

#### Features:

- Check valve controlled by fluid
- For subplate mounting, Mounting pattern to DIN 24 340
- Subplate or screw threaded connection
- With or without leakage port
- With or without pre-opening
- Type with pre-opening, dampened decompression
- 3 opening pressures



#### Function, section

SV and SL valves are hydraulic pilot operated check valves in poppet type design which may be opened to allow flow in either direction.

These valves are used for the isolation of operating circuits under pressure, as safeguard against the lowering of a load when a line break occurs or against creeping movements of hydraulically locked-in actuators.

Basically these valves consist of housing (1), poppet (2), compression spring (3), control spool (4) as well as a pre-opening, as poppet valve (5), optionally.

The valve enables free flow from A to B, in the counter direction the poppet (2) is held on its seat by the system pressure, additionally to the spring force.

Through the pressure connection at control port X the control piston (4) is moved to the right. This pushes the poppet (2) from the seat. Now the valve may also have a flow from B to A.

In order to ensure the proper opening of the valve via the control piston (4) a certain minimum control pressure is necessary

#### Type SV...A.. and SL...A.. (with pre-opening, section 1)

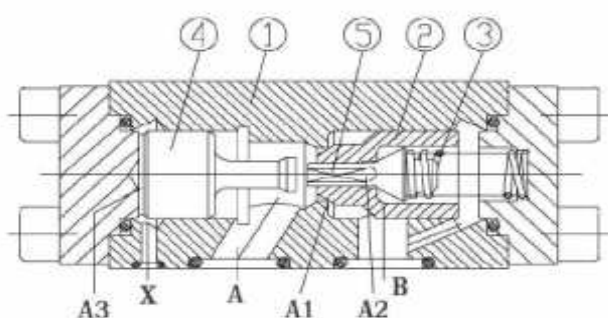
This valve has a additional pre-opening. Through pressure connection at control port X the control piston (4) is pushed to the right.

This first pushes the poppet (5) and then the poppet (2) from the seat. Now the valve may also have a flow from B to A. Because of the pre-opening there is a dampened decompression of the fluid under pressure. Through this possible pressure shocks are avoided.

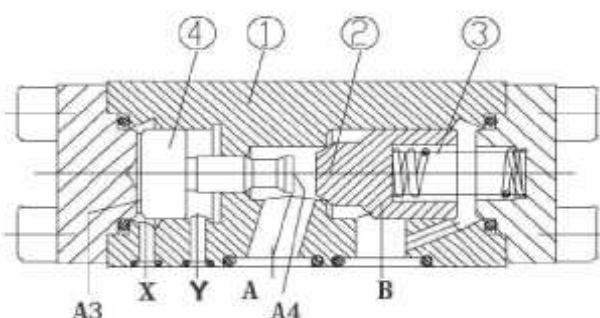
#### Type SL... (with leakage port, section 2)

The function of this valve is principally the same as the valve SV.

The difference is the additional leakage port Y. With this the annulus area of the control piston (4) is separated from port A. The pressure present at port A only effects area  $A_4$  of the control piston (4).



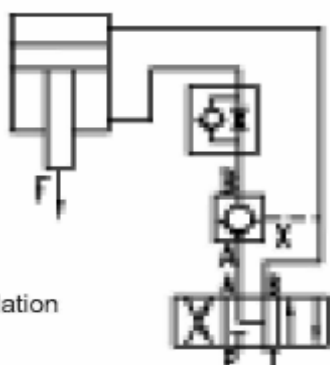
SV...PA (with pre-opening)



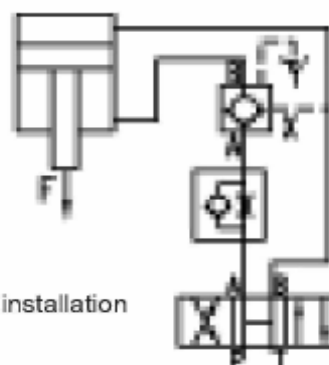
SL...PB (without pre-opening)

Type	A1 (cm <sup>2</sup> )	A2 (cm <sup>2</sup> )	A3 (cm <sup>2</sup> )	A4 (cm <sup>2</sup> )
SV/SL10	1.13	0.28	3.15	0.50
SV/SL20	3.14	0.78	9.62	1.13
SV/SL30	5.30	1.33	15.9	1.54

## Typical Circuit Example



Type SV installation



Type SL installation

## Ordering details

S						30	B	/	*
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Without drain port	=V
With drain port	=L

Further details in clear text

No code =	Mineral oils
V =	Phosphate ester

Style	SV		SL	
Connection	G	P	G	P
ordering code				
Size10	=10	=10	=10	=10
Size15	=15	-	=15	-
Size20	=20	=20	=20	=20
Size25	=25	-	=25	-
Size30	=30	=30	=30	=30

30 = Series 30 to 39  
(30 to 39: unchanged installation and connection dimensions)

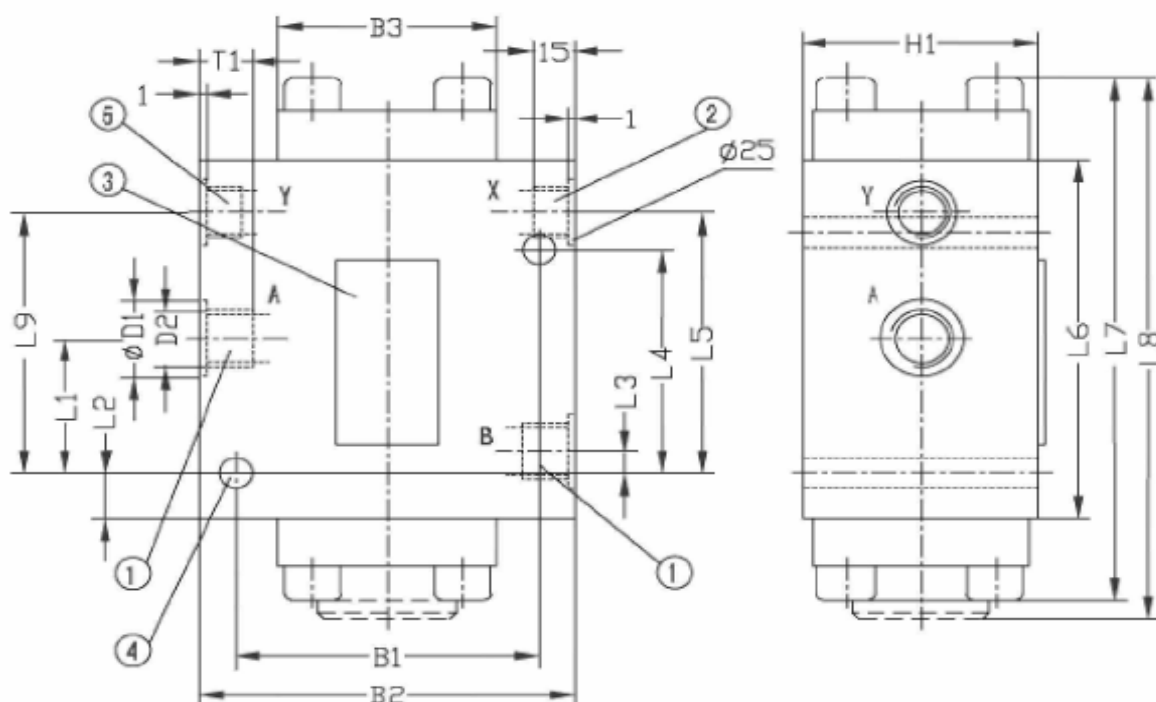
1=	}	Cracking pressure
2=		See curve A to B
3=		

Plate mounting	=P
Thread connection	=G

A=	With pilot valve
B=	Without pilot valve

## Technical data

Type	SV10	SL10	SV15, 20	SL15, 20	SV25, 30	SL25, 30
Control volume - port X (cm <sup>3</sup> )	2.2		8.7		17.5	
Control volume - port Y (cm <sup>3</sup> )	-	1.9	-	7.7	-	15.8
Direction of flow	From A to B free, from B to A when pilot operated					
Operating pressure, max. (MPa)	to 31.5					
Control pressure, max. (MPa)	0.5~31.5					
Pressure fluid	Mineral oils(for NBR seal) or phosphate ester(for FPM seal)					
Pressure fluid temperature range (°C)	-30 to +80					
Viscosity range (mm <sup>2</sup> /s)	2.8 to 500					
Weight (kg)	SV10	SL10	SV15, 20	SL15, 20	SV25, 30	SL25, 30
	2.5		4.0	4.5	8.0	

**Unit dimensions: for threaded connection**
**(Dimensions in mm)**


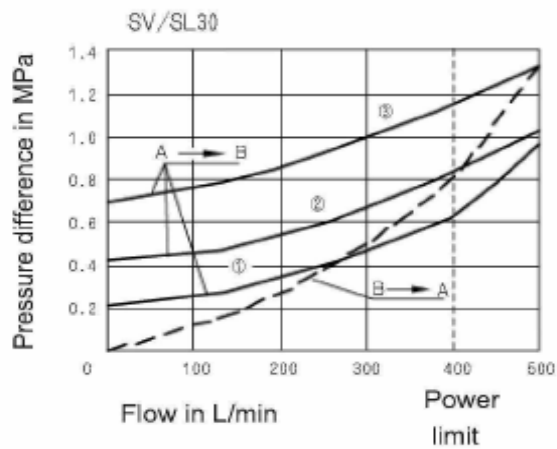
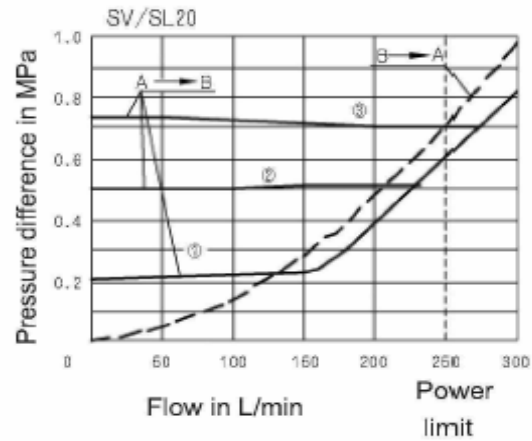
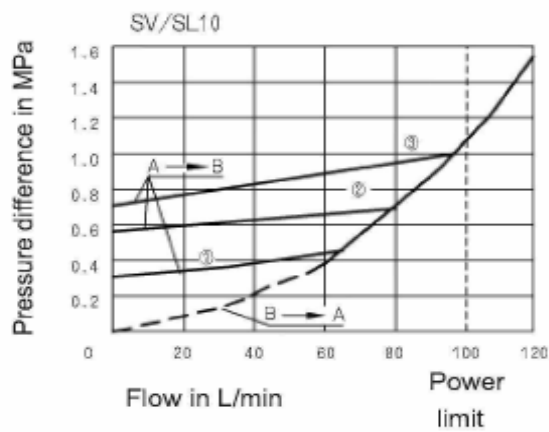
Type		B1	B2	B3	Φ D1	D2
SV	10	66.5	85	40	34	G1/2" or M22X1.5
	15	79.5	100	55	47	G3/4" or M27X2
	20	79.5	100	55	47	G1" or M33X2
	25	97	120	70	65	G1 1/4" or M42X2
	30	97	120	70	65	G1 1/2" or M48X2
SL	10	66.5	85	40	34	G1/2" or M22X1.5
	15	79.5	100	55	47	G3/4" or M27X2
	20	79.5	100	55	47	G1" or M33X2
	25	97	120	70	65	G1 1/4" or M42X2
	30	97	120	70	65	G1 1/2" or M48X2

1. Ports A and B
  2. Port X, G1/4" or M14X1.5
  3. Name plate
  4. Valve fixing holes Φ 10.5
  5. Port Y, G1/4" or M14X1.5
- \* Valve with cracking pressure "1" and "2" (dimension L7)
  - \* Valve with cracking pressure "3" (dimension L8)

Type		H1	L1	L2	L3	L4	L5	L6	L7	L8	L9	T1
SV	10	42	27.5	18.5	10.5	33.5	49	80	116	116	-	14
	15	57	36.5	17.5	13	50.5	67.5	95	135	146	-	16
	20	57	36.5	17.5	13	50.5	67.5	95	135	146	-	18
	25	75	54.5	15.5	20.5	73.5	89.5	115	169	179	-	20
	30	75	54.5	15.5	20.5	73.5	89.5	115	169	179	-	22
SL	10	42	22.5	18.5	10.5	33.5	49	80	116	116	51.5	14
	15	57	30.5	17.5	13	50.5	72.5	100	140	151	72.5	16
	20	57	30.5	17.5	13	50.5	72.5	100	140	151	72.5	18
	25	75	51	15.5	20	84	99.5	125	179	189	99.5	20
	30	75	51	15.5	20	84	99.5	125	179	189	99.5	22

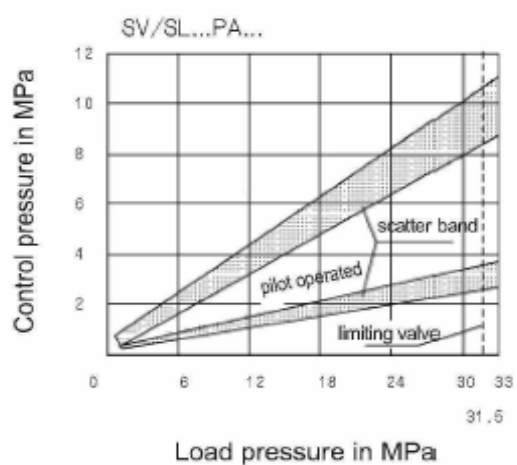
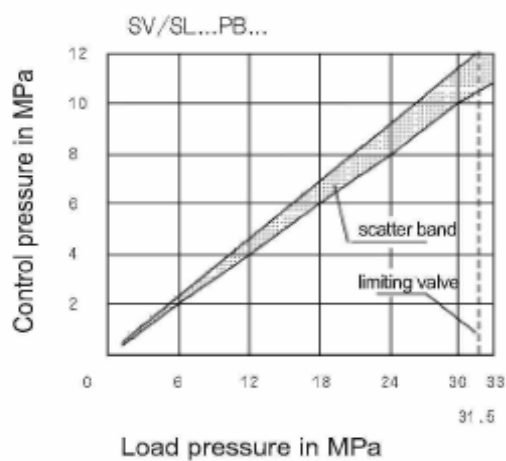
**Characteristic curves** ( measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $t = 50^\circ\text{C}$  )

Pressure difference / flow curves



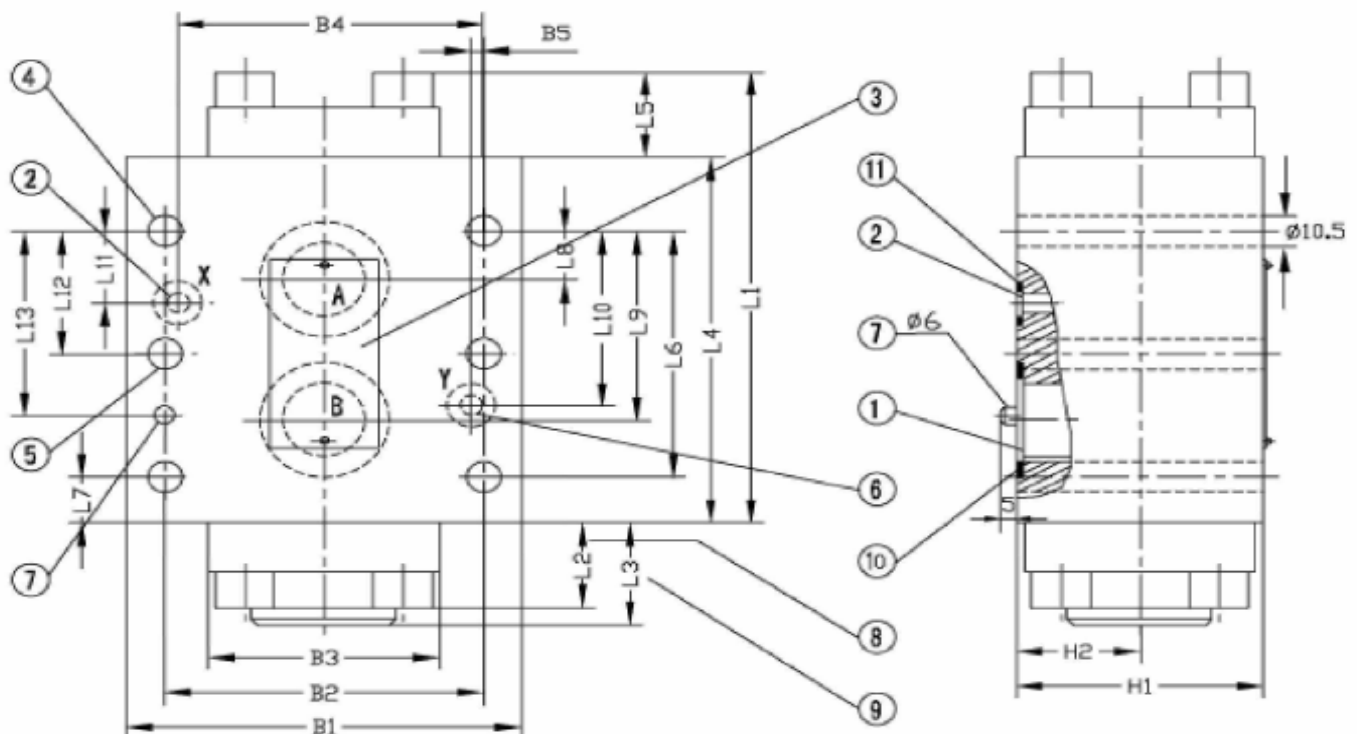
Curve one ,two and three are corresponding to one, two and three in the ordering code

Control pressure / Load pressure curves



# Unit dimensions: for subplate mounting

(Dimensions in mm)



1. Inlet ports A and B
2. Port X
3. Nameplate
4. 4 fixing holes with type SV/SL 10 SV/SL 20 valve
5. 6 fixing holes with type SV/SL 30 valve
6. Port Y with valve type "SL"  
(with valve type "SV" this port is closed)
7. Fixing pin
8. Valve with cracking pressure types "1" and "2" (dimension L2)
9. Valve with cracking pressure types "3" (dimension L3)
10. O-ring

For ports A and B

O-ring 15 × 3 (size10)

O-ring 24 × 3 (size20)

O-ring 34 × 3 (size30)

- 11 For ports X and Y  
O-ring 10 × 2.5  
(size10,20,30)

Required surface finish of mating piece



Valve fixing screw  
(included in goods)

Size10

4 - M10 × 50-10.9 (GB/T70.1-2000)

Screw torque:  $M_A = 75\text{Nm}$

Size20

4 - M10 × 70-10.9 (GB/T70.1-2000)

Screw torque:  $M_A = 75\text{Nm}$

Size30

6 - M10 × 85-10.9 (GB/T70.1-2000)

Screw torque:  $M_A = 75\text{Nm}$

Subplate:

Size10 G460/01(G3/8" ) G460/02(M18 × 1.5)

G461/01(G1/2" ) G461/02(M22 × 2)

Size20 G412/01(G3/4" ) G412/02(M27 × 2)

G413/01(G1" ) G413/02(M33 × 2)

Size30 G414/01(G1 1/4" ) G414/02(M42 × 2)

G415/01(G1 1/2" ) G415/02(M48 × 2)

must be ordered separately order:

see page 204

Type	Size	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
SV	10	98	18	18	80	18	43	18.5	7.2	35.8	-
	20	115	20	31	95	20	60.5	17.3	11.1	49.2	-
	30	144	29	35	115	29	84	15.5	16.5	67.5	-
SL	10	98	18	18	80	18	43	18.5	7.2	35.8	21.5
	20	115	20	31	100	20	60.5	17.3	11.1	49.2	39.7
	30	144	29	35	125	29	84	15.5	16.5	67.5	59.5

Type	Size	L11	L12	L13	B1	B2	B3	B4	B5	H1	H2
SV	10	21.5	-	32 <sup>+0.3</sup> <sub>-0.3</sub>	85	66.5	40	58.5	-	42	21
	20	20.6	-	44.5 <sup>+0.3</sup> <sub>-0.3</sub>	100	79.5	55	73	-	57	28.5
	30	24.5	42	63 <sup>+0.3</sup> <sub>-0.3</sub>	120	97	70	92.8	-	75	37.5
SL	10	21.5	-	32 <sup>+0.3</sup> <sub>-0.3</sub>	85	66.5	40	58.5	7.9	42	21
	20	20.6	-	44.5 <sup>+0.3</sup> <sub>-0.3</sub>	100	79.5	55	73	6.4	57	28.5
	30	24.5	42	63 <sup>+0.3</sup> <sub>-0.3</sub>	120	97	70	92.8	3.8	75	37.5