

Bosch Rexroth SV20PA1-4X/M subplate pilot-operated check valve

Manufacturer: Bosch Rexroth
Manufacturer part number / published order designation: R900587557
Published model: SV20PA1-4X/M

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

The current /M seal suffix is not defined in the selected July 2005 type key; seal material and seal-dependent thermal limits are withheld.

Current maximum pressure/flow and thermal ratings are not promoted from the archival reference.

The archived 315 bar series rating is not used to override possible later execution-specific ratings.

An exact delivered pilot threshold or reverse-flow opening pressure is not inferred.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Bosch Rexroth Sv SI Pilot Operated Check Re21468 2005 Complete

Original pages	Compiled pages	Relevant content
1-5	2-6	Original manufacturer document identity and subplate product scope; 4X type key, SV/SL drainage options, decompression and spring code; /M remains undecoded; Hydraulic function, pilot force balance and drainage conditions; Archived operating-fluid restrictions and area-based pilot requirements, not current execution ratings; Subplate pressure/flow curves and spring-code opening pressure under specified oil conditions
7	7	Subplate mounting dimensions, ISO 5781 interface, locating pin, screws and installation qualifications; selected size and drainage option only

Check valve hydraulically pilot operated

RE 21468/07.05
Replaces: 02.03

1/8

Types SV and SL

Nominal sizes 10 to 32
Component series 4X
Maximum operating pressure 315 bar
Maximum flow 550 l/min



H5558

Overview of contents

Contents

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Ordering details
Preferred types
Symbols
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Features

- For subplate mounting
- Connection location to ISO 5781
- Subplates to data sheet RE 45062 (separate order)
- For threaded connections
- With internal or external pilot oil drain, optional
- With or without decompression feature, optional
- Version with decompression feature for dampened decompression (minimising possible pressure shocks)
- 4 opening pressures, optional

Information on available spare parts:
www.boschrexroth.com/spc

Internal pilot oil drain = V
External pilot oil drain = L

Further details in clear text

	Seal material
No code =	NBR seals
V =	FKM seals

⚠ Attention!

The compatibility of the seals and pressure fluid used has to be taken into account!

4X = Component series 40 to 49
(40 to 49: unchanged installation
and connection dimensions)

Opening pressure

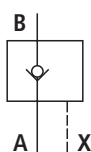
For subplate mounting	= P
For threaded connections	= G
With decompression feature	= A
Without decompression feature	= B

1 =	
2 =	See Δp - q_v -characteristic curves
3 =	A to B,
4 =	Pages 5 and 6

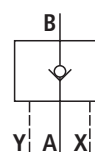
Type SV	Material No.
SV 10 GA1-4X/	R900483368
SV 10 GB1-4X/	R900453511
SV 10 PA1-4X/	R900483369
SV 10 PB1-4X/	R900467724
SV 15 GA1-4X/	R900587549
SV 20 GA1-4X/	R900587550
SV 20 PA1-4X/	R900587557
SV 25 GA1-4X/	R900587551
SV 30 GA1-4X/	R900587552
SV 30 PA1-4X/	R900587558

Further preferred types and standard units can be found within the EPS (Standard Price List).

Version SV (internal pilot oil drain)



Version SL (external pilot oil drain)



Function, section

The SV and SL valves are hydraulic pilot operated check valves of poppet type design which may be opened to permit flow in the reverse direction.

These valves are used for the isolation of operating circuits which are under pressure, i.e. as a safe guard against the lowering of a load when a line break occurs or against creeping movements of hydraulically locked actuators.

The valve basically comprises of the housing (1), the poppet (2), a compression spring (3), the control spool (4) as well as an optional decompression feature as a ball poppet valve (5).

Type SV...

The valve permits free-flow from A to B. In the reverse direction, the poppet (2) is held firmly on to its seat in addition to the spring force by the system pressure.

By applying pressure to connection X, the control spool (4) is moved to the right. This lifts poppet (2) off its seat. Now the valve also permits free-flow from B to A.

In order to ensure that the valve opens due to the pressure applied to the control spool (4), a certain minimum pilot pressure is required (see page 4).

Types SV..A.. and SL..A.. (with decompression)

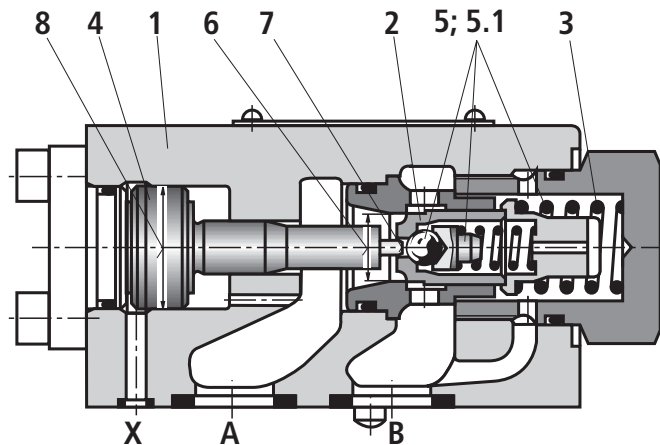
This valve is fitted with an additional decompression feature. When pressure is applied to port X, the control spool (4) is moved to the right. This firstly lifts the ball (5.1) and then the poppet (2) off their seats. The valve now permits flow from B to A.

Because of the decompression feature there is a dampened decompression of the pressurised fluid. Due to this possible pressure shocks are avoided.

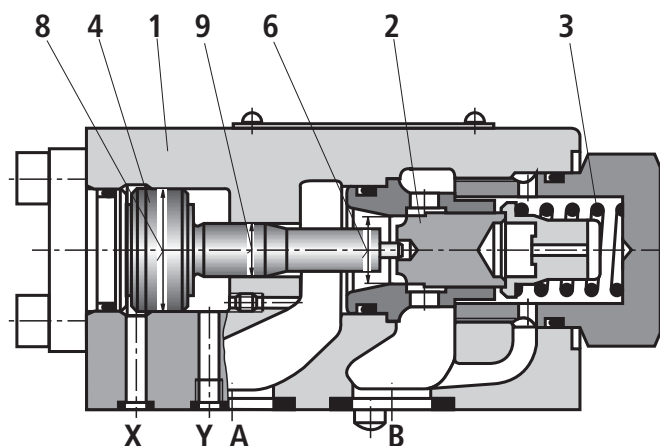
Type SL...

The function of this valve corresponds to that of the type SV.

The difference is the external Y connection. Here, the annular area of the control spool (4) is separated from the port A. Pressure present in port A only acts on area A_4 (9) of the control spool (4).



Type SV..PA.-4X/... (without pilot oil drain, with decompression)



Type SL..PB.-4X/... (with pilot oil drain, without decompression)

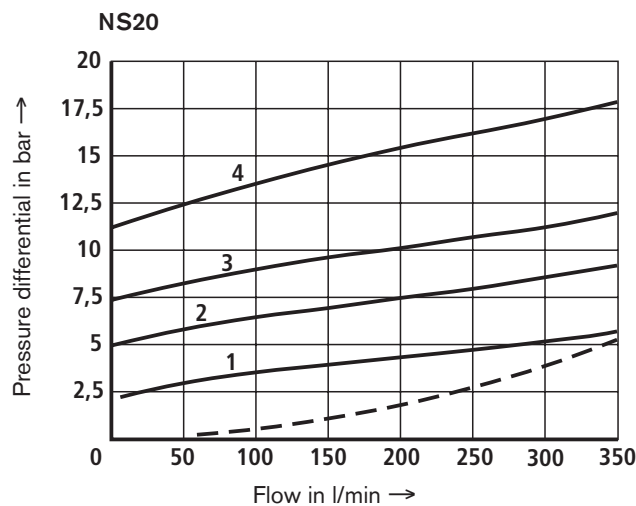
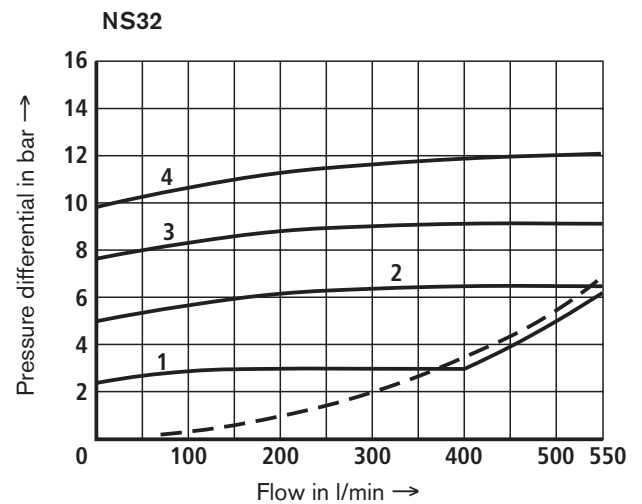
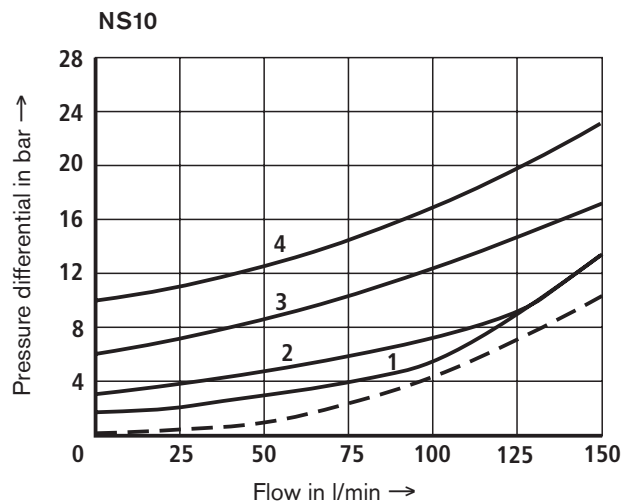
- 6 Area A_1
- 7 Area A_2
- 8 Area A_3
- 9 Area A_4

Technical data (for applications outside these parameters, please consult us!)

General							
Nominal sizes			NS10	NS16	NS20	NS25	NS32
Weight	– Subplate mounting	kg	1.8		4.7		7.8
	– Threaded connections	kg	2.1	5.4	5.4	10	10
Installation			Optional				
Ambient temperature range			°C	–30 to +80 (NBR seals) –20 to +80 (FKM seals)			
Hydraulic							
Maximum operating pressure			bar	315			
Maximum flow			l/min	See characteristic curves, pages 5 and 6			
Control pressure			bar	5 to 315			
Pressure fluid			Mineral oil (HL, HLP) to DIN 51524 ¹⁾ ; fast bio-degradable pressure fluids to VDMA 24568 (also see RE 90221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycoles) ²⁾ ; HEES (synthetic ester) ²⁾ ; other pressure fluids on request				
Pressure fluid temperature range			°C	–30 to +80 (NBR seals) –20 to +80 (FKM seals)			
Viscosity range			mm ² /s	2.8 to 500			
Maximum permissible degree of contamination of the pressure fluid. Cleanliness class ISO 4406 (c)			Class 20/18/15 ³⁾				
Flow direction			Free-flow from A to B, from B to A when opened				
Control volume	– Port X	cm ³	2.5	10.8	10.8	19.27	19.27
	– Port Y (only type SL)	cm ³	2.0	9.6	9.6	17.5	17.5
Control areas (areas according to sectional drawing, see page 3)	– Area A ₁	cm ²	1.33	3.46	3.46	5.72	5.72
	– Area A ₂	cm ²	0.33	0.7	0.7	1.33	1.33
	– Area A ₃	cm ²	3.8	10.17	10.17	16.61	16.61
	– Area A ₄	cm ²	0.79	1.13	1.13	1.54	1.54

¹⁾ Suitable for NBR and FKM seals²⁾ Only suitable for FKM seals³⁾ The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

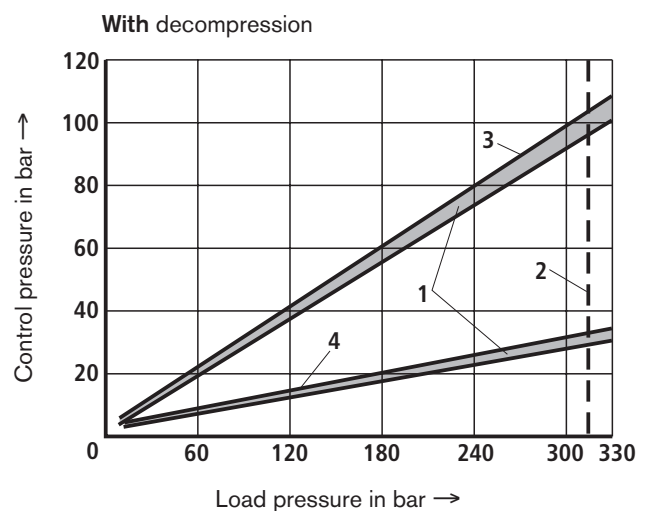
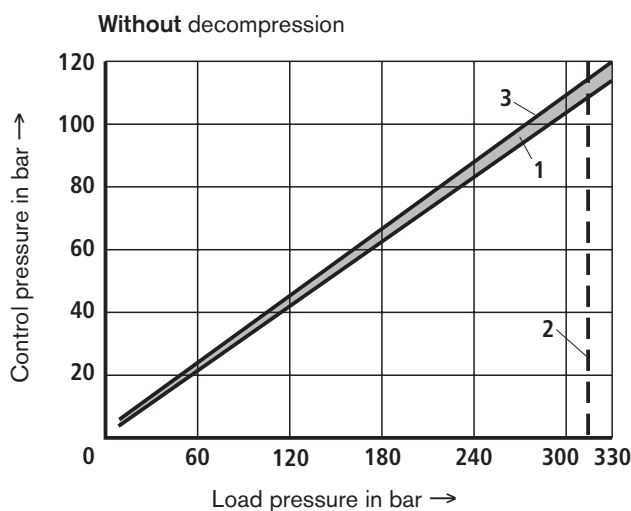
For the selection of filters see catalogue sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

Characteristic curves: subplate mounting (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)
 Δp - q_v -characteristic curves


— A to B - - - B to A

Opening pressure in bar

	NS10	NS20	NS32
1	1.5	2.5	2.5
2	3	5	5
3	6	7.5	8
4	10	10	10

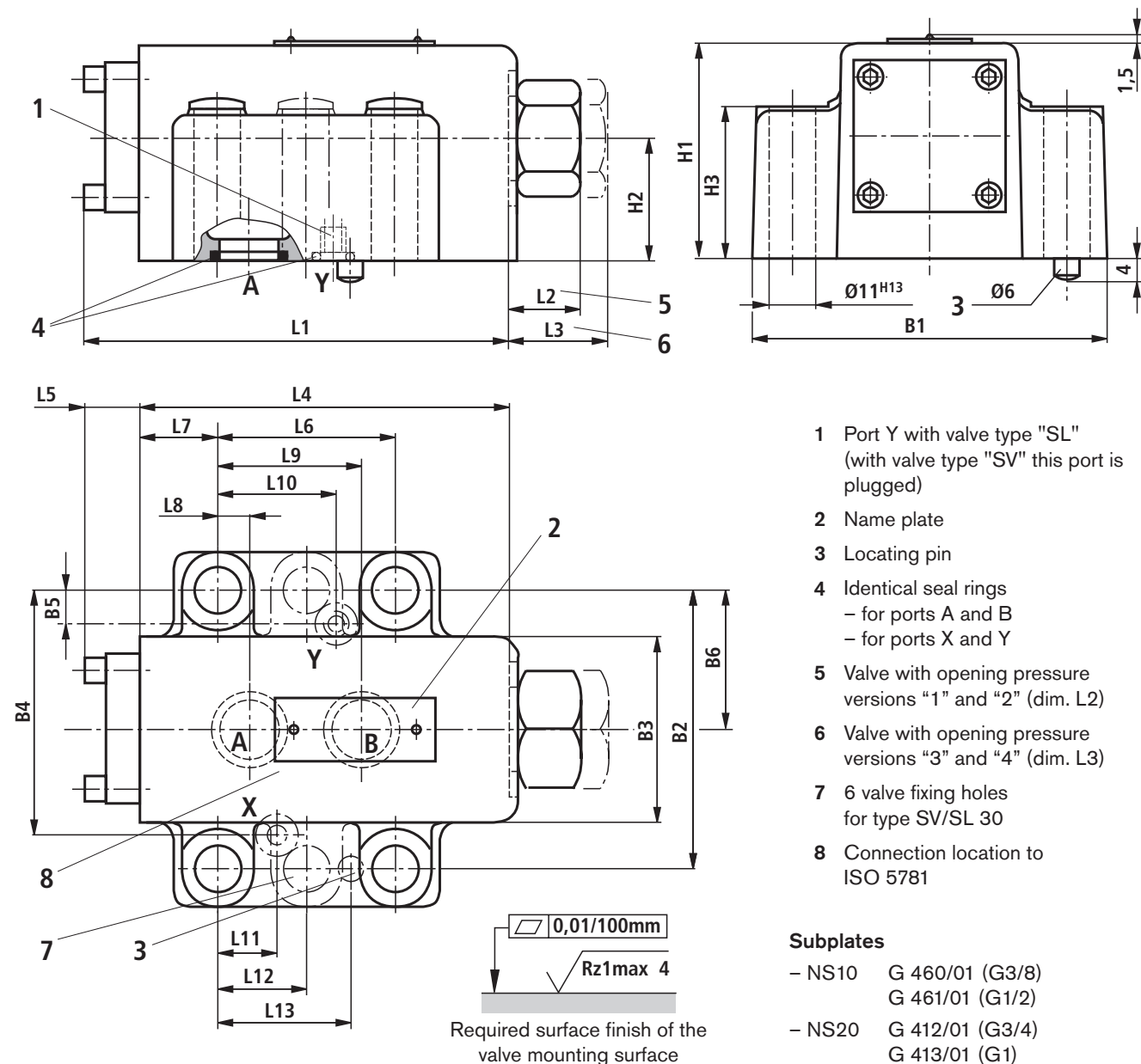
Control pressure-load pressure-characteristic curves


1 Scatter range

2 Limiting value

3 Valve poppet

4 Decompression

Unit dimensions: subplate mounting (nominal dimensions in mm)


Type	NS	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
SV	10	100,8	15,5	15,5	87,8	13	42,9	18,5	7,2	35,8	–	21,5
	20	135	17,7	47,7	117	18	60,3	27,5	11,1	49,2	–	20,6
	32	156,1	36,1	46,1	134	22,1	84,2	39	16,7	67,5	–	24,6
SL	10	100,8	15,5	15,5	87,8	13	42,9	18,5	7,2	35,8	21,5	21,5
	20	135	17,7	47,7	117	18	60,3	27,5	11,1	49,2	39,5	20,6
	32	156,1	36,1	46,1	134	22,1	84,2	39	16,7	67,5	59,5	24,6

Type	NS	L12	L13	B1	B2	B3	B4	B5	H1	H2	H3	B6
SV	10	–	31,8	84	66,7	44	58,8	–	51	29	36	33,3
	20	–	44,5	100	79,4	61	73	–	70	37	55	39,7
	32	42,1	62,7	118	96,8	75	92,8	–	85	42,5	70	48,4
SL	10	–	31,8	84	66,7	44	58,8	7,9	51	29	36	33,3
	20	–	44,5	100	79,4	61	73	6,4	70	37	55	39,7
	32	42,1	62,7	118	96,8	75	92,8	3,8	85	42,5	70	48,4