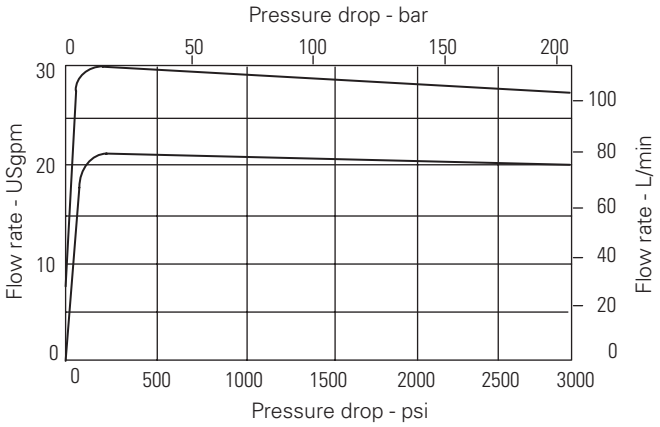
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 114 L/min (30 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package.

Performance characteristics



K

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

FC-3 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 114 L/min (30 USgpm) • 210 bar (300 psi)

Model code

FC	–	3	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FC - Fully adjustable pressure compensated flow control

2 Maximum rated flow

3 - 114 L/min (30 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
8G	1" BSPP	02-178283
16T	SAE 16	02-178284

6 Adjustment type

	Flow rate
K1 - Knob*	76 L/min (20 USgpm)
K2 - Knob	114 L/min (30 USgpm)
S1 - Screw	114 L/min (30 USgpm)
H1 - Handwheel	114 L/min (30 USgpm)

*180˚ rotation

7 Special features

00 - None

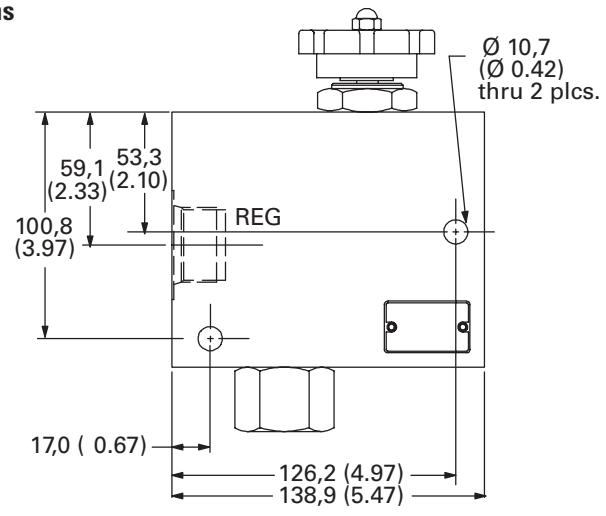
(Only required if valve has special features, omitted if "00".)

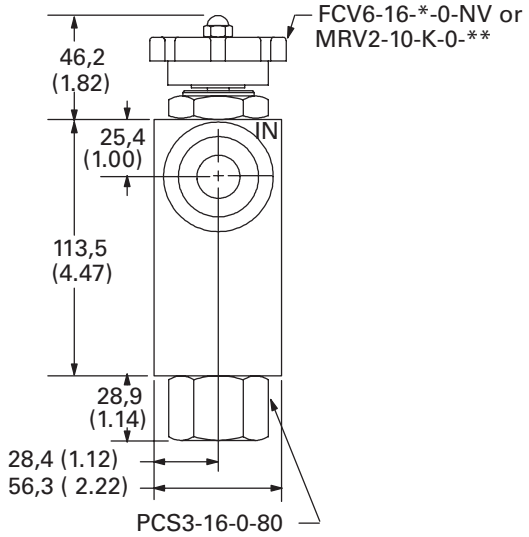
Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	MRV2-16-K-0-20	Flow restrictor, adjustable, semi-rotary spool	76 L/min (20 USgpm)
K2 - Knob	MRV2-16-K-0-30	Flow restrictor, adjustable, semi-rotary spool	114 L/min (30 USgpm)
S1 - Screw	FCV6-16-S-0-NV	Flow restrictor, adjustable	114 L/min (30 USgpm)
H1 - Hand Knob	FCV6-16-K-0-NV	Flow restrictor, adjustable	114 L/min (30 USgpm)
–	PCS3-16-0-80	Pressure compensator, spool type	114 L/min (30 USgpm)

Dimensions

mm (inch)

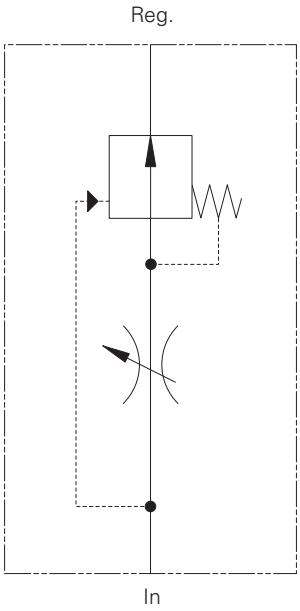




Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FC-4 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 190 L/min (50 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

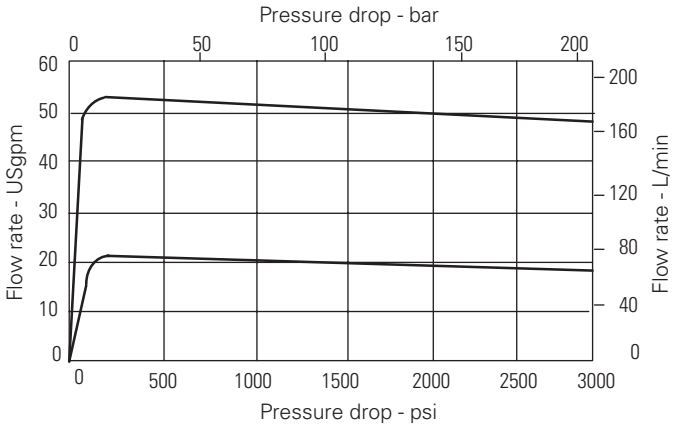
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 190 L/min (50 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package.

Pressure Characteristics



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

FC-4 - Flow control

Pressure compensated, restrictive type, full range adjustable
Up to 190 L/min (50 USgpm) • 210 bar (3000 psi)

Model code

FC	–	4	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FC - Fully adjustable pressure compensated flow control

2 Size

4 - 190 L/min (50 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
12G	1 1/4" BSPP	02-178285
20T	SAE 20	02-178286

6 Adjustment type

	Flow rate
K1 - Knob*	190 L/min (50 USgpm)

*180˚ rotation

7 Special features

00 - None

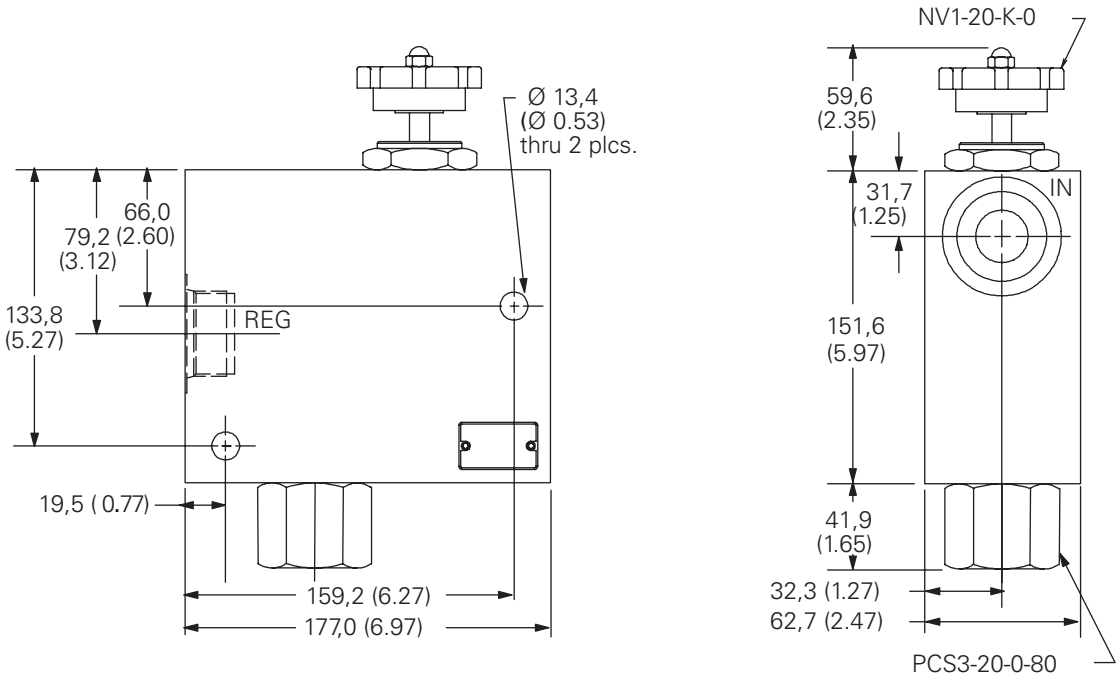
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	NV1-20-K-0	Needle Valve	190 L/min (50 USgpm)
–	PCS3-20-0-80	Pressure compensator, spool type	200 L/min (53 USgpm)

Dimensions

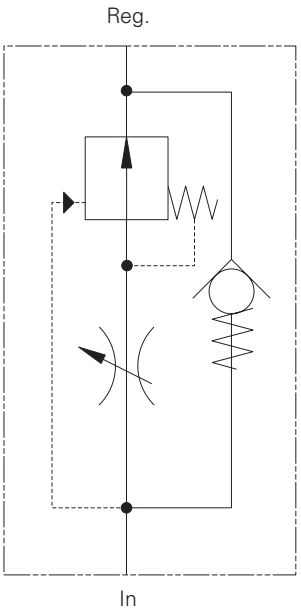
mm (inch)



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

FRC-1 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 36 L/min (9 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a hydraulic circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required. It also provides free reverse flow.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

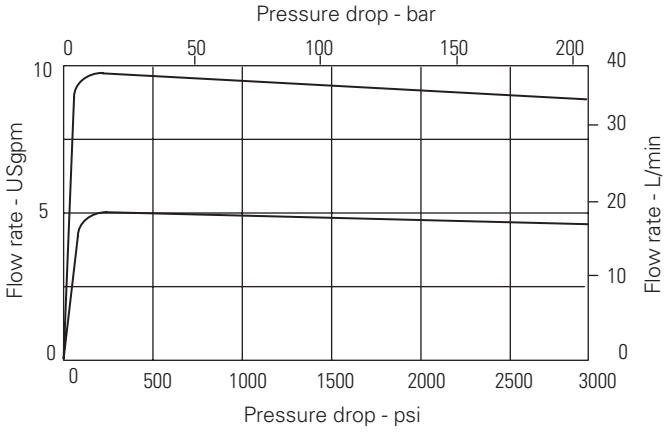
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 36 L/min (9 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package with free reverse flow.

Performance characteristics



K

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

FRC-1 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 36 L/min (9 USgpm) • 210 bar (3000 psi)

Model code

FRC	–	1	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FRC - Fully adjustable pressure compensated flow control with reverse flow check

2 Maximum rated flow

1 - 34 L/min (9 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
4G	1/2" BSPP	02-178287
8T	SAE 8	02-178288

6 Adjustment type

Adjustment type	Flow rate
K1 - Knob*	19 L/min (5 USgpm)
K2 - Knob	34 L/min (9 USgpm)
S1 - Screw	34 L/min (9 USgpm)
H1 - Handwheel	34 L/min (9 USgpm)

*180˚ rotation

7 Special features

00 - None

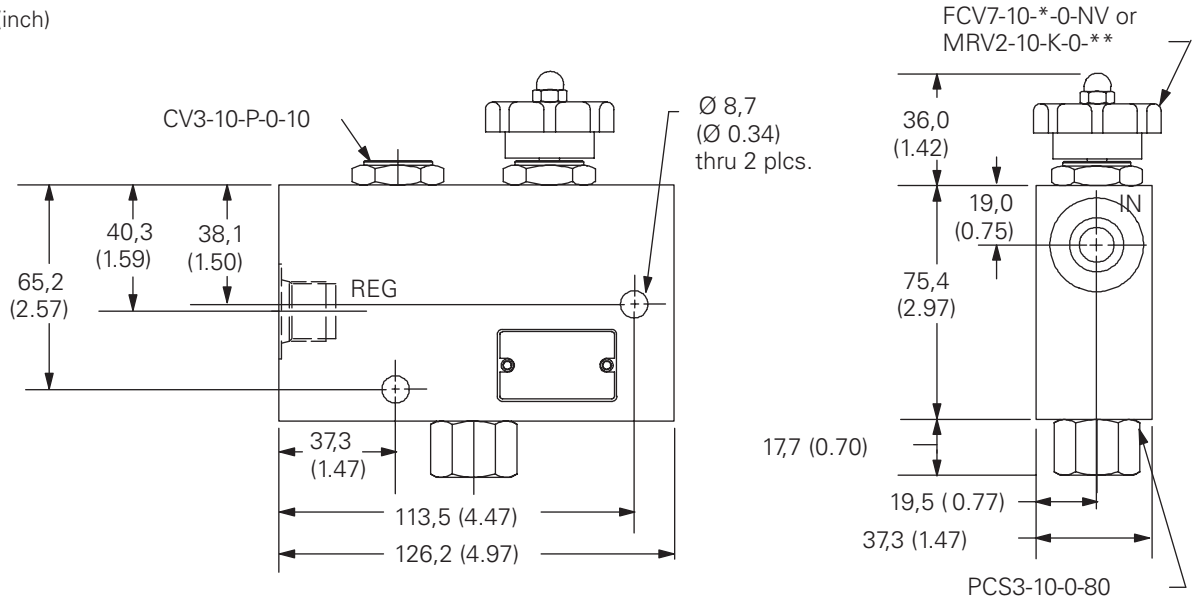
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	MRV2-10-K-0-05	Flow restrictor, adjustable, semi-rotary spool	19 L/min (5 USgpm)
K2 - Knob	MRV2-10-K-0-10	Flow restrictor, adjustable, semi-rotary spool	34 L/min (9 USgpm)
S1 - Screw	FCV7-10-S-0-NV	Flow restrictor, adjustable, needle type	34 L/min (9 USgpm)
H1 - Hand Knob	FCV7-10-K-0-NV	Flow restrictor, adjustable, needle type	34 L/min (9 USgpm)
–	CV3-10-P-0-10	Check valve	76 L/min (20 USgpm)
–	PCS3-10-0-80	Pressure compensator, spool type	40 L/min (12 USgpm)

Dimensions

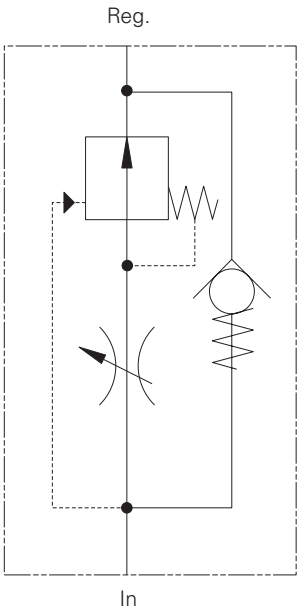
mm (inch)



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

FRC-2 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 57 L/min (15 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a hydraulic circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required. It also provides free reverse flow.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Description

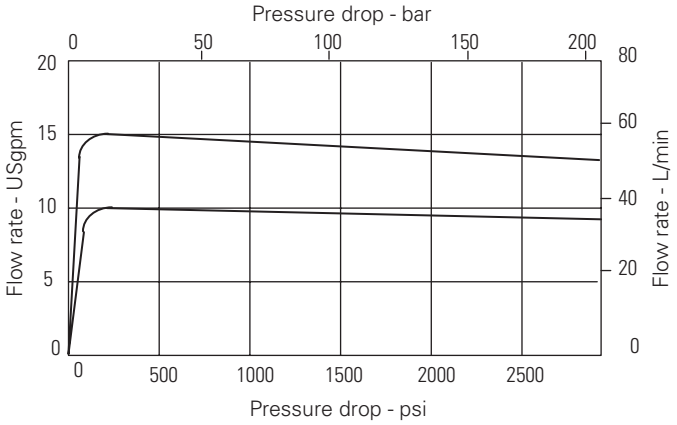
Full range adjustable restrictive pressure compensated flow control package with free reverse flow.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 57 L/min (15 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Performance characteristics



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

FRC-2 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 57 L/min (15 USgpm) • 210 bar (3000 psi)

Model code

FRC	–	2	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FRC - Fully adjustable pressure compensated flow control with reverse flow check

2 Maximum rated flow

2 - 57 L/min (15 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
6G	3/4" BSPP	02-178289
12T	SAE 12	02-178290

6 Adjustment type

	Flow rate
K1 - Knob*	38 L/min (10 USgpm)
K2 - Knob	57 L/min (15 USgpm)
S1 - Screw	57 L/min (15 USgpm)
H1 - Handwheel	57 L/min (15 USgpm)

*180˚ rotation

7 Special features

00 - None

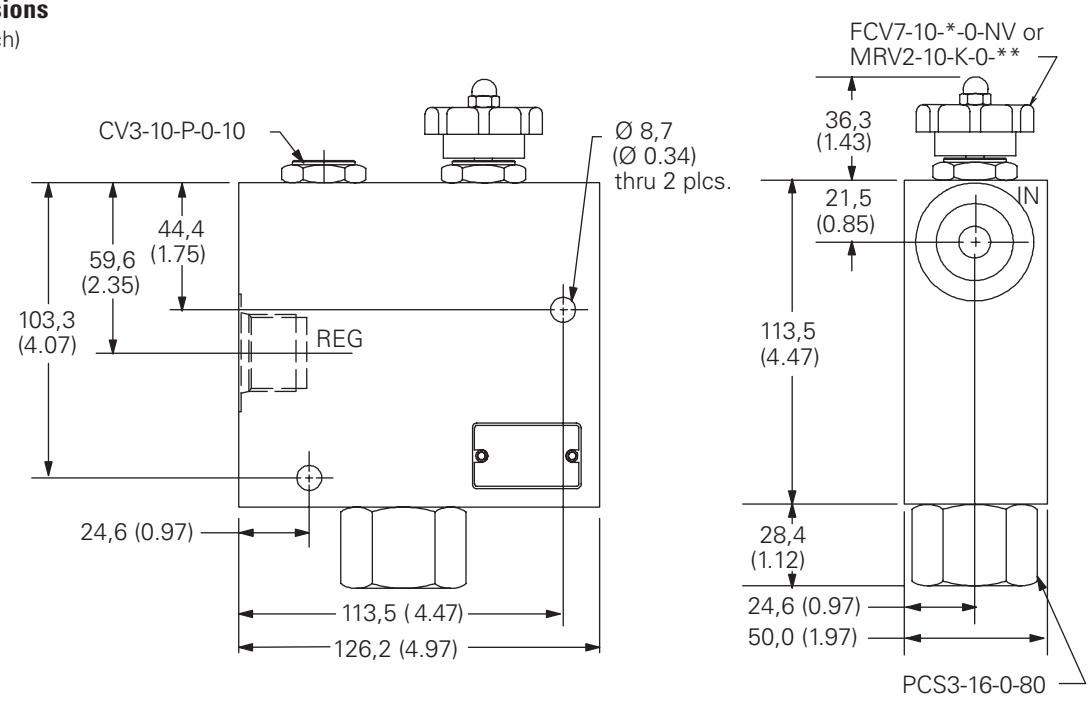
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	MRV2-10-K-0-10	Flow restrictor, adjustable, semi-rotary spool	38 L/min (10 USgpm)
K2 - Knob	MRV2-10-K-0-15	Flow restrictor, adjustable, semi-rotary spool	57 L/min (15 USgpm)
S1 - Screw	FCV7-10-S-0-NV	Flow restrictor, adjustable, needle type	57 L/min (15 USgpm)
H1 - Hand Knob	FCV7-10-K-0-NV	Flow restrictor, adjustable, needle type	57 L/min (15 USgpm)
–	CV3-10-P-0-10	Check valve	76 L/min (20 USgpm)
–	PCS3-16-0-80	Pressure compensator, spool type	114 L/min (30 USgpm)

Dimensions

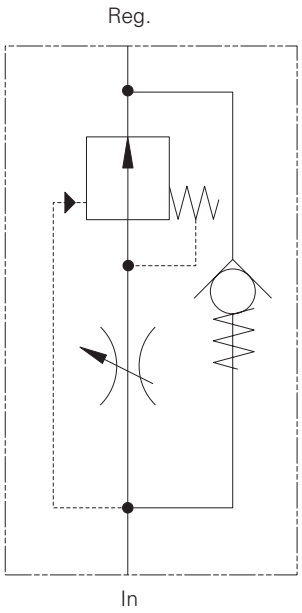
mm (inch)



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

FRC-3 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 114 L/min (30 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a hydraulic circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required. It also provides free reverse flow.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

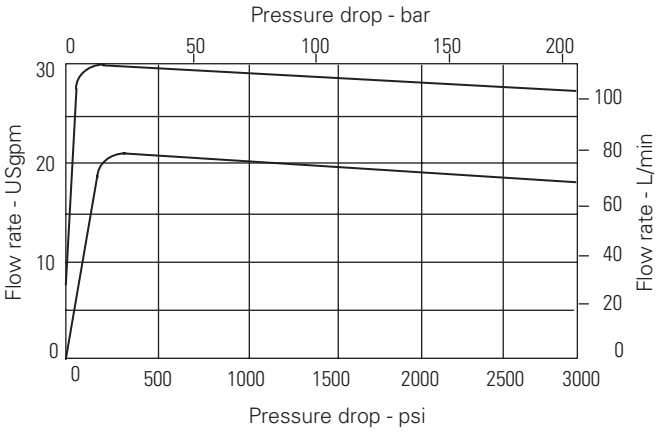
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 114 L/min (30 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package with free reverse flow.

Performance characteristics



K

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

FRC-3 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

FRC	–	3	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FRC - Fully adjustable pressure compensated flow control with reverse flow check

2 Maximum rated flow

3 - 115 L/min (30 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
8G	1" BSPP	02-178291
16T	SAE 16	02-178292

6 Adjustment type

	Flow rate
K1 - Knob*	76 L/min (20 USgpm)
K2 - Knob	114 L/min (30 USgpm)
S1 - Screw	114 L/min (30 USgpm)
H1 - Handwheel	114 L/min (30 USgpm)

*180° rotation

7 Special features

00 - None

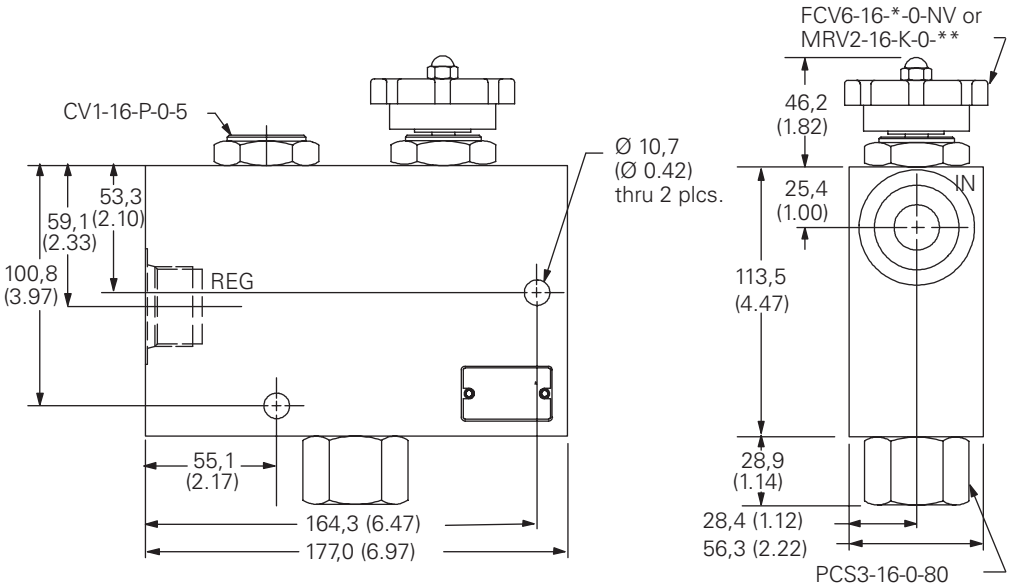
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	MRV2-16-K-0-20	Flow restrictor, adjustable, semi-rotary spool	76 L/min (20 USgpm)
K2 - Knob	MRV2-16-K-0-30	Flow restrictor, adjustable, semi-rotary spool	114 L/min (30 USgpm)
S1 - Screw	FCV6-16-S-0-NV	Flow restrictor, adjustable, needle type	114 L/min (30 USgpm)
H1 - Hand Knob	FCV6-16-K-0-NV	Flow restrictor, adjustable, needle type	114 L/min (30 USgpm)
–	CV1-16-P-0-5	Check valve	151 L/min (40 USgpm)
–	PCS3-16-0-80	Pressure compensator, spool type	114 L/min (30 USgpm)

Dimensions

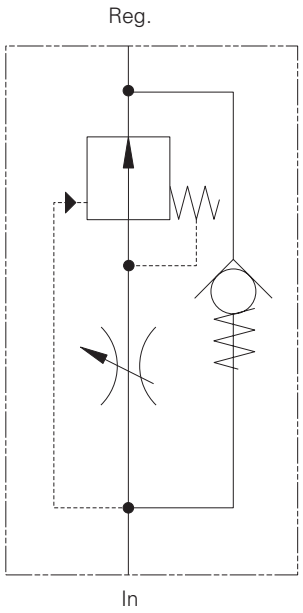
mm (inch)



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

FRC-4 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 190 L/min (50 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package is used in a hydraulic circuit where flow rates must be constantly maintained, regardless of changes in upstream or downstream pressure.

Also where a full range of flow adjustments is required. It also provides free reverse flow.

Features

Pressure compensation, full flow range adjustment, aluminum in-line type housing, Screw and knob adjustment options. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

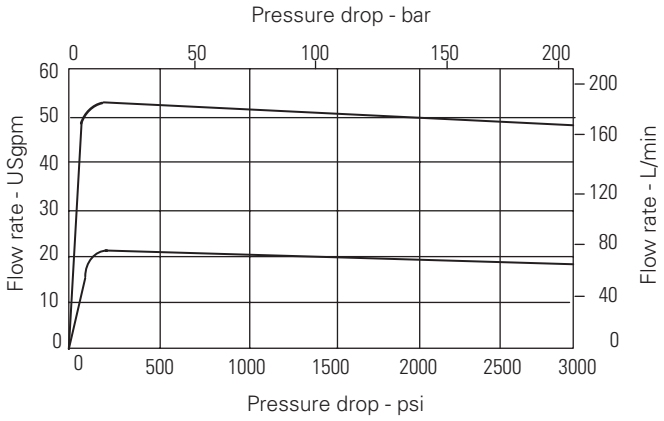
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regulated flow	Up to 190 L/min (50 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Full range adjustable restrictive pressure compensated flow control package with free reverse flow.

Performance characteristics



K

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

FRC-4 - Flow control

Pressure compensated, restrictive type, full range adjustable with reverse flow check
Up to 190 L/min (50 USgpm) • 210 bar (3000 psi)

Model code

FRC	–	4	(V)	–	A	**	–	**	–	00
1		2	3		4	5		6		7

1 Function

FRC - Fully adjustable pressure compensated flow control with reverse flow check

2 Maximum rated flow

4 - 190 L/min (50 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Valve housing material

A - Aluminum

5 Port size

Code	Port size	Housing number
12G	1 1/4" BSPP	02-178293
20T	SAE 20	02-178294

6 Adjustment type

	Flow rate
K1 - Knob*	190 L/min (50 USgpm)

*180° rotation

7 Special features

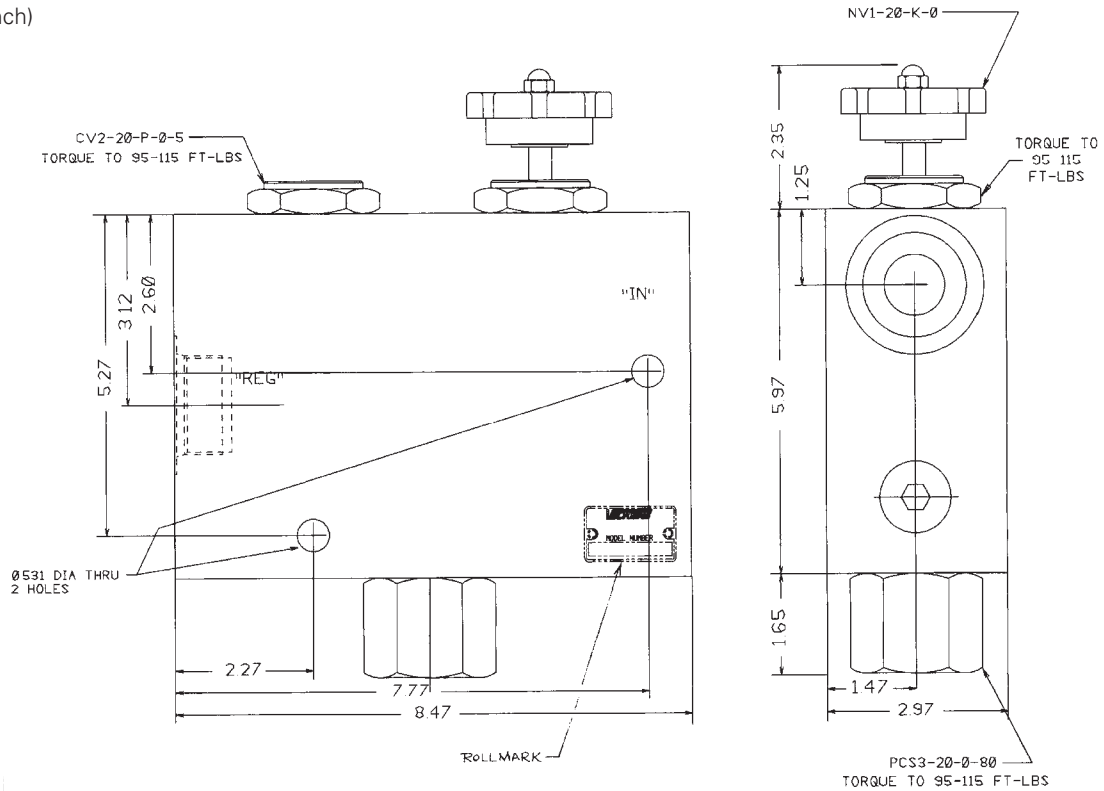
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Adjustment	Cartridge	Description	Maximum flow
K1 - Knob	NV1-20-K-0	Needle valve	190 L/min (50 USgpm)
–	CV2-20-P-0-5	Check valve	220 L/min (60 USgpm)
–	PCS3-20-0-80	Pressure compensator, spool type	200 L/min (53 USgpm)

Dimensions

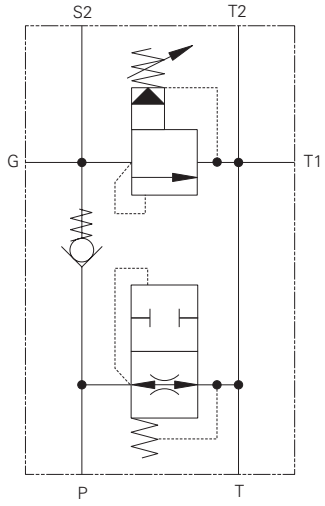
mm (inch)



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

PCC1-12 - Pump control

Single pump circuits
Up to 114 L/min (30 USgpm) • 5-210 bar (75-3000 psi)



Operation

This standard valve package is used for air-bleed and start-up in single pump power units. It also provides main system relief protection.

Features

Multiple tank ports for mounting convenience, direct reservoir mounting capability by using T port. Both T port and mounting holes have O-ring seals mounting surface.

Aluminum in-line type housing, Tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

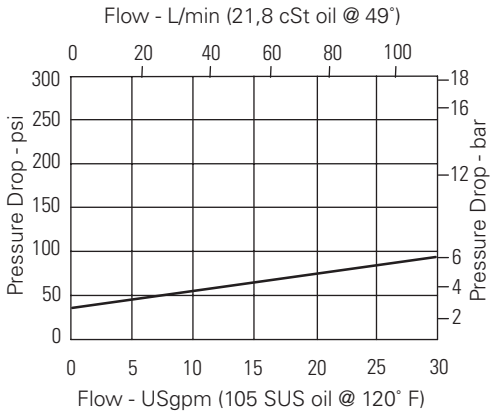
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range (all ports)	5-210 bar (75-3000 psi)
Maximum regulated flow	Up to 114 L/min (30 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

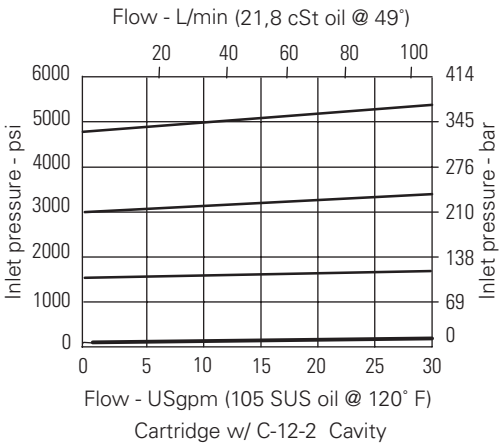
Description

Pump control manifold for single pump circuits.

Pressure drop



Pressure override



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

PCC1-12 - Pump control

Single pump circuits
Up to 114 L/min (30 USgpm) • 5-210 bar (75-3000 psi)

Model code

PCC1	–	12	(V)	–	*	–	A	**	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function
PCC1 - Pump control for single pump circuits

2 Size
12 - 12 size

3 Seal material
Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Relief control
C - Cap
K - Knob
S - Screw

5 Valve housing material
A - Aluminum

6 Port size

Code	P, SYS, T2	T1	Gauge
6G	3/4" BSPP	1/2" BSPP	1/4" BSPP
12T	SAE 12	SAE 8	SAE 4

7 Pressure range
Note: Code based on pressure in psi.
15 - 5-100 bar (75-1500 psi)
30 - 10-210 bar (150-3000 psi)

8 Pressure setting -
user requested in 50 psi steps. Example:
10 - 1000 psi
10.5 - 1050 psi

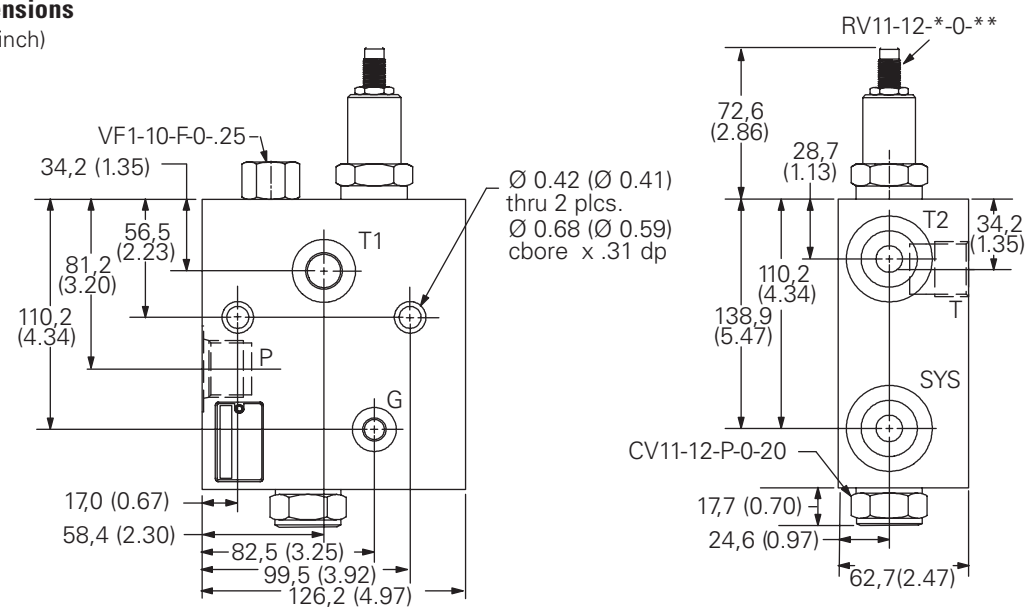
9 Special features
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Maximum flow	Quantity
VF1-10-F-0-.25	Velocity fuse	23 L/min (6 USgpm)	1
CV11-12-P-0-20	Check valve	113 L/min (30 USgpm)	1
RV11-12-*-0-**	Relief valve	113 L/min (30 USgpm)	1

Dimensions

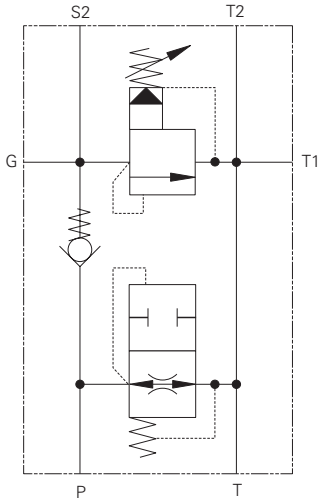
mm (inch)



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

PCC1-16 - Pump control

Single pump circuits
Up to 228 L/min (60 USgpm) • 10-210 bar (150-3000 psi)



Operation

This standard valve package is used for air-bleed and start-up in single pump power units. It also provides main system relief protection.

Features

Multiple tank ports for mounting convenience, direct reservoir mounting capability by using T port. Both T port and mounting holes have O-ring seals mounting surface.

Aluminum in-line type housing, Tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

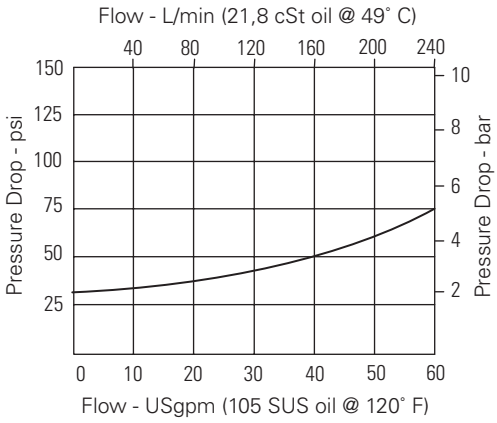
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range (all ports)	10-210 bar (150-3000 psi)
Maximum regulated flow	Up to 228 L/min (60 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

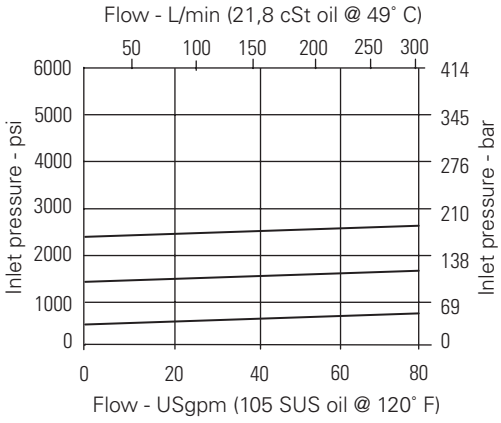
Description

Pump control manifold for single pump circuits.

Pressure drop



Pressure override



K

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

Model code

PCC1	–	16	(V)	–	*	–	A	**	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function

PCC1 - Pump control for single pump circuits

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control

C - Cap
K - Knob
S - Screw

5 Valve housing material

A - Aluminum

6 Port size

Code	P, SYS, T2	T1	Gauge
8G	1" BSPP	3/4" BSPP	1/4" BSPP
16T	SAE 16	SAE 8	SAE 4

7 Pressure range

Note: Code based on pressure in psi.

30 - 10-210 bar (150-3000 psi)

8 Pressure setting -

user requested in 50 psi steps.
Example:
10 - 1000 psi
10.5 - 1050 psi

9 Special features

00 - None

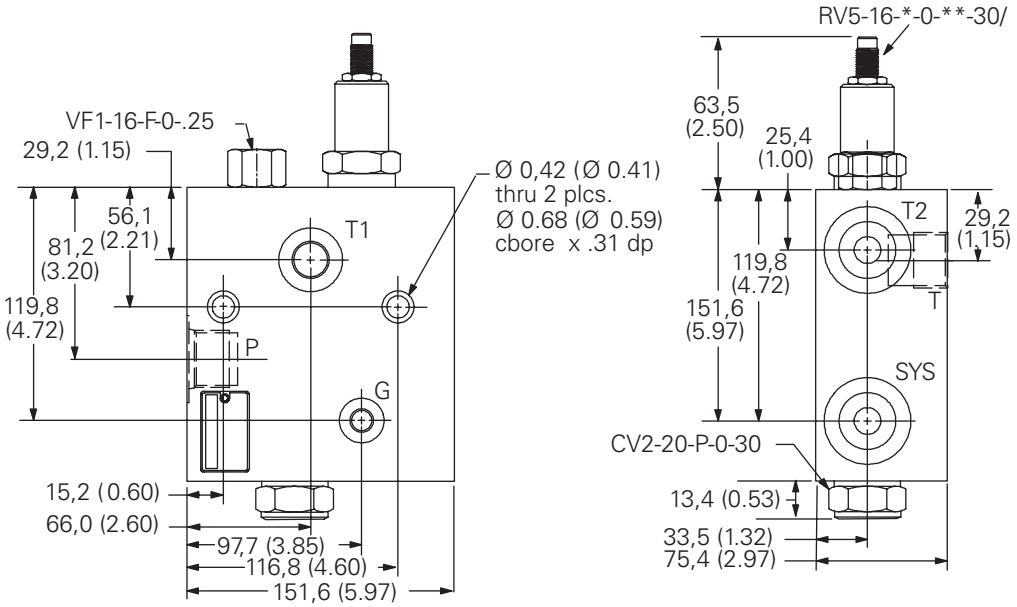
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Maximum flow	Quantity
VF1-10-F-0-.25	Velocity fuse	23 L/min (6 USgpm)	1
CV2-20-P-0-30	Check valve	228 L/min (60 USgpm)	1
RV5-16-*-0-30	Relief valve	303 L/min (80 USgpm)	1

Dimensions

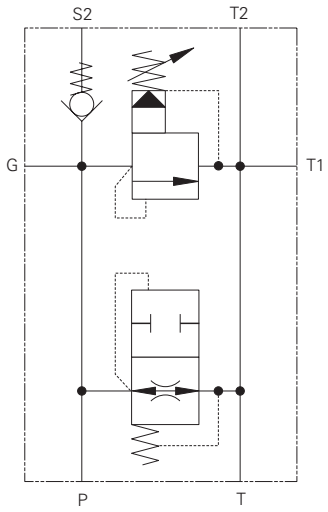
mm (inch)



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

PCC2-12 - Pump control

Multiple pump circuits
Up to 114 L/min (30 USgpm) • 5-210 bar (75-3000 psi)



Operation

This standard valve package is used to provide air-bleed, start-up and relief protection for each pump in multiple pump circuits. The check valve position in the circuit isolates the other pumps from the valve assembly.

Features

Individual relief pressure setting for each pump in the system, multiple tank ports for mounting convenience, direct reservoir mounting capability by using T port. Both T port and mounting holes have O-ring seals mounting surface.

Aluminum in-line type housing, tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

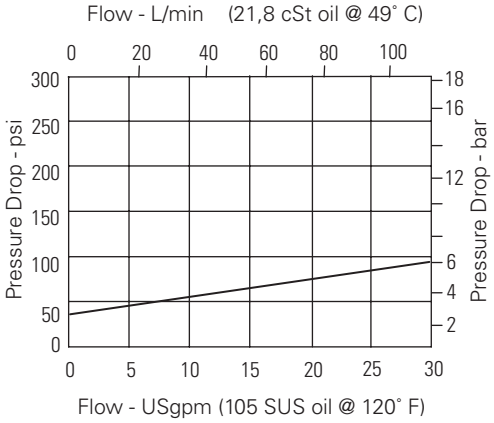
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range (all ports)	5 - 210 bar (75 - 3000 psi)
Maximum regulated flow	Up to 114 L/min (30 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

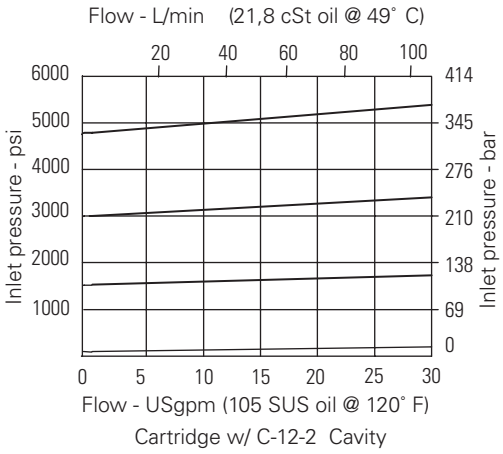
Description

Pump control manifold for multiple pump circuits.

Pressure drop



Pressure override



K

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

PCC2-12 - Pump control

Multiple pump circuits
Up to 114 L/min (30 USgpm) • 5-210 bar (75-3000 psi)

Model code

PCC2	–	12	(V)	–	*	–	A	**	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function

PCC2 - Pump control for single pump circuits

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control

C - Cap
K - Knob
S - Screw

5 Valve housing material

A - Aluminum

6 Port size

Code	P, SYS, T2	T1	Gauge
6G	3/4" BSPP	1/2" BSPP	1/4" BSPP
12T	SAE 12	SAE 8	SAE 4

7 Pressure range

Note: Code based on pressure in psi.

15 - 5-100 bar (75-1500 psi)
30 - 10-210 bar (150-3000 psi)

8 Pressure setting -

user requested in 50 psi steps. Example:

10 - 1000 psi
10.5 - 1050 psi

9 Special features

00 - None

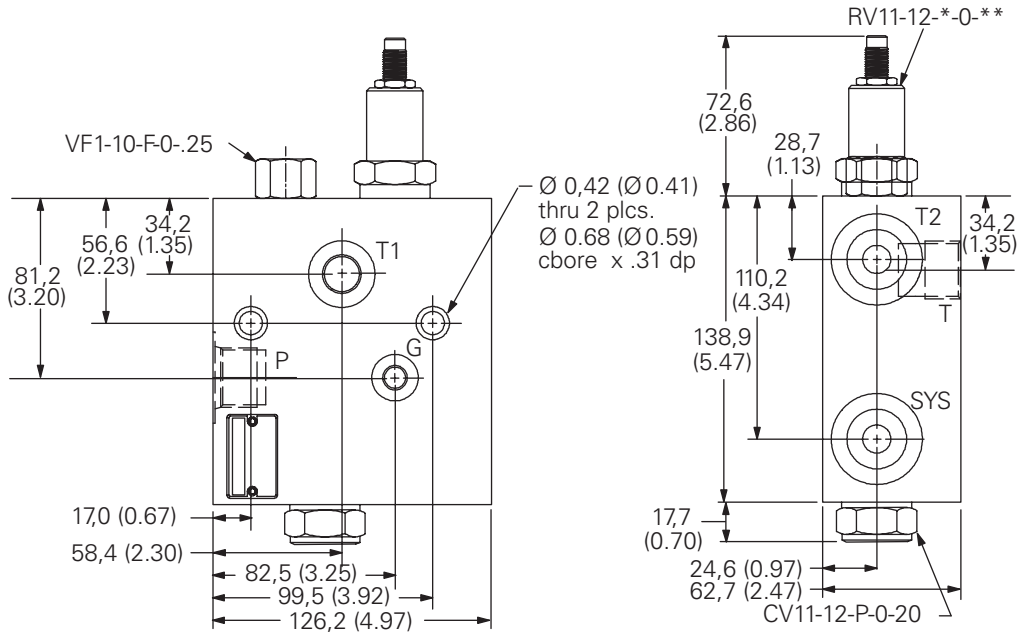
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Maximum flow	Quantity
VF1-10-F-0-.25	Velocity fuse	23 L/min (6 USgpm)	1
CV11-12-P-0-20	Check valve	113 L/min (30 USgpm)	1
RV11-12-*-0-**/	Relief valve	113 L/min (30 USgpm)	1

Dimensions

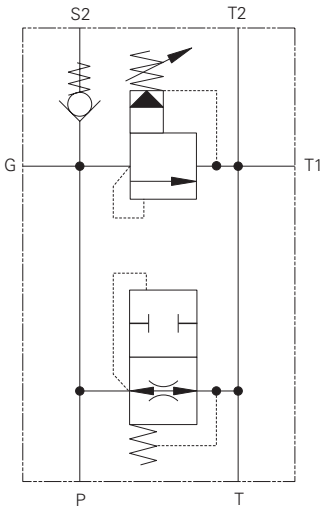
mm (inch)



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

PCC2-16 - Pump control

Multiple pump circuits
Up to 228 L/min (60 USgpm) • 10-210 bar (150-3000 psi)



Operation

This standard valve package is used to provide air-bleed, start-up and relief protection for each pump in multiple pump circuits. The check valve position in the circuit isolates the other pumps from the valve assembly.

Features

Individual relief pressure setting for each pump in the system, multiple tank ports for mounting convenience, direct reservoir mounting capability by using T port. Both T port and mounting holes have O-ring seals mounting surface.

Aluminum in-line type housing, tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

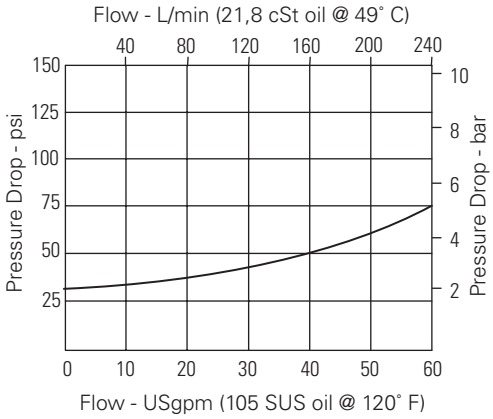
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range (all ports)	10-210 bar (150-3000 psi)
Maximum regulated flow	Up to 228 L/min (60 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

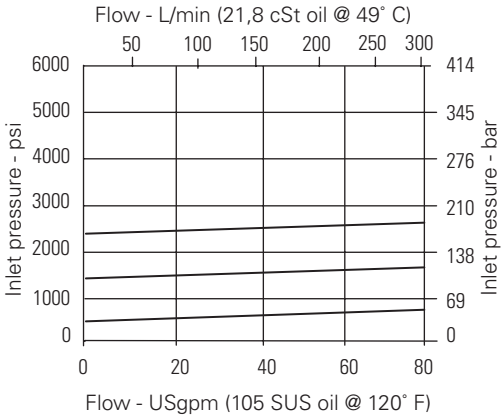
Description

Pump control manifold for multiple pump circuits.

Pressure drop



Pressure override



K

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

PCC2-16 - Pump control

Multiple pump circuits
Up to 228 L/min (60 USgpm) • 10-210 bar (150-3000 psi)

Model code

PCC2	16	(V)	*	A	**	**	/	**	00
1	2	3	4	5	6	7		8	9

1 Function
PCC2 - Pump control for single pump circuits

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Relief control
C - Cap
K - Knob
S - Screw

5 Valve housing material
A - Aluminum

6 Port size

Code	P, SYS, T2	T1	Gauge
8G	1" BSPP	3/4" BSPP	1/4" BSPP
16T	SAE 16	SAE 12	SAE 4

7 Pressure range
Note: Code based on pressure in psi.
30 - 10-210 bar (150-3000 psi)

8 Pressure setting -
user requested in 50 psi steps. Example:
10 - 1000 psi
10.5 - 1050 psi

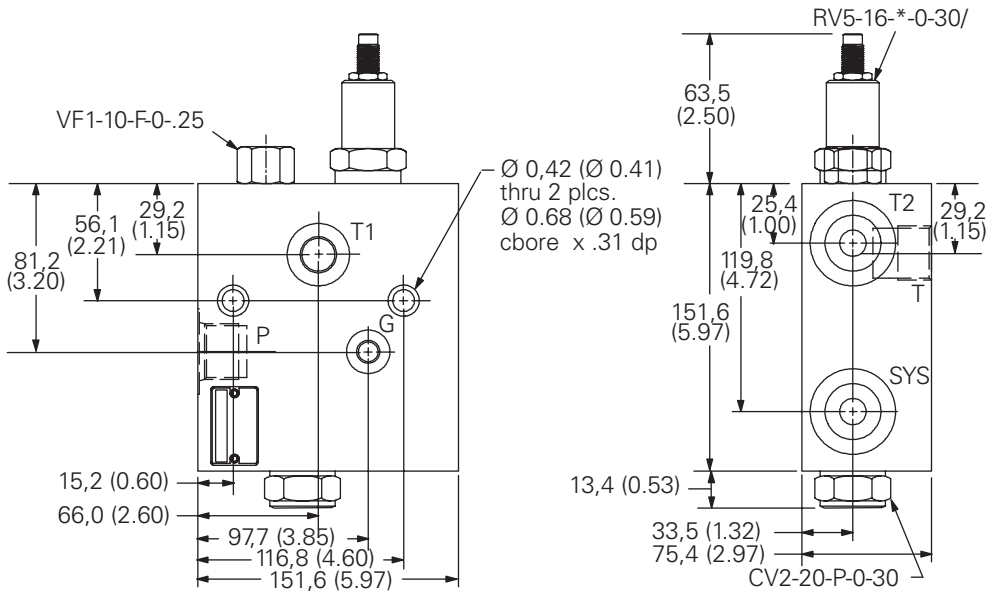
9 Special features
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Maximum flow	Quantity
VF1-10-F-0-.25	Velocity fuse	23 L/min (6 USgpm)	1
CV2-20-P-0-30	Check valve	228 L/min (60 USgpm)	1
RV5-16-*-0-30/	Relief valve	303 L/min (80 USgpm)	1

Dimensions

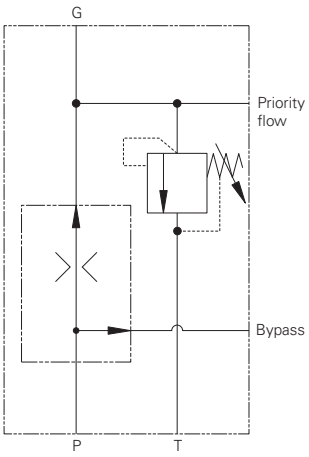
mm (inch)



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

PFRR-8 - Flow control

Pressure compensated, priority type, with relief on priority flow
15 L/min (4 USgpm) • 7-210 bar (100-3000 psi)



Operation

This standard valve package is used to maintain constant flow to priority circuits when input flow is greater than required, regardless of changes in upstream or downstream pressure. It will bypass the rest of the flow to an auxiliary circuit or to tank.

Relief valve on a priority port limits pressure on a priority port, as well as ensures bypass flow when there is no demand on priority circuit.

Features

Priority flow pressure compensation, all ports except T can be pressurized to 210 bar (3000 psi). Aluminum in-line type housing, tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

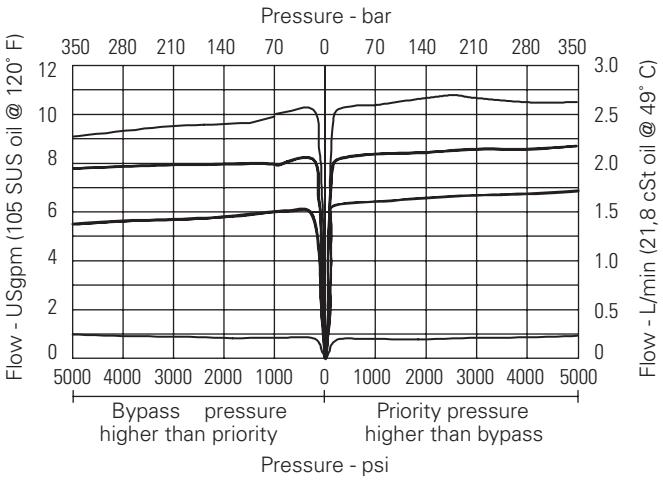
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range	7-210 bar (100-3000 psi)
Maximum inlet flow	15 L/min (4 USgpm)
Regulated flow range	0.4-8 L/min (0.1-2.5 USgpm)
Internal leakage	82 cm^3/min (5 in^3/min) max @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Fixed priority flow control with relief on priority flow port.

Typical flow regulation



K

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

PFRR-8 - Flow control

Pressure compensated, priority type, with relief on priority flow
15 L/min (4 USgpm) • 7-210 bar (100-3000 psi)

Model code

PFRR	–	8	(V)	–	*	–	A	**	–	**	/	**	–	**	–	00
1		2	3		4		5	6		7		8		9		10

1 Function

PFRR - Pressure compensated priority flow control with relief on priority port

2 Size

8 - 8 size

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control

C - Cap
K - Knob
S - Screw

5 Valve housing material

A - Aluminum

6 Port size

Code	P, Bypass	Priority, T	Gauge	Housing number
3G	3/8" BSPP	3/8" BSPP	1/4" BSPP	02-178273
8T	SAE 8	SAE 8	SAE 4	02-178274

7 Pressure range

Note: Code based on pressure in psi.

3 - 3-20 bar (50-300 psi)
20 - 40-140 bar (600-2000 psi)
36 - 20-250 bar (300-3600 psi)

8 Pressure setting -

user requested in 50 psi steps.
Example:
10 - 1000 psi
10.5 - 1050 psi

9 Flow setting

Customer must specify flow:
0.4 - 8L/min (0.1 - 2.5 USgpm)

10 Special features

00 - None

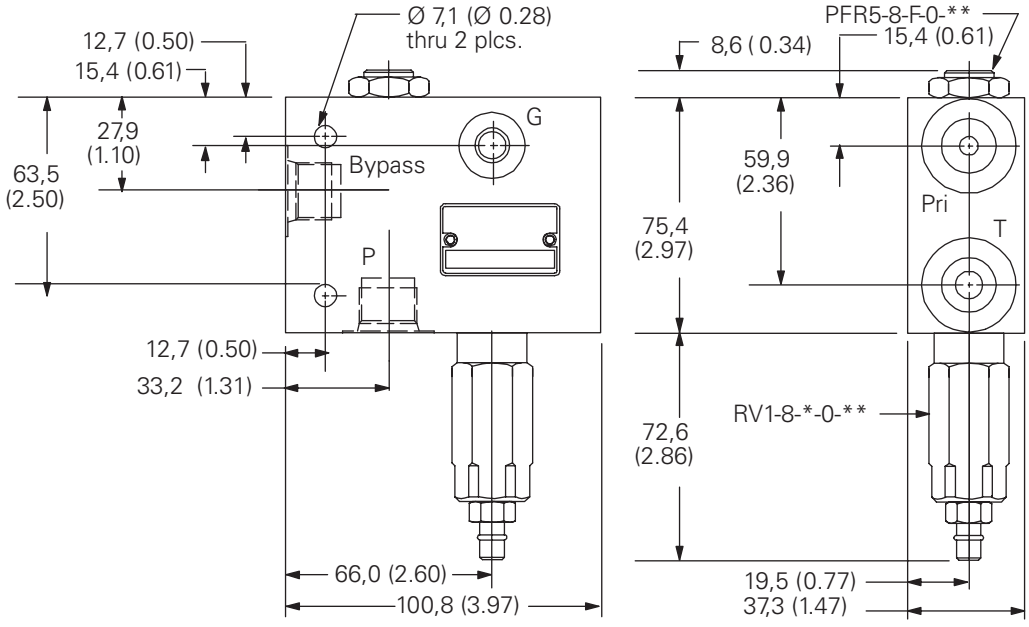
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
PFR5-8-F-0-**	Priority flow regulator	1
RV1-8-*-0-**	Relief valve	1

Dimensions

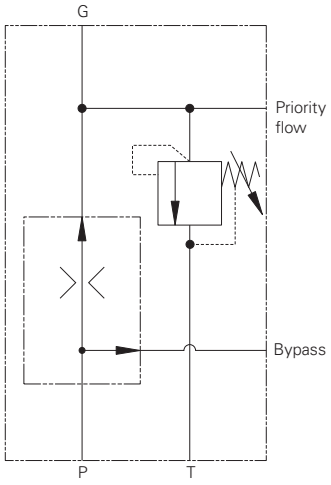
mm (inch)



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

PFRR-10 - Flow control

Pressure compensated, priority type, with relief on priority flow
Up to 57 L/min (15 USgpm) • 7-210 bar (100-3000 psi)



Operation

This standard valve package is used to maintain constant flow to priority circuits when input flow is greater than required, regardless of changes in upstream or downstream pressure. It will bypass the rest of the flow to an auxiliary circuit or to tank.

Relief valve on a priority port limits pressure on a priority port, as well as ensures bypass flow when there is no demand on priority circuit.

Features

Priority flow pressure compensation, all ports except T can be pressurized to 210 bar (3000 psi). Aluminum in-line type housing, tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

Ratings and specifications

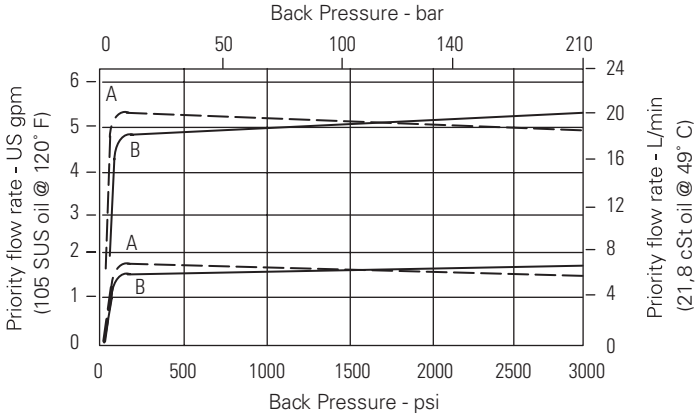
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range	7-210 bar (100-3000 psi)
Maximum inlet flow	57 L/min (15 USgpm)
Regulated flow range	0.38-22.7 L/min (0.1-6 USgpm)
Internal leakage	82 cm^3/min (5 in^3/min) max @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Fixed priority flow control with relief on priority flow port.

Typical flow regulation

A - Port 3, priority (regulated) outlet pressurized
B - Port 2, bypass outlet pressurized



K

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

PFRR-10 - Flow control

Pressure compensated, priority type, with relief on priority flow
Up to 57 L/min (15 USgpm) • 7-210 bar (100-3000 psi)

Model code

PFRR	–	10	(V)	–	*	–	A	**	–	**	/	**	–	**	–	00
1		2	3		4		5	6		7		8		9		10

1 Function
PFRR - Pressure compensated priority flow control with relief on priority port

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control
C - Cap
K - Knob
S - Screw

5 Valve housing material
A - Aluminum

7 Pressure range
Note: Code based on pressure in psi.

3 - 3-20 bar (50-300 psi)
20 - 7-140 bar (100-2000 psi)
35 - 17-240 bar (250-3500 psi)

8 Pressure setting -
user requested in 50 psi steps. Example:

10 - 1000 psi
10.5 - 1050 psi

9 Flow setting
Customer must specify flow: 0.38 - 22.7L/min (0.1 - 6 USgpm)

10 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

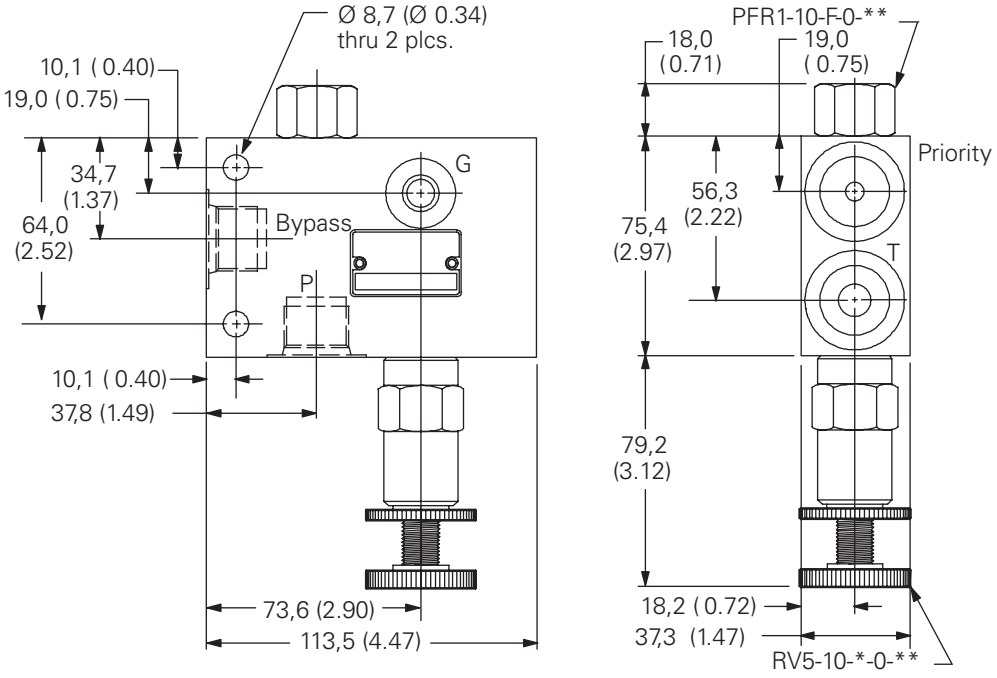
6 Port size

Code	P, Bypass	Priority, T	Gauge	Housing number
4G	3/8" BSPP	1/2" BSPP	1/4" BSPP	02-178275
10T	SAE 8	SAE 8	SAE 4	02-178276

Composition chart

Cartridge	Description	Quantity
PFR1-10-F-0-**	Priority flow regulator	1
RV5-10-*-0-35/	Relief valve	1

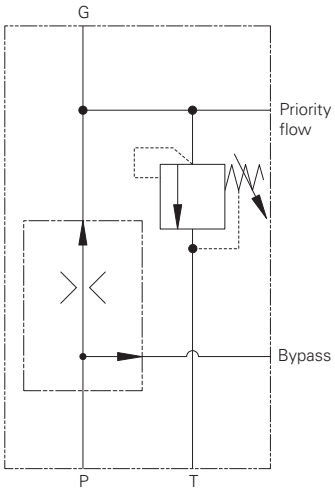
Dimensions
mm (inch)



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

PFRR-16 - Flow control

Pressure compensated, priority type, with relief on priority flow
152 L/min (40 USgpm) • 7-210 bar (100-3000 psi)



Operation

This standard valve package is used to maintain constant flow to priority circuits when input flow is greater than required, regardless of changes in upstream or downstream pressure. It will bypass the rest of the flow to an auxiliary circuit or to tank.

Relief valve on a priority port limits pressure on a priority port, as well as ensures bypass flow when there is no demand on priority circuit.

Features

Priority flow pressure compensation, all ports except T can be pressurized to 210 bar (3000 psi). Aluminum in-line type housing, tamper proof and adjustable relief options, gauge port. All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

Ratings and specifications

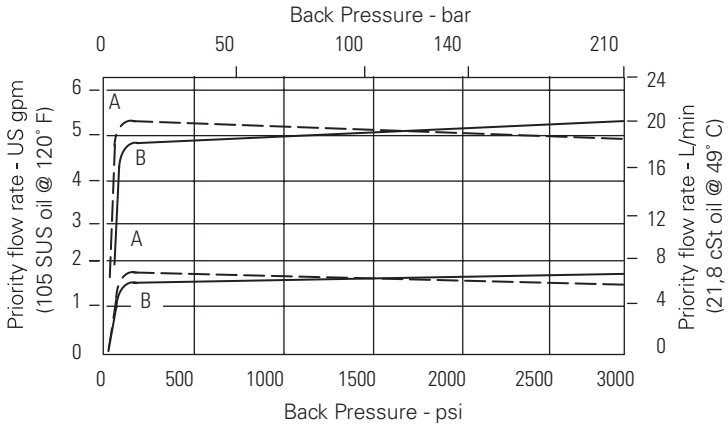
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure range	7-210 bar (100-3000 psi)
Maximum inlet flow	152 L/min (40 USgpm)
Regulated flow range	1.9-113 L/min (0.5-30 USgpm)
Internal leakage	82 cm^3/min (5 in^3/min) max @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Reseat pressure	90% of crack pressure
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Fixed priority flow control with relief on priority flow port.

Typical flow regulation

A - Port 3, priority (regulated) outlet pressurized
B - Port 2, bypass outlet pressurized



K

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

PFRR-16 - Flow control

Pressure compensated, priority type, with relief on priority flow
152 L/min (40 USgpm) • 7-210 bar (100-3000 psi)

Model code

PFRR	–	16	(V)	–	*	–	A	**	–	**	/	**	–	**	–	00
1		2	3		4		5	6		7		8		9		10

1 Function

PFRR - Pressure compensated priority flow control with relief on priority port

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control

C - Cap
K - Knob
S - Screw

5 Valve housing material

A - Aluminum

6 Port size

Code	P, Bypass	Priority, T	Gauge	Housing number
8G	1" BSPP	3/4" BSPP	1/4" BSPP	02-178277
16T	SAE 16	SAE 12	SAE 4	02-178278

7 Pressure range

Note: Code based on pressure in psi.

3 - 3-20 bar (50-300 psi)
20 - 7-140 bar (100-2000 psi)
35 - 17-240 bar (250-3500 psi)

8 Pressure setting -

user requested in 50 psi steps. Example:

10 - 1000 psi
10.5 - 1050 psi

9 Flow setting

Customer must specify flow: 0.38 - 22.7L/min (0.1 - 6 USgpm)

10 Special features

00 - None

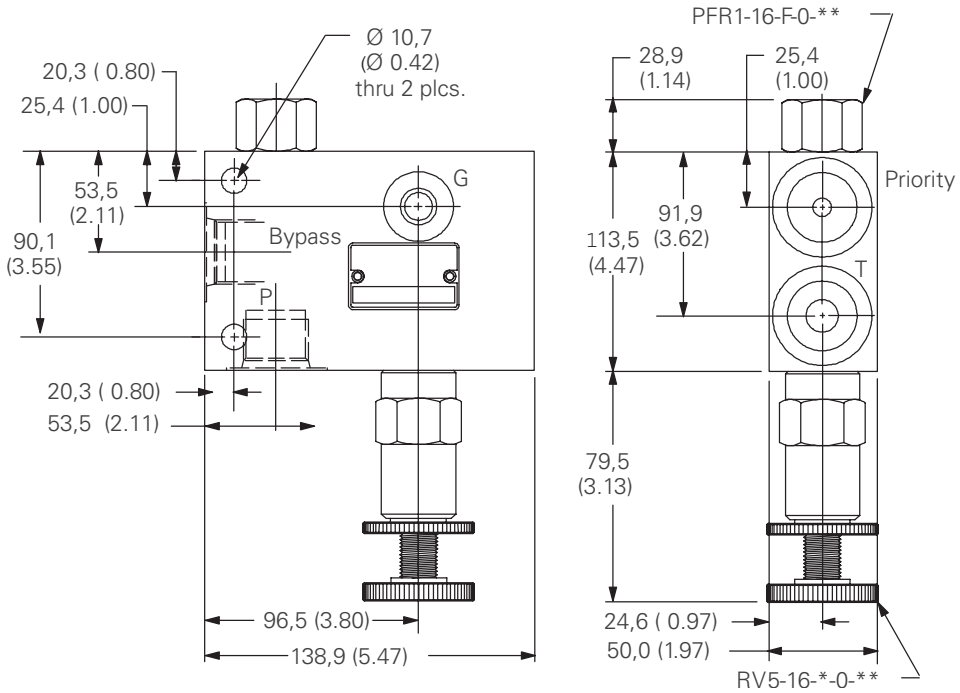
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
PFR1-16-F-0-**	Priority flow regulator	1
RV5-10-*-0-**/**	Relief valve	1

Dimensions

mm (inch)

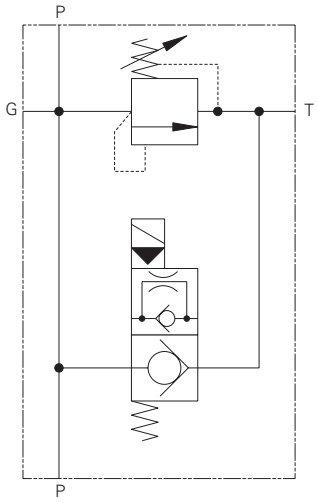


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

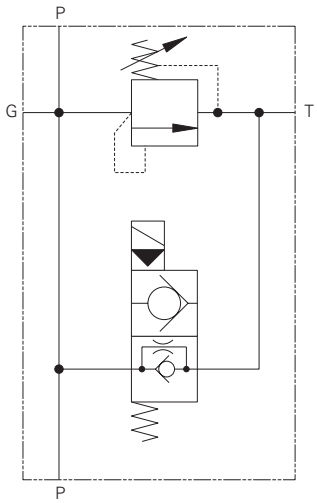
SRV-8 - Unloading/relief valve

Normally open or normally closed
23 L/min (6 USgpm) • 210 bar (3000 psi)

Normally Closed Version



Normally Open Version



Operation

This standard valve package is designed for pump unloading via solenoid valve activation and pump relief, when the solenoid valve is not activated and system pressure reaches relief valve setting.

Features

Normally closed and normally open options, tamper proof or adjustable relief options. Low power requirements, gauge port. Aluminum in-line type housing, number of voltage and connector options.

All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

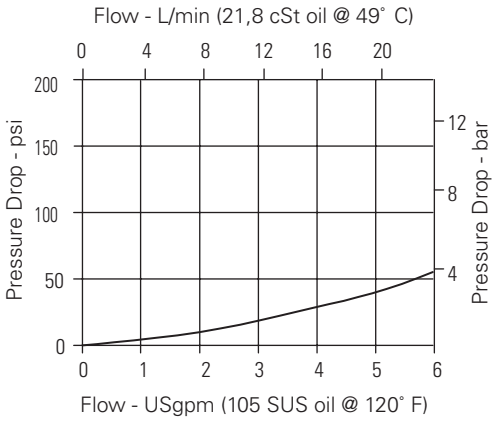
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Flow rating	23 L/min (6 USgpm)
Internal leakage	5 drops/min @ 80% of crack pressure
Reseat pressure	80% of crack pressure
Typical vented ΔP	4 bar (60 psi) at rated flow
Coil specifications	Power requirements: 16 watts Coil duty: Continuous from 85% to 110% of nominal voltage (AC coils are internally rectified)
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

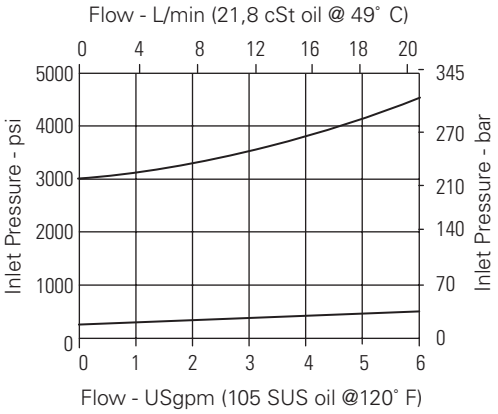
Description

Solenoid actuated relief valve.

Pressure drop (unloading)



Pressure override



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

SRV-8 - Unloading/relief valve

Normally open or normally closed
23 L/min (6 USgpm) • 210 bar (3000 psi)

Model code

SRV – 8 (V) – * – * – A ** – ** / *** – ** – 00

1 2 3 4 5 6 7 8 9 10 11

1 Function
SRV - Solenoid actuated relief valve

2 Size
8 - 8 size

3 Seal material
Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Type
C - Normally closed
O - Normally open

5 Relief control
P - leakproof screw adjustment
R - Handknob adjustment
G - Tamperproof cap (See page E-7 for dimensions)

6 Valve housing material
A - Aluminum

7 Port size

Code	P, T	Gauge	Housing number
3G	3/8" BSPP	1/4" BSPP	02-178306
8T	SAE 8	SAE 4	02-178307

8 Relief Pressure range
Note: Code based on pressure in psi.
10 - 7-100 bar (100-1450 psi)
20 - 35 - 210 bar (500-3000 psi)

9 Voltage rating
12D - 12 VDC
24D - 24 VDC
120A - 120 VAC
240A - 240 VAC

10 Connector types
GS - ISO 4400 DIN 43650 connector
PS - 1/2" NPT conduit
WS - Lead wire

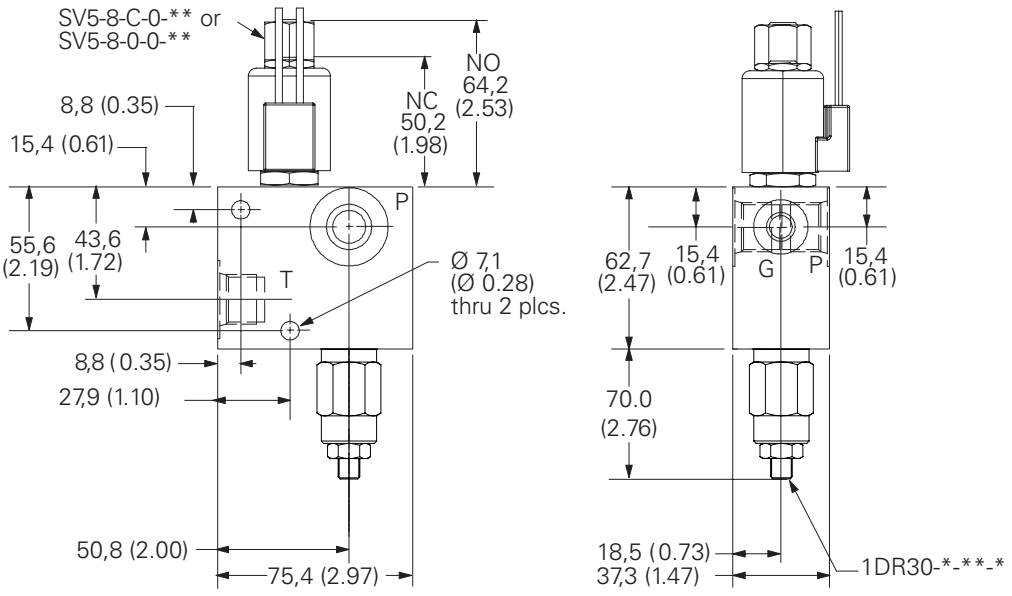
11 Special features
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
SV5-8-0-0-**	2 way/2 position N.O. poppet solenoid valve	1
SV5-8-C-0-**	2 way/2 position N.C. poppet solenoid valve	1
1DR30-*-**-*	Relief valve, direct acting	1

Dimensions

mm (inch)

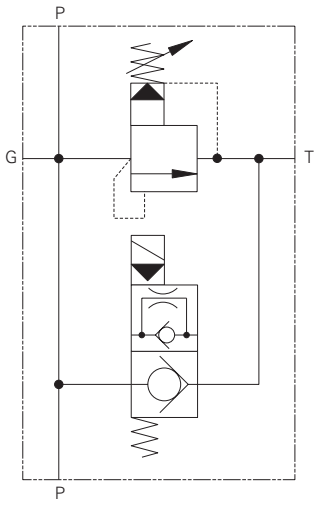


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

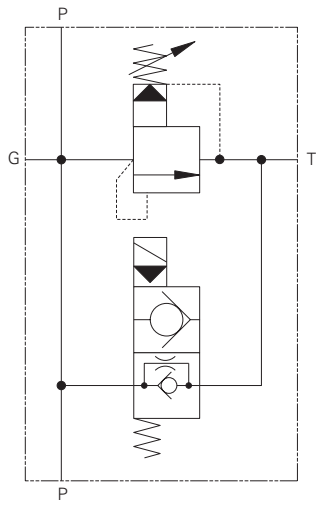
SRV-10 - Unloading/relief valve

Normally open or normally closed
57 L/min (15 USgpm) • 210 bar (3000 psi)

Normally closed version



Normally open version



Operation

This standard valve package is designed for pump unloading via solenoid valve activation and pump relief, when the solenoid valve is not activated and system pressure reaches relief valve setting.

Features

Normally closed and normally open options, tamper proof or adjustable relief options. Low power requirements, gauge port. Aluminum in-line type housing, number of voltage and connector options.

All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

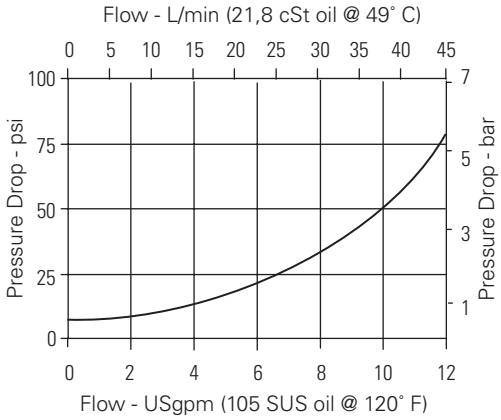
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Flow rating	57 L/min (15 USgpm)
Internal leakage	80 cm³/min (5 in³/min) @ 210 bar (3000 psi)
Reseat pressure	80% of crack pressure
Typical vented ΔP	7 bar (100 psi) at rated flow
Coil specifications	Power requirements: 18 watts Coil duty: continuous from 85% to 110% of nominal voltage (AC coils are internally rectified)
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

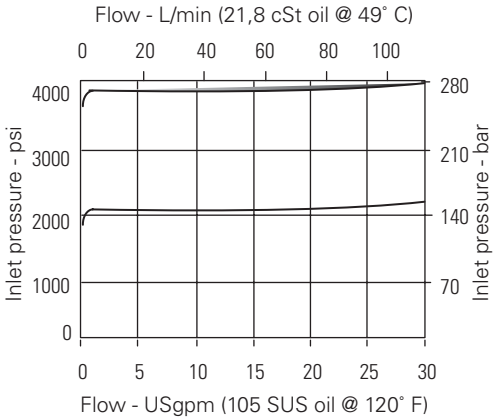
Description

Solenoid actuated relief valve.

Pressure drop (unloading)



Pressure override



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

SRV-10 - Unloading/relief valve

Normally open or normally closed
57 L/min (15 USgpm) • 210 bar (3000 psi)

Model code

SRV	_	10	(V)	_	*	_	*	_	A	**	_	**	/	***	_	**	_	00
1		2	3		4		5		6	7		8		9		10		11

1 Function
SRV - Solenoid actuated relief valve

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Type
C - Normally closed
O - Normally open

5 Relief control
C - Cap
K - Knob
S - Screw

6 Valve housing material
A - Aluminum

8 Relief Pressure range
Note: Code based on pressure in psi.
3 - 3-20 bar (50-300 psi)
35 -17-240 bar (250-300 psi)

9 Voltage rating
12D - 12 VDC
24D - 24 VDC
115A - 115 VAC
230A - 230 VAC

10 Connector types
G - ISO 4400 DIN 43650 connector
P - 1/2" NPT conduit
W - Leadwire

11 Special features
00 - None
(Only required if valve has special features, omitted if "00".)

7 Port size

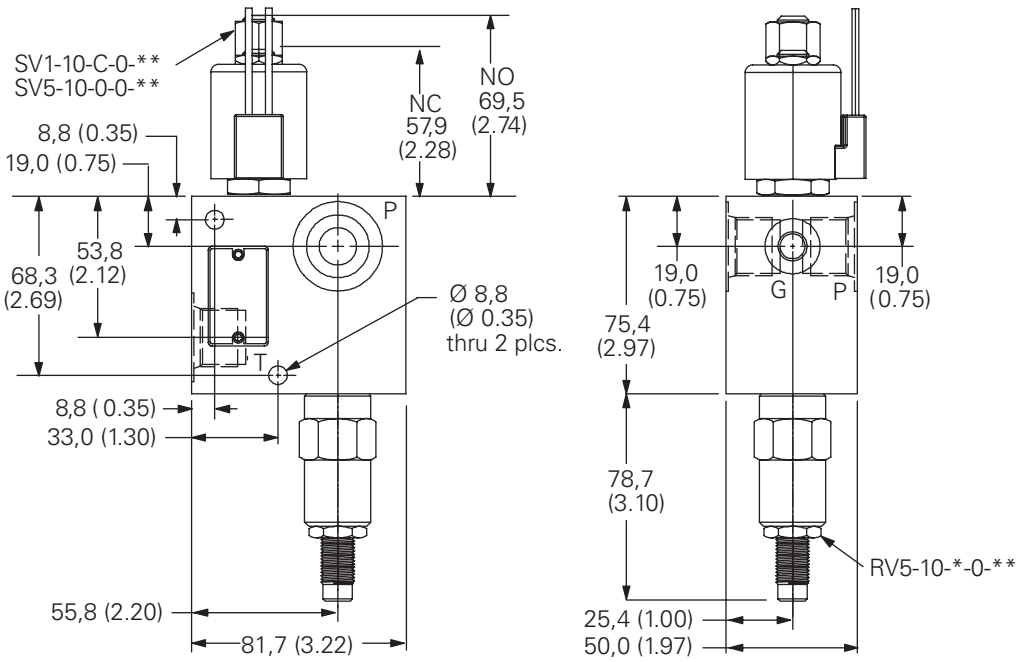
Code	P, T	Gauge	Housing number
4G	1/2" BSPP	1/4" BSPP	02-178308
10T	SAE 10	SAE 4	02-178309

Composition chart

Cartridge	Description	Quantity
SV5-10-0-0-**	2 way/2 position N.O. poppet solenoid valve	1
SV1-10-C-0-**	2 way/2 position N.C. poppet solenoid valve	1
RV5-10-*-0-**	Relief valve, pilot operated	1

Dimensions

mm (inch)

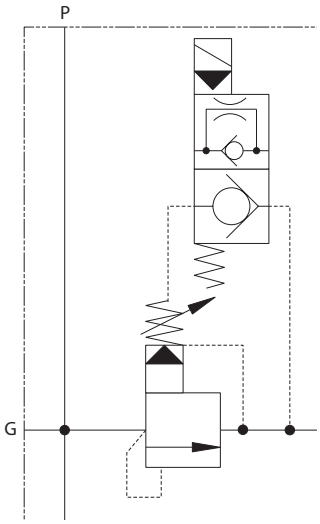


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

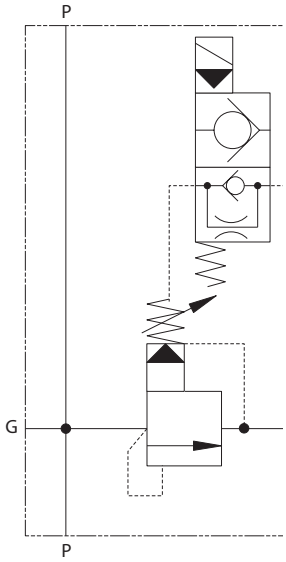
SRV-12 - Solenoid vented relief valve

Normally open or normally closed
100 L/min (26 USgpm) • 210 bar (3000 psi)

Normally closed version



Normally open version



Description

Solenoid actuated vented relief valve.

Operation

This standard valve package is designed for pump unloading via solenoid valve activation to control remotely ventable relief valve and system relief, when the solenoid valve is not activated.

Features

Normally closed and normally open options, tamper proof or adjustable relief options. Low power requirements, gauge port. Aluminum in-line type housing, number of voltage and connector options.

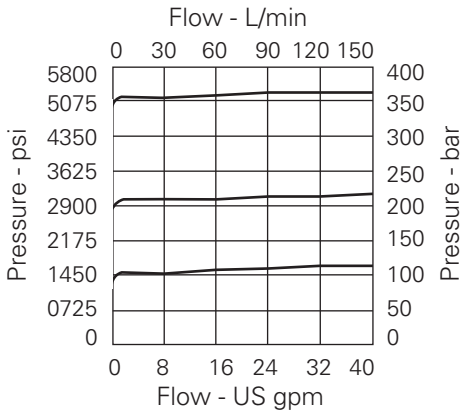
All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

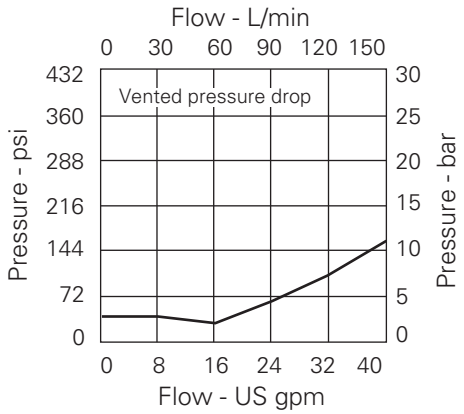
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Flow rating	100 L/min (26 USgpm)
Internal leakage	35 milliliters/min @ 280 bar
Reseat pressure	Refer datasheet of 1VR100 in Section E
Typical vented ΔP	Refer datasheet of 1VR100 in Section E
Coil specifications	Power requirements: 16 watts Coil duty: Continuous from 85% to 110% of nominal voltage (AC coils are internally rectified)
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Pressure drop curves





K

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

SRV-12 - Solenoid vented relief valve

Normally open or normally closed
100 L/min (26 USgpm) • 210 bar (3000 psi)

Model code

SRV	_	12	(SV)_	*	_	*	_	A	**	_	**	/	***	_	**	_	00
1		2	3	4		5		6	7		8		9		10		11

1 Function
SRV - Solenoid actuated ventable relief valve

2 Size
12 - 12 size

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

V - Viton® (for high temperatures and most special fluid applications)

Viton is a registered trademark of E.I. DuPont

4 Type
C - Normally closed
O - Normally open

5 Relief control
P - Leakproof Screw Adjustments
G - Temper Proof Cap

6 Valve housing material
A - Aluminum

7 Port size

Code	P, T	Gauge	Housing number
6W	3/4" BSPP	1/4" BSPP	6030455-001
12T	SAE 12	SAE 4	6030455-002

8 Relief pressure range
Note: Code based on pressure in psi.

20 - 10-210 bar (145-3000 psi)

9 Voltage rating
12D - 12 VDC
24D - 24 VDC
120A - 120 VAC
240A - 240 VAC

10 Connector types
GS - ISO 4400 DIN 43650 connector
PS - 1/2" NPT conduit
WS - Leadwire

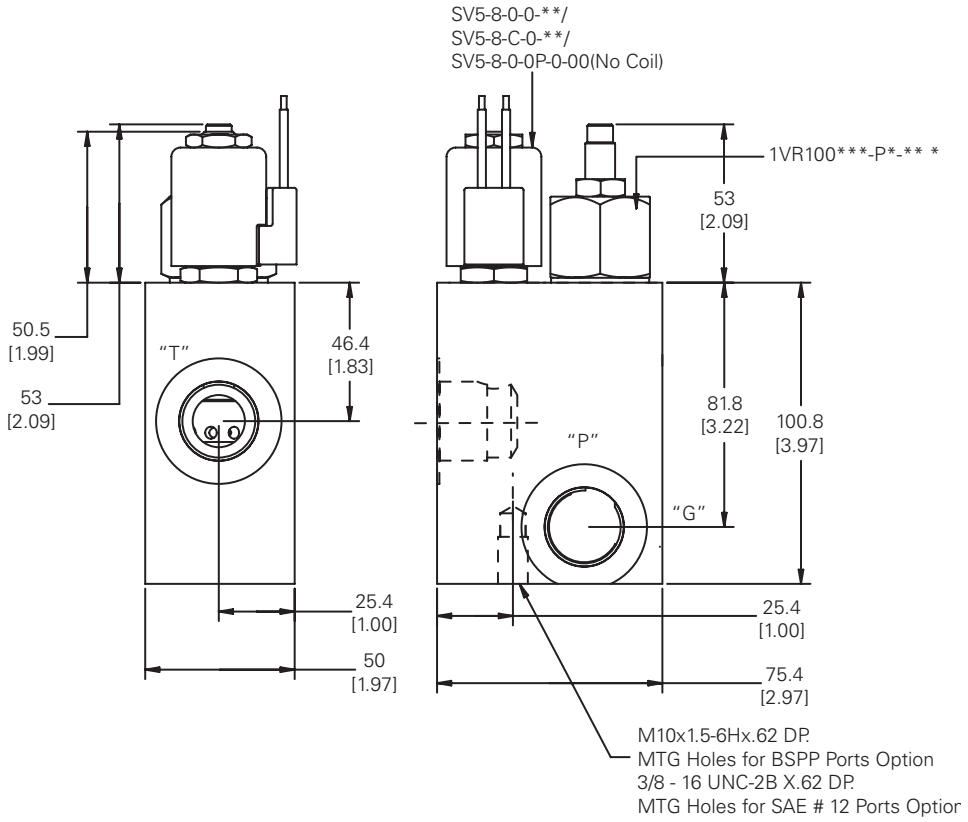
11 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
SV5-8-0-0-**	2 way/2 position N.O. poppet solenoid valve	1
SV5-8-C-0-**	2 way/2 position N.C. poppet solenoid valve	1
1VR100***-P*-** *	Vented relief valve	1

Dimensions
mm (inch)

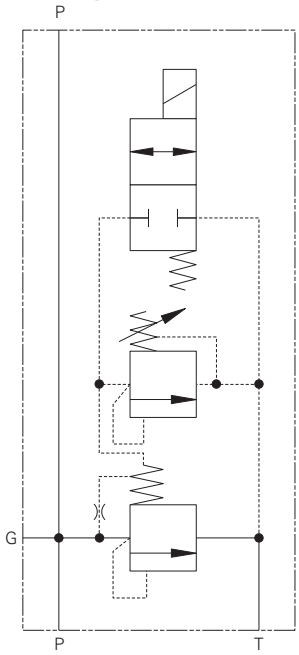


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

SRV-16 - Solenoid vented relief valve

Normally open or normally closed
225 L/min (60 USgpm) • 210 bar (3000 psi)

Normally closed version



Operation

This standard valve package is designed for pump unloading via solenoid valve activation and pump relief, when the solenoid valve is not activated and system pressure reaches relief valve setting.

Features

Normally closed and normally open options, tamper proof or adjustable relief options. Low power requirements, gauge port. Aluminum in-line type housing, number of voltage and connector options.

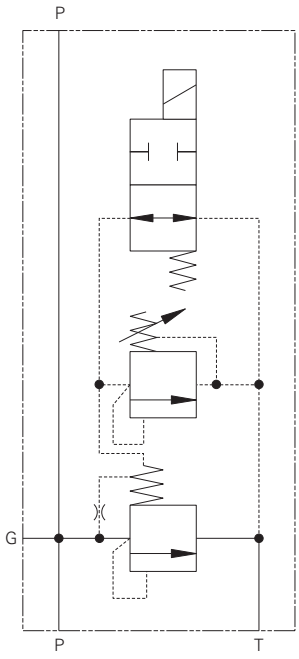
All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

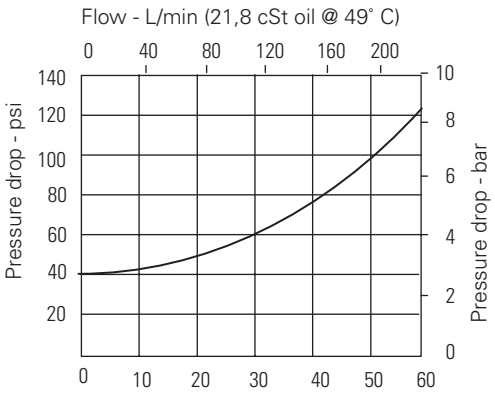
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Flow rating		225 L/min (60 USgpm)
Internal leakage		160 L/min (10 in³/min) @ 210 bar (3000 psi)
Reseat pressure		80% of crack pressure
Typical vented ΔP		8 bar (120 psi) at rated flow
Coil specifications		16 watts
	Power requirements:	Continuous from 85% to 110% of nominal voltage
	Coil duty:	(AC coils are internally rectified)
Temperature range		-40° to 120° C (-40° to 248° F)
Fluids		All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

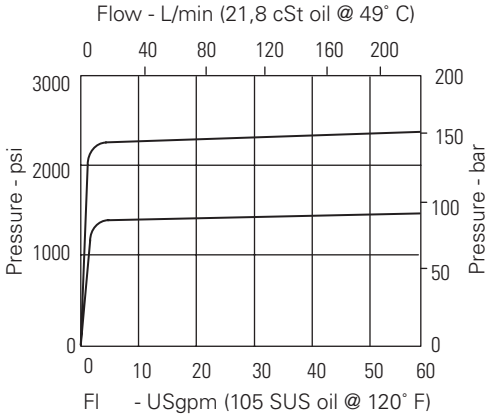
Normally open version



Pressure drop (unload)



Pressure override



Description

Solenoid actuated relief valve.

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

SRV-16 - Solenoid vented relief valve

Normally open or normally closed
225 L/min (60 USgpm) • 210 bar (3000 psi)

Model code

SRV	–	16	(V)	–	*	–	*	–	A	**	–	**	/	***	–	**	–	00
1		2	3		4		5		6	7		8		9		10		11

1 Function
SRV - Solenoid actuated relief valve

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Type
C - Normally closed
O - Normally open

5 Relief control
C - Cap
K - Knob
S - Screw

6 Valve housing material
A - Aluminum

7 Port size

Code	P, T	Gauge
8G	1" BSPP	1/4" BSPP
16T	SAE 16	SAE 4
12T	SAE 12	SAE 4

8 Relief Pressure range
Note: Code based on pressure in psi.

15 - 3-100 bar (50-1500 psi)
30 - 70-210 bar (1000-3000 psi)

9 Voltage rating
12D - 12 VDC
24D - 24 VDC
120A - 125 VAC
240A - 240 VAC

10 Connector types
GS -ISO 4400 DIN 43650 connector
PS - 1/2" NPT conduit
WS - Lead wire

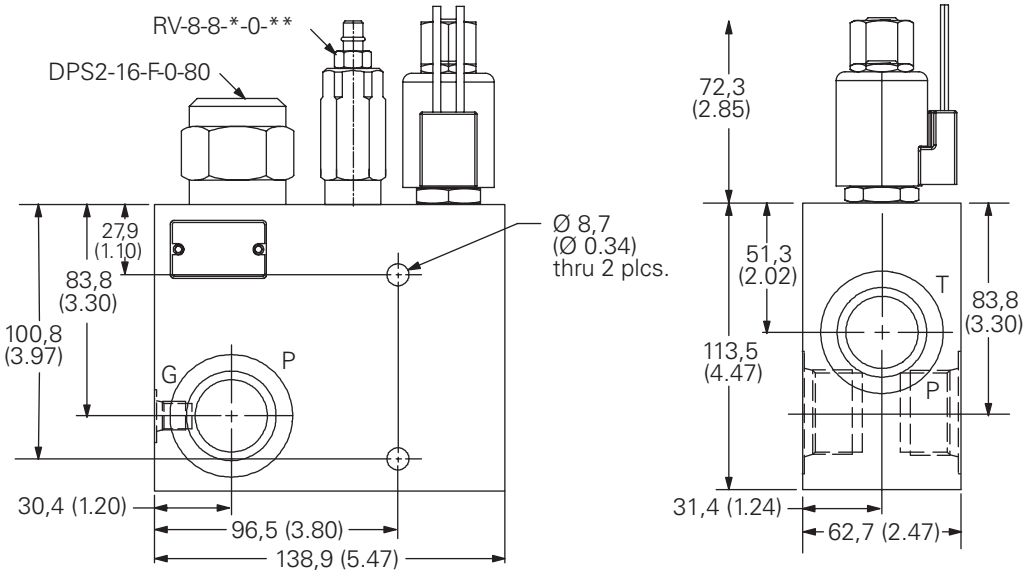
11 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
SV4-8-0-0-**	2 way/2 position N.O. poppet solenoid valve	1
SV4-8-C-0-0-**	2 way/2 position N.C. poppet solenoid valve	1
RV8-8-*-0-**	Relief valve	1
DPS2-16-V-F-0-80	Differential pressure sensing valve	1

Dimensions
mm (inch)

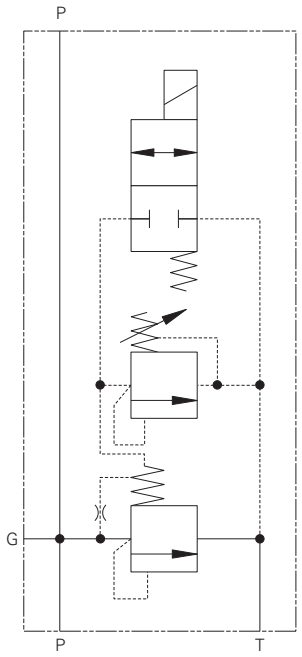


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

SRV-20 - Solenoid vented relief valve

Normally open or normally closed
300 L/min (80 USgpm) • 210 bar (3000 psi)

Normally closed version



Operation

This standard valve package is designed for pump unloading via solenoid valve activation and pump relief, when the solenoid valve is not activated and system pressure reaches relief valve setting.

Features

Normally closed and normally open options, tamper proof or adjustable relief options. Low power requirements, gauge port. Aluminum in-line type housing, number of voltage and connector options.

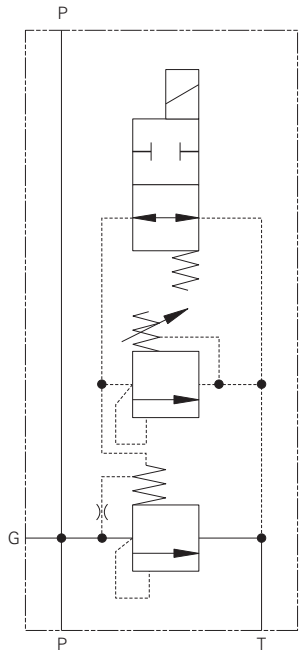
All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

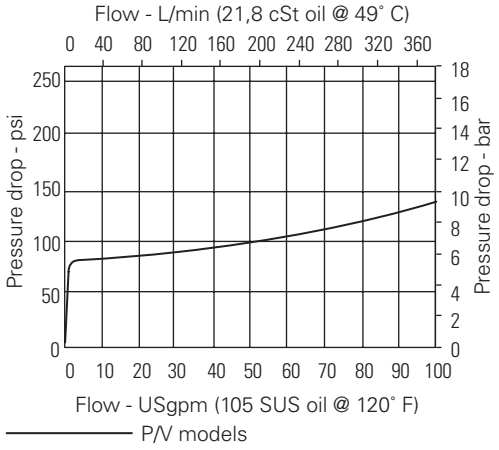
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Flow rating		300 L/min (80 USgpm)
Internal leakage		160 cm³/min (10 in³/min) @ 210 bar (3000 psi)
Reseat pressure		80% of crack pressure
Typical vented ΔP		9 bar (135 psi) at rated flow
Coil specifications	Power requirements: Coil duty:	16 watts Continuous from 85% to 110% of nominal voltage (AC coils are internally rectified)
Temperature range		-40° to 120° C (-40° to 248° F)
Fluids		All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

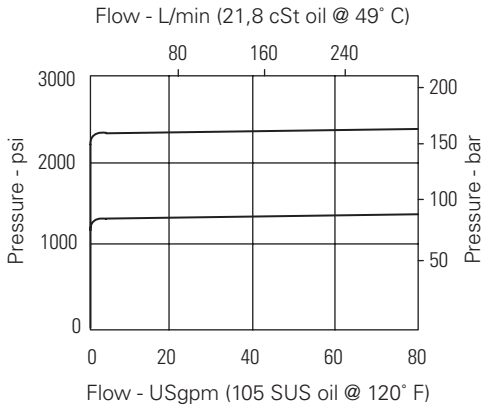
Normally open version



Pressure drop (unloading)



Pressure override



Description

Solenoid actuated relief valve.

K

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

SRV-20 - Solenoid vented relief valve

Normally open or normally closed
300 L/min (80 USgpm) • 210 bar (3000 psi)

Model code

SRV	–	20	(V)	–	*	–	*	–	A	**	–	**	/	***	–	**	–	00
1		2	3		4		5		6	7		8		9		10		11

1 Function
SRV - Solenoid actuated relief valve

2 Size
20 - 20 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Type
C - Normally closed
O - Normally open

5 Relief control
C - Cap
K - Knob
S - Screw

6 Valve housing material
A - Aluminum

7 Port size

Code	P, T	Gauge	Housing
12G	1 1/4" BSPP	1/4" BSPP	02-178312
20T	SAE 20	SAE 4	02-178313

8 Relief Pressure range
Note: Code based on pressure in psi.

15 - 3-100 bar (50-1500 psi)
30 - 70-210 bar (1000-3000 psi)

9 Voltage rating
12D - 12 VDC
24D - 24 VDC
120A - 125 VAC
240A - 240 VAC

10 Connector types
GS - ISO 4400 DIN 43650 connector
PS - 1/2" NPT conduit
WS - Leadwire

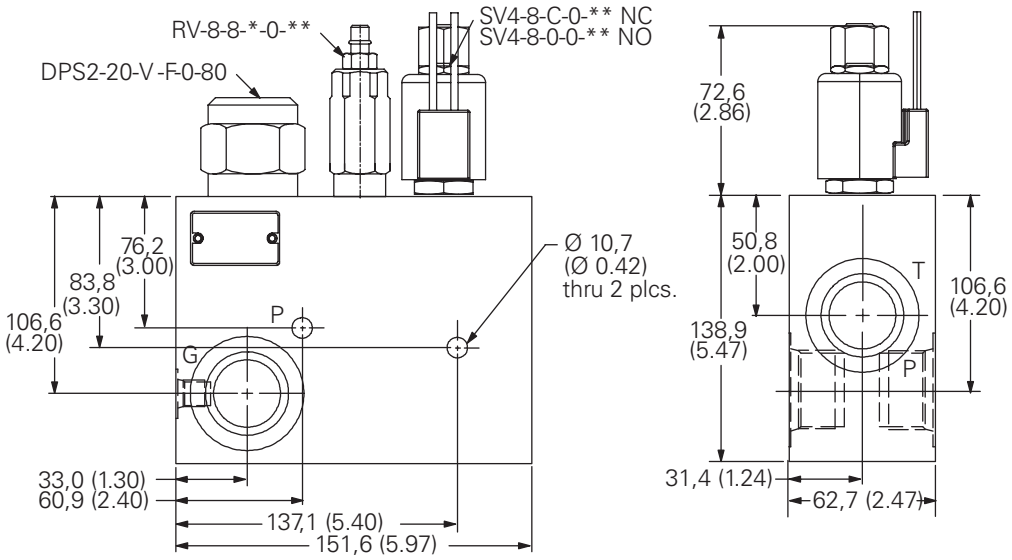
11 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
SV4-8-0-0-**	2 way/2 position N.O. poppet solenoid valve	1
SV4-8-C-0-**	2 way/2 position N.C. poppet solenoid valve	1
RV8-8-*-0-**	Relief valve	1
DPS2-20-V-F-0-80	Differential pressure sensing valve	1

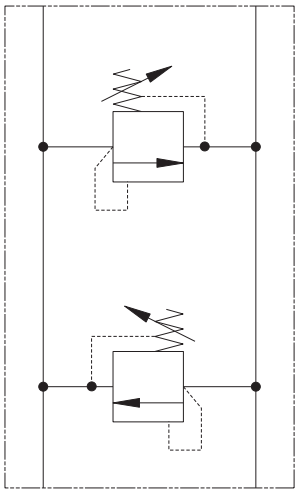
Dimensions
mm (inch)



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

CRV-10 - Relief valve

Cross port
76 L/min (20 USgpm) • 17-210 bar (250-3000 psi)



Operation

This standard valve package is used to provide pressure relief for bi-directional motors and cylinders.

Features

Tamper proof and adjustable relief options. Aluminum in-line type housing.

All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

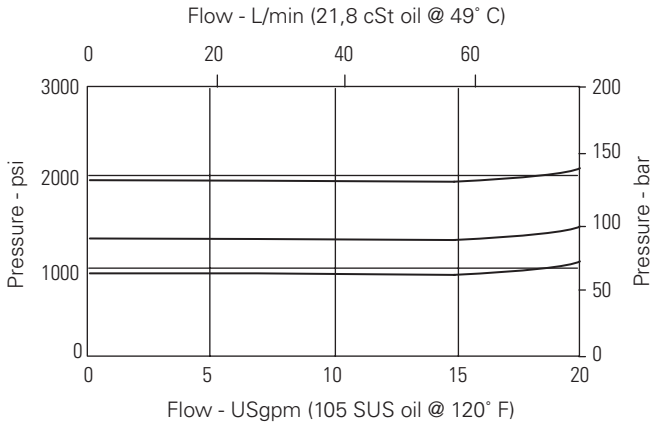
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	17-210 bar (250-3000 psi)
Flow rating	76 L/min (20 USgpm)
Reseat pressure	90% of crack pressure
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Cross port relief valve.

Pressure override



K

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

CRV-10 - Relief valve

Cross port
76 L/min (20 USgpm) • 17-210 bar (250-3000 psi)

Model code

CRV	–	10	(V)	–	*	–	A	**	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function
CRV - Cross-port relief valve

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Relief control
C - Cap
K - Knob
S - Screw

5 Valve housing material
A - Aluminum

6 Port size

Code	Port size	Housing number
3G	3/8" BSPP	02-178476
8T	SAE 8	889185

7 Pressure Range
Note: Code based on pressure in psi.
6 - 6-40 bar (100-600 psi)
36 - 40-250 bar (600-3600 psi)

8 Pressure Setting -
user requested in 50 PSI steps
Example:
10 - 1000 psi
10.5 - 1050 psi

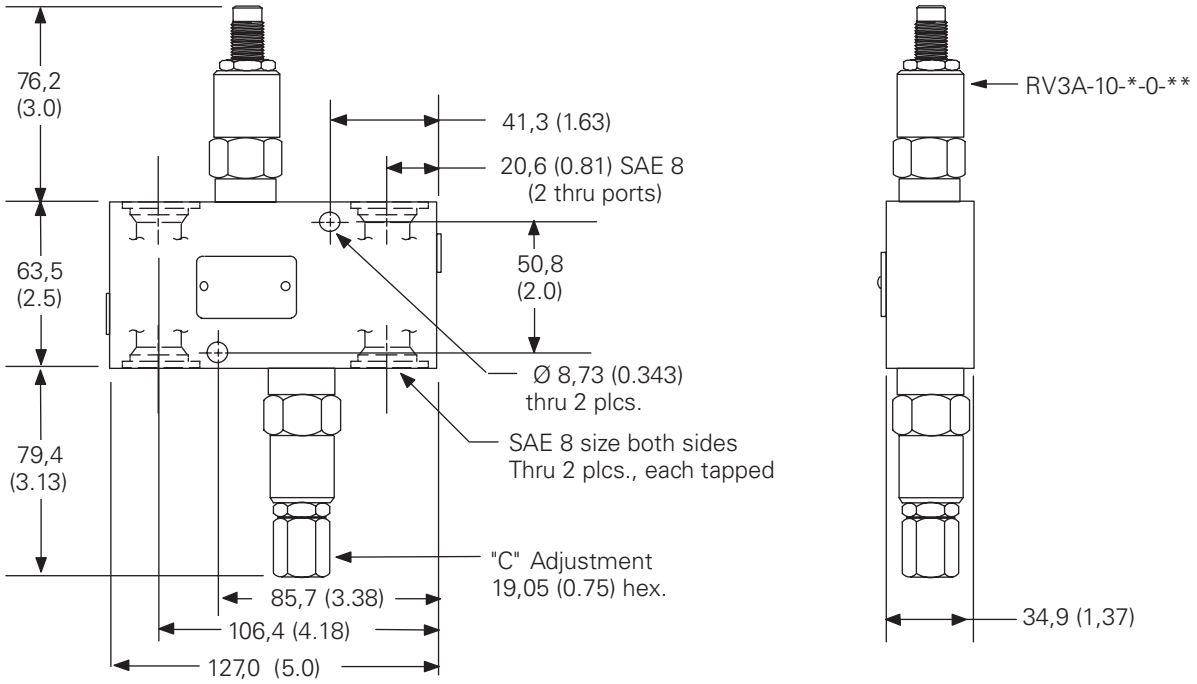
9 Special Features
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
RV3A-10-*-0-**	Relief valve	2

Dimensions

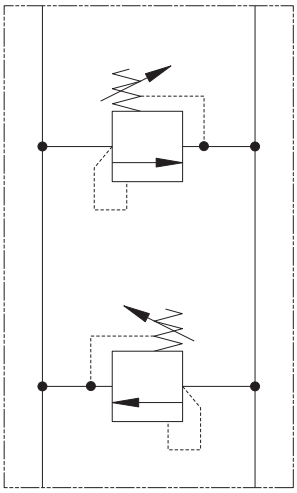
mm (inch)



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

CRV-16 - Relief valve

Cross port
303 L/mim (80 USgpm) • 17-172 bar (250-2500 psi)



Operation

This standard valve package is used to provide pressure relief for bi-directional motors and cylinders.

Features

Tamper proof and adjustable relief options. Aluminum in-line type housing.

All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

Performance data

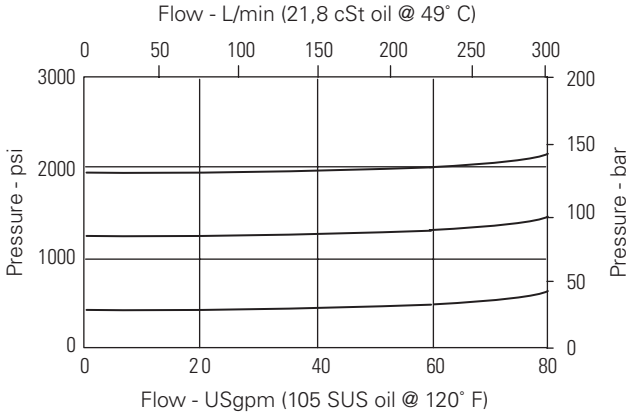
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	17-172 bar (250-2500 psi)
Flow rating	300 L/min (80 USgpm)
Reseat pressure	90% of crack pressure
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

Description

Cross port relief valve.

Pressure override



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

CRV-16 - Relief valve

Cross port
303 L/mim (80 USgpm) • 17-172 bar (250-2500 psi)

Model code

CRV – 16 (V) – * – A *** – ** / ** – 00

1 2 3 4 5 6 7 8 9

1 Function
CRV - Cross-port relief valve

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control
C - Cap
K - Knob
S - Screw

5 Valve housing material
A - Aluminum

6 Port size

Code	Port size	Housing number
8G	1" BSPP	02-178477
16T	SAE 16	889189

7 Pressure range
Note: Code based on pressure in psi.

25 - 17-175 bar (250-2500 psi)

8 Pressure setting -
user requested in 50 PSI steps
Example:

10 - 1000 psi
10.5 - 1050 psi

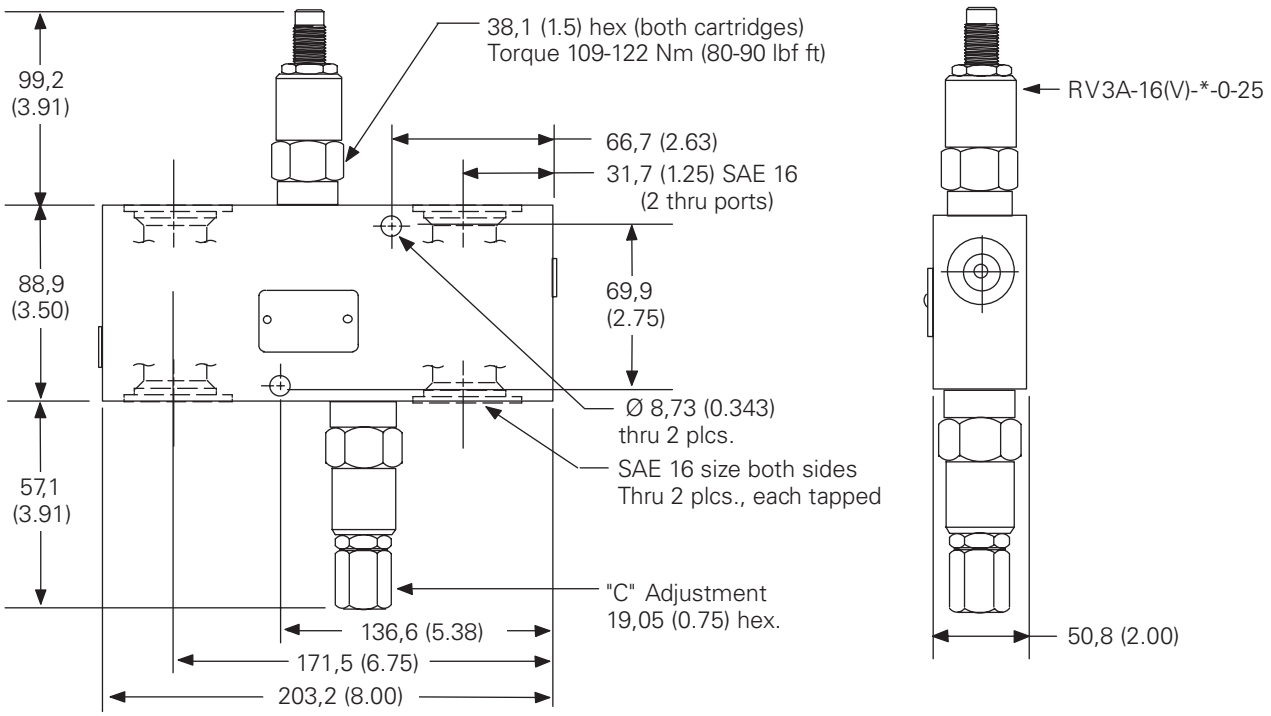
9 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
RV3A-16-*-0-**	Relief valve	2

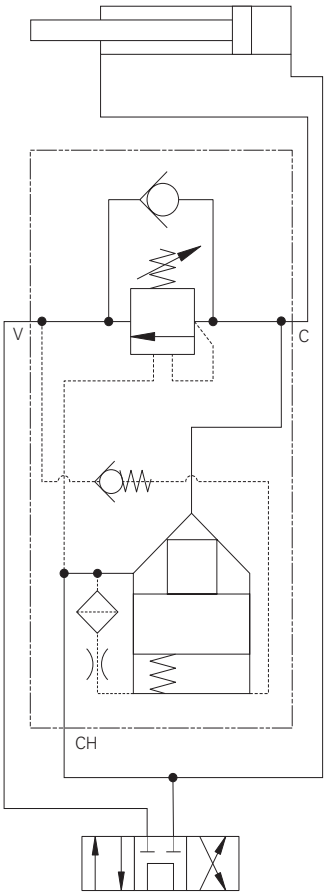
Dimensions
mm (inch)



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

RGV-30 - Regenerative valve

Pressure sensitive
30 L/min (8 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package provides means for fast extension of a cylinder at low pressure without additional pump flow. This package diverts rod end flow to the head end in order to accelerate the load. When the load induced pressure reaches a predetermined level, the valve closes off. Rod end oil is automatically diverted to tank and the full pump pressure is applied, allowing maximum force to develop at lower speed.

When applying pressure sensitive regenerative valves consider the following: Rod to diameter ratio. The pressure required to move a cylinder. Losses due to high flows and seal friction may prevent a circuit from staying in regeneration.

Features

Automatic kick out of regenerative operation made via load pressure sensing. Tamper proof and adjustable pressure setting options. Provides a smooth transition and decrease of the regenerative flow through use of a counterbalance valve. Aluminum in-line type housing.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regenerative flow Regeneration diminishes progressively above setting of 1CE30	30 L/min (8 USgpm)
Temperature range	-40° to 120° C (-40° to 248° F)

Notes: Regeneration circuits apply only to single rod cylinders in extension direction.

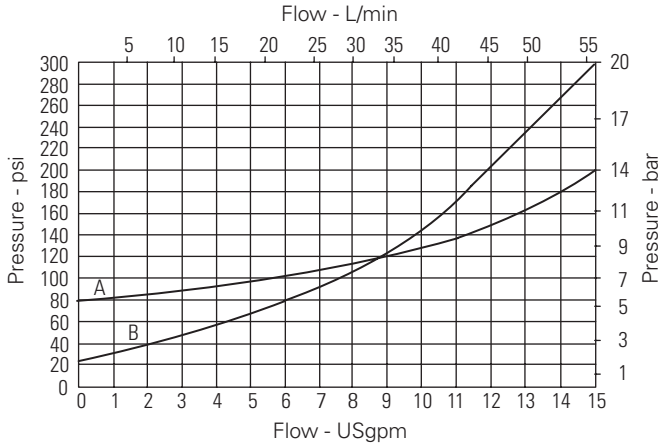
Description

Pressure sensitive regenerative valve package.

Pressure drop

A - Port CR to CH

B - Port VR to CR



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

RGV-30 - Regenerative valve

Pressure sensitive
30 L/min (8 USgpm) • 210 bar (3000 psi)

Model code RGV – 30 (V) – * – A *** – ** / ** – 00

1 2 3 4 5 6 7 8 9

1 Function
RGV - Pressure sensitive regeneration valve

2 Size
30 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control
F - Screw adjustment
N - Fixed - State pressure setting required

5 Valve housing material
A - Aluminum

6 Port size

Code	Port size	Housing number
4G	1/2" BSPP	6029951-001
10T	SAE 10	6029950-001

7 Pressure range*
Note: Code based on pressure in psi.

20 - 70 - 210 bar. std. setting 100 bar

*System pressure is limited to 210 bar (3000 psi)

8 Pressure setting -
user requested in 50 PSI steps Example:

10 - 1000 psi
10.5 - 1050 psi

9 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
1CE30-F-20-S-5	Counterbalance valve	1
DPS2-10-S-F-0-80	Differential pressure sensing	1
566395	Sense check kit	1

Application notes

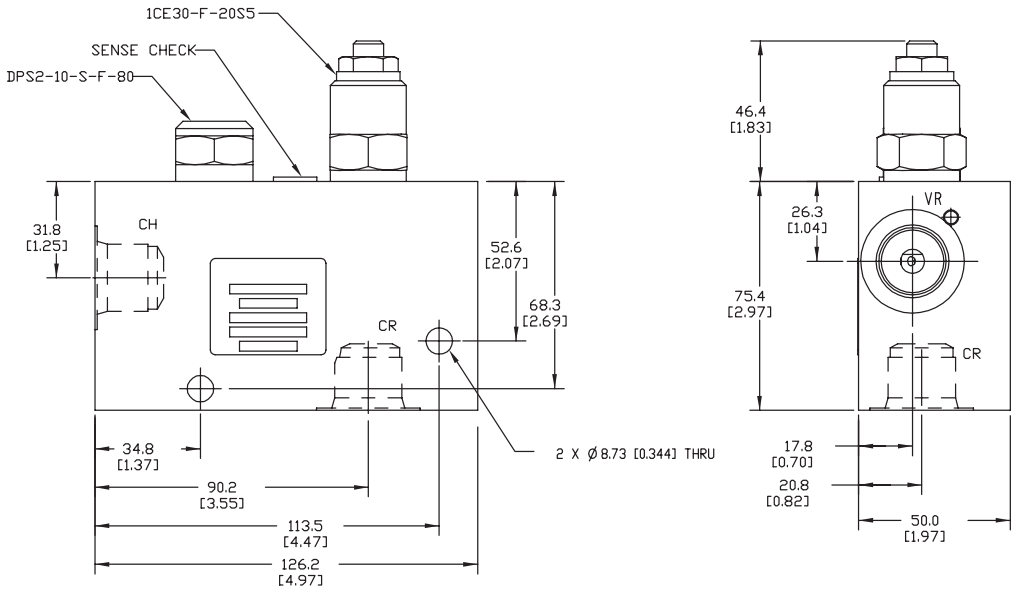
Formulas to calculate flow in regeneration circuits are:
(where Db = Bore Diameter and Dr = Rod Diameter)

Combined Flow (pump flow plus regenerative flow) = $\frac{Db^2}{Dr^2}$ X Pump Flow

Regenerative Flow (flow out rod end) = $\frac{Db^2 - Dr^2}{Dr^2}$ X Pump Flow

Retraction Flow (flow out of the bind end during retraction) = $\frac{Db^2}{Db^2 - Dr^2}$ X Pump Flow

Dimensions
mm (inch)

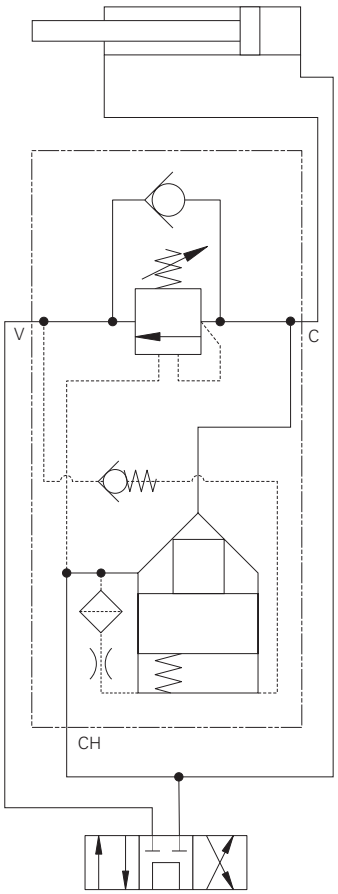


Note: This valve package should not be used as a load holding or load lowering control valve.

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

RGV-90 - Regenerative valve

Pressure sensitive
90 L/min (23 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package provides means for fast extension of a cylinder at low pressure without additional pump flow. This package diverts rod end flow to the head end in order to accelerate the load. When the load induced pressure reaches a predetermined level, the valve closes off. Rod end oil is automatically diverted to tank and the full pump pressure is applied, allowing maximum force to develop at lower speed.

When applying pressure sensitive regenerative valves consider the following: Rod to diameter ratio. The pressure required to move a cylinder. Losses due to high flows and seal friction may prevent a circuit from staying in regeneration.

Features

Automatic kick out of regenerative operation made via load pressure sensing. Tamper proof and adjustable pressure setting options. Provides a smooth transition and decrease of the regenerative flow through use of a counterbalance valve. Aluminum in-line type housing.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cst (105 sus) and 49°c (120°f)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regenerative flow Regeneration diminishes progressively above setting of 1CE90	90 L/min (23 USgpm)
Temperature range	-40° to 102° C (-40° to 248° F)

Notes: Regeneration circuits apply only to single rod cylinders in extension direction.

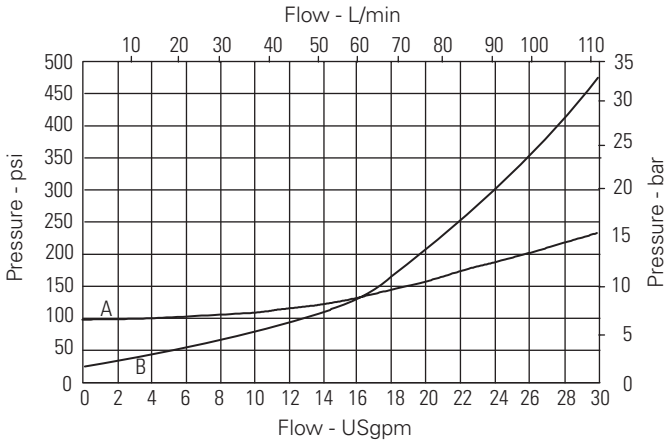
Description

Pressure sensitive regenerative valve package.

Pressure drop

A - Port CR to CH

B - Port VR to CR



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

RGV-90 - Regenerative valve

Pressure sensitive
90 L/min (23 USgpm) • 210 bar (3000 psi)

Model code

RGV _ 90 (V) _ * A * _ ** / ** _ 00**

1 2 3 4 5 6 7 8 9

1 Function

RGV - Pressure sensitive regeneration valve

2 Size

90 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control

F - Screw adjustment
N - Fixed - State pressure setting required

5 Valve housing material

A - Aluminum

6 Port size

Code	Port size	Housing number
6G	3/4" BSPP	6029914-001
12T	SAE 12	6029909-001

7 Pressure range*

Note: Code based on pressure in psi.

20 - 70 - 225 bar. std. setting 100 bar

*System pressure is limited to 210 bar (3000 psi)

8 Pressure setting -

user requested in 50 PSI steps Example:

10 - 1000 psi
10.5 - 1050 psi

9 Special features

00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
1CE90-F-20-*-4	Counterbalance valve	1
DPS2-16-S-F-0-80	Differential pressure sensing	1
566395	Sense check kit	1

Application Notes

Formulas to calculate flow in regeneration circuits are:
(where Db = Bore Diameter and Dr = Rod Diameter)

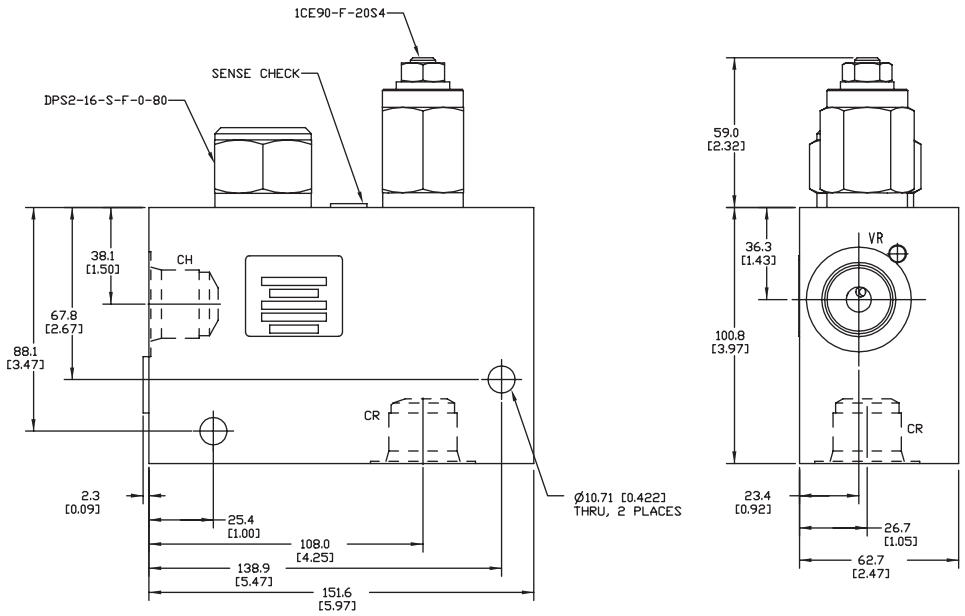
Combined Flow (pump flow plus regenerative flow) = $\frac{Db^2}{Dr^2}$ X Pump Flow

Regenerative Flow (flow out rod end) = $\frac{Db^2 - Dr^2}{Dr^2}$ X Pump Flow

Retraction Flow (flow out of the bind end during retraction) = $\frac{Db^2}{Db^2 - Dr^2}$ X Pump Flow

Dimensions

mm (inch)

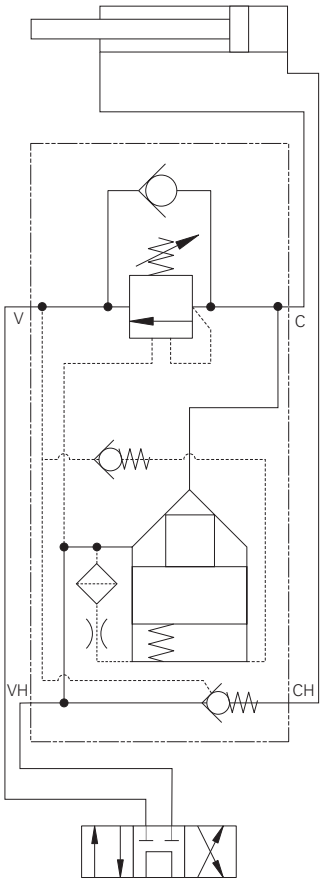


Notes: This valve package should not be used as a load holding or load lowering control valve.

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

RLV-30 - Regenerative valve

With load locking
30 L/min (8 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package provides means for fast extension of a cylinder at low pressure without additional pump flow. This package diverts rod end flow to the head end in order to accelerate the load. When the load induced pressure reaches a predetermined level, the valve closes off. Rod end oil is automatically diverted to tank and the full pump pressure is applied, allowing maximum force to develop at lower speed.

When applying pressure sensitive regenerative valves consider the following: Rod to diameter ratio. The pressure required to move a cylinder. Losses due to high flows and seal friction may prevent a circuit from staying in regeneration.

Features

Automatic kick out of regenerative operation made via load pressure sensing. Tamper proof and adjustable pressure setting options. Provides a smooth transition and decrease of the regenerative flow through use of a counterbalance valve. Provides manual override on POC cartridge to lower the load in the event of power loss. Aluminum in-line type housing.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regenerative flow Regeneration diminishes progressively above setting of 1CE30	30 L/min (8 USgpm)
Temperature range	-40° to 120° C (-40° to 248° F)

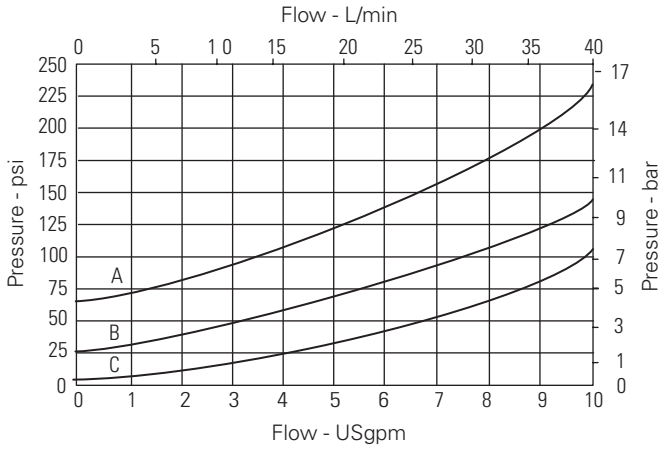
Notes: Regeneration circuits apply only to single rod cylinders in extension direction.

Description

Pressure sensitive regenerative valve package with load locking.

Pressure drop

A - Port CR to CH
B - Port VR to CR
C - Port VH to CH



K

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

RLV-30 - Regenerative valve

With load locking
30 L/min (8 USgpm) • 210 bar (3000 psi)

Model code

RLV	–	30	(V)	–	*	–	A	***	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function
RLV - Pressure sensitive regeneration valve with load holding check valve.

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®

Viton is a registered trademark of E.I. DuPont

4 Relief control
F - Screw adjustment
N - Fixed - Stare pressure setting required

5 Valve housing material
A - Aluminum

6 Port size

Code	Port size	Housing number
4G	1/2" BSPP	6029965-001
10T	SAE 10	6029964-001

7 Pressure range*
Note: Code based on pressure in psi.

20 - 70 - 210 bar. std. setting 100 bar

*System pressure is limited to 210 bar (3000 psi)

8 Pressure setting -
user requested in 50 PSI steps Example:

10 - 1000 psi
10.5 - 1050 psi

9 Special features
00 - None

(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
1CE30-F-*20-*-4	Counterbalance valve	1
DPS2-10-S-F-0-80	Differential pressure sensing	1
4CK30-1S3	Pilot operated check valve	1
566395	Sense check kit	1

Application notes

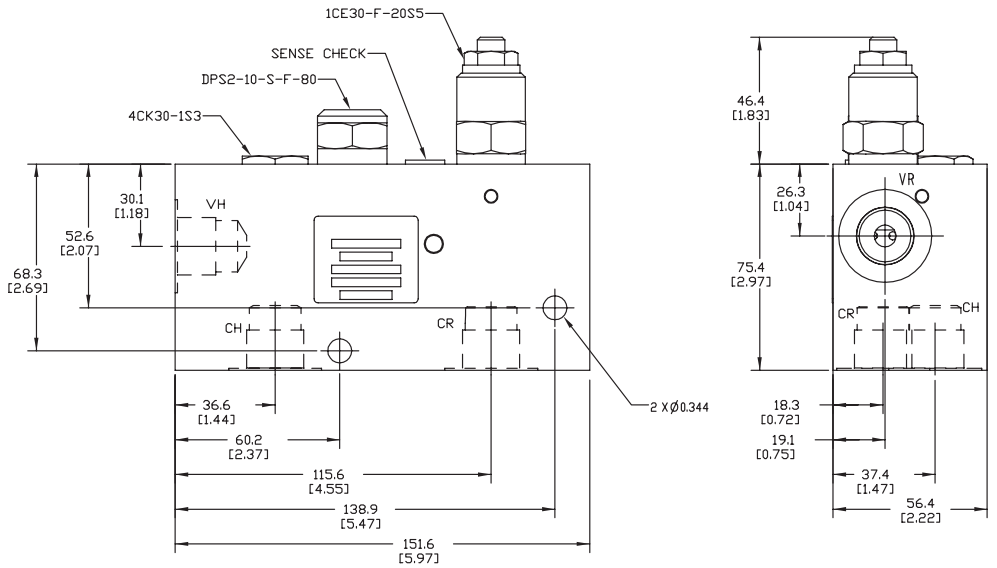
Formulas to calculate flow in regeneration circuits are:
(where Db = Bore Diameter and Dr = Rod Diameter)

Combined Flow (pump flow plus regenerative flow) = $\frac{Db^2}{Dr^2}$ X Pump Flow

Regenerative Flow (flow out rod end) = $\frac{Db^2 - Dr^2}{Dr^2}$ X Pump Flow

Retraction Flow (flow out of the bind end during retraction) = $\frac{Db^2}{Db^2 - Dr^2}$ X Pump Flow

Dimensions
mm (inch)

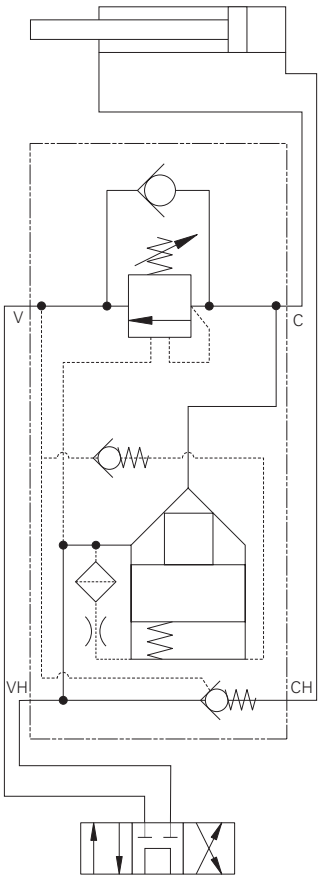


Notes: This valve package should not be used as a load holding or load lowering control valve.

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

RLV-90 - Regenerative valve

With load locking
90 L/min (23 USgpm) • 210 bar (3000 psi)



Operation

This standard valve package provides means for fast extension of a cylinder at low pressure without additional pump flow. This package diverts rod end flow to the head end in order to accelerate the load. When the load induced pressure reaches a predetermined level, the valve closes off. Rod end oil is automatically diverted to tank and the full pump pressure is applied, allowing maximum force to develop at lower speed.

When applying pressure sensitive regenerative valves consider the following: Rod to diameter ratio. The pressure required to move a cylinder. Losses due to high flows and seal friction may prevent a circuit from staying in regeneration.

Features

Automatic kick out of regenerative operation made via load pressure sensing. Tamper proof and adjustable pressure setting options. Provides a smooth transition and decrease of the regenerative flow through use of a counterbalance valve. Provides manual override on POC cartridge to lower the load in the event of power loss. Aluminum in-line type housing.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Maximum regenerative flow Regeneration diminishes progressively above setting of 1CE90	90 L/min (23 USgpm)
Temperature range	-40° to 120° C (-40° to 248° F)

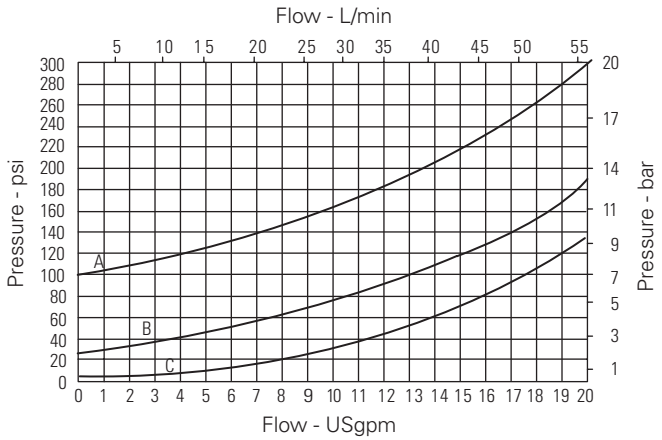
Notes: Regeneration circuits apply only to single rod cylinders in extension direction.

Description

Pressure sensitive regenerative valve package with load locking.

Pressure drop

A - Port CR to CH
B - Port VR to CR
C - Port VH to CH



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

RLV-90 - Regenerative valve

With load locking
114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

RLV	–	90	(V)	–	*	–	A	***	–	**	/	**	–	00
1		2	3		4		5	6		7		8		9

1 Function

RLV - Pressure sensitive regeneration valve w/ load holding check valve

2 Size

90 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Relief control

F - Screw adjustment
N - Fixed - Stare pressure setting required

5 Valve housing material

A - Aluminum

6 Port size

Code	Port Size	Housing number
6G	3/4" BSPP	02-178936
12T	SAE 12	02-178935

7 Pressure range*

Note: Code based on pressure in psi.
20 - 70 - 225 bar. std setting 100 bar
*System pressure is limited to 210 bar (3000 psi)

8 Pressure setting - user requested in 50 PSI steps

Example:
10 - 1000 psi
10.5 - 1050 psi

9 Special features

00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
1CE90-F-20-*-4	Counterbalance valve	1
DPS2-16-S-F-0-80	Differential pressure sensing	1
POC1-12-S-0-005	Pilot operated check valve	1
566395	Sense check kit	1

Application Notes

Formulas to calculate flow in regeneration circuits are:
(where Db = Bore Diameter and Dr = Rod Diameter)

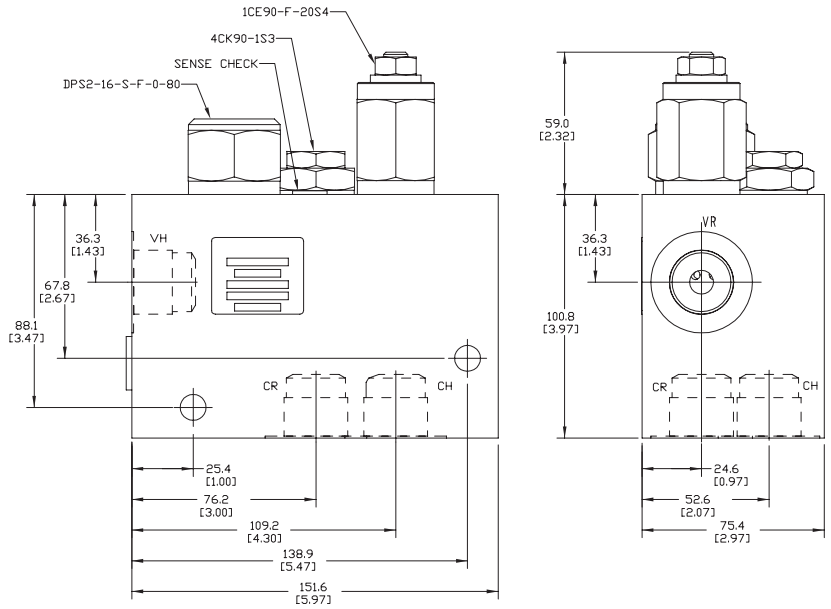
Combined Flow (pump flow plus regenerative flow) = $\frac{Db^2}{Dr^2}$ X Pump Flow

Regenerative Flow (flow out rod end) = $\frac{Db^2 - Dr^2}{Dr^2}$ X Pump Flow

Retraction Flow (flow out of the bind end during retraction) = $\frac{Db^2}{Db^2 - Dr^2}$ X Pump Flow

Dimensions

mm (inch)



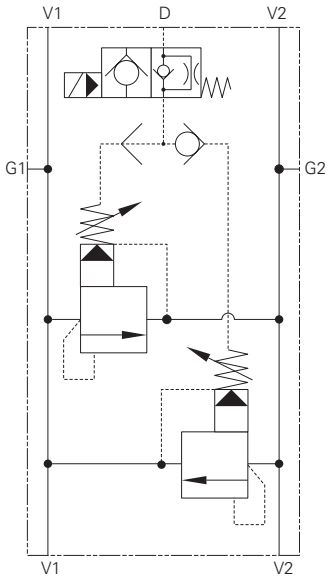
Notes: This valve package should not be used as a load holding or load lowering control valve.

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

SCR-1 - Cross port relief

With shuttle and solenoid vent
Up to 114 L/min (30 USgpm) • 210 bar (3000 psi)

Normally Open Version



Operation

This standard valve package is used to provide pressure line relief for bi-directional motors and cylinders. With the addition of a remotely controlled shuttle valve, allowance is made for motor slip or cylinder dump conditions.

Features

Normally closed and normally open options. Tamper proof or adjustable relief options, gauge port. Low power requirements, number of voltages and connectors options. Aluminum in line type housing.

All components in the package are true cartridges and can be removed from the housing without disturbing the plumbing.

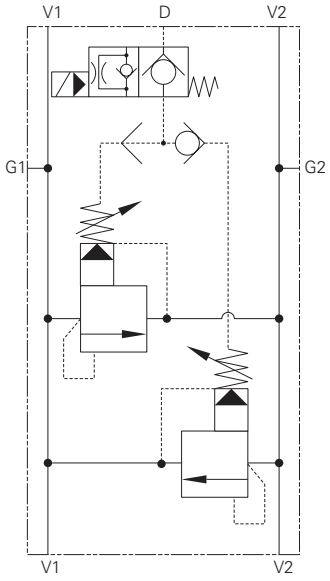
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Flow rating		114 L/min (30 USgpm)
Reseat pressure		90% of crack pressure
Coil specifications	Power requirements: Coil duty:	16 watts Magnet wire – UL class N rated (200° C) Continuous from 85% to 110% of nominal voltage (AC coils are internally rectified)
Temperature range		-40° to 120° C (-40° to 248° F)

Notes: Regeneration circuits apply only to single rod cylinders in extension direction.

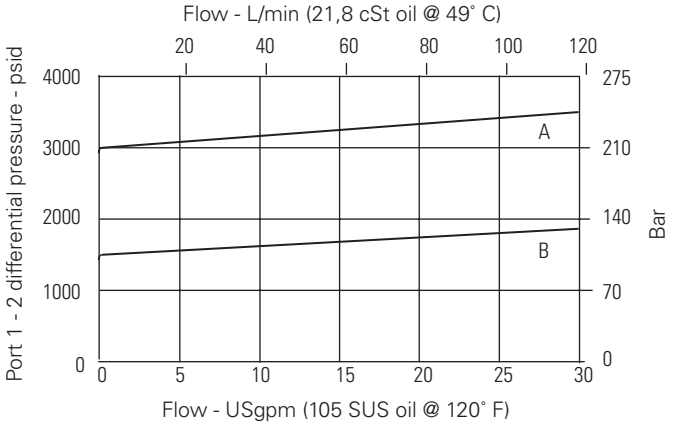
Normally Closed Version



Pressure drop

A - 30 - pressure range code

B - 15 - pressure range code



Description

Cross port relief with shuttle and solenoid vent.

K

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

SCR-1 - Cross port relief

With shuttle and solenoid vent
Up to 114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

SCR	–	1	(V)	–	*	–	*	–	A	**	**	/	**	–	***	**	–	00
1		2	3		4		5		6	7	8		9		10	11		12

1 Function

SCR - Solenoid actuated crossover relief valve with shuttle

2 Size

1 - 114 L/min (30 USgpm)

3 Seal material

Blank - Buna-N
V - Viton®
Viton is a registered trademark of E.I. DuPont

4 Type

C - Normally closed
O - Normally open

5 Relief control

C - Cap
K - Knob
S - Screw

6 Valve housing material

A - Aluminum

7 Port size

Code	V1, V2	Gauge	Drain	Housing number
6G	3/4" BSPP	1/4" BSPP	3/8" BSPP	02-178938
12T	SAE 12	SAE 4	SAE 6	02-178937

8 Pressure range*

Note: Code based on pressure in psi.
15 - 5-100 bar (75-1500 psi)
30 - 10-210 bar (150-3000 psi)
***System pressure is limited to 210 bar (3000 psi)**

9 Pressure setting -

user requested in 50 psi steps
Example:
10 - 1000 psi
10.5 - 1050 psi

10 Voltage rating

12D - 12 VDC
24D - 24 VDC
120A - 120 VAC
240A - 240 VAC

11 Connector types

GS - ISO 4400 DIN 43650 connector
PS - 1/2" NPT conduit
WS - Leadwire

12 Special features

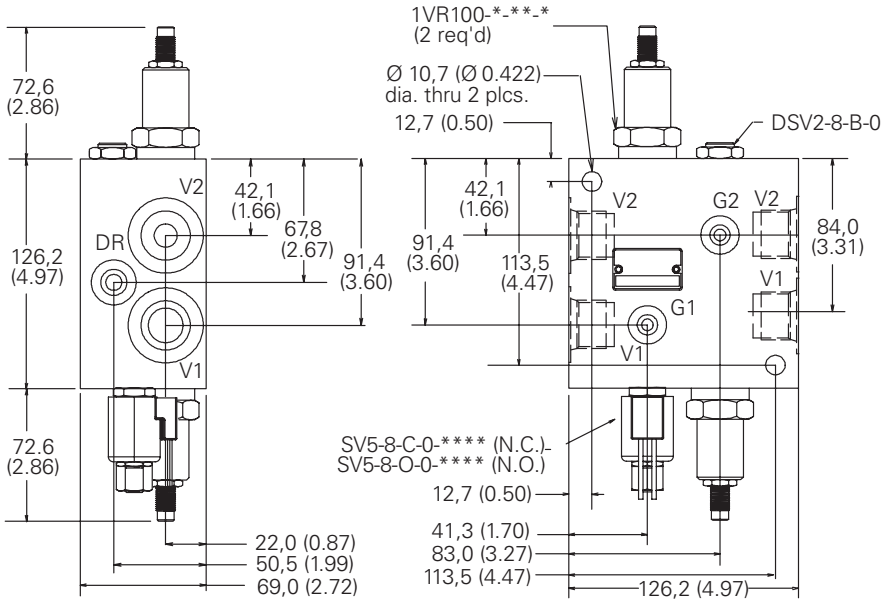
00 - None
(Only required if valve has special features, omitted if "00".)

Composition chart

Cartridge	Description	Quantity
VRV11-12-*-0-**/	Ventable relief valve	2
DSV2-8-B-0	Shuttle valve	1
SV5-8-C-0-**	Solenoid valve, N.C.	1
SV5-8-O-0-**	Solenoid valve, N.O.	1

Dimensions

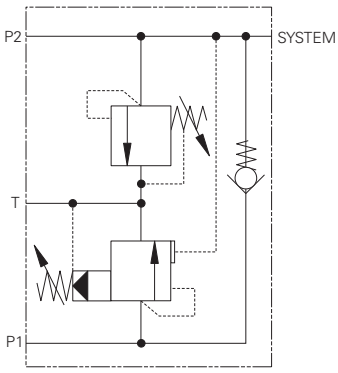
mm (inch)



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

1UL255 - Unloading valve

Two pump
Up to 200 L/min (40 USgpm) • 350 bar (5000 psi)



Operation

Pump inlet to P1 and P2 is combined to give maximum flow at low pressure. When the load pressure increases to the valve setting the high flow (low pressure) pump is bypassed from P1 to tank allowing nearly all system power to be used for the high pressure pump.

(See graph for the pressure drop of the dumped flow). The system relief valve provides protection by limiting the maximum pressure in the system line.

Features

This is a self contained system including two replaceable cartridges with full adjustment through their respective ranges. Hardened working components give long, trouble-free life and single body reduces plumbing to a minimum.

Performance data

Ratings and specifications

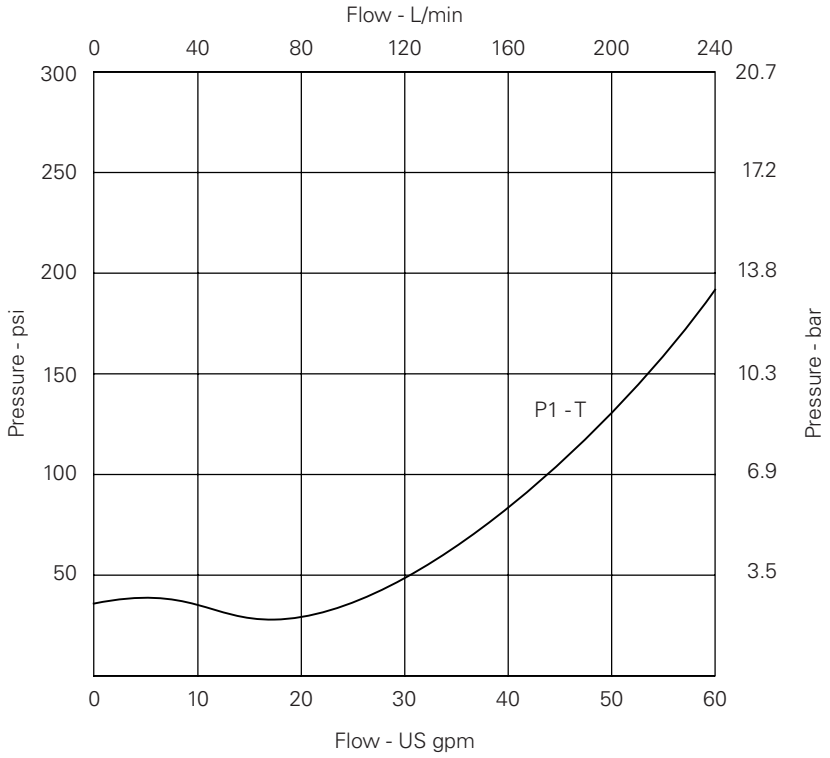
Performance data is typical with fluid at 32 cST (150 SUS)	
Rated flow	low flow/high pressure (P2 150 L/min (40 USgpm) high flow/low pressure (P1)) 200 L/min (52 USgpm)
Max setting	350 bar (5000 psi)
Cartridge material	Working parts hardened & ground steel External surface zinc plated
Body material	Standard - steel
Mounting position	Unrestricted
Weight	3.15 kg (6.93 lbs)
Seal kit number	SK671 (Nitrile) SK671V (Viton)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating Temp	-30°C to +90°C (-22° to 194° F)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

Description

Two-pump unloader valves are used in systems with combinations of two (or more) pumps to give high flow at low pressure and high pressure at low flow. The valves bypass the flow from the low pressure pump(s) to tank at a pre-set pressure. This allows pump selection to give, for example, rapid advance and high power compaction with the most economic usage of system components and energy requirements.

Pressure drop



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

1UL255 - Unloading valve

Up to 200 L/min (40 USgpm) • 350 bar (5000 psi)

Model code

1UL255 – P 6W-4W – 20 / 35 S

1 2 3 4 5 6

1 Basic code

1UL255 - Complete Valve

2 Adjustment means

P - Leakproof Screw Adjustment

3 Port sizes -

Code	System PI & T	P2	Housing number (steel)
6W-4W	3/4" BSPP	1/2" BSPP	BXP24051-6W-4W-S-377

4 Adjustable low pressure range

Note: Code based on pressure in bar.

20 - 30-210 bar. Std setting 100 bar

35 - 150-350 bar. Std setting 200 bar

5 Adjustable high pressure range

Note: Code based on pressure in bar.

17 - 35-175 bar. Std setting 105 bar

28 - 75-285 bar. Std setting 175 bar

35 - 114-350 bar. Std setting 280 bar

6 Seals

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

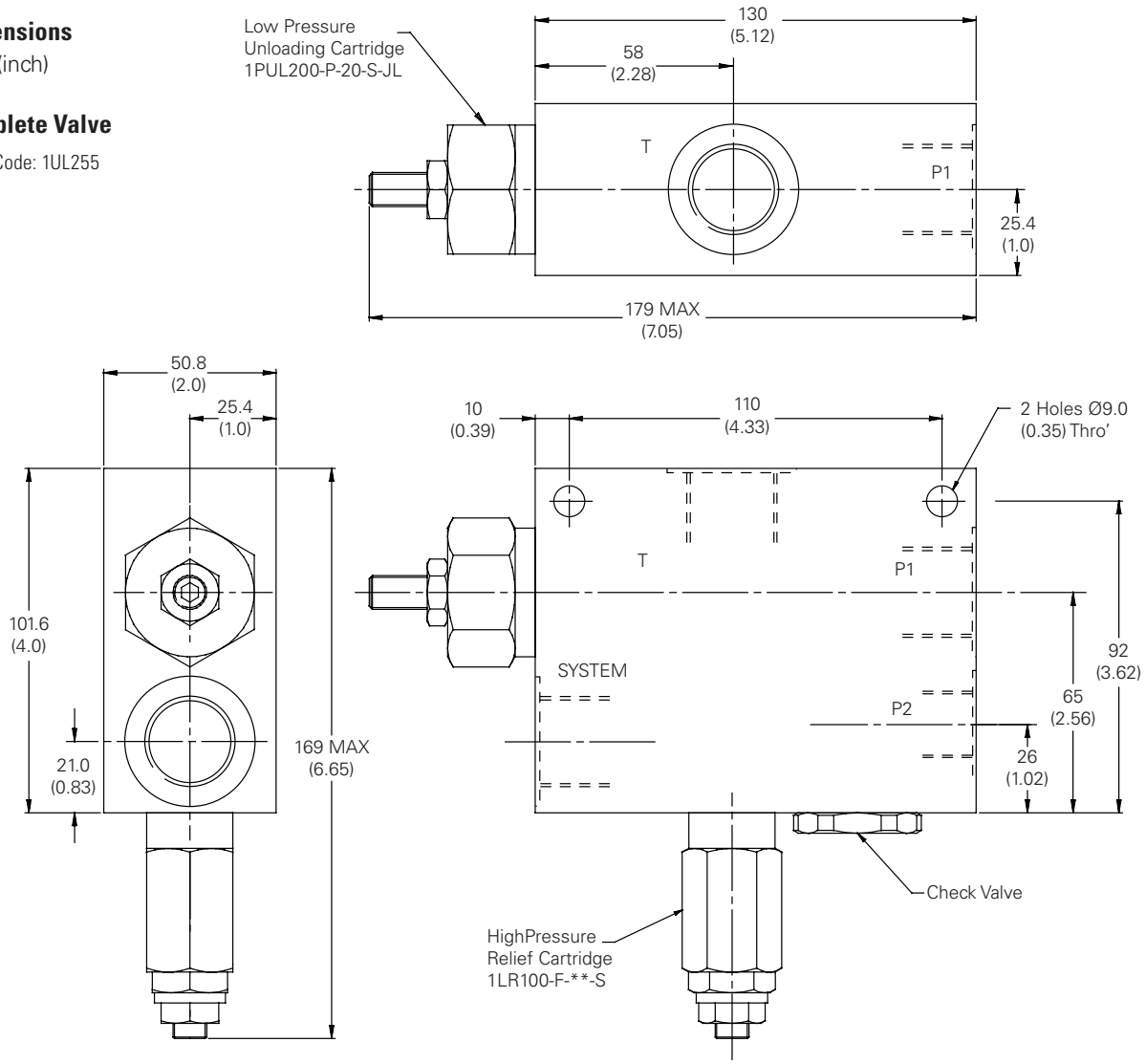
SV - Viton (For high temperature and most special fluid applications)

Dimensions

mm (inch)

Complete Valve

Basic Code: 1UL255



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

On-Line Tools

Ease of Doing Business

- Product Advisor (PVM, VMQ, DG-70, Proportional and Servo Valves)
- Expanded Eaton.com

EATON
Powering Business Worldwide

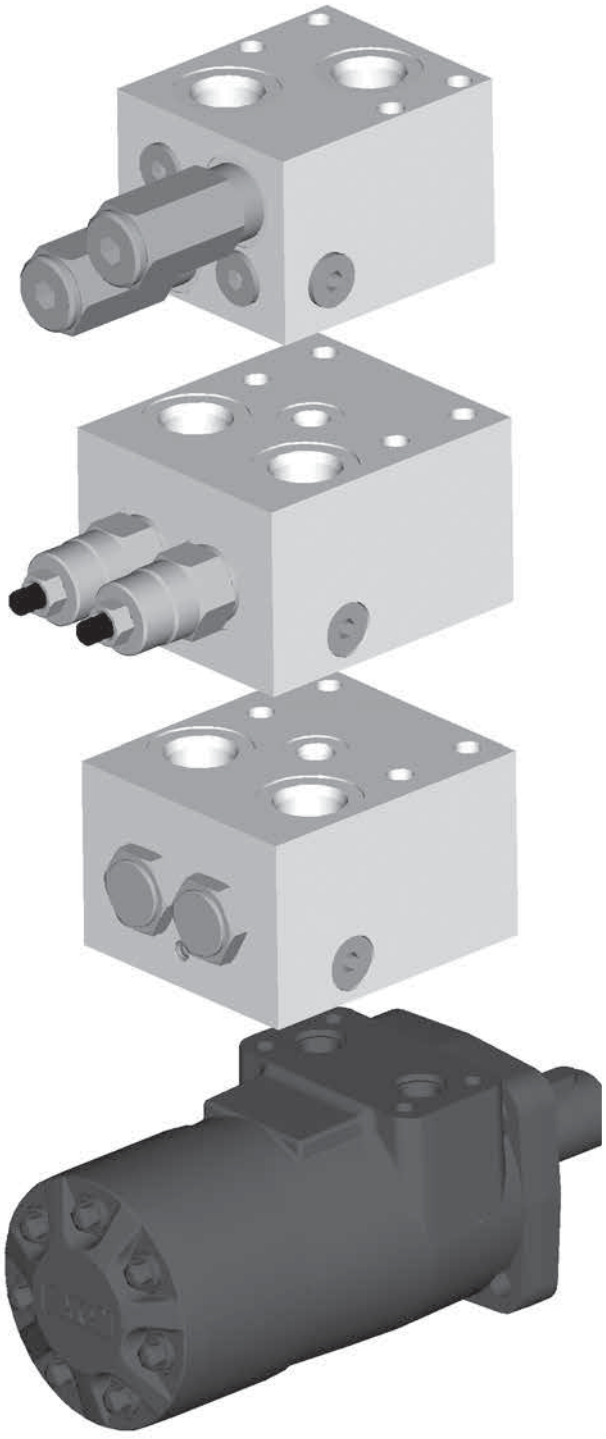
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

We manufacture solutions

Designing hydraulic systems with Eaton-Vickers Cartridge Valves & Manifolds is a cost effective way of bringing your design into production well within the most demanding of production schedules. Minimizing the use of hoses, tubing and fittings will reduce production and assembly time significantly.

Features

- Compatible with Eaton H & T series spool valve motors, and most 2000 series disk valve motors
- Aluminum Manifolds Anodized Black
- Pre-set cartridges to your specifications
- 100% production tested assembly
- Wide range of settings available
- Intelligent model code
- Manifolds are available with out cartridge valves, or pre-assembled and tested to your specifications
- Manifolds and motors can be supplied as a pre-assembled package
- Dual counterbalance valve (with integral shuttle valve), dual pilot operated check valve and dual cross port relief valve packages are available



Eaton H Series Hydraulic Motor

Dual cross-over relief package for H&T series 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

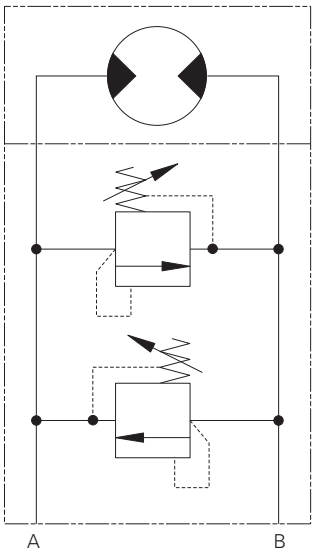
Complete pre-assembled packages are specified using the RV3A-10 model code. Option "A" must be selected for the cage seals, position 6 of the model code is "H". To order the manifold separately, without the two RV3A cartridges, order the part number 4997062-001.

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

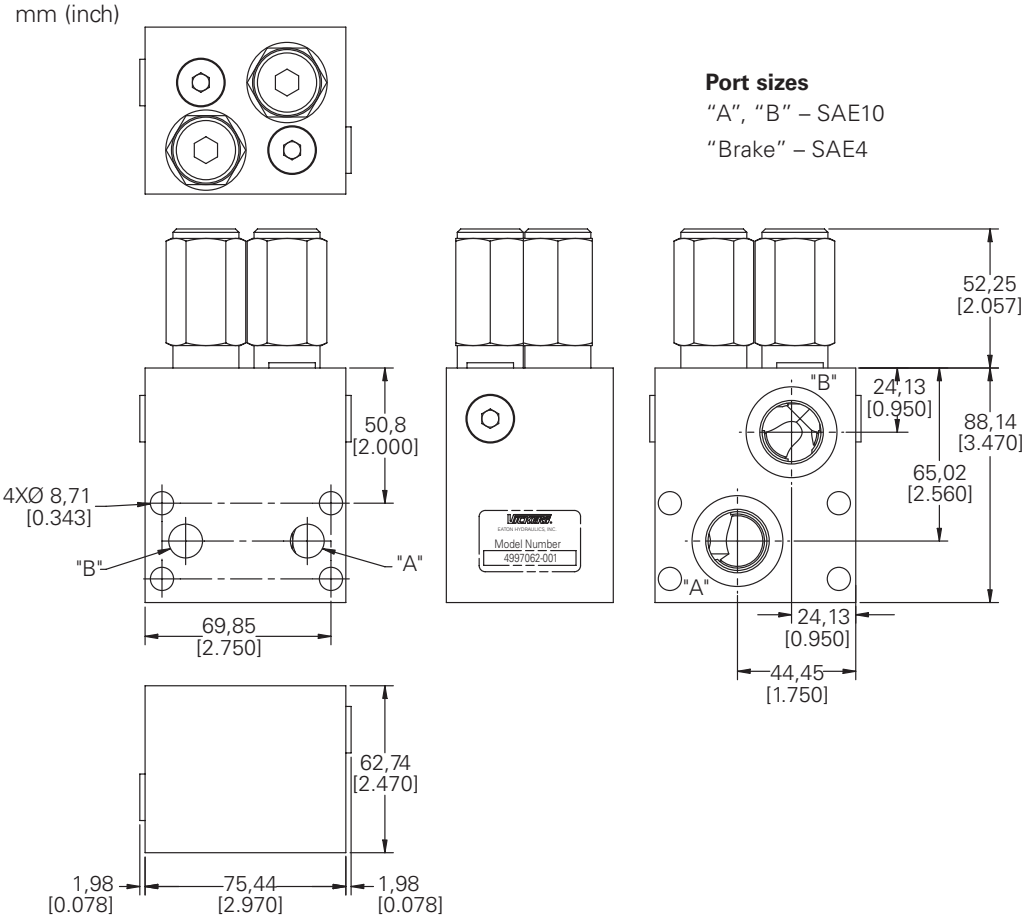
For detailed specifications refer to the RV3A-10 data sheet on page E-210

Functional symbol



Dimensions

mm (inch)



Port sizes

"A", "B" – SAE10

"Brake" – SAE4

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

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".

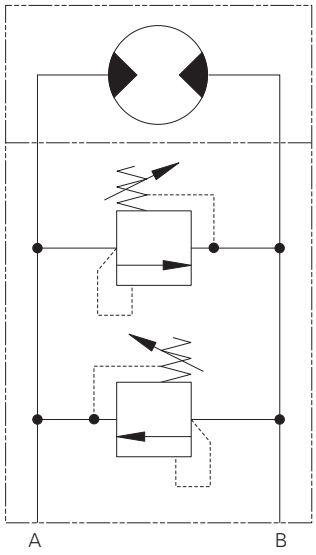
To order the manifold separately, without the two RV3A cartridges, order 4997060-001

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

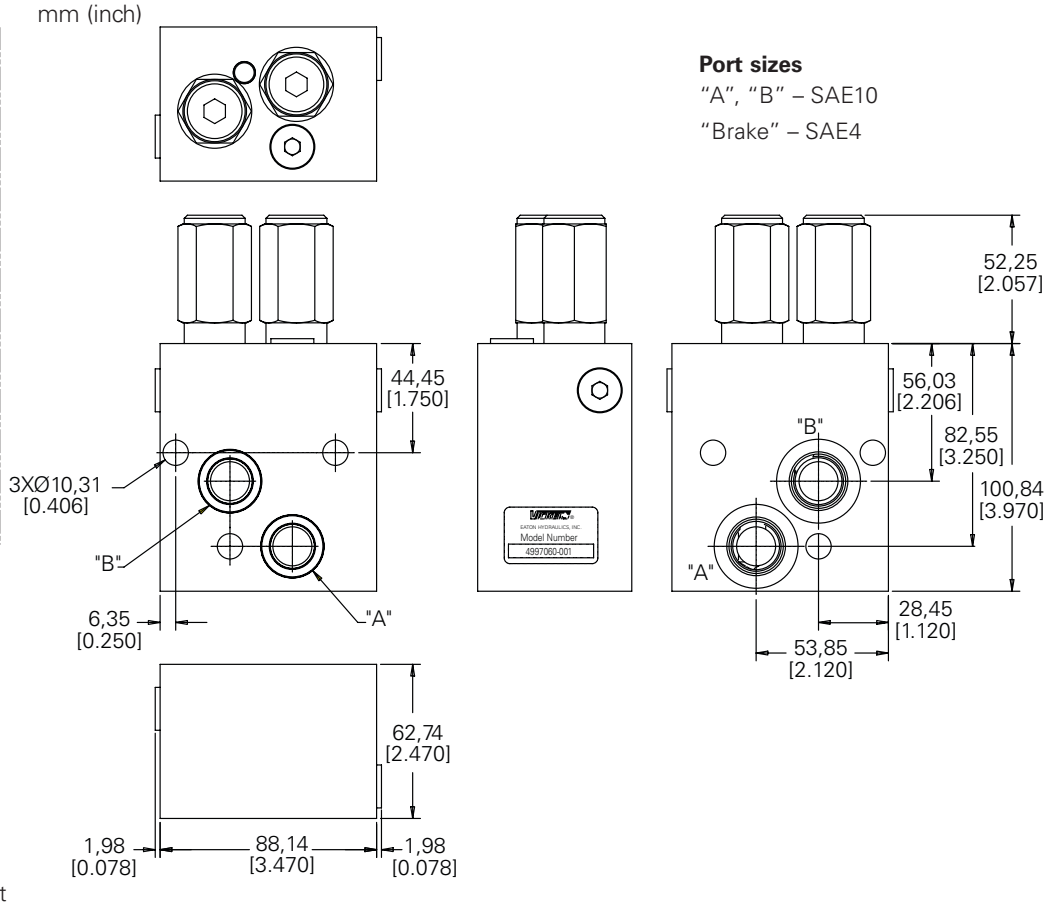
For detailed specifications refer to the RV3A-10 data sheet on page E-14

Functional symbol



Dimensions

mm (inch)



Port sizes

"A", "B" – SAE10

"Brake" – SAE4

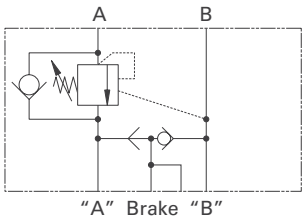
⚠ Warning

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

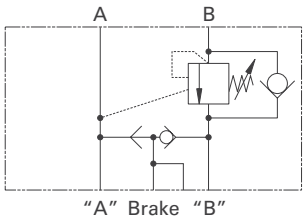
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CESHHT35/1CEESHHT35 - Motor mounted valves

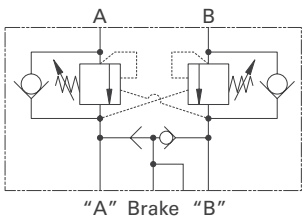
H & T mounting pattern single and dual overcenter valve with brake release shuttle



1CESHHT35*A



1CESHHT35*B



1CEESHHT35

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:

Pilot Pressure =

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

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

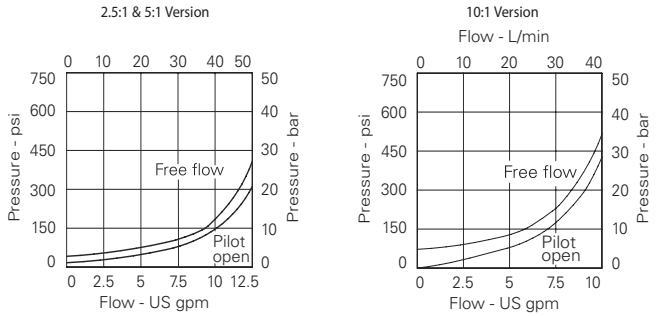
Ratings and specifications

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 ibs ft)
Weight (inc cartridges)		1CESHHT35 1CEESHHT35	2.29 kg (5.04 lbs) 2.34 kg (5.15 lbs)
Seal kit number	1CESHHT35 1CEESHHT35	9900828-000 (Buna-N) 9900828-000 (Buna-N)	9900829-000 (Viton) 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.

1CESHHT35/1CEESHHT35 - Motor mounted valves

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



1CE*SHHT35- F - A 10H - AG - 35 0 - 35 0 - S - 5

1 2 3 4 5 6 7 8 9 10 11

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

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

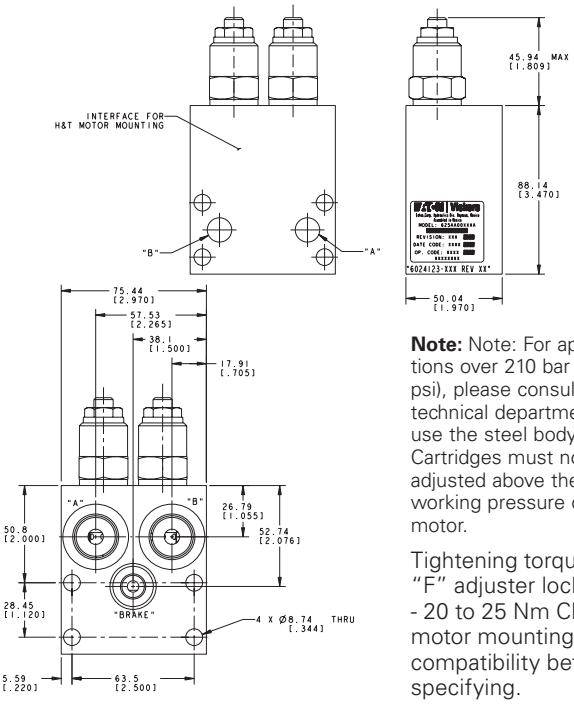
S – Buna-N
SV – VitoN

11 Pilot ratio

2 – 2.5:1
5 – 5:1
10 – 10:1

Cavity plug part number

Nitrile
AXP13032-01-N
AXP13032-01-V



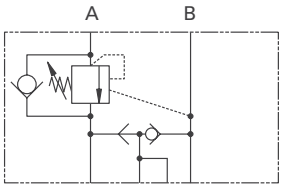
Note: Note: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option. Cartridges must not be adjusted above the safe working pressure of the motor.

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.

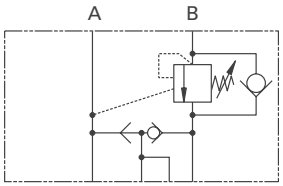
1CESH2K95/1CEESH2K95 - Motor mounted valves

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



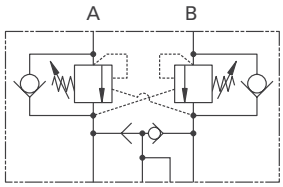
"A" Brake "B"

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:

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

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

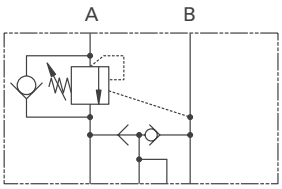
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)			
Rated flow			90 L/min (23 USgpm)
Max setting		Max load induced Pressure:	270 bar (4000 psi)
		Relief setting:	350 bar (5000 psi)
Cartridge material			Working parts hardened & ground steel External surface zinc plated
Body material			Standard 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 ibs 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)
	1CEESHT35	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)

K

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

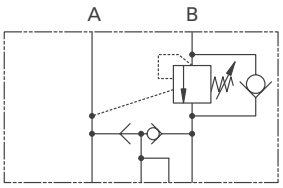
1CESH2K95/1CEESH2K95 - Motor mounted valves

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



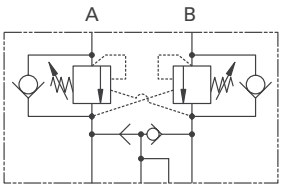
"A" Brake "B"

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:

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

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

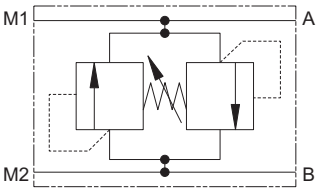
Ratings and specifications

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 ibs 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)
	1CEESHT35	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.

1CLLROMP150 - Motor mounted relief

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



Operation

Pressure acts over one of two differential areas forcing the poppet back allowing relief flow to the other port. This being a single cartridge is ideal for mounting on to a motor in a special housing.

Features

Single cartridge relieving in both directions cutting down space requirements, giving full adjustment through its range on both pressures at the same time.

Performance data

Ratings and specifications

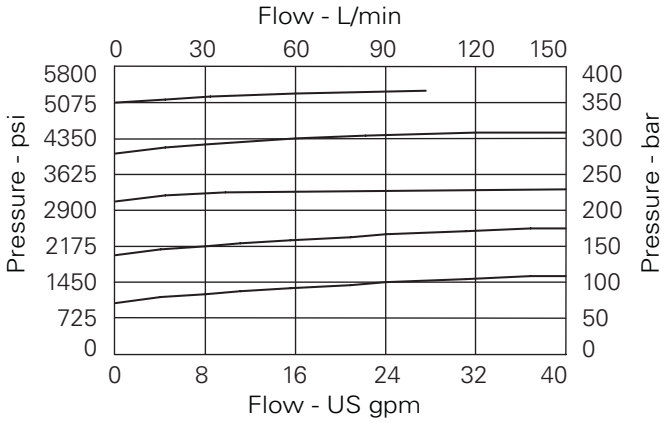
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated Flow	150 L/min (40 USgpm)
Max Setting	350 bar (5000 psi)
Cartridge Material	Working parts hardened and ground steel. External steel surfaces black oxide.
Body Material	Standard aluminium (up to 210 bar*) Add Suffix '377' for steel option
Mounting Position	Unrestricted
Cavity Number	A878 (See Section M)
Torque Cartridge into Cavity	60 Nm (44 lbs ft)
Weight	1.46 kg (3.21 lbs)
Seal Kit Number	SK1280 (Nitrile) SK1280V (Viton)
Recommended Filtration Level	BS5540/4 Class 18/13 (25 micron nominal)
Operating Temp	-30°C to +90°C (-22° to 194°F)
Leakage	5 milliL/min
Nominal Viscosity Range	5 to 500 cSt

Description

This is a direct acting bi-directional relief valve designed to protect both lines in a circuit from over pressurization by relieving oil to the other line. Ideal for use with motors or directional valves as a emergency relief. Differential area, fast acting, poppet valve.

Pressure drop

Cartridge only



K

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

1CLLROMP150 - Motor mounted relief

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

Model code

1CLLROMP150 – F 4W – 35 S BK

1 2 3 4 5 6

1 Basic code

1CLLROMP150 - Cartridge and Body

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	Port size	Housing number
4W	1/2" BSP	AXP24058-4W-S

4 Adjustable pressure range

Note: Code based on pressure in bar.

35 - 114-350 bar. Std setting 280 bar*

Std setting made at 14 L/min

* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Mounting

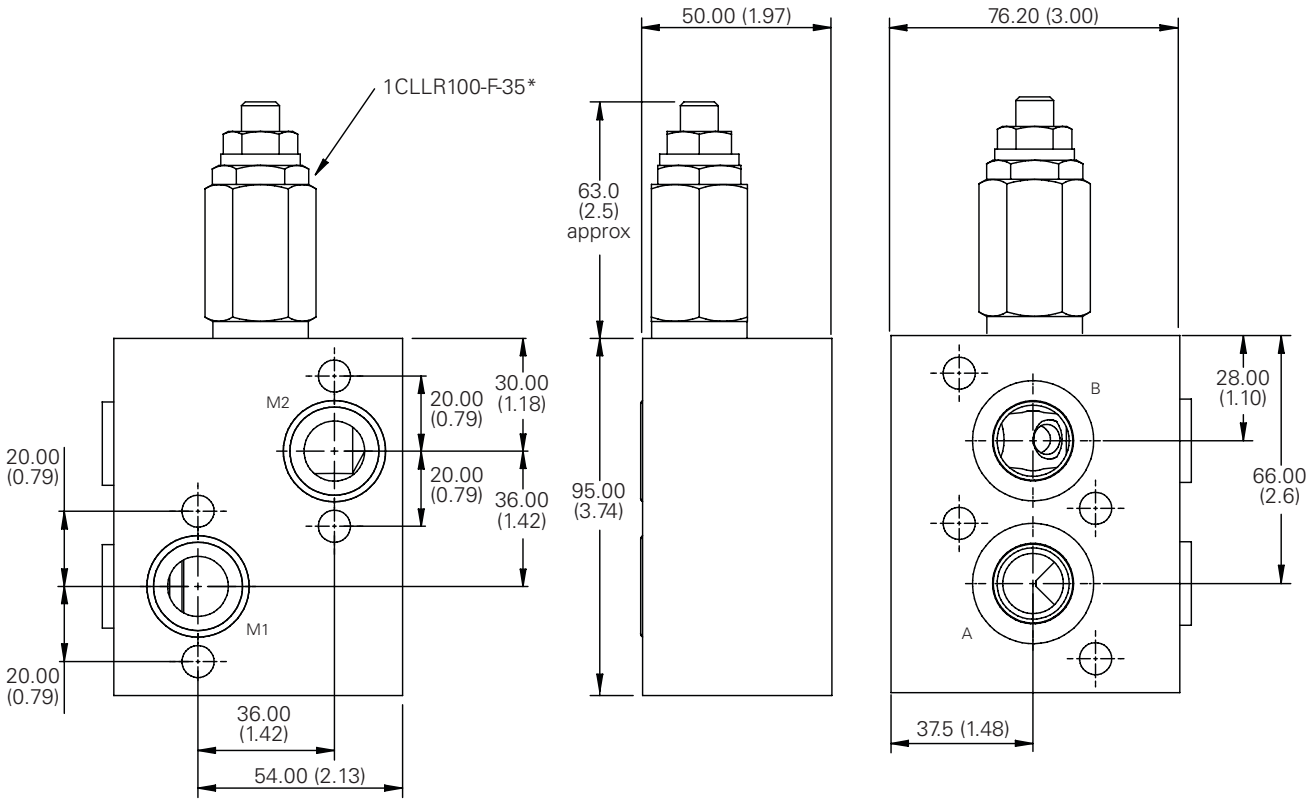
BK - Bolt Kit

Dimensions

mm (inch)

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

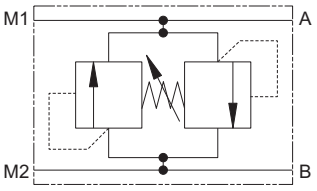
Notes: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option.



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

1CLLROMS150 - Motor mounted relief

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



Operation

Pressure acts over one of two differential areas forcing the poppet back allowing relief flow to the other port. This being a single cartridge is ideal for mounting on to a motor in a special housing.

Features

Single cartridge relieving in both directions cutting down space requirements, giving full adjustment through its range on both pressures at the same time.

Performance data

Ratings and specifications

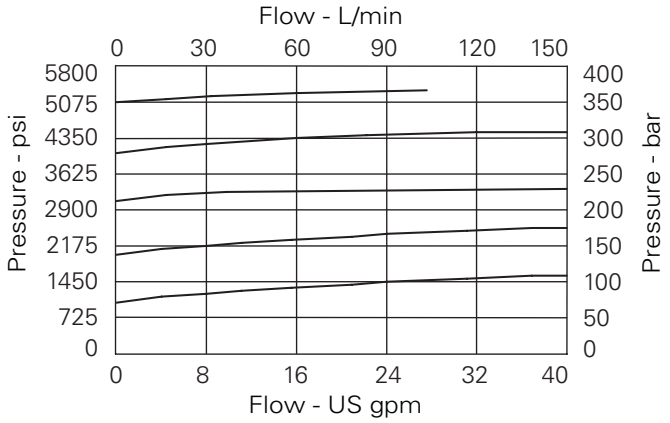
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)	
Rated Flow	150 L/min (40 USgpm)
Max Setting	350 bar (5000 psi)
Cartridge Material	Working parts hardened and ground steel. External steel surfaces black oxide.
Body Material	Standard aluminium (up to 210 bar*) Add Suffix '377' for steel option
Mounting Position	Unrestricted
Cavity Number	A878 (See Section M)
Torque Cartridge into Cavity	60 Nm (44 lbs ft)
Weight	1.46 kg (3.21 lbs)
Seal Kit Number	SK1280 (Nitrile) SK1280V (Viton)
Recommended Filtration Level	BS5540/4 Class 18/13 (25 micron nominal)
Operating Temp	-30°C to +90°C (-22° to 194°F)
Leakage	5 milliL/min
Nominal Viscosity Range	5 to 500 cSt

Description

This is a direct acting bi-directional relief valve designed to protect both lines in a circuit from over pressurization by relieving oil to the other line. Ideal for use with motors or directional valves as a emergency relief. Differential area, fast acting, poppet valve.

Pressure drop

Cartridge only



K

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

1CLLROMS150 - Motor mounted relief

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

Model code

1CLLROMS150 – F 4W – 35 S BK

1 2 3 4 5 6

1 Basic code

1CLLROMS150 - Cartridge and Body

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	Port size	Housing number
4W	1/2" BSP	AXP24059-4W-S

4 Adjustable pressure range

Note: Code based on pressure in bar.
35 - 114-350 bar. Std setting 280 bar*
Std setting made at 14 L/min
* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Mounting

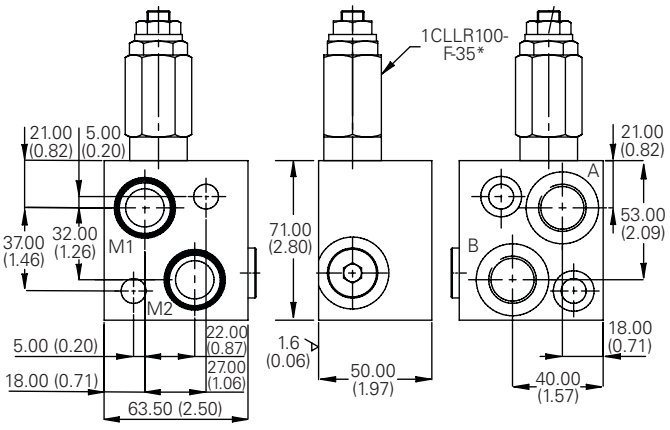
BK - Bolt Kit

Dimensions

mm (inch)

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

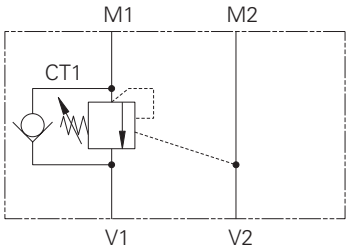
Note: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option.



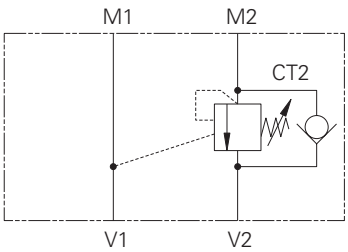
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEOMP35/1CEEOMP35 - Motor mounted valves

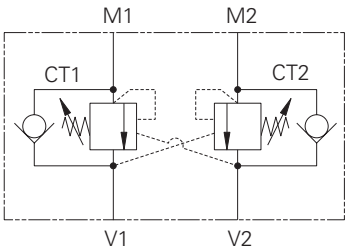
OMP mounting pattern single and dual overcenter valves



1CEOMP35-1



1CEOMP35-2



1CEEOMP35

Description

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

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

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

Operation

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

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

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

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

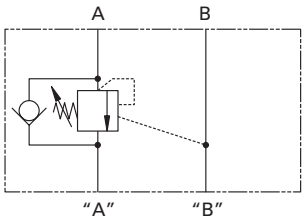
Ratings and specifications

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*) Add suffix '377' for steel option
Mounting position			Unrestricted
Cavity Number			A6610 (See section M)
Torque cartridge into cavity			45 Nm (33 ibs ft)
Weight (inc cartridges)			1CEOMP35 1.6 kg (3.52 lbs) 1CEEOMP35 1.66 kg (3.65 lbs)
Seal kit number	1CEOMP35	SK1285 (Nitrile)	SK1285V (Viton)
	1CEEOMP35	SK1284 (Nitrile)	SK1284V (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

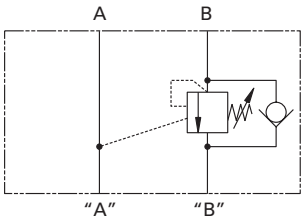
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEHT35/1CEEHT35 - Motor mounted valves

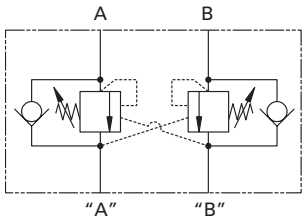
H & T Mounting pattern single and dual overcenter valves



1CEHT35*A



1CEHT35*B



1CEEHT35

Description

Overcenter valves give static and dynamic control of loads by regulating the flow into and out of hydraulic actuators. When installed close to or within an actuator, the overcenter valve will stop runaway in the event of hose burst and if open center directional control valves are used, will allow thermal expansion relief of the hydraulic fluid. The overcenter cartridge is ideal for mounting directly into a cavity machined in the body of the cylinder, motor or rotary actuator.

The cartridge can also be mounted directly to the ports via a specifically machined body as part of a Hydraulic Integrated Circuit or single unit, or contained within one of our standard line bodies.

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

Operation

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

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

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

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

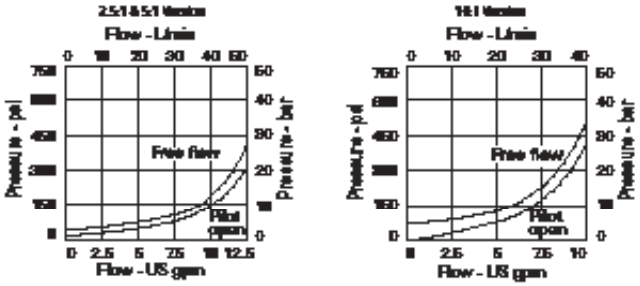
Ratings and specifications

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 ibs ft)
Weight (inc cartridges)		1CEOMP35 1.6 kg (3.52 lbs) 1CEEOMP35 1.66 kg (3.65 lbs)
Seal kit number	1CEHT35 1CEEHT35	9900834-000 (Buna-N) 9900835-000 (Viton) 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.

1CEHT35/1CEEHT35 - Motor mounted valves

H & T Mounting pattern single and dual overcenter valves



1CEEHT35	-	F	A	10H	-	AG	-	35	0	-	35	0	-	S	-	5
1		2	3	4		5		6	7		8	9		10		11

1 Basic code

1CEEHT35 - Double Cartridge and Body
1CEHT35* - ASingle overcenter in line A-"A"
1CEHT35* - BSingle overcenter in line B-"B"

2 Adjustment means

F – Screw Adjustment

3 Housing material

A – Aluminum
S – Steel

4

	Port size	Dual housing number	
Code	**"A" & "B"**	**Aluminum**	**Steel**
4W	1/2" BSP	6024221-001	6024221-003
10H	SAE 10	6024221-002	
10T	SAE 10		6024221-04

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.
3**5 –** (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

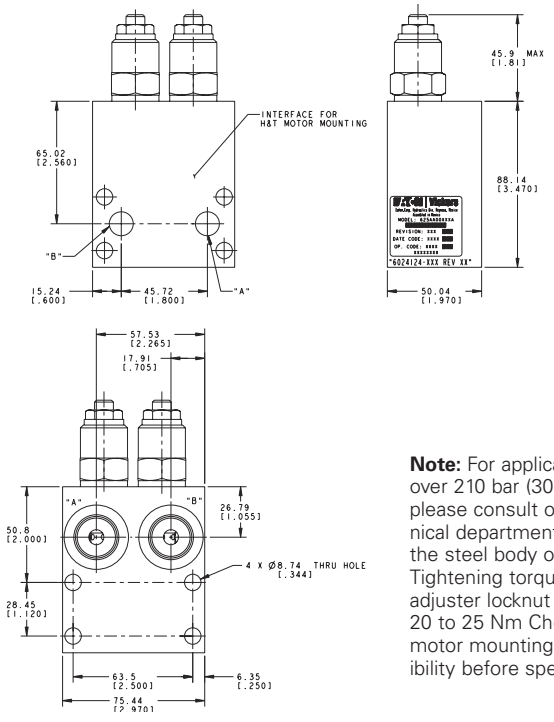
S – Buna-N
SV – VitoN

11 Pilot ratio

4 – 4:1
8 – 8:1
10 – 8:1

Cavity plug part number

Nitrile
AXP13032-01-N
AXP13032-01-V

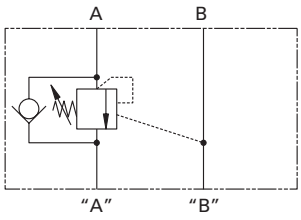


Note: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option. Tightening torque of "F" adjuster locknut - 20 to 25 Nm Check motor mounting compatibility before specifying.

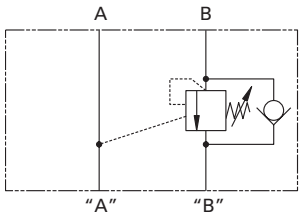
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CE2K95/1CEE2K95 - Motor mounted valves

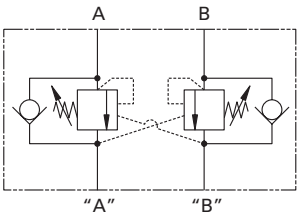
2K Mounting pattern single and dual overcenter valves



1CE2K95*A



1CE2K95*B



1CEE2K95

Description

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

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

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

Operation

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

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

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

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

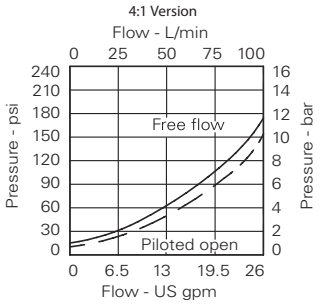
Ratings and specifications

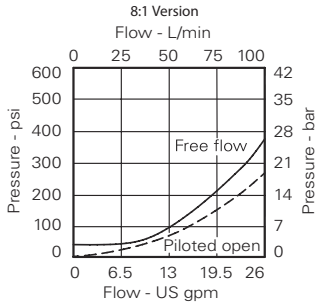
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)		
Rated flow		90 L/min (23 USgpm)
Max setting		Max load induced Pressure: 270 bar (4000 psi) Relief setting: 350 bar (5000 psi)
Cartridge material		Working parts hardened & ground steel External surface zinc plated
Body material		Standard 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 ibs ft)
Weight (inc cartridges)		1CE2K95 2.16 kg (4.75 lbs) 1CEE2K95 2.26 kg (4.97 lbs)
Seal kit number	1CE2K95	9900826-000 (Buna-N) 9900827-000 (Viton)
	1CEE2K95	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)

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

1CE2K95/1CEE2K95 - Motor mounted valves

2K Mounting pattern single and dual overcenter valves





1CEE2K95 - F - A 10H - AG - 35 0 - 35 0 - S - 5

1 2 3 4 5 6 7 8 9 10 11

1 Basic code

1CEE2K95 Double Cartridge and Body
1CE2K95* A Single overcenter in line A-"A"
1CE2K95* B Single overcenter in line B-"B"

2 Adjustment means

F – Screw Adjustment

3 Housing material

A – Aluminum
S – Steel

4

	Port size	Dual housing number	
Code	**"A" & "B"**	**Aluminum**	**Steel**
4W	1/2" BSP	6025185-001	6025185-003
10H	SAE 10	6025185-002	
10T	SAE 10		6025185-004

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 – 70-225 bar. Std setting 100 bar.
35 – 200-350 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 – 70-225 bar. Std setting 100 bar.
35 – 200-350 bar. Std setting 210 bar.

9 Pressure setting (cart B)

0 – Std factory setting
1500 – 1500 psi

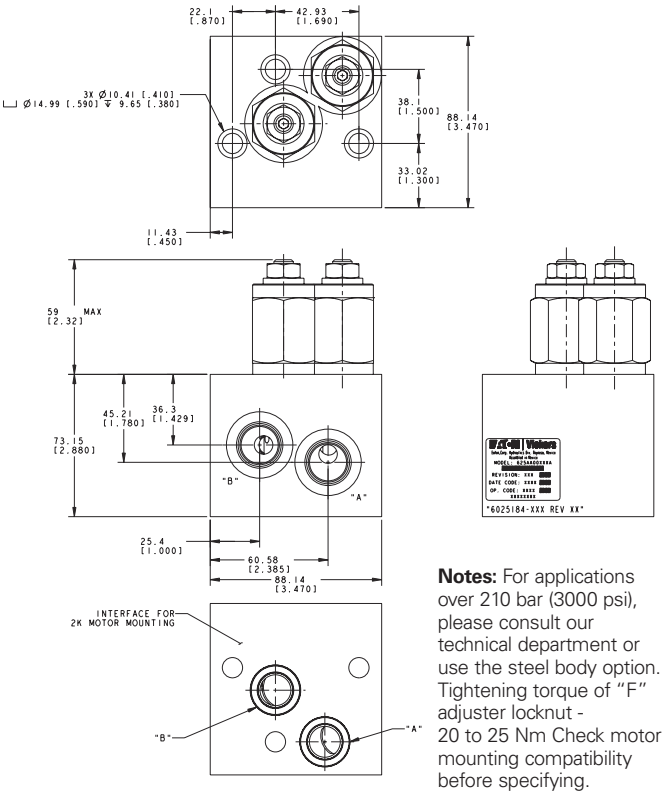
10 Seals

S – Buna-N
SV – VitoN

11 Pilot ratio

4 – 4:1
8 – 8:1

Cavity plug part number
Nitrile
AXP14434-02-N
Viton
AXP14434-02-V

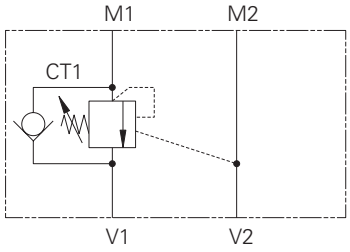


Notes: For applications over 210 bar (3000 psi), please consult our technical department or use the steel body option. Tightening torque of "F" adjuster locknut - 20 to 25 Nm Check motor mounting compatibility before specifying.

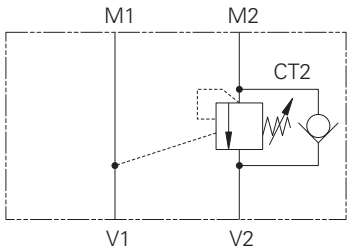
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEOMS95/1CEEOMS95 - Motor mounted valves

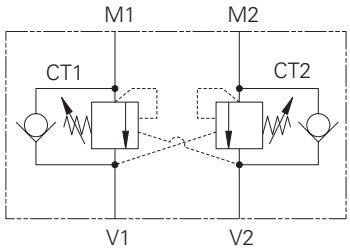
OMS Mounting pattern single and dual overcenter valves



1CEOMS95-1



1CEOMS95-2



1CEEOMS95

Description

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

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

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

Operation

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

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

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

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*) Add suffix '377' for steel option
Mounting position	Unrestricted
Cavity Number	A12336 (See section M)
Torque cartridge into cavity	60 Nm (44 ibs ft)
Weight (inc cartridges)	1CEOMS95 2.16 kg (4.75 lbs) 1CEEOMS95 2.26 kg (4.97 lbs)
Seal kit number	1CEOMS95 SK1282 (Nitrile) SK1282V (Viton) 1CEEOMS95 SK795 (Nitrile) SK795V (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

K

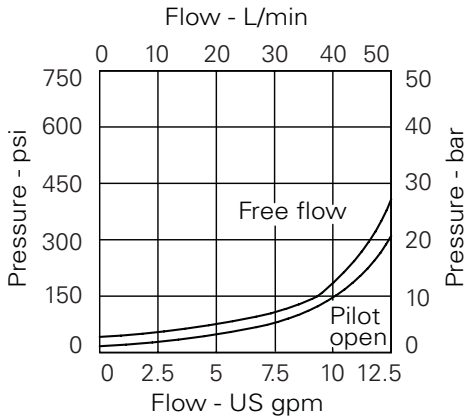
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CEOMP35/1CEEOMP35 - Motor mounted valves

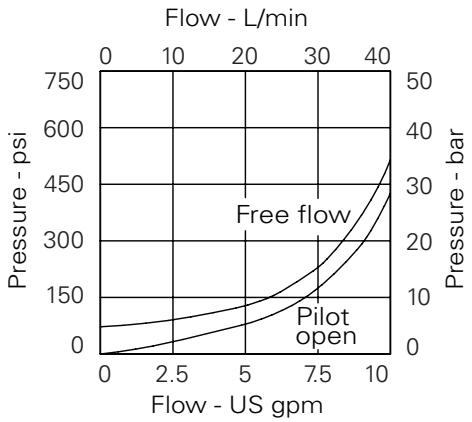
OMP Mounting pattern single and dual overcenter valves

Pressure drop

2.5:1 & 5:1 Version



10:1 Version



Model code

1CE*OMP35-* – F 4W – 35 S 5 BK

1 2 3 4 5 6 7

1 Basic code

1CEEOMP35 - Double Cartridge and Body
1CEOMP35-1 - Single overcenter in line V1-M1
1CEOMP35-2 - Single overcenter in line V2-M2

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	Port size	Housing number
4W	1/2" BSPP	BXP24052-4W-S

4 Pressure range

Note: Code based on pressure in bar.
20 - (2.5:1 and 5:1): 70-210 bar. Std setting 100 bar
(10:1): 100-210 bar. Std setting 100 bar
35 - (2.5:1 and 5:1): 100-350 bar. Std setting 210 bar
(10:1): 120-350 bar. Std setting 210 bar
Std setting made at 4.8 L/min
* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Pilot ratio

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

7 Mounting

BK - Bolt Kit

Cavity plug part number

Nitrile
AXP13032-01-N

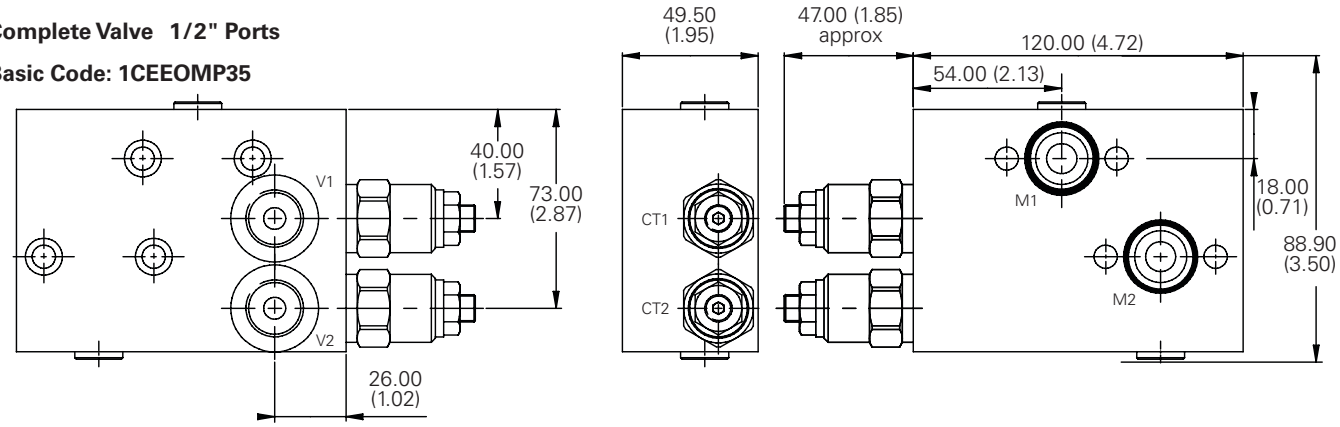
Viton
AXP13032-01-V

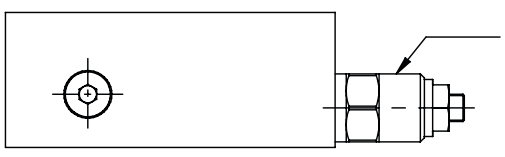
Dimensions

mm (inch)

Complete Valve 1/2" Ports

Basic Code: 1CEEOMP35





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

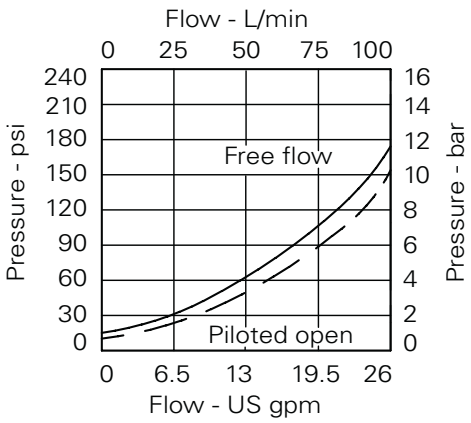
Tightening torque of "F" adjuster locknut - 20 to 25 Nm

Check motor mounting compatibility before specifying.

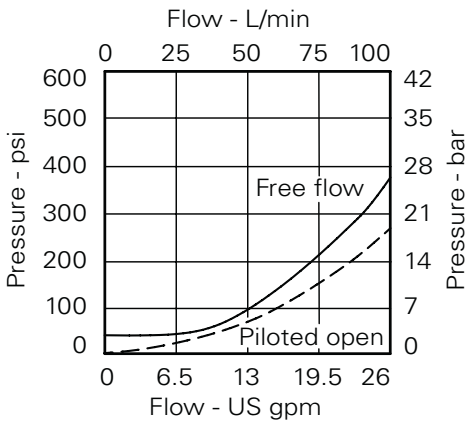
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Pressure drop

4:1 Version



8:1 Version



Model code

1CE*OMS95-* – F 4W – 35 S 4 BK

1 2 3 4 5 6 7

1 Basic code

1CEEOMS95 - Double Cartridge and Body
1CEOMS95-1 - Single overcenter in line V1-M1
1CEOMS95-2 - Single overcenter in line V2-M2

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	V1 & V2	Brake	Housing number
4W	1/2" BSPP	1/4" BSPP	BXP24055-4W-S

4 Pressure range

Note: Code based on pressure in bar.

20 - 70-225 bar. Std setting 100 bar

35 - 200-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min

* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Pilot ratio

4 - 4:1
8 - 8:1

7 Mounting

BK - Bolt Kit

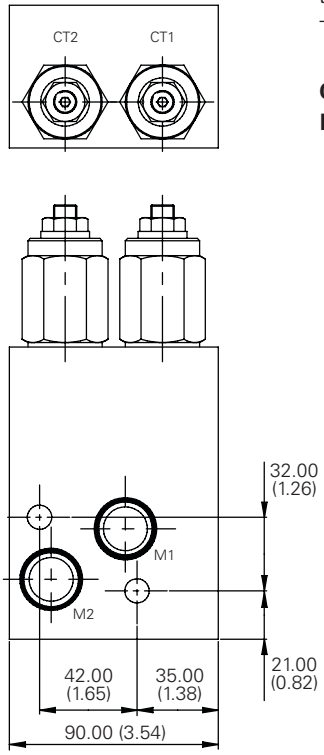
Cavity plug part number

Nitrile
AXP14434-02-N

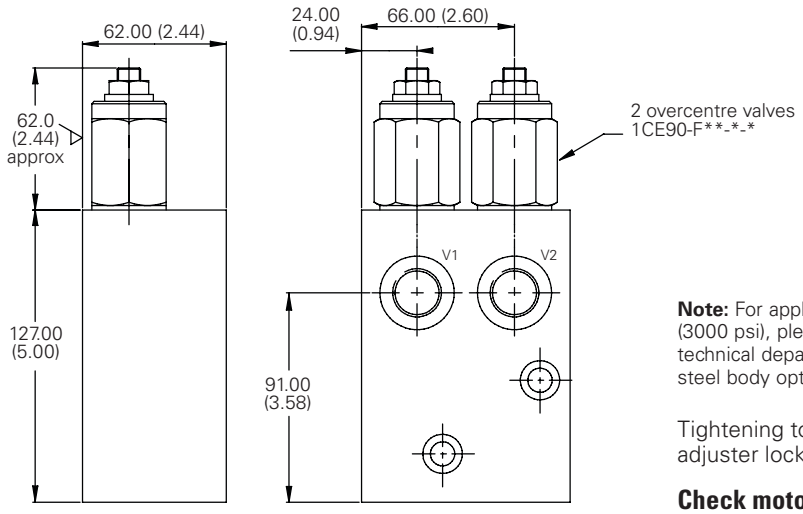
Viton
AXP14434-02-V

Dimensions

mm (inch)



Complete Valve 1/2" Ports
Basic Code: 1CEEOMS95



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

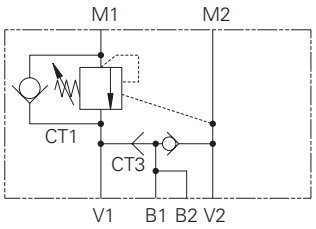
Tightening torque of "F" adjuster locknut - 20 to 25 Nm

Check motor mounting compatibility before specifying.

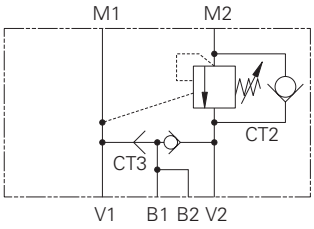
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CESHOMP35/1CEESHOMP35 - Motor mounted valves

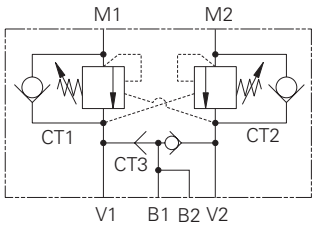
OMP Mounting pattern single and dual overcenter valve with brake release shuttle



1CESHOMP35-1



1CESHOMP35-2



1CEESHOMP35

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 V1 or V2. 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 =

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

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*) Add suffix '377' for steel option
Mounting position	Unrestricted
Cavity Number	A6610 (See section M)
Torque cartridge into cavity	45 Nm (33 ibs ft)
Weight (inc cartridges)	1CESHOMP35 2.29 kg (5.04 lbs) 1CEESHOMP35 2.34 kg (5.15 lbs)
Seal kit number	1CESHOMP35 SK1285 (Nitrile) SK1285V (Viton) 1CEESHOMP35 SK1284 (Nitrile) SK1284V (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

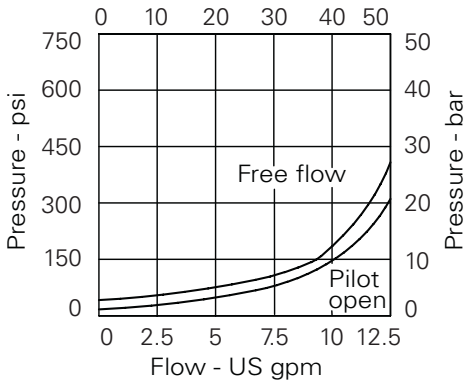
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CESHOMP35/1CEESHOMP35 - Motor mounted valves

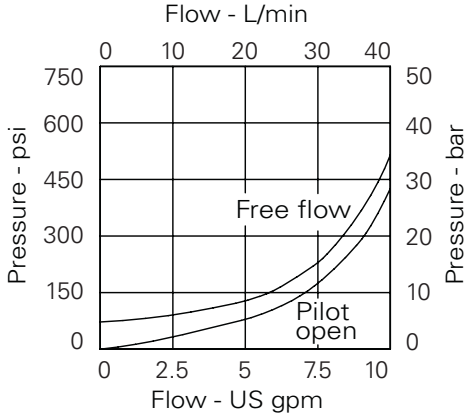
OMP Mounting pattern single and dual overcenter valve with brake release shuttle

Pressure drop

2.5:1 & 5:1 Version



10:1 Version



Model code

1CE*SHOMP35-*– F 4W – 35 S 5 BK

1 2 3 4 5 6 7

1 Basic code

1CEESHOMP35 - Double Cartridge and Body
1CESHOMP35-1 - Single overcenter in line V1-M1
1CESHOMP35-2 - Single overcenter in line V2-M2

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	V1 & V2	Brake	Housing number
4W	1/2" BSPP	1/4" BSPP	BXP24053-4W-S

4 Pressure range

Note: Code based on pressure in bar.

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

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

Std setting made at 4.8 L/min

* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Pilot ratio

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

7 Mounting

BK - Bolt Kit

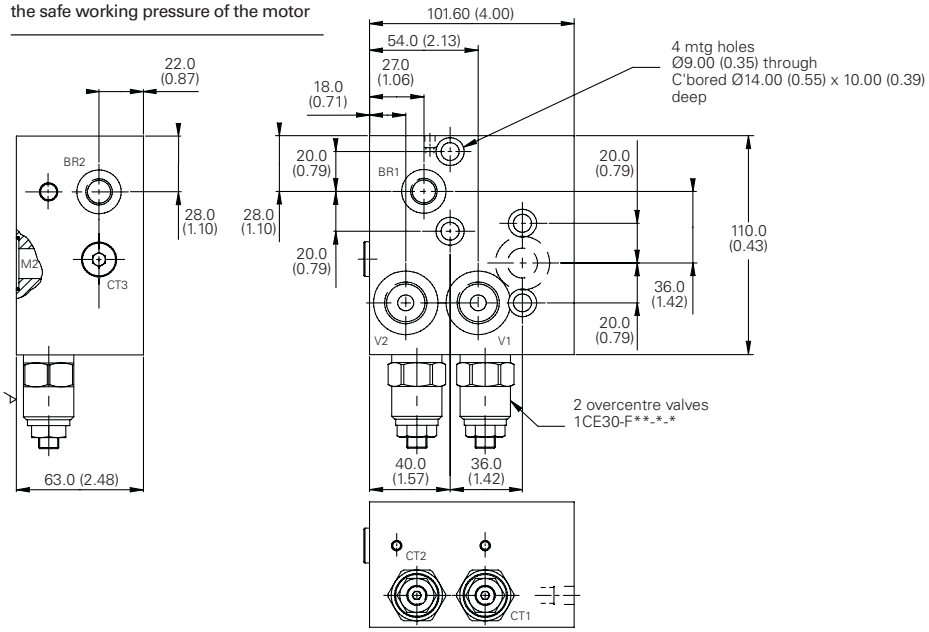
Cavity plug part number
Nitrile
AXP13032-01-N
Viton
AXP13032-01-V

Dimensions

mm (inch)

Complete Valve 1/2" Ports
Basic Code: 1CEESHOMP35

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



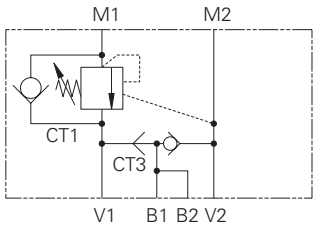
Tightening torque of "F" adjuster locknut - 20 to 25 Nm

Check motor mounting compatibility before specifying.

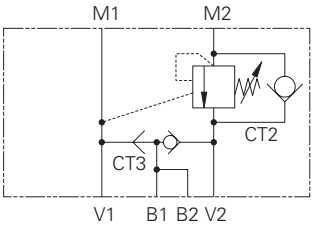
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CESHOMS95/1CEESHOMS95 - Motor mounted valves

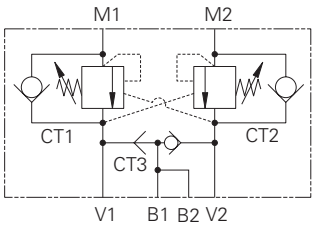
OMS Mounting pattern single and dual overcenter valves with brake release shuttle



1CESHOMS95-1



1CESHOMS95-2



1CEESHOMS95

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 V1 or V2. 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 =

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

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*) Add suffix '377' for steel option
Mounting position	Unrestricted
Cavity Number	A12336 (See section M)
Torque cartridge into cavity	60 Nm (44 ibs ft)
Weight (inc cartridges)	1CESHOMS95 2.32 kg (5.10 lbs) 1CEESHOMS95 2.42 kg (5.32 lbs)
Seal kit number	1CESHOMS95 SK1282 (Nitrile) SK1282V (Viton) 1CEESHOMS95 SK795 (Nitrile) SK795V (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

K

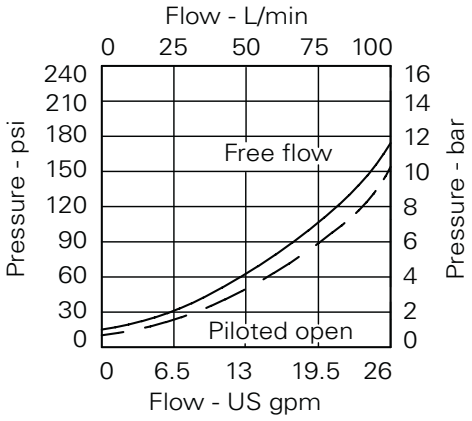
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1CESHOMS95/1CEESHOMS95 - Motor mounted valves

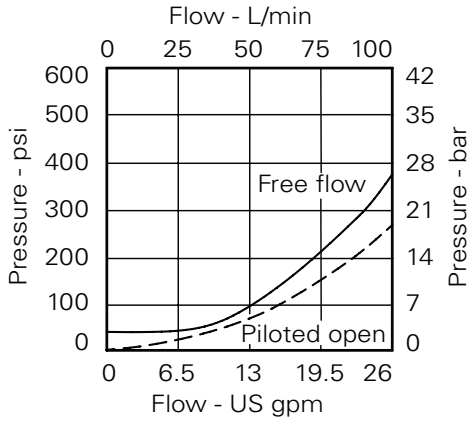
OMS Mounting pattern single and dual overcenter valves with brake release shuttle

Pressure drop

4:1 Version



8:1 Version



Model code

1CE*SHOMS95-* –F 4W – 35 S 4 BK

1 2 3 4 5 6 7

1 Basic code

1CEESHOMS95 - Double Cartridge and Body
1CESHOMS95-1 - Single overcenter in line V1-M1
1CESHOMS95-2 - Single overcenter in line V2-M2

2 Adjustment means

F - Screw Adjustment

3 Port size

Code	V1 & V2	Brake	Housing number
4W	1/2" BSPP	3/8" BSPP	BXP24056-4W-S

4 Pressure range

Note: Code based on pressure in bar.

20 - 70-225 bar. Std setting 100 bar

35 - 200-350 bar. Std setting 210 bar

Std setting made at 4.8 L/min

* Cartridges must not be adjusted above the safe working pressure of the motor

5 Seals

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

6 Pilot ratio

4 - 4:1
8 - 8:1

7 Mounting

BK - Bolt Kit

Cavity plug part number

Nitrile
AXP14434-02-N

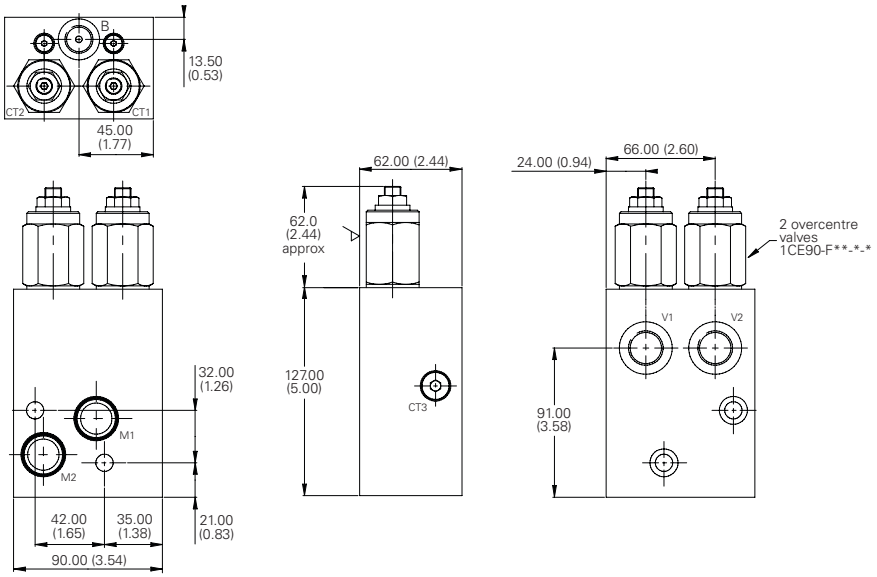
Viton
AXP14434-02-V

Dimensions

mm (inch)

Complete Valve 1/2" Ports
Basic Code: 1CEESHOMS35

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



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

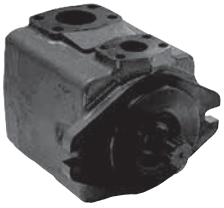
Check motor mounting compatibility before specifying.

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

Reliable.
Quiet.
Compact.
Long Life

EATON
Powering Business Worldwide

Vane Pumps: VMQ



- Pin Vane Design
- Multiple Configurations
- Very Durable
- Very Quiet
- High Continuous Pressure
- Global Design