CARTRIDGE VALVES

Hydraulic cartridge valves are compact, screw-in or slip-in valve elements fitted into a cavity in a manifold block performing functions like directional, pressure, and flow control. Since the valve sits inside a manifold, the overall system is compact and complex circuits may be built within the block instead of using line mounted or sub-plate mounted valves. This eliminates pipe joints, fittings, potential leakage points, contamination and greatly simplifies maintenance.

Bemco Fluidtechnik (FLUIDIK) offers a variety of cartridge valve options as detailed below,

Type	Model Code	Sizes	Max Pressure	Max Flow
Pr. Relief Valve	RVK...	-	700 bar	10 LPM
Pr. Relief Valve	FDBD...	NG6 - NG30	315 bar	300 LPM
Pump Unloading	PUV...	NG6	700 bar	10 LPM
Pilot Check Valve	PCV...	NG5	700 bar	20 LPM
Pilot Check Valve	FKCB...	-	350 bar	40 LPM
Shuttle Valve	FVS...	M12	420 bar	15 LPM
Hose Burst Valve	HBV...	1/4" to 3/4" BSP	315 bar	150 LPM
Needle Valve	NVK...	-	700 bar	10 LPM
Needle Valve	QVK...	NG4-NG8	315 bar	60 LPM
Lowering Control Valve	LCV...	3/8" to 3/4"	210 bar	30 LPM

KEY FEATURES & BENEFITS

FLUIDIK range of cartridge valves are available for a variety of functions as listed above for pressures up to 700bar (10,000PSI). Custom options for varied application requirements, custom MOC and surface treatment options are also possible. Consult factory for additional details.

COMMON APPLICATIONS

- Mobile equipment - Excavators, backhoe loaders, wheel loaders etc.
- Cranes and aerial work platforms
- Tractors and agricultural machinery (harvesters, sprayers etc.)
- Forestry machinery and road construction equipment
- Material handling equipment - Forklifts and stackers, Dock Leveller
- Steel mills and rolling equipment
- Ship steering and deck cranes
- Winches and anchor-handling systems and many others...

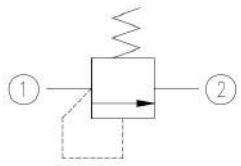
Refer the following pages for additional details and contact us for your custom application requirements.

PRESSURE LIMITING/ RELIEF VALVE - CARTRIDGE

Ball Seat Type | Cartridge | 700 bar

Specification/ Technical Data

Max. Operating Pressure	700 bar
Max Flow at ΔP 15bar	10 LPM
Type	Direct Operated
Design	Ball Seat Type
Mounting	Screw-in Cartridge
User Adjustable	Yes
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.3 Kg





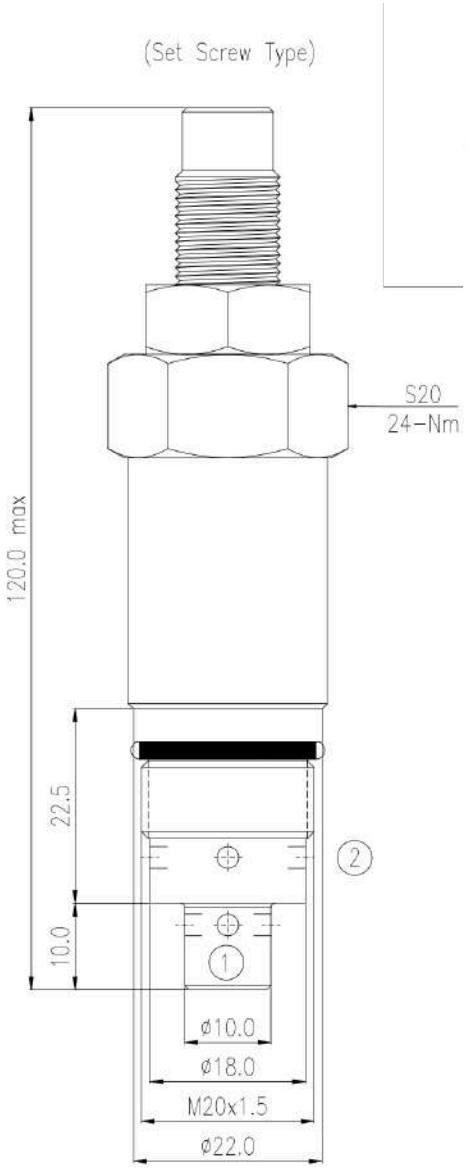
Pressure relief or limiting valve cartridge RVK is a compact, screw-in type valve designed to safeguard hydraulic systems from excessive pressure. It functions as a normally closed valve and remains so until the system pressure reaches a pre-determined maximum setting that may damage the components or elements in the system. Once this set pressure is exceeded, the cartridge's internal mechanism opens, diverting excess hydraulic fluid back to the reservoir (T). This controlled release of pressure prevents damage to pumps, cylinders, and other components by ensuring that the system operates within safe working limits. Essentially, it acts as a critical safety net, preventing system, component and line failure due to over pressurisation.

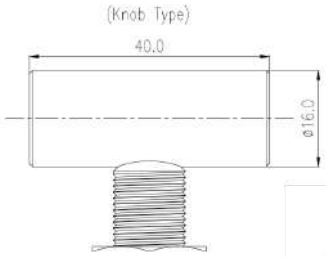
Ordering Information

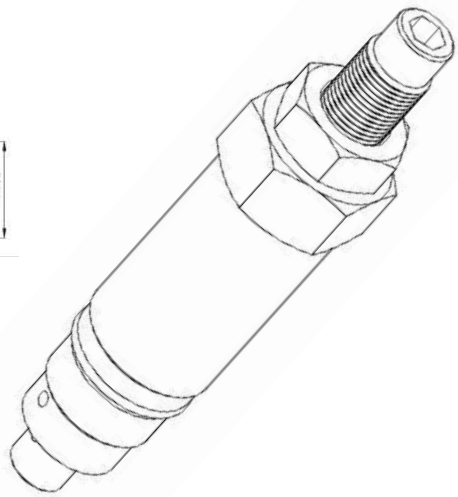
Basic Code	Relief Valve	RV
Type	Cartridge	K
Pr. Rating	210/350/500/700 bar	210…700
Adjustment	S-Set Screw/ H-Knob	S/ H
Version		1x

Model	Rated Flow	Max Pressure	Working Range
RVK 700	5 LPM	700 bar	150…700
RVK 500	5 LPM	500 bar	100…500
RVK 350	10 LPM	350 bar	70…350
RVK 210	10 LPM	210 bar	40…210

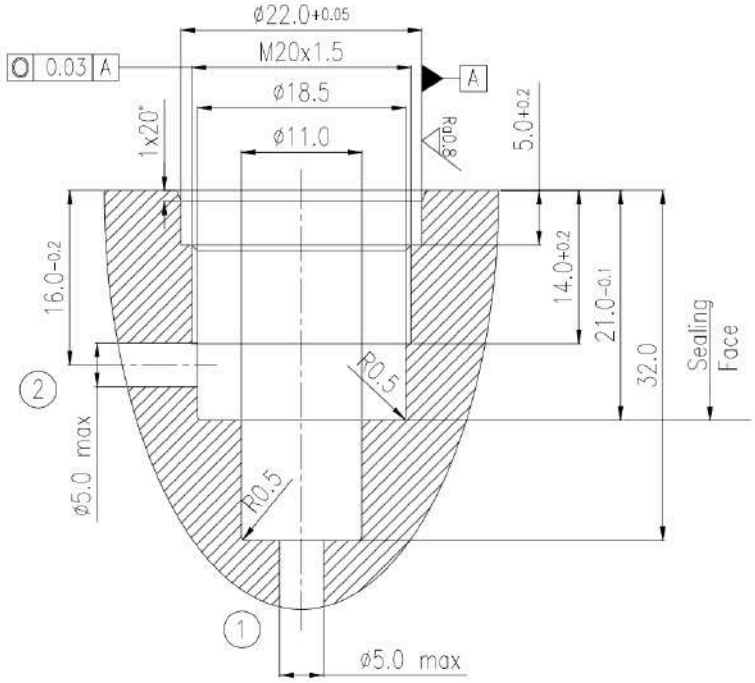
Dimensions







Cavity Details



Spare List

SealKit	SSVRVK1x

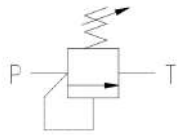
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PRESSURE RELIEF VALVE - CARTRIDGE

Direct Operated | Cartridge | 315 bar

Specification/ Technical Data

Working Pressure	50…315 bar
Size	NG 6…NG 30
Max Flow	300 LPM
Type	Screw-in Cartridge
Adjustment	Screw or Knob
Min Settable Pressure	10% of range
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.5 - 2.2 Kg





FDBD type valves are direct-operated pressure relief or pressure limiting valves used in hydraulic systems for limiting and/or controlling maximum system pressure. These valves are essential to prevent damages due to over pressurisation of the system.

The valves use a spring loaded ball or poppet that prevents oil flow through it. When the system pressure exceeds the value set by the spring force, the ball/ poppet begins to lift off its seat thereby allowing some oil to flow through it. This pressure is termed as cracking pressure. Any decrease is the pressure again lowers the ball/ poppet into its seat preventing oil flow.

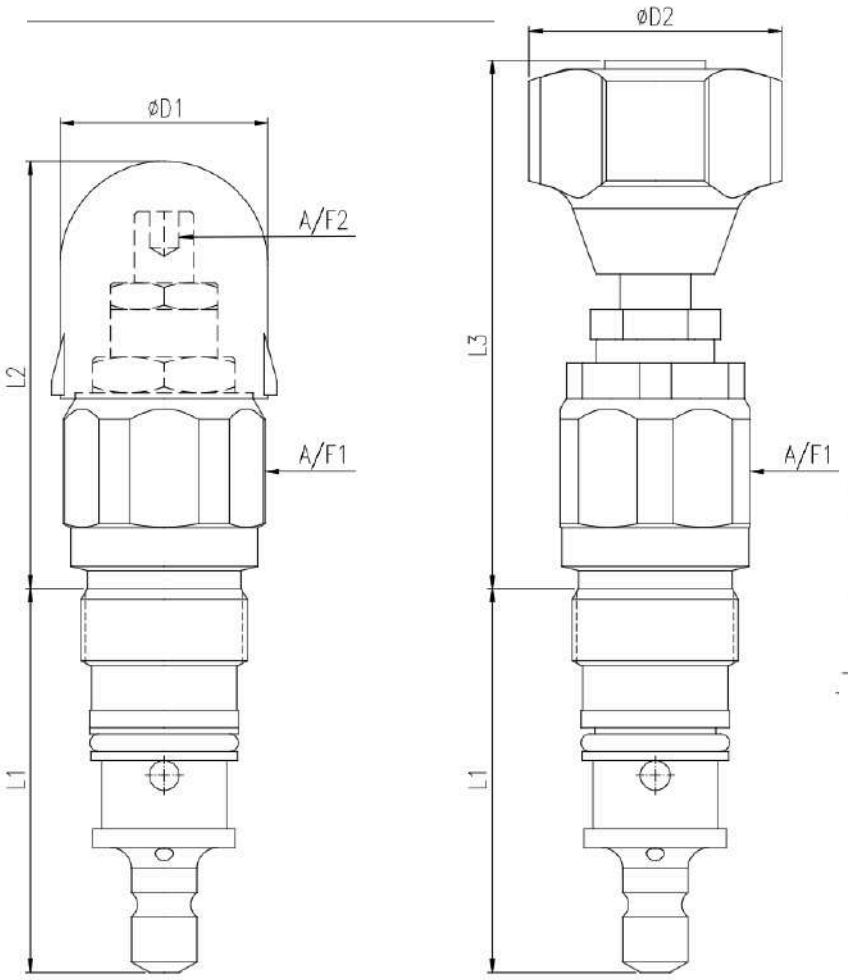
When the valve opens, hydraulic fluid is allowed to flow from the high-pressure inlet (P) to the lower-pressure outlet (T). By releasing excess fluid, the valve maintains the system pressure at or below the set value. The greater the flow, more the ball/ poppet lifts, creating a larger path for the fluid and preventing further pressure increase.

The back pressure in the lower pressure outlet port adds directly to the set pressure of the valve. This means that the actual system pressure at which the valve opens will be the sum of the spring setting and the pressure in the outlet line.

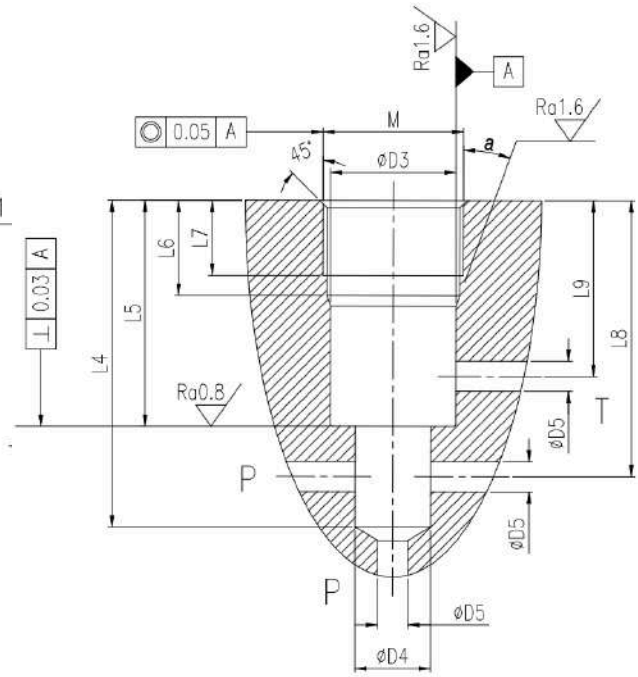
Ordering Information

Basic Code	Relief Valve	FDBD
Size	NG 06/ 10/ 20/ 30	06…30
Adjustment	Screw (S)/ Knob (H)	S/ H
Relief Pressure	50/100/200/315 bar	50…315
Version		1x

Cartridge Dimensions



Cavity Details



Size	A/F1	A/F2	M	øD1	øD2	øD3	øD4	øD5	a	Torque	Weight
NG 06	30	6	M28 x 1.5	34	60	25 H9	15	6	15°	100 Nm	0.5 Kg
NG 10	36	6	M35 x 1.5	38	60	32 H9	19	10	15°	150 Nm	1.0 Kg
NG 20	46	6	M45 x 1.5	48	60	40 H9	24	20	20°	300 Nm	1.6 Kg
NG 30	60	8	M60 x 2.0	63	60	55 H9	39	30	20°	500 Nm	2.2 Kg

Size	L1	L2	L3	L4	L5	L6	L7	L8	L9
NG 06	64	65	72	65	45	19	15	56.5	36
NG 10	77	80	80	80	52	23	18	67.5	42
NG 20	106	110	90	110	70	27	21	91.5	55
NG 30	131	130	100	140	84	29	23	113.5	63

All dimensions in mm

Spare List

SealKit - FDBD06	SSVFDBD061x
SealKit - FDBD10	SSVFDBD101x
SealKit - FDBD20	SSVFDBD201x
SealKit - FDBD30	SSVFDBD301x

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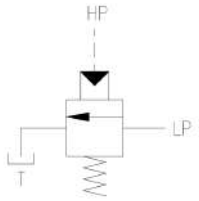
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PUMP UNLOADING VALVE - CARTRIDGE

Ball Seat Type | Cartridge | 700 bar

Specification/ Technical Data

Working Pressure	50…130 bar
Max Pilot Pressure	700 bar
Max Flow	10 LPM
Design	Ball Seat Type
Mounting	Screw-in Cartridge
User Adjustable	No (Factory Set)
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.32 Kg





Pump unloading valve type PUV06 is crucial in high-low hydraulic circuits to efficiently manage system pressure and flow. Its primary purpose is to bypass the flow from the high-flow pump back to the tank when the system pressure reaches a predetermined set point, thereby "unloading" the pump. This unloading action significantly reduces the power required from the electric motor driving the high-pressure pump, as it no longer has to work against full system pressure and flow.

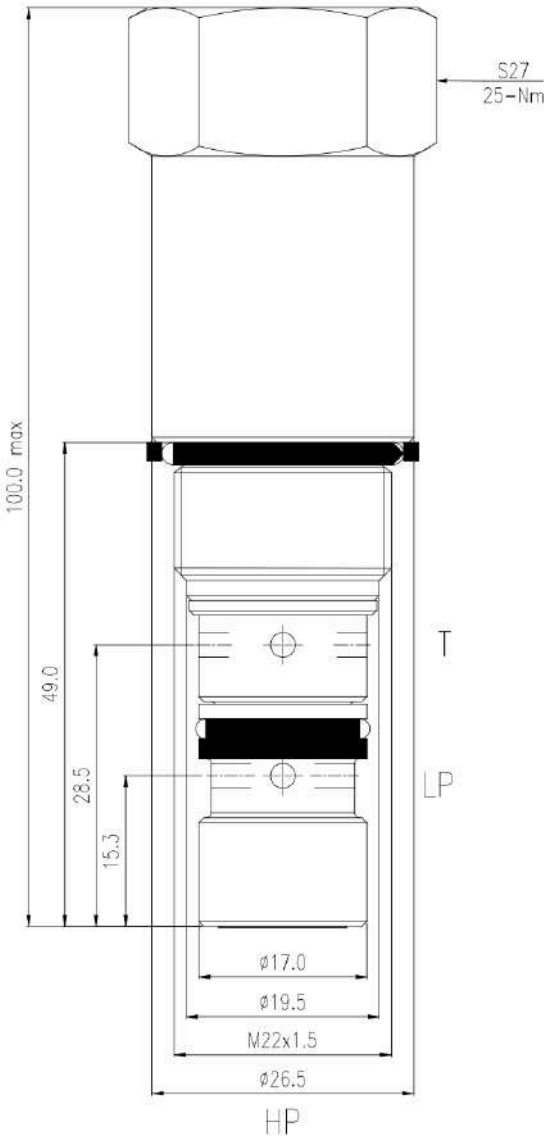
By unloading the low-pressure pump, the motor only needs to power the high-pressure pump during the work cycle, leading to significant energy savings. The use of an unloading valve also helps in reducing heat generation within the hydraulic system, as less energy is wasted through throttling or relief valve operation. This design enhances the overall efficiency and longevity of the hydraulic power unit by minimising continuous stress on the motor and pumps.

Multiple pump unloading valves may be used in a hydraulic circuit to design a 2 or 3 stage systems thereby bringing higher efficiency into circuit design.

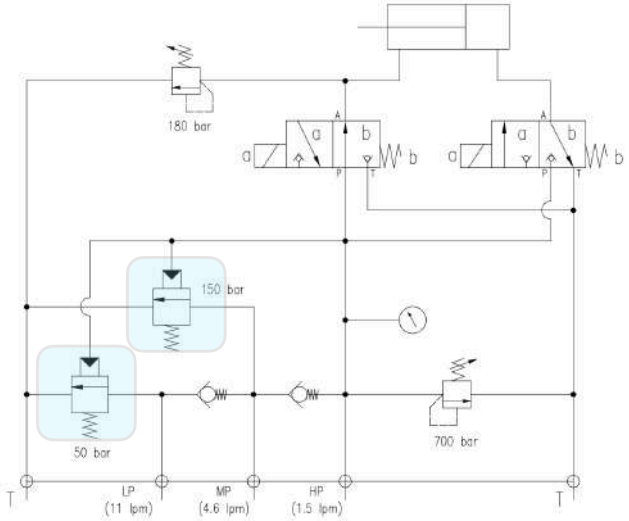
Ordering Information

Basic Code	Unloading Valve	PUV
Size	NG 06	06
Unload Pressure	50…130	50…130
Adjustment	Factory Set	-
Version		2x

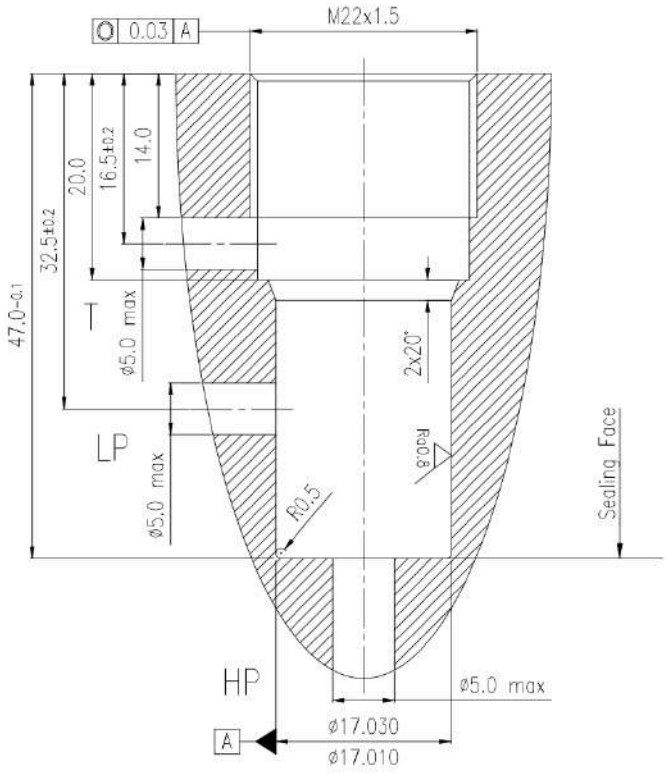
Dimensions



Example - 3 Stage Pump Circuit



Cavity Details



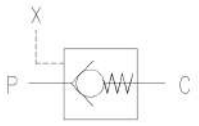
Spare List

SealKit - PCV05	SSVPUV062x

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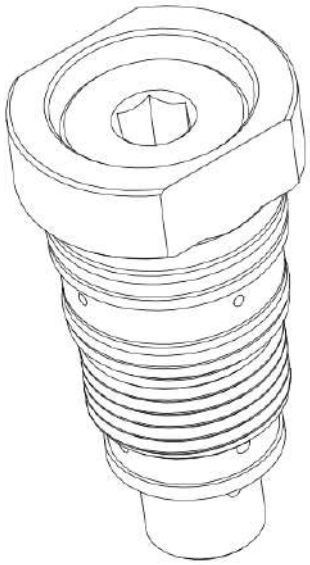
PILOT CHECK VALVE - CARTRIDGE

Ball Type | Cartridge and Line Mounted |700 bar



Specification/ Technical Data

Max. Operating Pressure	700 bar
Cracking Pressure	1.5 bar
Pilot Pressure	350 bar
Area Ratio	5.75
Max Flow at ΔP 15bar	20 LPM
Design	Spring Loaded Ball
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.35 Kg



Pilot operated check valves are non-return valves that block oil flow in one direction and can be released using a hydraulic pilot line. In the opposite direction, the valves will allow free oil flow. The construction allow the valves to be screwed into the tapped holes in any manifold body. These valves are ideal for applications where load holding functions are required or where creeping movement of the hydraulic cylinders need to be arrested.

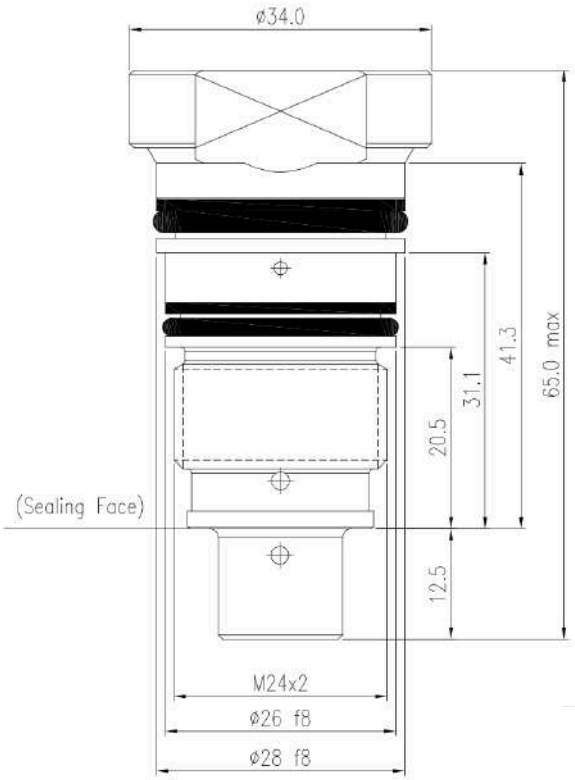
- Available as cartridge and line mounted type
- Zero leakage valves in closed condition
- Ball seat type design

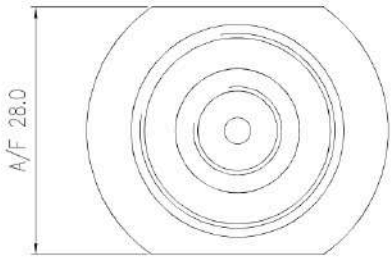
Note: Refer FKCB catalogue for 350bar version

Ordering Information

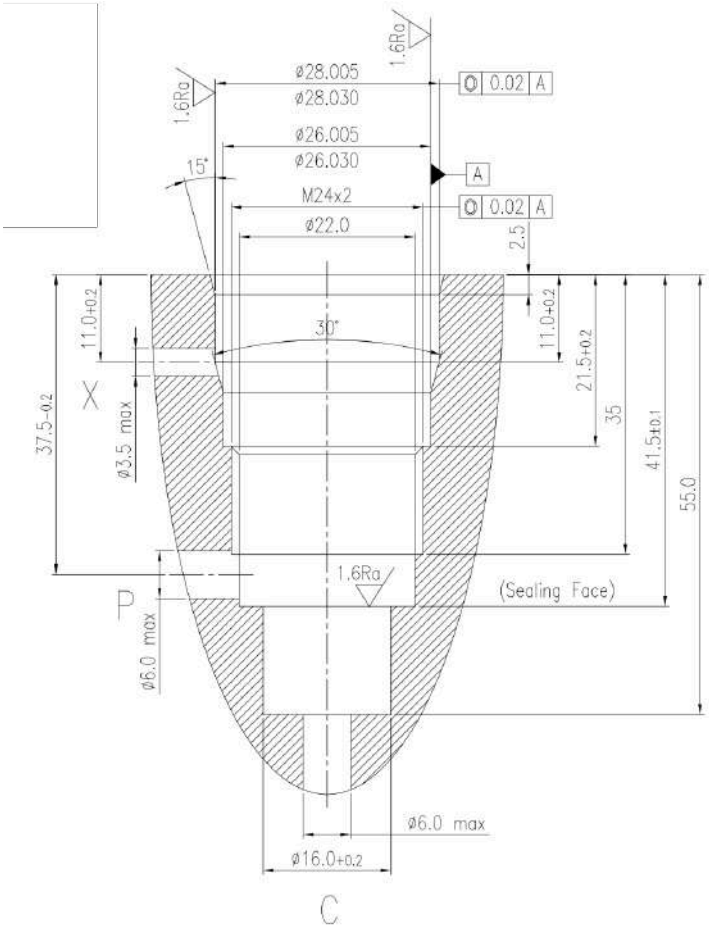
Basic Code	Pilot Check Valve	PCV
Size	NG5	05
Type	Cartridge (K)/ Line (Single/ Double)	K/ LS/ LD
Version		1x

Dimensions





Cavity Details



Spare List

SealKit - PCV05	SSVPCV051x

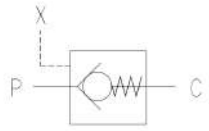
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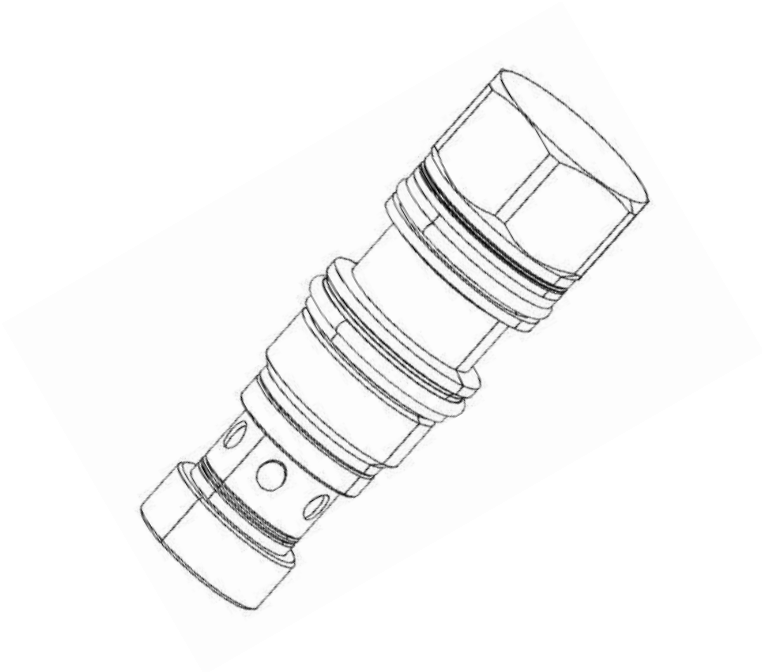
PILOT CHECK VALVE - CARTRIDGE (FKCB)

Ball Type | Cartridge or Line Mounted | 350 bar

Specification/ Technical Data

Max. Operating Pressure	350 bar
Cracking Pressure	~ 1.0 bar
Pilot Pressure	350 bar
Area Ratio	3:1
Max Flow at ΔP 15bar	40 LPM
Design	Spring Loaded Ball
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.25 (1.0) Kg





Note: Refer PCV-05 catalogue for 700bar version

Ordering Information

Basic Code	Pilot Check Valve	FKCB
Cracking Pr.	1.0 bar	-
Seal MOC	Viton	-
Type	Cartridge/ Line (L)	No code/ L
Version		1x

Pilot operated check valves are non-return valves that block oil flow in one direction and can be released using a hydraulic pilot line. In the opposite direction, the valves will allow free oil flow.

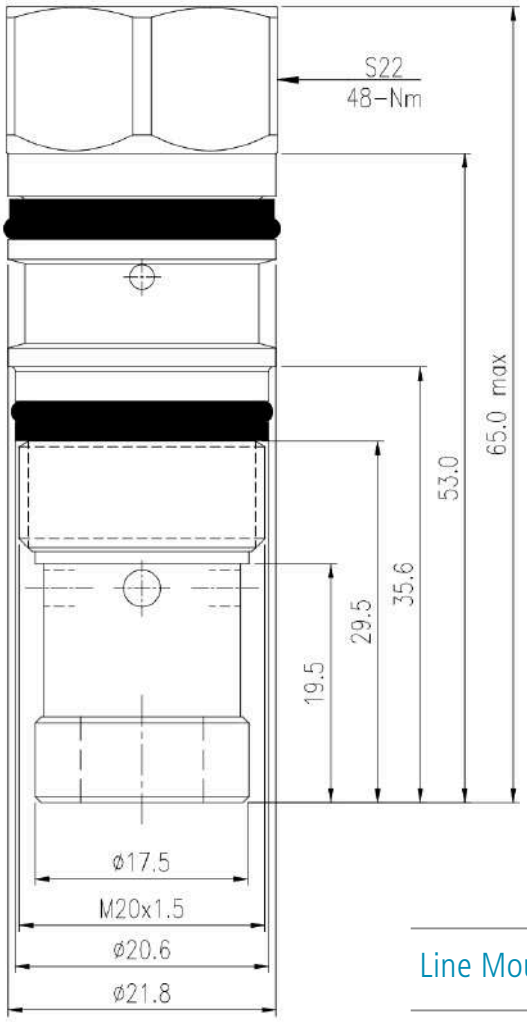
FKCB valves are cartridge type valves that fit into a standard cavities. These valves are ideal for applications where load holding functions are required or where creeping movement of the hydraulic cylinders need to be arrested.

A line mounted version is also available with independent P, C and X threaded ports.

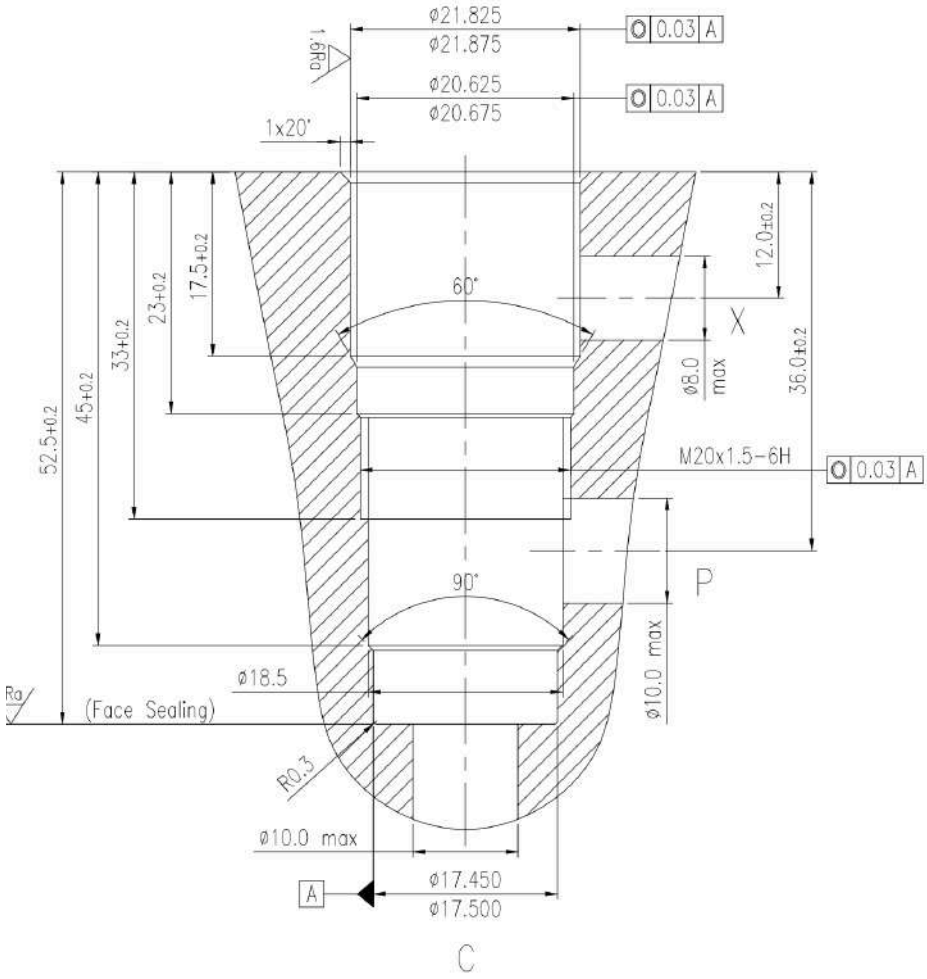
Key Features:

- Designed to fit into standard cavity
- Customisation option available
- Low leakage design
- Viton seals as standard

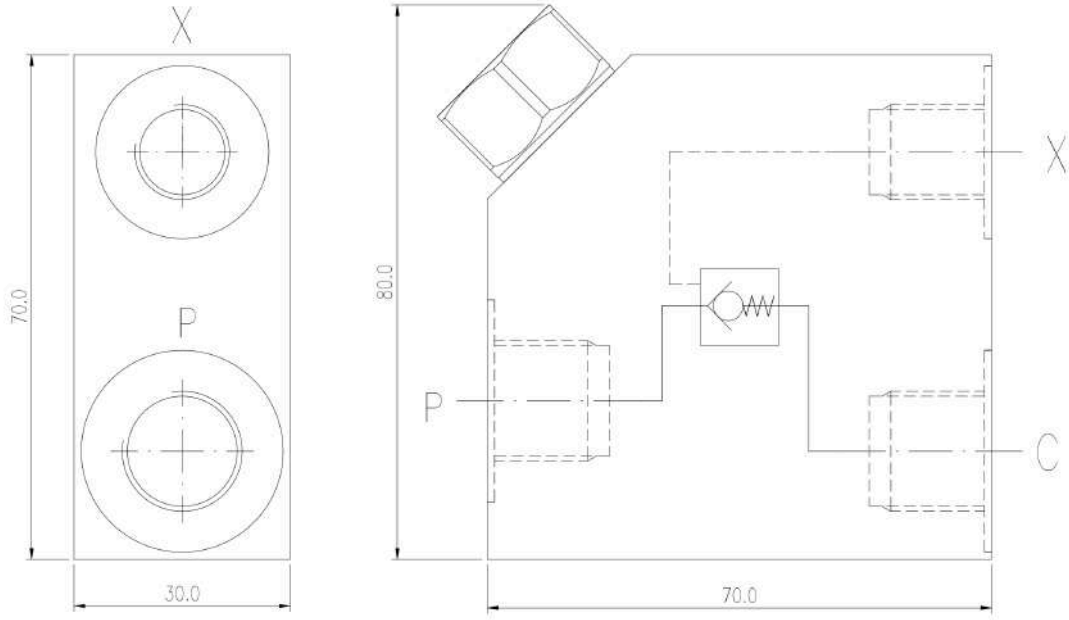
Dimensions



Cavity Details



Line Mounted Version



P & C ports: 3/8" BSP (F)
X port: 1/4" BSP (F)

All dimensions in mm

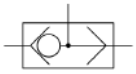
Spare List

SealKit	SSVFKCB1x

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SHUTTLE VALVE - CARTRIDGE

Ball Seat Design | Cartridge Type | 420 bar



Specification/ Technical Data

Max. Operating Pressure	420 bar
Flow Capacity	15 LPM
Design	Ball Seat
Type	Cartridge
Size	M12
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.1 Kg
Tightening Torque	10 Nm



A hydraulic shuttle valve is a type of directional control valve that automatically selects the higher pressure fluid source from two inlet ports and directs it to a single outlet port. It essentially acts as an "OR" logic element in a hydraulic circuit.

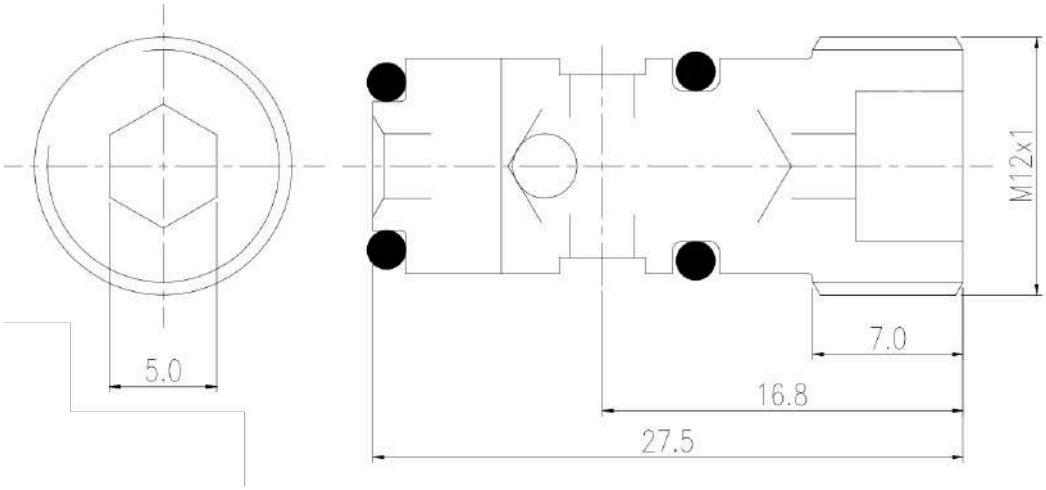
Its basic structure involves a movable internal ball, within a cylindrical body with 2 ports. When fluid pressure is applied to one inlet, it pushes the ball towards the opposite inlet, blocking it, and allowing the fluid to flow out through the common outlet. If the other inlet then experiences higher pressure, the ball moves in the opposite direction, blocking the first inlet and allowing flow from the second.

Shuttle valves are crucial for ensuring continuous operation, providing redundancy, and managing pressure signals in various hydraulic applications, such as load sensing circuits, brake systems, and standby/ emergency systems, by ensuring that the system always responds to the highest available pressure.

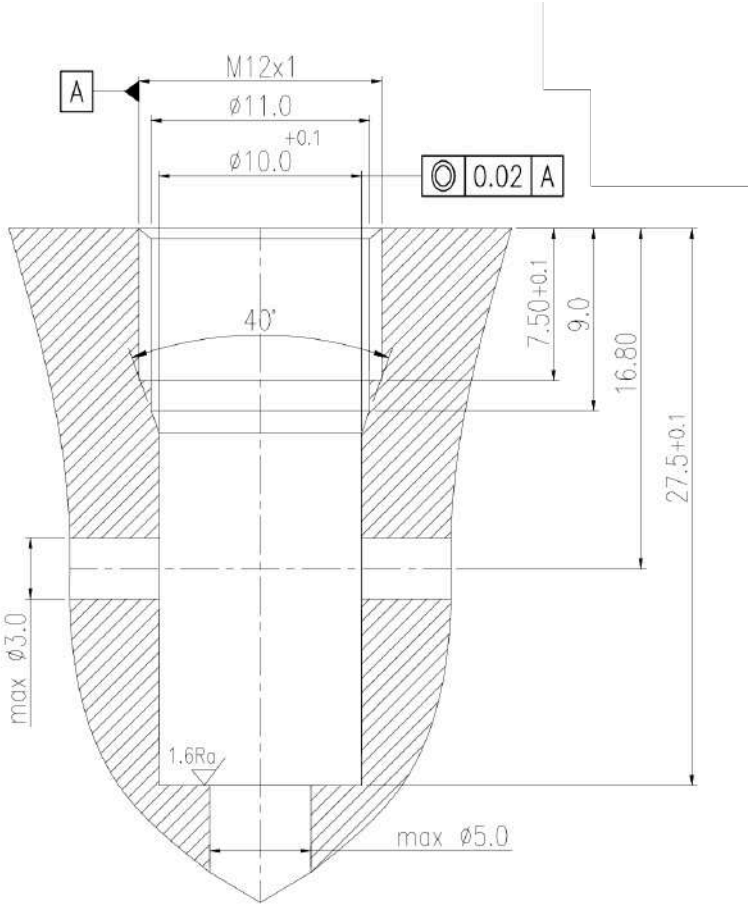
Ordering Information

Basic Code	Shuttle Valve	FVS
Size	M12x1	M12
Type	Cartridge	No code
Version		1x

Valve Dimensions



Cavity Details



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HOSE BURST VALVE/ VELOCITY FUSE - HBV

Insert Type | 315bar | Max 150 LPM

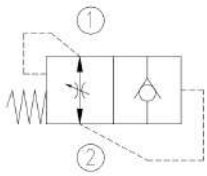
Specification/ Technical Data

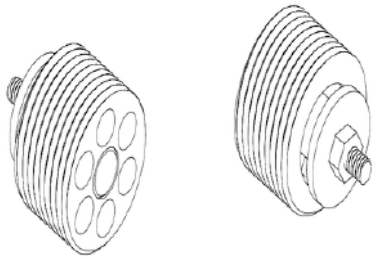
Max. Operating Pressure	315 bar
Maximum Flow	150 LPM
Max. Internal Leakage	0.3ml/min
Free Flow Direction	1 to 2
Restricted Flow	2 to 1
Stroke	Adjustable
Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 80°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight	0.05 - 0.20 Kg

Note: Assembly Tool is available on request or refer page-3 for details
Rated Flow to be mentioned in the model code for presetting at factory

Ordering Information

Basic Code	Hose Burst Valve	HBV
Size/ NG	1/4" to 3/4" BSP	1… 4
Seal Material	Viton	No code
Version		1x
Rated Flow	Factory Set	/…





Hose burst valves, also known as velocity fuses, are safety valves installed directly into the cylinder ports of hydraulic circuits. Their primary application is in lifting and load-holding in mobile equipment, such as excavators, scissor lifts, and cranes, where sudden pressure loss can be highly dangerous. In the event of a hose failure or rupture, these valves immediately block the flow of hydraulic fluid to prevent the suspended load from crashing down and causing accidents.

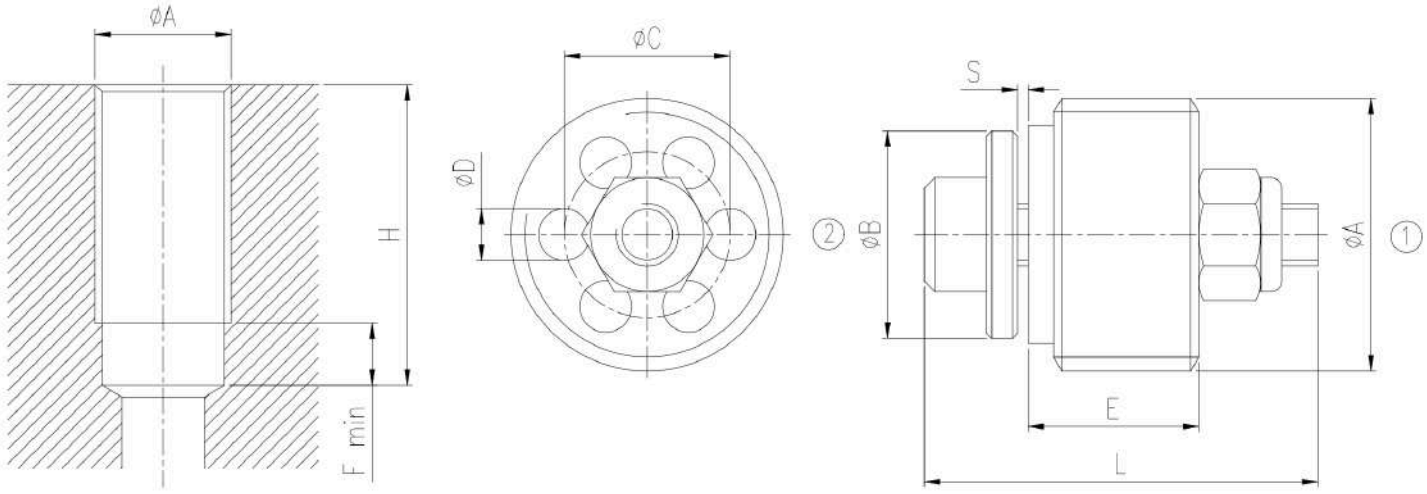
Under normal operating conditions, these valves remain open, allowing bi-directional fluid flow with a minimal pressure drop across its internal poppet. However, if the return flow rate exceeds a pre-set threshold—typically calibrated just above the maximum normal operating flow—the valve reacts instantly. This sudden increase in flow creates a pressure differential that overcomes the internal spring tension, forcing the poppet to shut and lock the fluid inside the cylinder.

These valves are highly reliable and failsafe, requiring no external power or electronics to operate, and work entirely on internal fluid dynamics. Once triggered, the valve remains securely closed by the pressure of the suspended load and is typically reset by reapplying system pressure to the blocked line after replacing the damaged hose.

Consult factory for line mounted or dual hose burst valve designs.

Model	Size	Min Flow LPM	Max Flow LPM	Weight Kg	Torque N-m
HBV 1	1/4" BSP	4	25	0.05	2
HBV 2	3/8" BSP	6	50	0.07	3
HBV 3	1/2" BSP	16	80	0.15	4
HBV 4	3/4" BSP	25	150	0.20	10

Valve Dimension

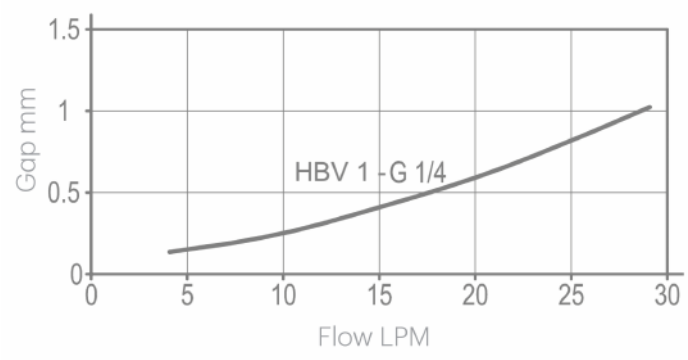


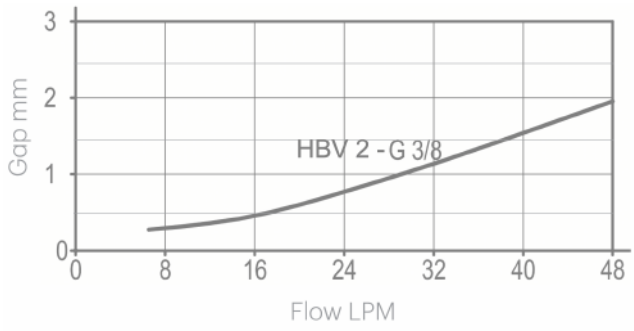
All dimensions in mm

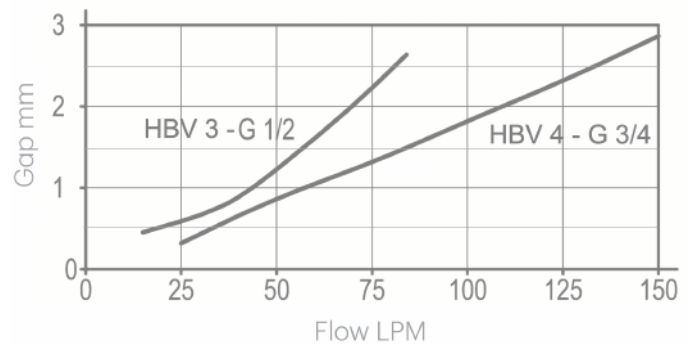
Model	øA	øB	øC	øD	E	F	H	L	S-max	Hex
HBV 1	G 1/4"	8	8	2.5	8.5	11	40	22	1.5	2.5
HBV 2	G 3/8"	12.5	10.5	3	11	11	45	28	2.0	4.5
HBV 3	G 1/2"	15	12	4	13.5	15	50	30	2.5	4.5
HBV 4	G 3/4"	18.5	16	6	17	16	55	35	3.0	4.5

Performance Curves

Recorded at TOil = 40°C and 68 cSt.



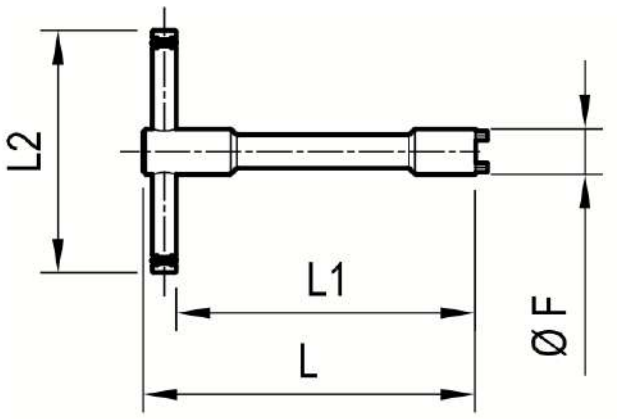




Notes:

1. Max +/- 10% variation in flow may be expected.
2. The gap must be set to allow at least 50% over the nominal flow from the actuator for consistent performance.
3. If the valve is triggered due to hose failure or otherwise, it is recommended to verify the integrity of the valve before pressurising the system again.

Assembly Tool



Valve Model	Ordering Code	L	L1	L2	øF
HBV 1 - 1/4"	ATHBV11x	120	110	60	11.3
HBV 2 - 3/8"	ATHBV21x	120	108	80	15
HBV 3 - 1/2"	ATHBV31x	120	108	80	18.8
HBV 4 - 3/4"	ATHBV41x	120	108	80	24

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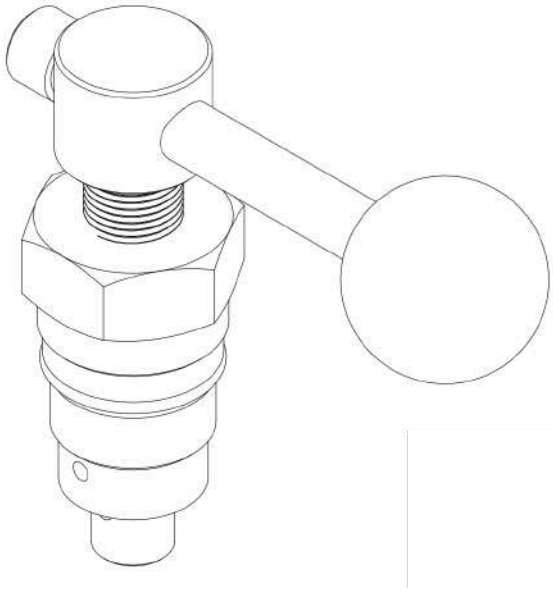
NEEDLE VALVE - 700BAR (NVK)

Poppet-Seat Type | Cartridge | 700 bar

Specification/ Technical Data

Max. Operating Pressure	700 bar
Max Flow at ΔP 15bar	10 LPM
Flow Direction	1 to 2
Design	Poppet Seat Type
Mounting	Screw-in Cartridge
Flow Adjustment	Hand Lever
Body Material	Carbon Steel
Media	Mineral Oil
Oil Temperature Range	+10 to 60°C
Oil Viscosity	ISO VG 46-100
Oil Cleanliness (ISO 4406)	20/18 /15
Orientation	Any
Weight (approx.)	0.3 Kg





Needle valve cartridge NVK is a compact, screw-in type valve designed for precisely controlling fluid flow in systems operating under extreme pressure conditions up to 700 bar. The valve construction ensures durability and leak-free operation even at high pressures. The fine control feature makes it ideal for controlling oil flow and thereby adjusting cylinder speed. These valves may also be used for manually decomposing or relieving hydraulic pressure in high-pressure systems like jacks, tensioning, crimping, etc. after completion of operation.

NVK valve is a poppet-in-seat type of valve, where the poppet lifts to allow oil flow through it. The adjustment increases or decreases the allowable area for oil flow, thereby throttling the flow through the valve. Flow adjustment is possible in direction 1 to 2, and when the valve is fully closed, the poppet blocks the oil path, making the valve zero leak. In direction 2 to 1, throttling is not possible, and the valve will be shut completely, making it zero leak.

The flow adjustment is through a standard lever supplied with the valve, and flow may be adjusted even at high pressures.

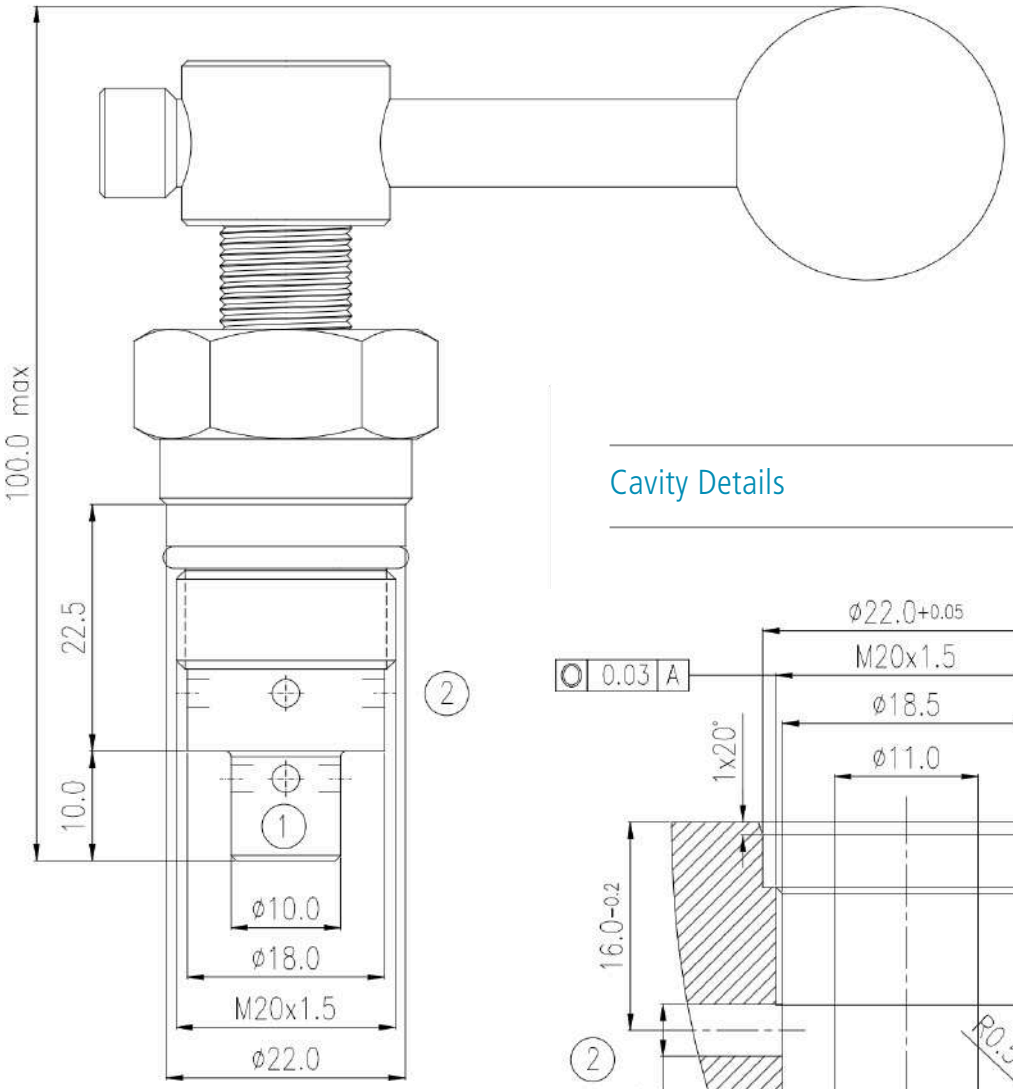
Model	Rated Flow	Max Pressure
NVK 700	10 LPM	700 bar

Rated flow considering ΔP 15bar
Tested with Mineral Oil ISO VG46 at 50deg C

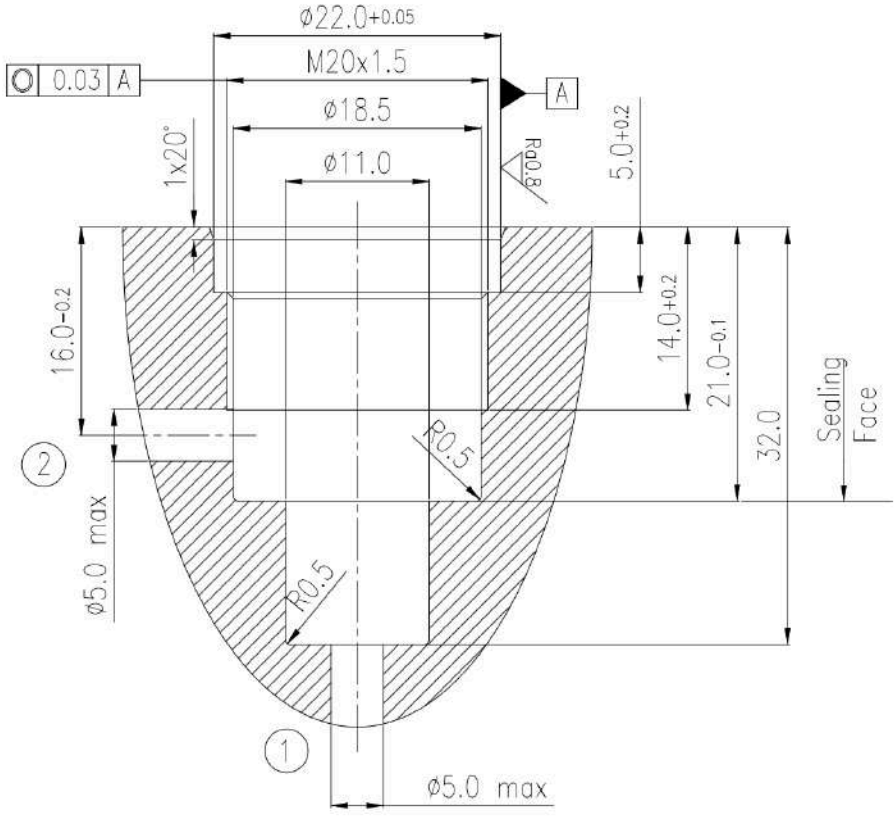
Ordering Information

Basic Code	Needle Valve	NV
Type	Cartridge	K
Pr. Rating	700 bar	700
Adjustment	Hand Lever	-
Version		1x

Valve Dimensions



Cavity Details



All dimensions in mm

Spare List

SealKit	SSVNVK1x

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