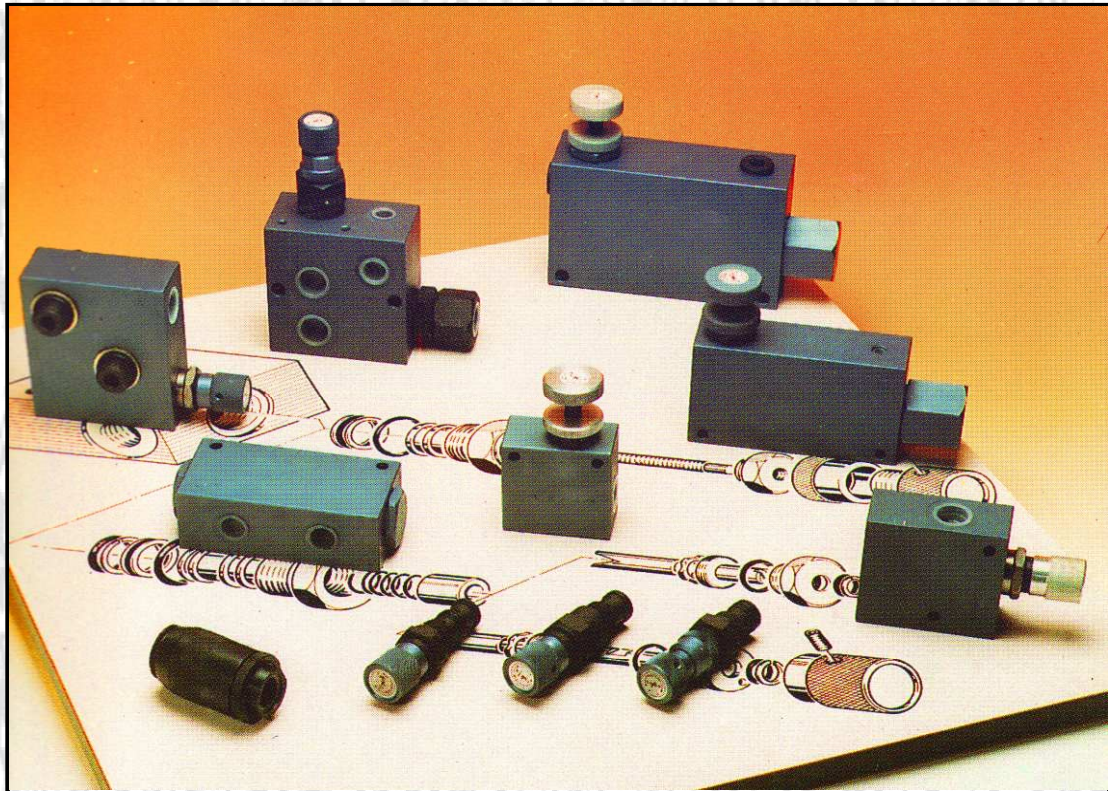


M A HYDRAULICS LTD



CIRCUIT VALVES



UNIT 11 - ASHLEY ESTATE - EXMOOR AVENUE - SCUNTHORPE - DN15 8NJ

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E&OE



Circuit Valves



Section 1	Relief Valves	Line Mount Cross Line Reducing Sequence
Section 2	Non-Return	Line Mount Pilot Operated Outrigger Locks Cetop 3
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Section 6	Solenoid	2 Port On / Off 3 Port Diverters 4 Way Directional
Section 7	Cetop 3	Double Solenoid Single Solenoid Subplates



Section 1

Relief / Reducing Sequence Valves

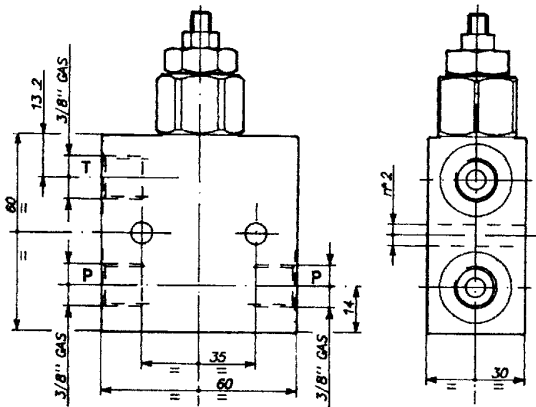


Relief Valve - Line Mount



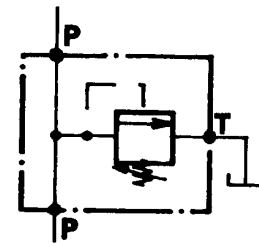
Direct Acting Pilot Piston
Block Style Relief Valve

Pressure 350 Bars
Flow 20 l/min



Direct acting pilot piston relief valve giving fast response, accurate control and low hysteresis. A choice of three springs provides for precise pressure control making these units ideal for continuous duty applications. Valves are supplied with a through P port and parallel T port, for ease of installation. Adjustment is by means of a socket headed screw with locknut to secure the setting.

Circuit Symbol



(All dimensions in mm)

Part Number	Setting Range	Spring	Size
VMP/10-GC14-L 002.008.000	20 to 350 Bars	Yellow	1/4" BSP
VMP/20-GC38-G 002.296.000	10 to 210 Bars	Green	3/8" BSP
VMP/20-GC38-Y 002.296.000	20 to 350 Bars	Yellow	3/8" BSP

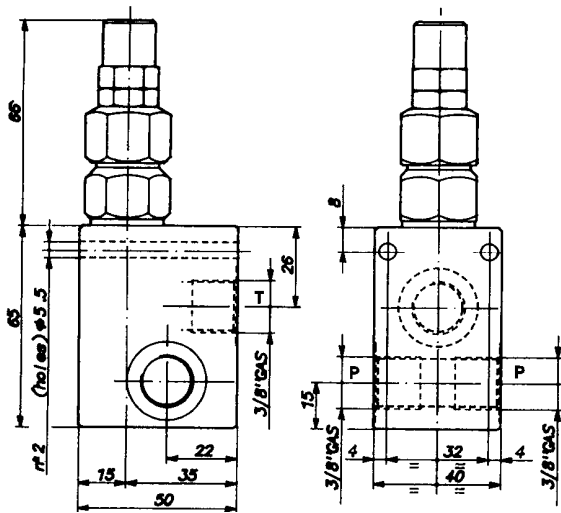


Relief Valve - Line Mount



Direct Acting
T Block Style Pilot Piston
Relief Valve

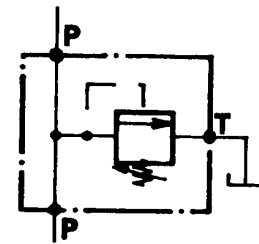
Pressure 450 Bars
Flow 35 l/min



Direct acting poppet relief valve giving fast response, accurate control and low hysteresis. Choice of three s ranges provides for precise pressure control.

Valves are supplied with a through P port and right ar T port, for ease of installation. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.

Circuit Symbol



(All dimensions in mm)

Part Number	Setting Range	Spring	Size
VMP/35-GC-38-B 002.134.000	5 to 100 Bars	Blue	3/8" BSP
VMP/35-GC-38-G 002.134.000	10 to 210 Bars	Green	3/8" BSP
VMP/35-GC-38-Y 002.134.000	20 to 350 Bars	Yellow	3/8" BSP



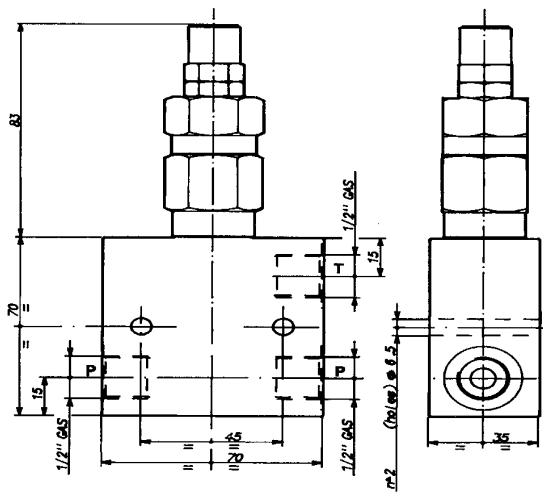
Relief Valve - Line Mount



Direct Acting
Block Style

Pilot Piston
Relief Valve

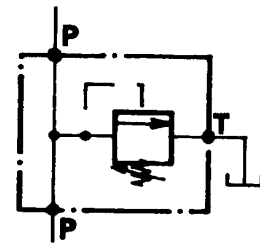
Pressure 450 Bars
Flow 45 l/min



Direct acting poppet relief valve giving fast response, accurate control and low hysteresis. Choice of three s ranges provides for precise pressure control.

Valves are supplied with a through P port and parallel line T port, for ease of installation. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.

Circuit Symbol



(All dimensions in mm)

Part Number	Setting Range	Spring	Size
VMP/45-G/C-12-B 002.277.000	5 to 100 Bars	Blue	1/2" BSP
VMP/45-G/C-12-G 002,277.000	10 to 210 Bars	Green	1/2" BSP
VMP/45-G/C-12-Y 002.277.000	20 to 350 Bars	Yellow	1/2" BSP

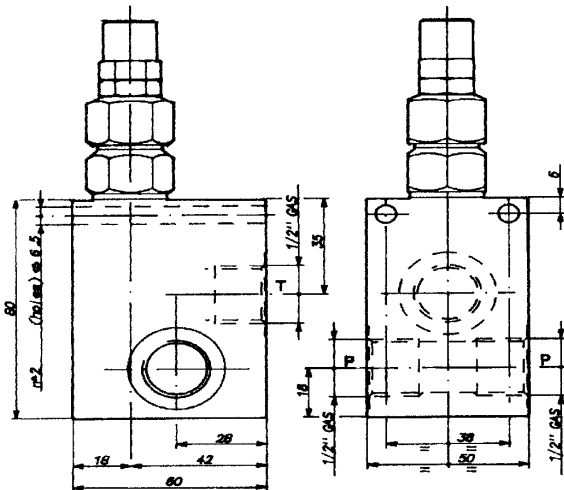


Relief Valve - Line Mount



Direct Acting Pilot Piston
T Block Style Relief Valve

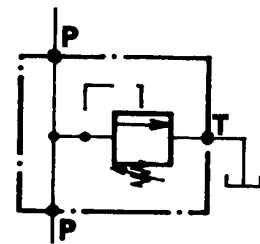
Pressure 450 Bars
Flow 80 l/min



Direct acting poppet relief valve giving fast response, accurate control and low hysteresis. Choice of three s ranges provides for precise pressure control.

Valves are supplied with a through P port and right ar T port, for ease of installation. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.

Circuit Symbol



(All dimensions in mm)

Part Number	Setting Range	Spring	Size
VMP/80-G/C-12-BLU 002.202.000	5 to 50 Bars	Blue	1/2" BSP
VMP/80-G/C-12-BLA 002.202.000	5 to 100 Bars	Black	1/2" BSP
VMP/80-G/C-12-GRE 002.202.000	10 to 150 Bars	Green	1/2" BSP
VMP/80-G/C-12-YEL 002.202.000	25 to 250 Bars	Yellow	1/2" BSP
VMP/80-G/C-12-RED 002.202.000	40 to 350 Bars	Red	1/2" BSP



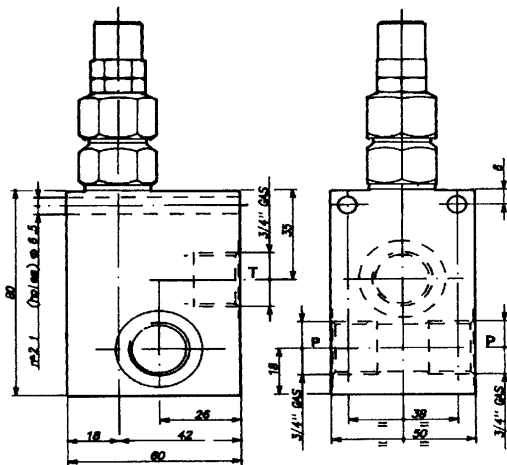
Relief Valve - Line Mount



Direct Acting
T Block Style

Pilot Piston
Relief Valve

Pressure 450 Bars
Flow 80 l/min

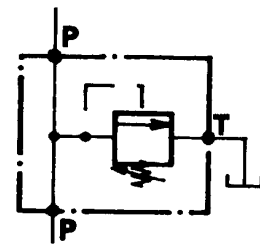


Direct acting poppet relief valve giving fast response, accurate control and low hysteresis. Choice of three ranges provides for precise pressure control.

Valves are supplied with a through P port and right angle T port, for ease of installation. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.

(All dimensions in mm)

Circuit Symbol



Part Number	Setting Range	Spring	Size
VMP/80-G/C-34-BLU 002.211.000	5 to 50 Bars	Blue	3/4" BSP
VMP/80-G/C-34-BLA 002.211.000	5 to 100 Bars	Black	3/4" BSP
VMP/80-G/C-34-GRE 002.211.000	10 to 150 Bars	Green	3/4" BSP
VMP/80-G/C-34-YEL 002.211.000	25 to 250 Bars	Yellow	3/4" BSP
VMP/80-G/C-34-RED 002.211.000	40 to 350 Bars	Red	3/4" BSP

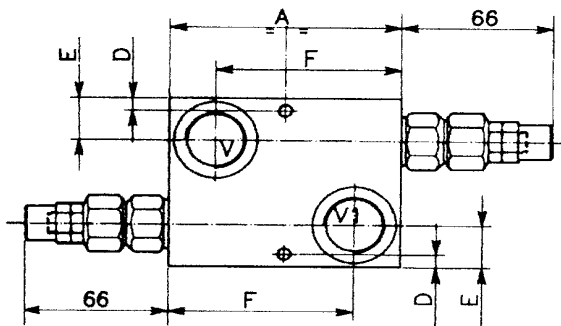


Cross Line Relief Valve



Direct Acting Pilot Piston
Through Port Relief Valve

Pressure 350 Bars
Flow 80 l/min

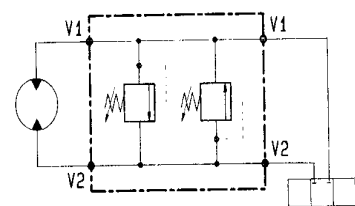


Two direct acting pilot piston relief valves giving fast response, accurate control and low hysteresis. A choice of three different springs provides for precise pressure control.

Valve available in 1/2" BSP. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.

(All dimensions in mm)

Circuit Symbol



Part Number	A	B	C	D	E	F	Size
VMP/D1/35-38L 000.XXX.000	80	60	40	5.5	18	64	3/8" BSP
VMP/D1/35-12L 000.XXX.000	80	60	40	5.5	18	64	1/2" BSP
VMP/D1/35-34L 000.XXX.000	100	80	50	6	20	80	3/4" BSP

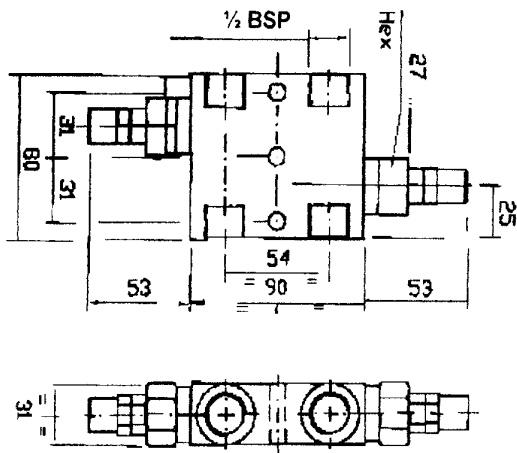


Cross Line Relief Valve

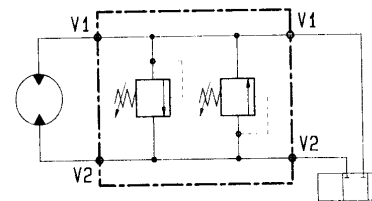


Direct Acting Pilot Piston
Block Style Relief Valve

Pressure 350 Bars
Flow 45 l/min



Circuit Symbol



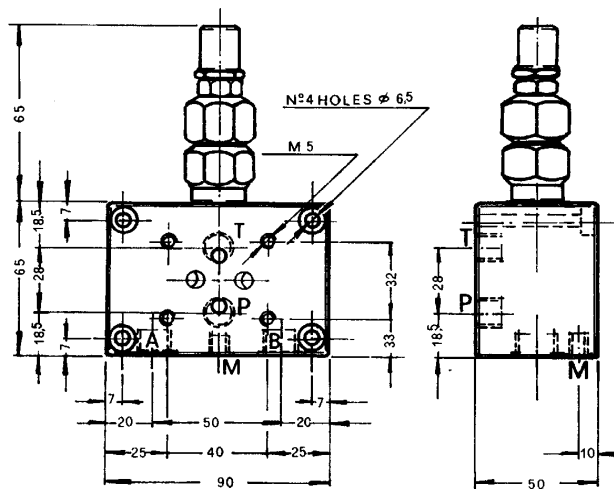
Two direct acting pilot piston relief valves giving fast response, accurate control and low hysteresis. A choice of three different springs provides for precise pressure control.

Valve available in 1/2" BSP. Adjustment is by means of a socket headed screw complete with dome and locknut to secure the setting.
(All dimensions in mm)

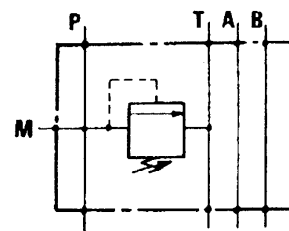
Part Number	Setting Range	Spring	Size
VD1-45-12/SA-B	002.753.000 5 to 100 Bars	Blue	1/2" BSP
VD1-45-12/SA-G	002.753.000 10 to 200 Bars	Green	1/2" BSP
VD1-45-12/SA-Y	002.753.000 25 to 350 Bars	Yellow	1/2" BSP

Direct Acting Relief Valve
Subplate Mount Cetop 3

Pressure 350 Bars
Flow 40 l/min



Circuit Symbol



Direct acting pilot piston relief valve giving fast response, accurate control and low hysteresis.

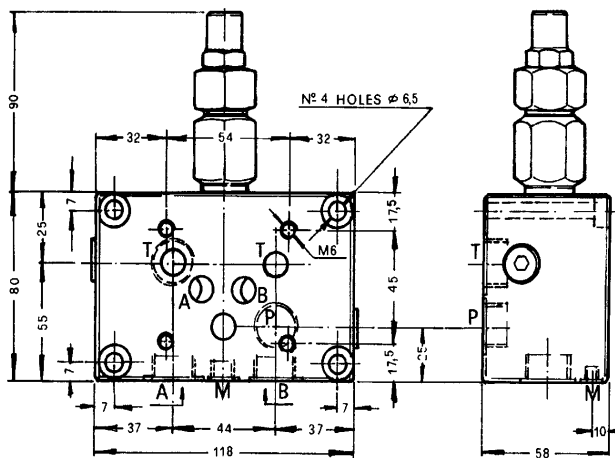
The valve's design combines a Cetop 3 subplate and the relief valve into one compact and cost effective unit.

(All dimensions in mm)

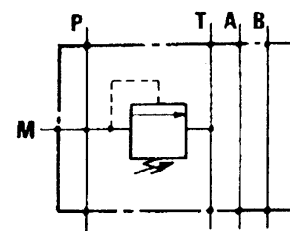
Part Number	Ports P/T/A/B	Port M	Setting	Spring
VMP/35/CBE/-B 005.007.000	3/8" BSP	1/4" BSP	5-100	Blue
VMP/35/CBE/-G 005.007.000	3/8" BSP	1/4" BSP	10-200	Green
VMP/35/CBE/-Y 005.007.000	3/8" BSP	1/4" BSP	20-350	Yellow

Direct Acting Relief Valve
Subplate Mount Cetop 5

Pressure 350 Bars
Flow 80 l/min



Circuit Symbol



Direct acting pilot piston relief valve giving fast response, accurate control and low hysteresis.

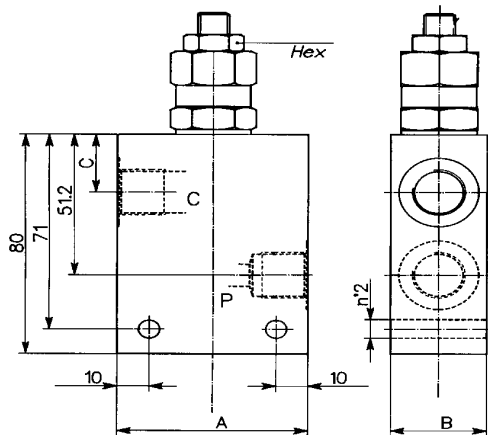
The valve's design combines a Cetop 5 subplate and the relief valve into one compact and cost effective unit.

(All dimensions in mm)

Part Number	Ports P-A-B	Port T	Port M	Range	Spring
VMP/80/CBE/-B 005.022.000	1/2" BSP	3/4"	1/4" BSP	5-100	Blue
VMP/80/CBE/-G 005.022.000	1/2" BSP	3/4"	1/4" BSP	10-200	Green
VMP/80/CBE/-Y 005.022.000	1/2" BSP	3/4"	1/4" BSP	20-350	Yellow

Direct Acting Line Mount
Sequence Valve Two Port

Pressure 350 Bars
Flow 60 l/min

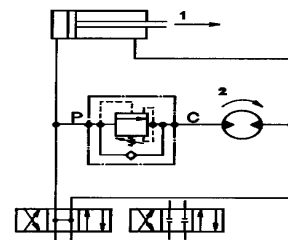


Direct acting differential piston style sequence valve complete with integral non-return valve providing for two port operation. The CC style valves are best suited for use with closed centre spools.

It is recommended that the secondary operating pressure is not below 20 bars.

(All dimensions in mm)

Circuit Symbol



Part Number	A	B	C	D	Size	Flow
VSQ/D/C-38 002.xxx.000	60	30	21	6.5	3/8" BSP	40 l/min
VSQ/D/C-12 002.298.000	70	35	19	8.5	1/2" BSP	60 l/min

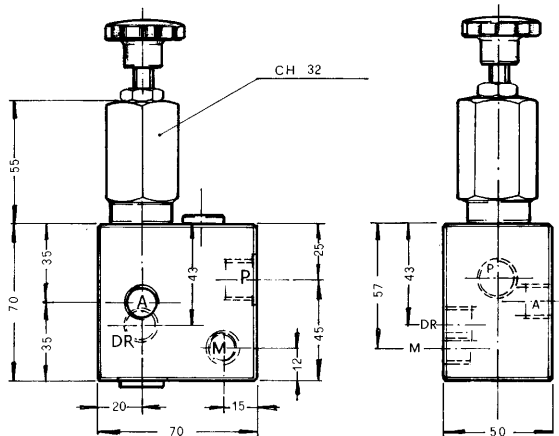


Pressure Reducing Valve



Direct Acting Line Mount
Pressure Reducing Valve

Pressure 350 Bars
Flow 45 l/min

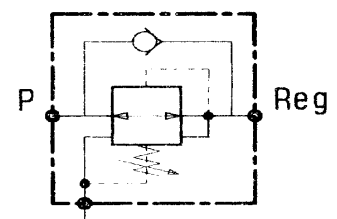


Direct acting pressure reducing valve giving fast response accurate control and low hysteresis. A choice of four different springs provides for precise pressure control

Unit is supplied with integral non-return valve, drain port and pressure gauge port.

(All dimensions in mm)

Circuit Symbol



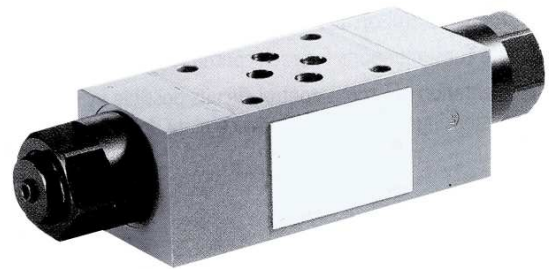
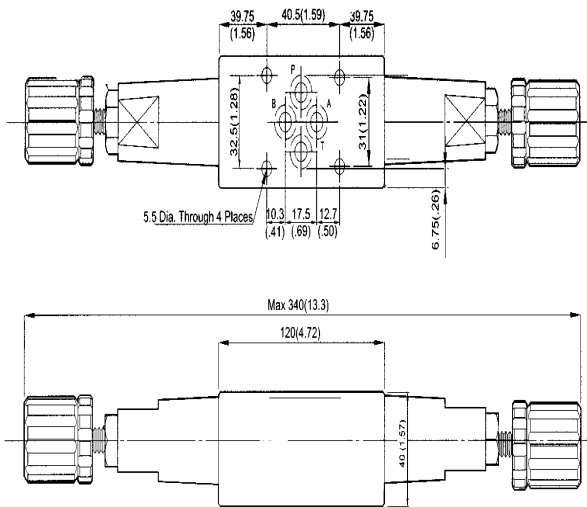
Part No:	Ports A+ P	Port DR+M	Spring Range
VRP/14-L 002.xxx.000	1/4" BSP	1/4" BSP	Blue 0 -150 Yellow 0 - 350
VRP/38-L 002.050.000	3/8" BSP	3/8" BSP	Blue 0 -150 Yellow 0 - 350



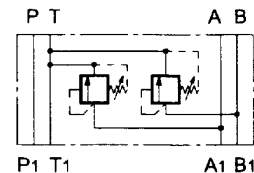
Relief Valve Cetop 3

Dual Line Relief Valve
Cetop 3 Modular Mounting

Pressure 250 Bars
Flow 50 l/min



Circuit Symbol



Dual line pressure relief valve allowing relief flow from A & B ports to T port.
Suitable for protection of individual circuit functions.

Choice of knob adjuster or socket head screw.

(All dimensions in mm)

Part Number	Pressure Range	Size	Max Flow
MBW-01-03	250 Bars	Cetop 3	50 l/min



Section 2

Non-Return Valves

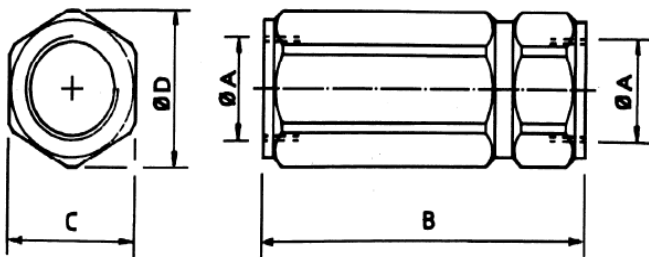


Non Return Valve



Line Mount Ball / Poppet
Non Return Valve

Pressure 500 Bars
Flow 230 l/min



Non-Return valves in a convenient line mounted form utilising either ball or poppet elements.

In standard form units are supplied with 1 bar closing spring although an alternative 6 bar spring is available.

(All dimensions in mm)

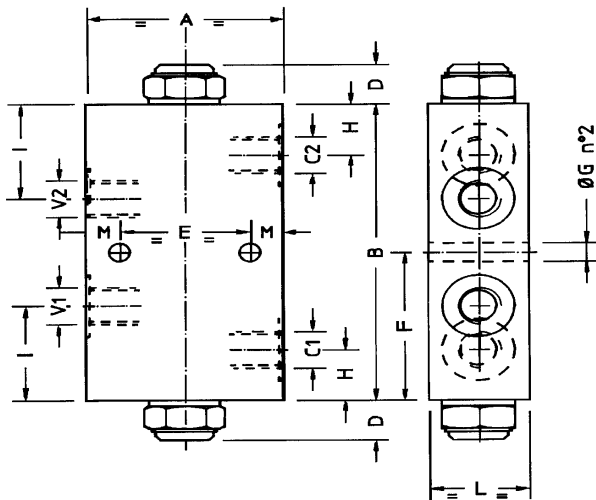
Circuit Symbol



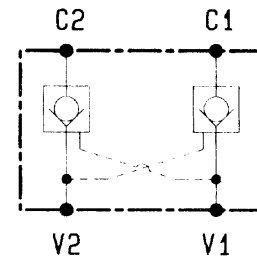
Part Number	A	B	C	D	Flow	Pressure
VNR/SF-14 003.021.000	1/4" BSP	57	19	20.7	15	500
VNR/SF-38 003.022.000	3/8" BSP	61	24	26.5	30	500
VNR/SF-12 003.023.000	1/2" BSP	74	27	29.5	45	500
VNR/SF-34 003.024.000	3/4" BSP	92	36	40	65	500
VNR/SF-100 003.020.000	1" BSP	110	41	45.5	95	500
VNR/SF-114 003.001.000	1 1/4" BSP	130	55	61	160	500
VNR/SF-112 003.002.000	1 1/2" BSP	145	65	72	230	500

Pilot Operated Non-Return
Block Type Line Mount

Pressure 350 Bars
Flow 45 l/min



Circuit Symbol



Pilot Operated Non-Return valves for normal line mounting applications. Valves are supplied with poppet closing element and a 4:1 pilot ratio piston.

In standard form units are supplied with 1 bar closing spring. Alternative 8 bar springs are available.

(All dimensions in mm)

Part No:	Size	A	B	E	F	H	I	L	M	Rato	L/m
VNRC/DE/14 003.047.00	1/4"	60	105	40	52	18	33	30	10	4:1	15
VNRC/DE/38 003.049.000	3/8"	70	110	40	55	20	38	35	15	4:1	35
VNRC/DE/12 003.050.000	1/2"	70	110	40	55	20	38	35	15	4:1	45

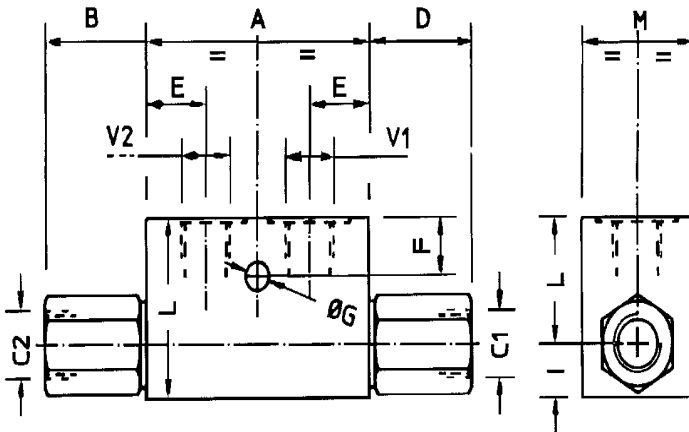


Pilot Non Return Valve



Single & Double Valves
Cylinder Mounting Style

Pressure 350 Bars
Flow 60 l/min

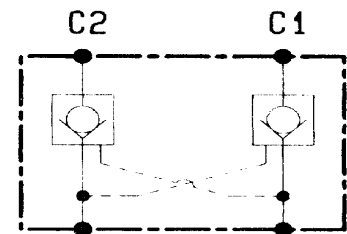


Pilot Operated Non-Return valves designed for cylinder mounting applications. Valves are supplied with poppet closing element and a 4:1 pilot opening ratio piston.

Valves are available as single or double acting units.

(All dimensions in mm)

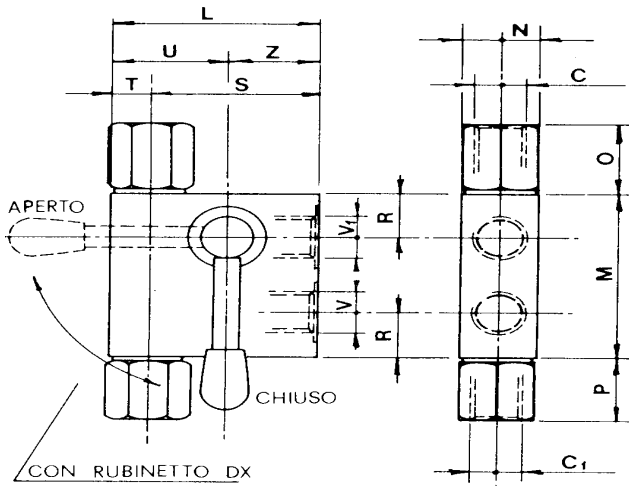
Circuit Symbol



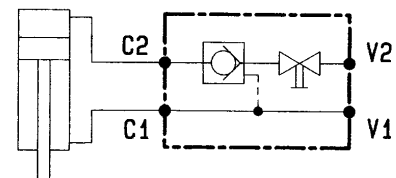
Part Number	Size	A	B	D	E	F	H	I	M	Ratio	L/min
VNR/SO/SE-14L 003.026.000	1/4"	60	27	23	16	13	28	12	30	4:1	12
VNR/SO/SE-38L 003.027.000	3/8"	70	29	23	16	15	35	15	35	4:1	23
VNR/SO/SE-12L 003.028.000	1/2"	80	32	26	21	15	34	16	35	4:1	40
VNR/SO/SE-34L 003.029.000	3/4"	100	41	33	25	15	39	21	40	3.5:1	60
VNR/SO/DE-14L 003.030.000	1/4"	60	27	23	16	13	28	12	30	4:1	12
VNR/SO/DE-38L 003.031.000	3/8"	70	29	23	16	15	35	15	35	4:1	23
VNR/SO/DE-12L 003.032.000	1/2"	80	32	26	21	15	34	16	35	4:1	40
VNR/SO/DE-34L 003.033.000	3/4"	100	41	33	25	15	39	21	40	3.5:1	60

Single & Double Valves
Cylinder Mounting Style

Pressure 350 Bars
Flow 40 l/min



Circuit Symbol



Pilot Operated Non-Return valves designed for use with outrigger / stabilizer cylinders. Lever control allows for the cylinder to be securely locked into the desired position.

Valves are supplied with poppet closing element and a 4:1 pilot opening ratio piston.

(All dimensions in mm)

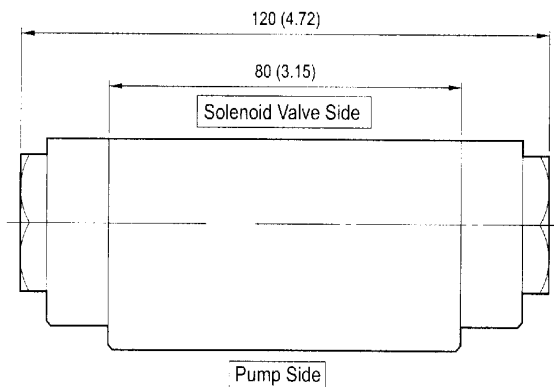
Part Number	Size	A	B	D	E	F	H	I	L	M	Ratio
VNR/SO-DR 003.291.000 D	3/8"	70	70	30	28.5	23.5	55	15	38	32	4:1
VNR/SO-SR 003.291.000 S	3/8"	70	70	30	28.5	23.5	55	15	38	32	4:1



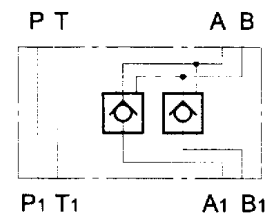
Pilot Non-Return Cetop 3

Dual Pilot Non-Return
Cetop 3 Modular Mounting

Pressure 250 Bars
Flow 50 l/min



Circuit Symbol



Dual pilot operated non-return valve will lock the exiting flow from a function or actuator in position when the directional valve is in the centre condition with ports A & B connected to tank.

(All dimensions in mm)

Part Number	Pressure Range	Size	Max Flow
MPW-01-03	250 Bars	Cetop 3	50 l/min

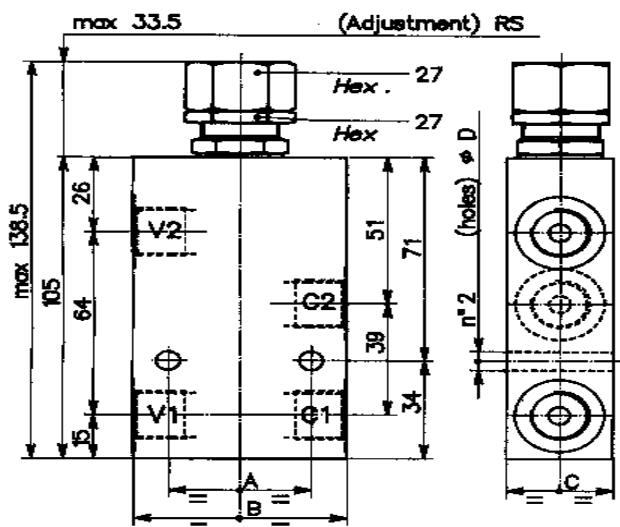


Section 3

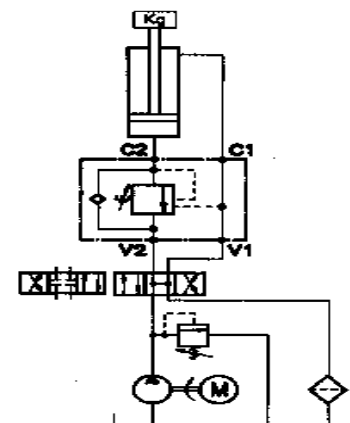
Overcentre Valves

Internal Pilot Ratio 4.25:1
Counterbalance Valve

Pressure 350 Bars
Flow 60 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	A	B	C	D	Port	L/min
OWC/SE-14L 001.XXX.000	40	60	30	6.5	1/4"	25
OWC/SE-38L 001.003.000	40	60	30	6.5	3/8"	40
OWC/SE-12L 001.008.000	50	70	35	8.5	1/2"	60

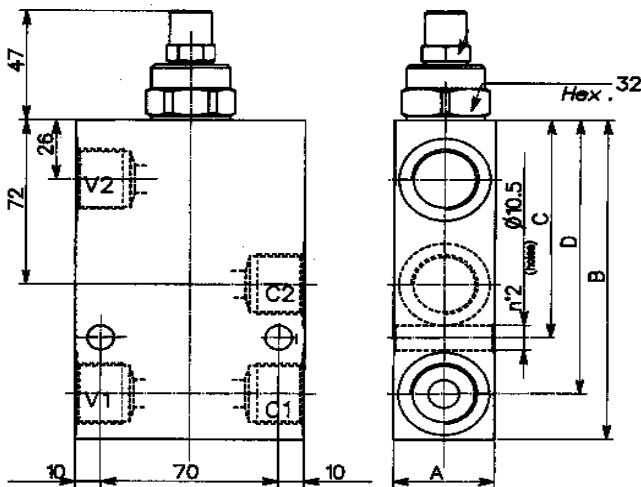


Single Overcentre Valve

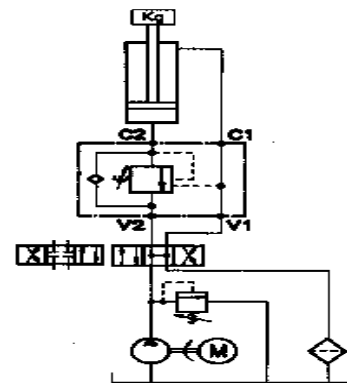


Internal Pilot Ratio 6.2:1
Counterbalance Valve

Pressure 350 Bars
Flow 160 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

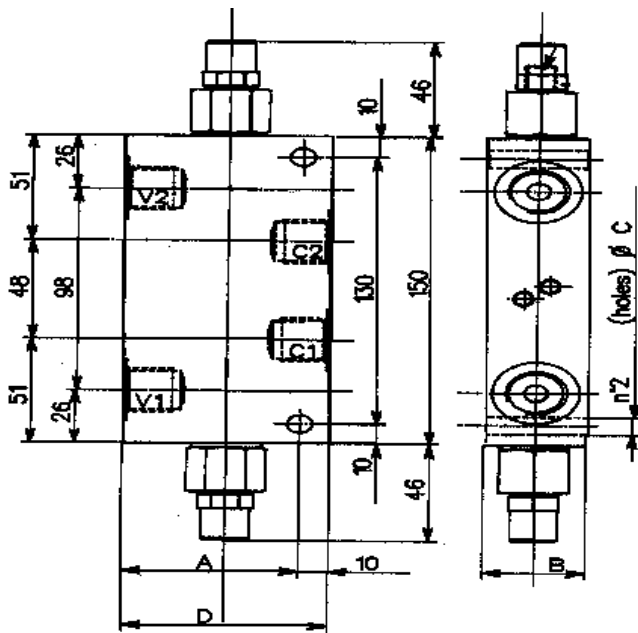
Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

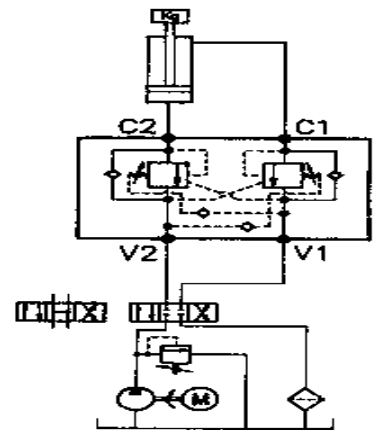
Part Number	A	B	C	D	Ports	L/min
OWC/SE-34L 001.219.000	40	140	95	120	3/4"	120
OWC/SE-100L 001.XXX.0	50	165	107	142	1"	160

Internal Pilot Ratio 4.25:1
Counterbalance Valve

Pressure 350 Bars
Flow 60 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

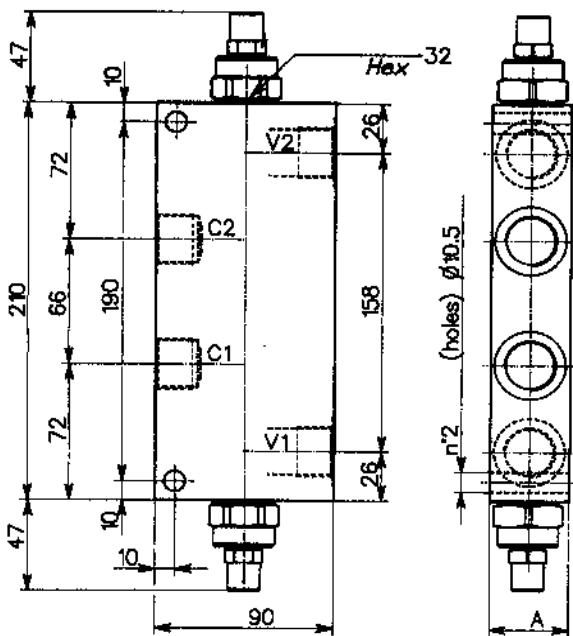
Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

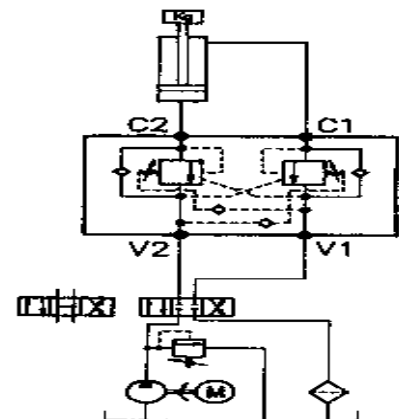
Part Number	A	B	C	D	Port	L/min
OWC/DE-14L 001.XXX.000	50	30	6.5	60	1/4"	25
OWC/DE-38L 001.005.000	50	30	6.5	60	3/8"	40
OWC/DE-12L 001.010.000	60	35	8.5	70	1/2"	60

Internal Pilot Ratio 4.25:1
Counterbalance Valve

Pressure 350 Bars
Flow 160 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	A	Port	L/min
OWC/DE-34LU 001.453.000	40	3/4"	120
OWC/DE-100LU 001.454.000	50	1"	160

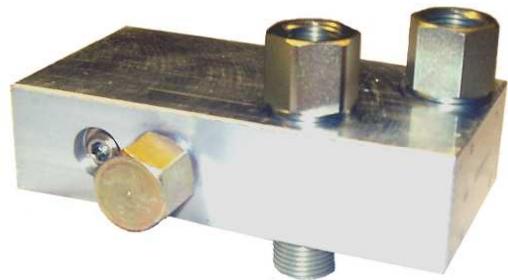
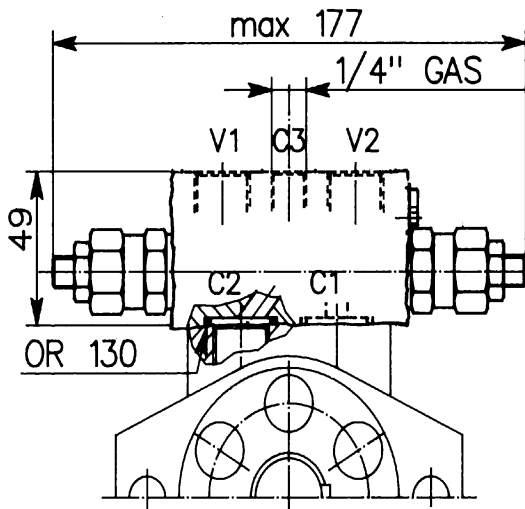


Overcentre Valve - Motor Mount

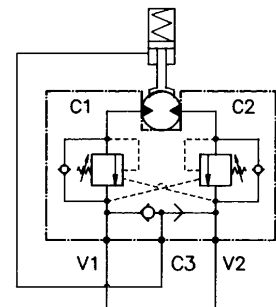


Double Counterbalance
OMP / OMR Direct Mount

Pressure 220 Bars
Flow 50 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	Setting Range Bars	Ports	Motor Types
WB-M-DE-OMP 001.504.000	30 to 220	1/2" BSP	Danfoss OMP / OMR

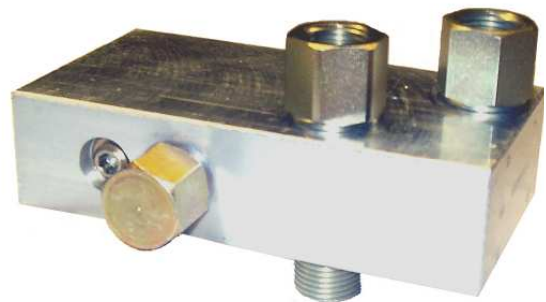
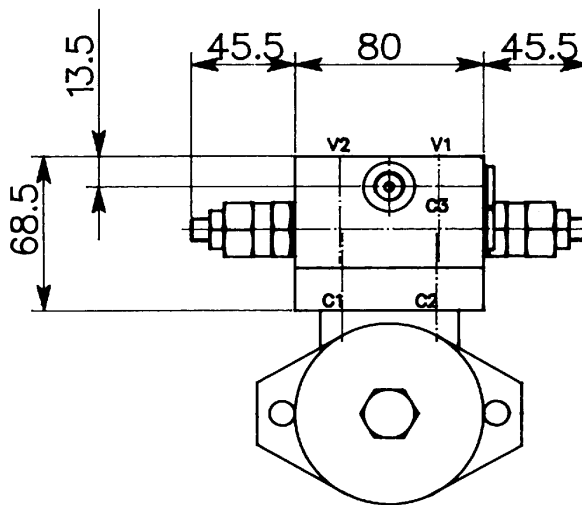


Overcentre Valve - Motor Mount

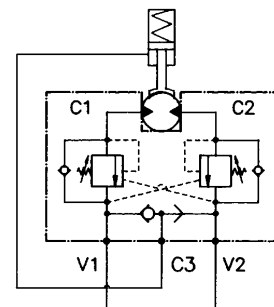


Double Counterbalance
OMS Direct Motor Mount

Pressure 220 Bars
Flow 60 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	Setting Range Bars	Ports	Motor Types
WB-M-DE-OMS 001.438.000	30 to 220	1/2" BSP	Danfoss OMS

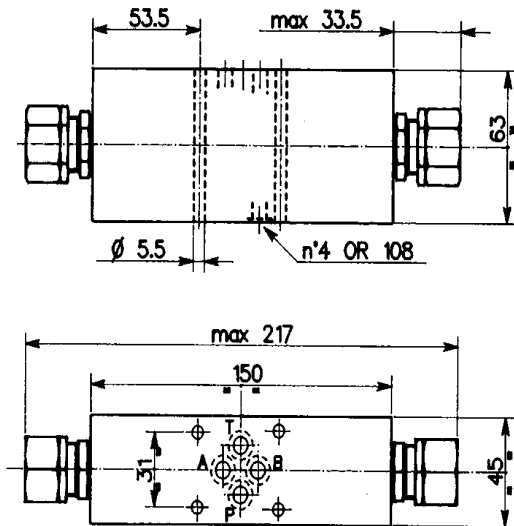


Overcentre Valve Cetop 3

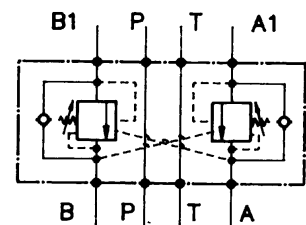


Double Counterbalance
Cetop 3 Modular Mounting

Pressure 350 Bars
Flow 30 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	Setting Range Bars	Ratio	Size	Max Flow
OWC/DE 001.226.000	60 to 350	4.25:1	Cetop 3	30 l/min
OWC/DE 001.227.000	30 to 220	4.25:1	Cetop 3	30 l/min

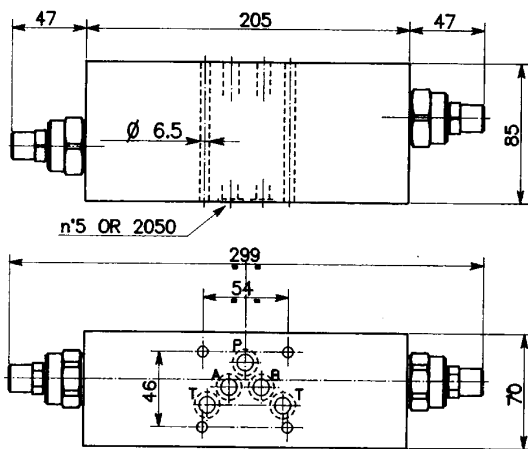


Overcentre Valve Cetop 5

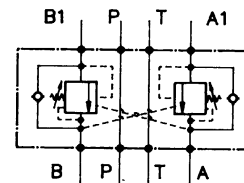


Double Counterbalance
Cetop 5 Modular mounting

Pressure 350 Bars
Flow 80 l/min



Circuit Symbol



Overcentre valves are used to prevent cavitation, keeping a load from running ahead of the pump flow. They will lock or hold a load in the event of a line failure or an accidental operation of the directional control valve, when the system is not running.

Overcentre valves will also provide thermal relief protection.

(All dimensions in mm)

Part Number	Setting Range Bars	Ratio	Size	Max Flow
OWC/DE 001.292.000	30 to 220	6.2:1	Cetop 5	80 l/min



Section 4

Flow Control Valves

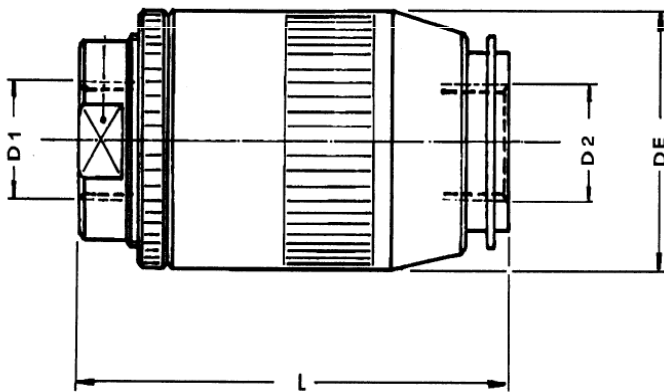


Flow Regulator Valve

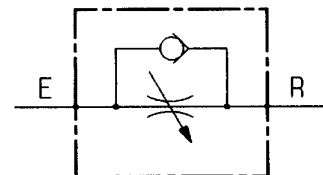


Adjustable Setting + Lock
Free Flow Return

Pressure 450 Bars
Flow 40 l/min



Circuit Symbol



In Line flow restrictors adjusted by rotating the outer t through 180 degrees from closed to fully open. The required setting can be secured by means of a locking ring tightened against the outer body. Leakage in the closed position is 0.5 l/min.

(All dimensions in mm)

Part Number	D1 - D2	DE	L	CH	Max Bars
VST-UDL-14 004.063.000	1/4" BSP	34	72	24	450
VST-UDL-38 004.064.000	3/8" BSP	34	72	24	450
VST-UDL-12 004.066.000	1/2" BSP	40	72	27	450

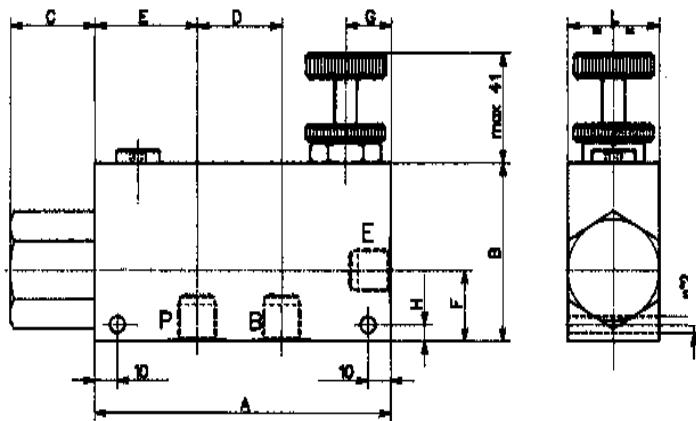


Priority Flow Divider

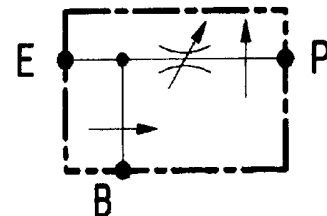


Double Pressure Compensated
3 Port Flow Control Valve

Pressure 250 Bars
Flow 150 l/min



Circuit Symbol



Double pressure compensated three way flow control valve with hand knob adjuster. The valve establishes a priority flow to the controlled priority port and bypasses all the excess flow to the secondary circuit through the bypass port.

Constant flow is maintained to the priority circuit regardless of changes in input flow or load changes in either priority or bypass circuits.

(All dimensions in mm)

Part Number	A	B	C	D	E	F	G	H	L	Size	Max Priority	Max Inlet
VRF/3V38 004.003.000	130	70	38	37	45	28	20	6.5	40	3/8"	30 l/m	55 l/m
VRF/3V12 004.005.000	130	70	38	37	45	28	20	6.5	40	1/2"	55 l/m	90 l/m
VRF/3V-34 004.007.000	155	90	35	44	54	35	25	7.5	50	3/4"	90 l/m	150 l/m

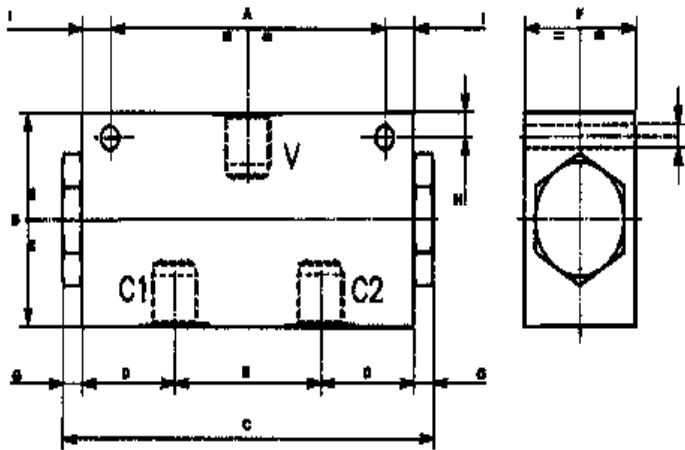


Flow Divider / Combiners

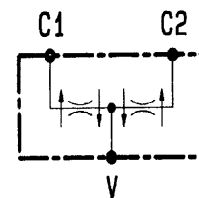


Divider + Combiner
50/50 Split

Pressure 210 Bars
Flow 150 l/min



Circuit Symbol



Pressure compensated flow divider / combiners are designed to split an input flow into two equal flows regardless of the loads applied in the system. Accuracy is nominally plus or minus 3%.

For best performance always select a valve that is best sized for your normal flow requirement.
(All dimensions in mm)

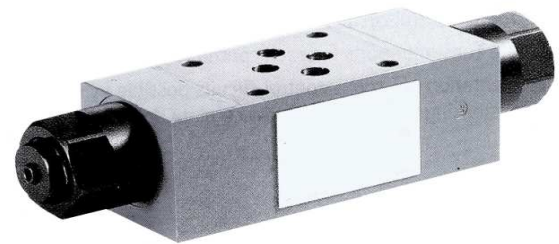
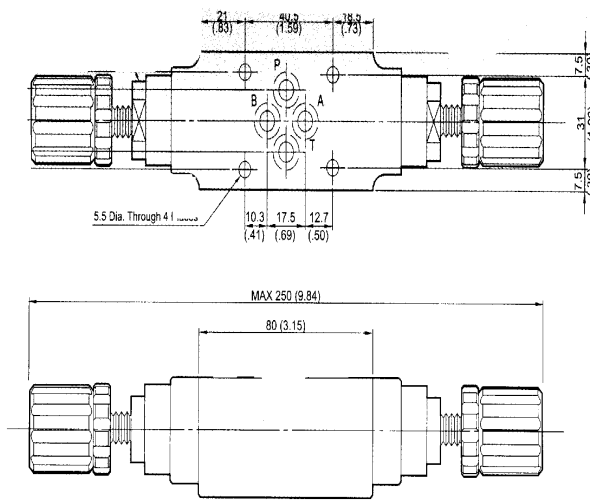
Part No	V	C1 C2	A	B	E	F	G	H	I	Inlet Flow
004.008.000	3/8"	3/8"	100	60	53	40	7	7	10.5	6.5 to 11 l/min
004.076.000	3/8"	3/8"	100	60	53	40	7	7	10.5	13 to 22 l/min
004.077.000	3/8"	3/8"	100	60	53	40	7	7	10.5	25 to 38 l/min
004.XXX.000	1/2"	3/8"	100	60	53	40	7	7	10.5	6.5 to 11 l/min
004.078.000	1/2"	3/8"	100	60	53	40	7	7	10.5	13 to 22 l/min
004.079.000	1/2"	3/8"	100	60	53	40	7	7	10.5	25 to 38 l/min
004.056.000	3/4"	1/2"	160	80	80	50	8	10	10	28 to 55 l/min
004.058.000	3/4"	1/2"	160	80	80	50	8	10	10	56 to 95 l/min
004.059.000	1"	3/4"	160	80	80	50	8	10	10	90 to 150 l/min



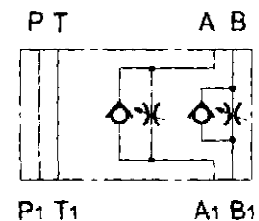
Flow Control Cetop 3

Dual Flow Control
Cetop 3 Modular Mounting

Pressure 250 Bars
Flow 50 l/min



Circuit Symbol



Flow restrictor valve allows for the control of flows that are exiting from an actuator or cylinder (Meter Out) when using Cetop 3 directional control valves. The input flow into each side of the actuator is unrestricted as it passes through a non-return valve.

Choice of knob adjuster or socket head adjuster.

(All dimensions in mm)

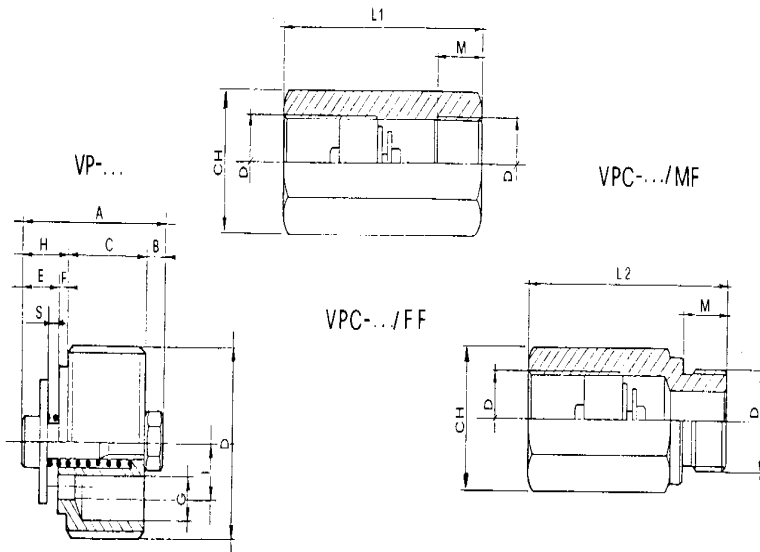
Part Number	Setting Range	Max Pressure	Size	Max Flow
MSW-01-03-Y	0 to 50 l/min	250 Bars	Cetop 3	50 l/min

Section 5

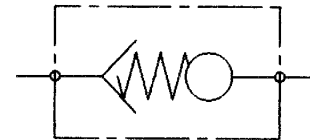
Miscellaneous Valves

Insert or Body Mounting
Adjustable Flow Setting

Pressure 350 Bars
Flow 150 l/min



Circuit Symbol



Hose Burst valves can block a flow from an actuator if pre-set flow setting is exceeded, as in the case of an uncontrolled flow arising from a hose or pipe failure.

Valves can be screwed directly into the actuator port or housed in a choice of bodies.

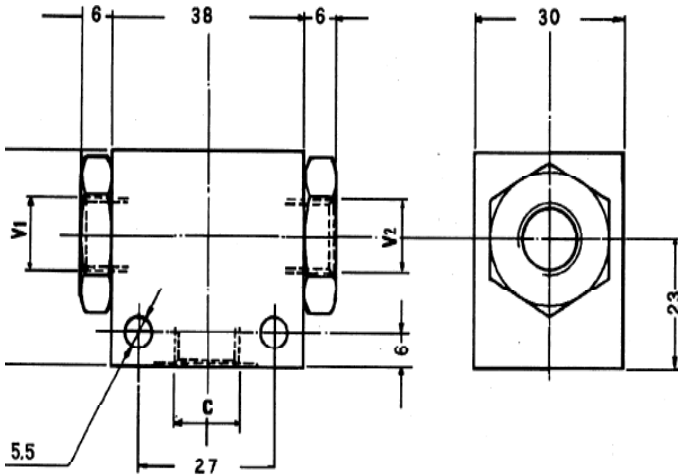
The correct gap must be pre-set once the maximum operating flows are known within the system.

(All dimensions in mm)

Part Number	A	B	C	D	E	F	G	H	I	L1	L2	CH	M	
VP-14 003.059.000	18	3	12	1/4	4	2	2.4	6	8.5	48	50	19	12	
VP-38 003.060.000	20	3	12	3/8	6	2	3.5	8	11	52	58	24	12	
VP-12 003.061.000	24	3	16	1/2	6	2	4.5	8	13	60	65	27	14	
VP-34 003.062.000	29	3	16	3/4	8	2	6	10	16	72	78	36	16	

Line Mount Shuttle Valve
High Pressure Selector

Pressure 350 Bars
Flow 20 l/min

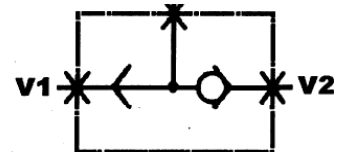


Shuttle valve connects the highest pressure at either the V1 or V2 port through to the C port.

Units are suitable for the selection of high pressure signals such as brake release ports.

(All dimensions in mm)

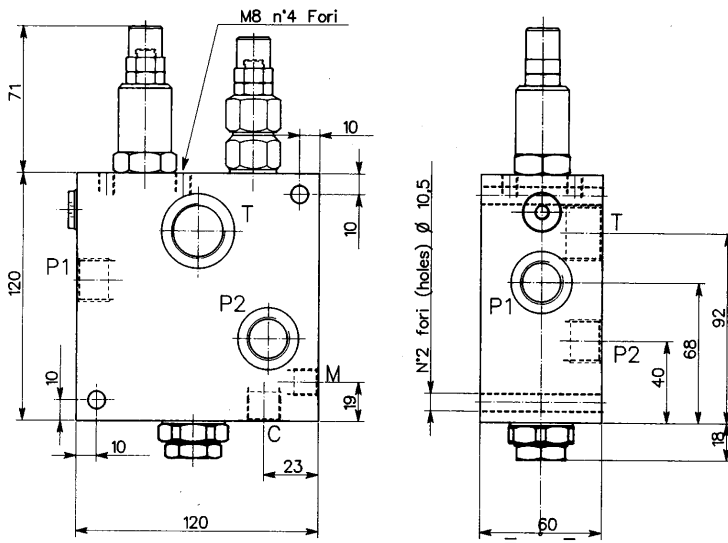
Circuit Symbol



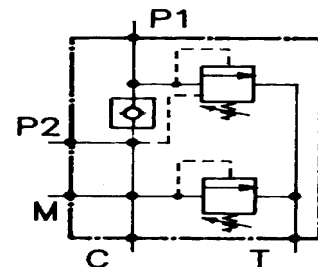
Part Number	Size
VFF/14 003.055.000	1/4" BSP
VFF/38 003.272.000	3/8" BSP

Two Pump Unloading Valve Line Mounting

Pressure 350 Bars
Flow 90 / 22 l/min



Circuit Symbol



Pump unloading valves can divert to tank one pump oil supply once a pre-set pressure within the system has been reached.

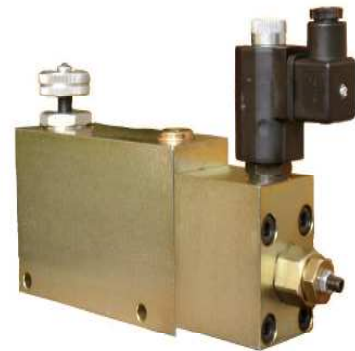
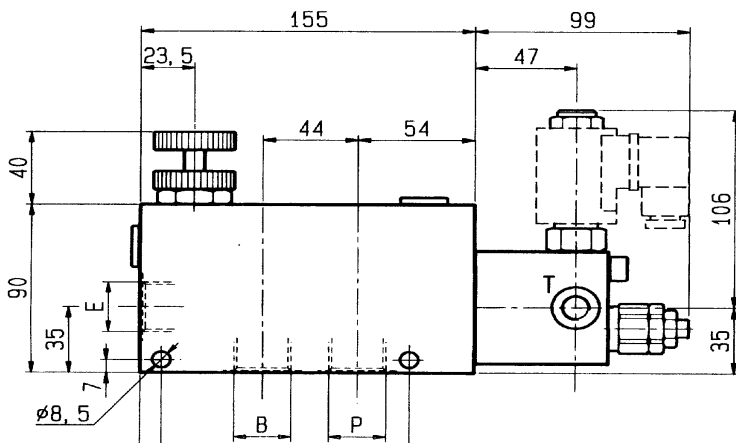
The non-return valve allows the system to continue to operate with the remaining pump up to the relief valve setting. Typical applications are for systems requiring flow low pressure or low flow high pressure, whilst optimising the power requirement.

(All dimensions in mm)

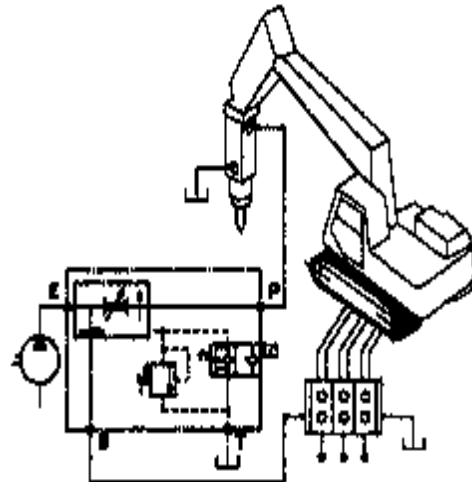
Part Number	Port T	Ports P1 - P2	Port M	Max Flow l/min
VD34-12-14 002.046.000	3/4" BSP	1/2" BSP	1/4" BSP	90 - 22

Solenoid Operated 4 Por
Pressure Comp. Hammer Valve

Pressure 350 Bars
Flow 250 l/min



Circuit Symbol

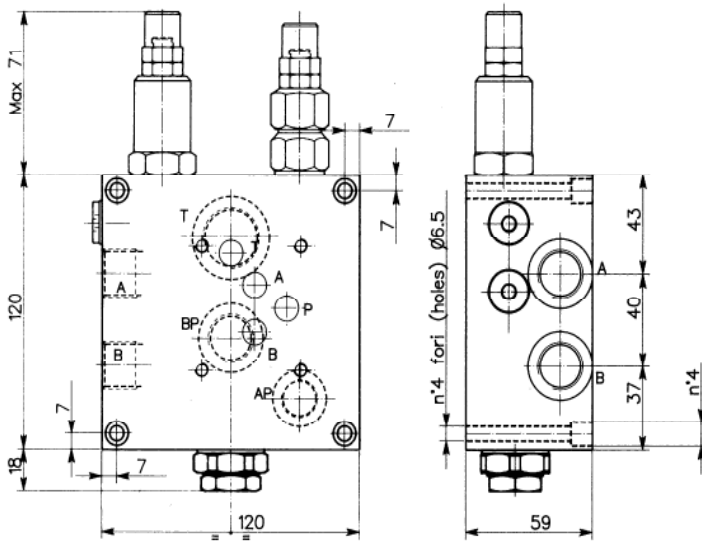


Hammer valves allow a pre-set pressure compensated priority flow into a circuit, by means of an electrically operated solenoid. When not operated, the solenoid valve allows all the input flow to be diverted into the bypass circuit for use in alternative functions. Solenoid control can be normally open or normally closed. Solenoids in 12 V or 24 V DC. (All dimensions in mm)

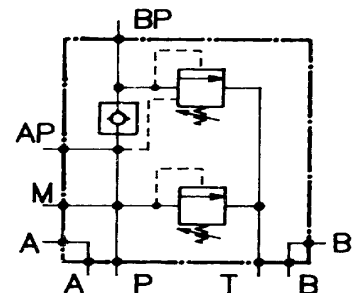
Part Number	Size	Max Bars Ports E- B	Max Bars Port P	Max P Flow l/m	Max E Flow l/m
VRF/3V+VMP38 004.xxx.000	3/8"	350	210	30	55
VRF/3V+VMP12 004.xxx.000	1/2"	350	210	55	90
VRF/3V+VMP34 004.198.000	3/4"	350	210	90	150
VRF/3V+VMP100 004.200.000	1"	350	210	150	250
VRF/3V+VMP114 004.xxx.000	1 1/4"	350	210	250	400

Two Pump Unloading Valve
Cetop 5 Subplate Mounting

Pressure 350 Bars
Flow 90 / 22 l/min



Circuit Symbol



Pump unloading valves can divert to tank one pump oil supply once a pre-set pressure within the system has been reached.

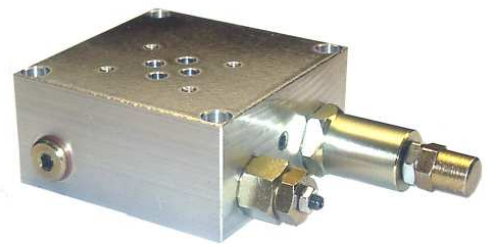
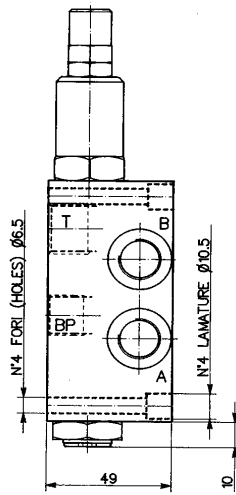
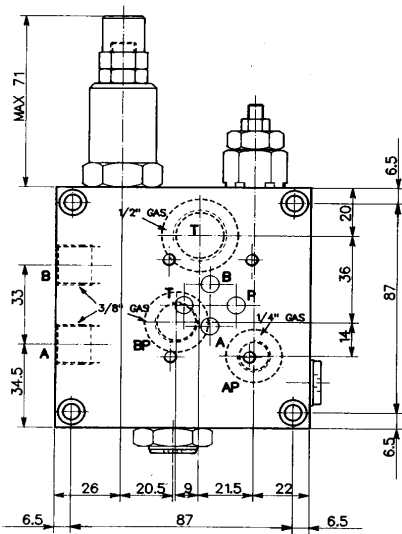
The non-return valve allows the system to continue to operate with the remaining pump up to the relief valve setting. Typical applications are for systems requiring flow low pressure or low flow high pressure, whilst optimising the power requirement.

(All dimensions in mm)

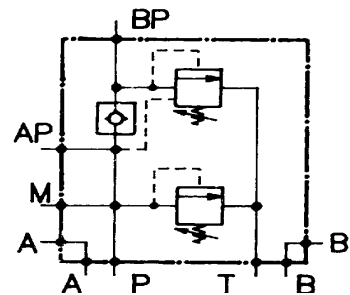
Part Number	Setting in Bars	Port T	Ports A-B -BP	Ports AP-M	Max Flow l/min
VD/CTP5 002.678.000	5 - 100	3/4" BSP	1/2" BSP	3/8" BSP	90 - 22
VD/CTP5 002.679.000	10 - 210	3/4" BSP	1/2" BSP	3/8" BSP	90 - 22
VD/CTP5 002.680.000	20 - 350	3/4" BSP	1/2" BSP	3/8" BSP	90 - 22

Two Pump Unloading Valve Cetop 3 Subplate Mounting

Pressure 350 Bars
Flow 80 / 22 l/min



Circuit Symbol



Pump unloading valves can divert to tank one pump oil supply once a pre-set pressure within the system has been reached.

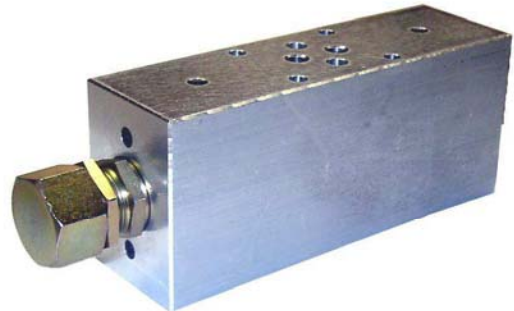
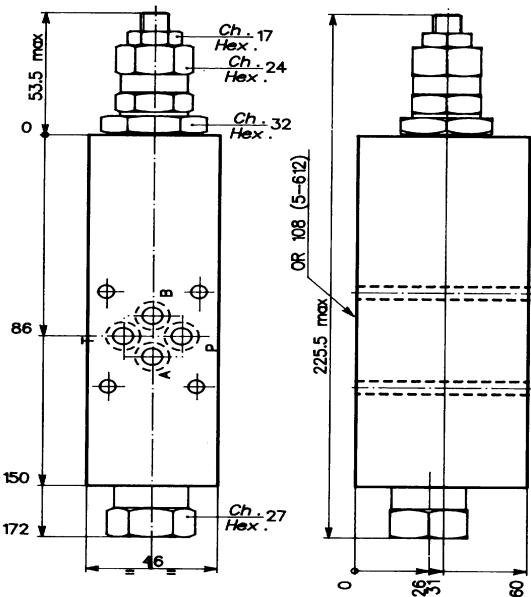
The non-return valve allows the system to continue to operate with the remaining pump up to the relief valve setting. Typical applications are for systems requiring flow low pressure or low flow high pressure, whilst optimising the power requirement.

(All dimensions in mm)

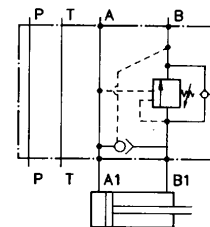
Part Number	Setting in Bars	Port T	Ports A-B -BP	Ports AP-M	Max Flow l/min
VD/CTP3 002.675.000	5 - 100	1/2" BSP	3/8" BSP	1/4" BSP	60 - 15
VD/CTP3 002.676.000	10 - 210	1/2" BSP	3/8" BSP	1/4" BSP	60 - 15
VD/CTP3 002.677.000	20 - 350	1/2" BSP	3/8" BSP	1/4" BSP	60 - 15

Cetop 3 Modular Mount Regeneration Valve

Pressure 350 Bars
Flow 40 l/min



Circuit Symbol



Regeneration valves provide the opportunity of compounding flows to double acting cylinders for maximum speed whilst optimising pump flow.

Cetop 3 version provides a compact solution for systems with limited pump flow.

(All dimensions in mm)

Part Number	Max Pressure Bars	Size	Max Flow l/min
VWR/CRR-CTP3 010.272.106	350	Cetop 3	40 - 10



Section 6

Solenoid Valves

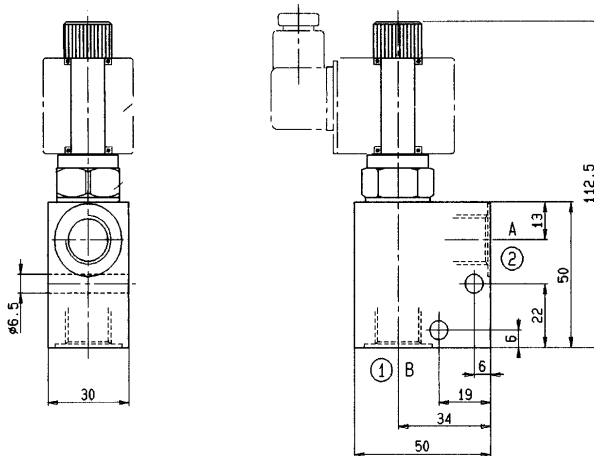


Solenoid 2 Port Valve

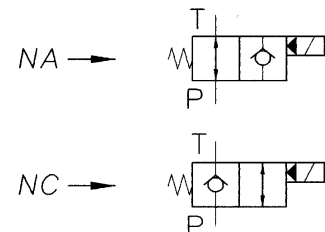


Normally Open / Closed
Two Port On/Off Valve

Pressure 300 Bars
Flow 20 l/min



Circuit Symbol

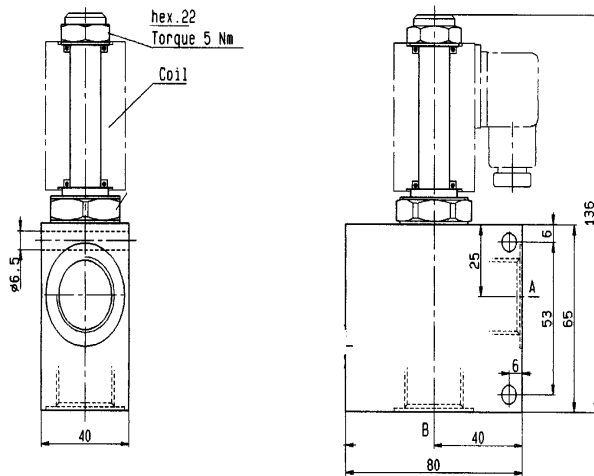


Pilot operated poppet style solenoid valves providing excellent pressure and flow characteristics. Valves are available in normally open or normally closed configurations plus a choice of DC or AC solenoid coils. Valve is fitted with 3/4"UNF type cartridge. Manual override options are also available. (All dimensions in mm)

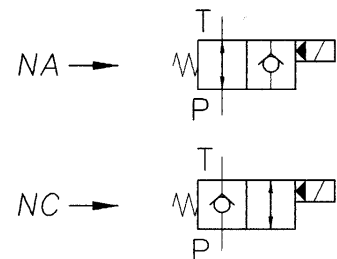
Part Number	Description	Voltage	Ports
VE-NA-20 005.540.12VDC	Normally Open	12 Volt DC	3/8" BSP
VE-NA-20 005.540.24VDC	Normally Open	24 Volt DC	3/8" BSP
VE-NA-20 005.540.110AC	Normally Open	110 Volt AC	3/8" BSP
VE-NA-20 005.540.220AC	Normally Open	220 Volt AC	3/8" BSP
VE-NC-20 005.541.12VDC	Normally Closed	12 Volt DC	3/8" BSP
VE-NC-20 005.541.24VDC	Normally Closed	24 Volt DC	3/8" BSP
VE-NC-20 005.541.110AC	Normally Closed	110 Volt AC	3/8" BSP
VE-NC-20 005.541.220AC	Normally Closed	220 Volt AC	3/8" BSP

Normally Open / Closed
Two Port On / Off Valve

Pressure 350 Bars
Flow 50 l/min



Circuit Symbol



Pilot operated poppet style solenoid valves providing excellent pressure and flow characteristics. Valves are available in normally open or normally closed configurations plus a choice of DC or AC solenoid coils. Valve is fitted with 7/8" UNF type cartridge. Manual override options are also available. (All dimensions in mm)

Part Number	Description	Voltage	Ports
VEP 005.552.12VDC	Normally Open	12 Volt DC	1/2" BSP
VEP 005.552.24VDC	Normally Open	24 Volt Dc	1/2" BSP
VEP 005.552.110AC	Normallly Open	110 Volt AC	1/2" BSP
VEP 005.552.220AC	Normally Open	220 Volt AC	1/2" BSP
VEP 005.553.12VDC	Normally Closed	12 Volt DC	1/2" BSP
VEP 005.553.24VDC	Normally Closed	24 Volt Dc	1/2" BSP
VEP 005.553.110AC	Normallly Closed	110 Volt AC	1/2" BSP
VEP 005.553.220AC	Normally Closed	220 Volt AC	1/2" BSP

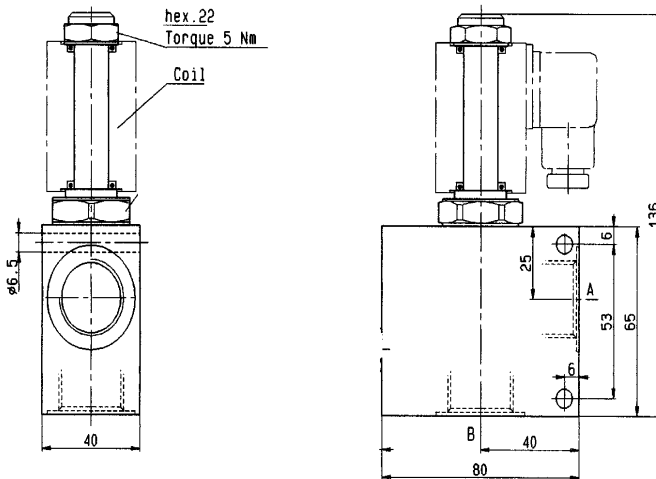


Solenoid 2 Port Valve



Normally Open / Closed
Two Port On / Off Valve

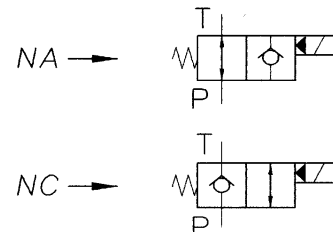
Pressure 300 Bars
Flow 80 l/min



Circuit Symbol

Pilot operated poppet style solenoid valves providing excellent pressure and flow characteristics.

Valves are available in normally open or normally closed configurations plus a choice of DC or AC solenoid coils. Manual override options are also available.
(All dimensions in mm)



Part Number	Description	Voltage	Ports
VE/NA 005.554.12VDC	Normally Open	12 Volt DC	3/4" BSP
VE/NA 005.554.24VDC	Normally Open	24 Volt Dc	3/4" BSP
VE/NA 005.554.110AC	Normally Open	110 Volt AC	3/4" BSP
VE/NA 005.554.220AC	Normally Open	220 Volt AC	3/4" BSP
VE/NC 005.555.12VDC	Normally Closed	12 Volt DC	3/4" BSP
VE/NC 005.555.24VDC	Normally Closed	24 Volt Dc	3/4" BSP
VE/NC 005.555.110AC	Normally Closed	110 Volt AC	3/4" BSP
VE/NC 005.555.220AC	Normally Closed	220 Volt AC	3/4" BSP

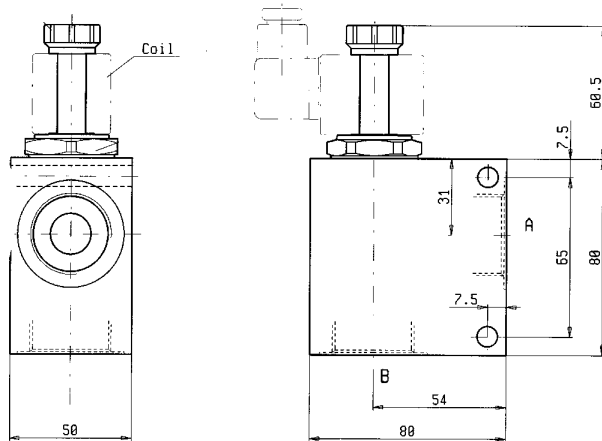


Solenoid 2 Port Valve



Normally Open / Closed
Two Port On / Off Valve

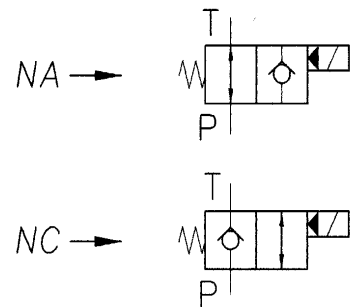
Pressure 300 Bars
Flow 150 l/min



Circuit Symbol

Pilot operated poppet style solenoid valves providing excellent pressure and flow characteristics.

Valves are available in normally open or normally closed configurations plus a choice of DC or AC solenoid coils. Manual override options are also available.
(All dimensions in mm)



Part Number	Description	Voltage	Ports
VE/NA 005.556.12VDC	Normally Open	12 Volt DC	1" BSP
VE/NA 005.556.24VDC	Normally Open	24 Volt DC	1" BSP
VE/NA 005.556.110AC	Normally Open	110 Volt AC	1" BSP
VE/NA 005.556.220VAC	Normally Open	220 Volt AC	1" BSP
VE/NC 005.557.12VDC	Normally Closed	12 Volt DC	1" BSP
VE/NC 005.557.24VDC	Normally Closed	24 Volt DC	1" BSP
VE/NC 005.557.110AC	Normally Closed	110 Volt AC	1" BSP
VE/NC 005.557.220VAC	Normally Closed	220 Volt AC	1" BSP

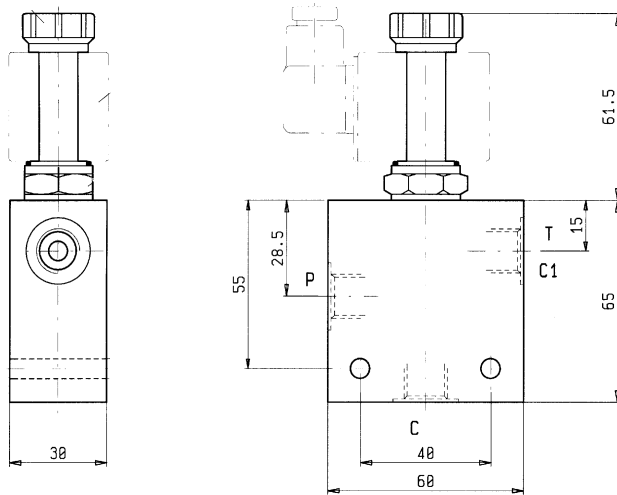


Solenoid Diverter Valve

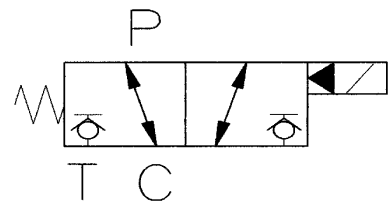


3 Port Diverter Valve
Direct Acting 12/24 Volt

Pressure 300 Bars
Flow 40 l/min



Circuit Symbol



Three way direct acting two position solenoid diverter valve. De-energised the flow path is P to C with T port blocked, energised the flow path is P to T with C port blocked.

Valve is fitted with 7/8" UNF type cartridge.
Manual override options are also available.

(All dimensions in mm)

Part Number	Description	Voltage	Ports
VEDT 3V 005.569.12VDC	3 Port Diverter	12 Volt DC	3/8" BSP
VEDT 3V 005.569.24VDC	3 Port Diverter	24 Volt DC	3/8" BSP

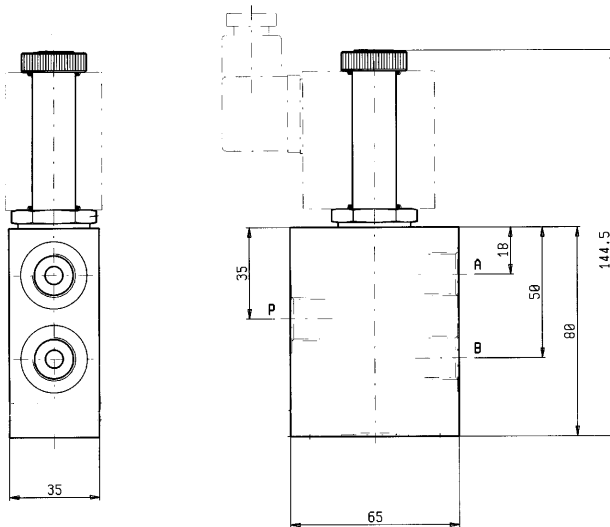


Solenoid 4 Way Valve

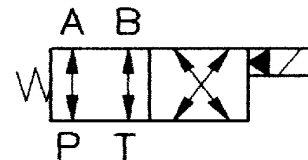


Directional Control Valve
2 Position 4 Way

Pressure 210 Bars
Flow 40 l/min



Circuit Symbol



Four way two position directional control valve providing a cost effective alternative to subplate mounted spool valves. Valve fitted with 7/8" UNF type cartridge.

Available with 12 V or 24 V solenoids.
Manual override options are also available.

(All dimensions in mm)

Part Number	Description	Voltage	Ports
VE-4V 005.247.12VDC	4 Way Valve	12 Volt DC	3/8" BSP
VE-4V 005.247.24VDC	4 Way Valve	24 Volt DC	3/8" BSP

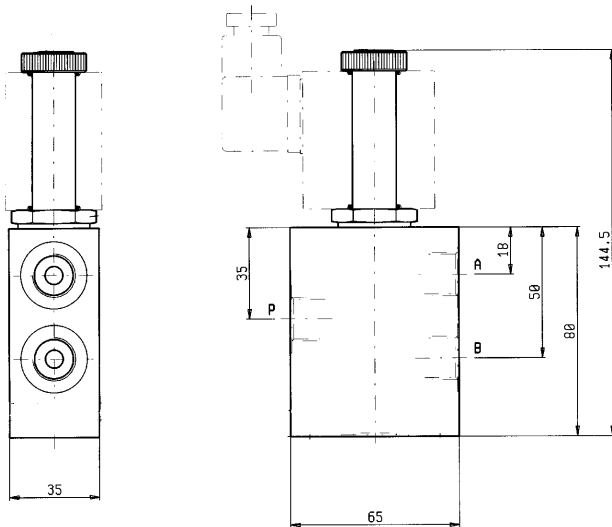


Solenoid 4 Way Valve

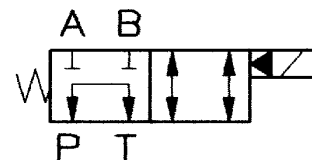


Directional Control Valve
2 Position 4 Way

Pressure 210 Bars
Flow 40 l/min



Circuit Symbol



Four way two position directional control valve providing a cost effective alternative to subplate mounted spool valves. Valve is fitted with a 7/8" UNF type cartridge.

Available with 12 V or 24 V solenoids.
Manual override options are also available.

(All dimensions in mm)

Part Number	Description	Voltage	Ports
VE-4V 005.249.12VDC	4 Way Valve	12 Volt DC	3/8" BSP
VE-4V 005.249.24VDC	4 Way Valve	24 Volt DC	3/8" BSP

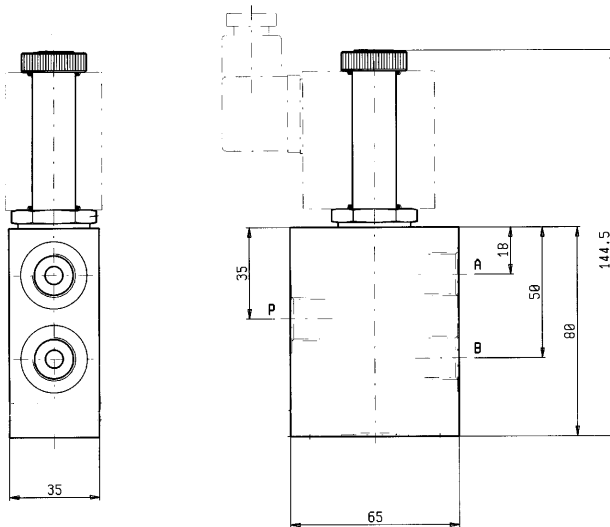


Solenoid 4 Way Valve

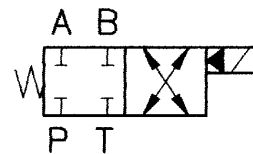


Directional Control Valve
2 Position 4 Way

Pressure 210 Bars
Flow 40 l/min



Circuit Symbol



Four way two position directional control valve providing a cost effective alternative to subplate mounted spool valves. Valve is fitted with a 7/8" UNF type cartridge.

Available with 12 V or 24 V solenoids.
Manual override options are also available.

(All dimensions in mm)

Part Number	Description	Voltage	Ports
VE-4V 005.251.12VDC	4 Way Valve	12 Volt DC	3/8" BSP
VE-4V 005.251.24VDC	4 Way Valve	24 Volt DC	3/8" BSP