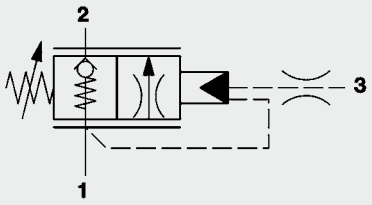
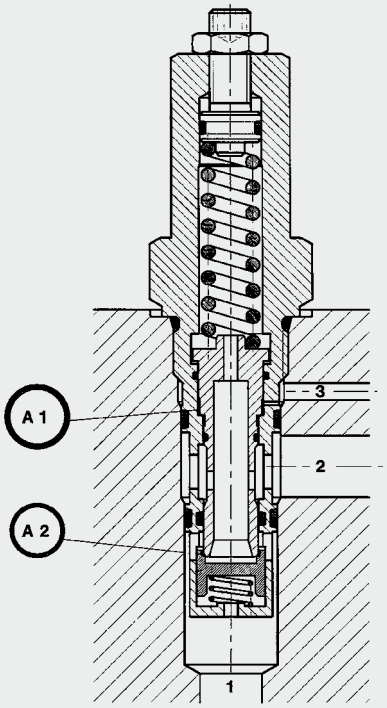
Counterbalance Valve Poppet Type, Direct-Acting Cartridge – 350 bar

SBVE-R1 and SBVE-R1/2



Up to 100 l/min
Up to 350 bar

FUNCTION



HYDAC counterbalance valves are direct-acting poppet valves with integrated check valve which enable smooth action in consumers if there are retracting and extending loads. In load-holding applications, it can be used as a hose-break valve.
To raise a load, flow is permitted from pump port 2 to consumer port 1 via the built-in check valve.
To hold the load, the check valve piston is pressed against its seat by the load pressure at port 1 and seals leakage-free (control port 3 must be released of pressure!).
To lower the load, pressure is applied to control port 3 which controls the valve. The load cannot therefore speed ahead because the load flow rate is controlled at the metering edge of the control piston according to the consumer's inlet pressure.
An additional restriction of the load pressure is provided in that the consumer pressure (load pressure) at port 1 acts on a control piston within the valve and therefore against the force of the adjustment spring. When the spring tension is exceeded, the control piston moves away from the check valve piston, and this opens the flow path from port 1 to port 2.

FEATURES

- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Speed of consumer controlled in accordance with the inlet flow
- Consumer prevented from speeding ahead where there are retracting loads
- Consumer is held in position leak-free
- Consumer pressure is restricted to the relevant pre-set pressure
- Acts as a hose-break valve for safety purposes if there is a break in the control line, consumer supply line or drain line
- All exposed surfaces can be zinc-plated as an option (version 04) for better protection from corrosion

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Setting pressure:	max. 420 bar	
Nominal flow:	max. 100 l/min (30 l/min for SBVE-R1/2)	
Cracking pressure:	1 bar (from port 2 to port 1)	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Control volume:	SBVE-R1/2	0.05 cm³
	SBVE-R1	0.20 cm³
Pilot ratio:	$\varphi = \frac{A1}{A2}$	
	SBVE-R1/2-01X	φ = 4.6
	SBVE-R1/2-11X	φ = 7.5
	SBVE-R1/2-18X	φ = 3.3
	SBVE-R1-01X	φ = 4.8
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	08021 and 16021	
Weight:	SBVE-R1/2	0.20 kg
	SBVE-R1	0.77 kg

MODEL CODE

SBVE – R1/2 – 01 X – 200 V

Designation
Counterbalance valve

Size
R1/2 and R1

Type
01 = standard pilot ratio φ 4.6 (R1/2) and 4.8 (R1), phosphated
11 = pilot ratio φ 7.5 for (R1/2), phosphated
18 = pilot ratio φ 3.3 for (R1/2), zinc-plated

Series
(determined by manufacturer)

Setting pressure
No details = valve not pre-set
200 = pre-set to 200 bar by manufacturer (optional)
Other settings on request

Type of adjustment
V = Allen head
Other types of adjustment on request

Standard models

Model code	Part No.
SBVE-R1-01X-XXXV	710101
SBVE-R1/2-01X-XXXV	710100

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08021-01X-01	275033	Steel, zinc-plated	G3/8, G1/4	420 bar
R08021-10X-01	283841	Steel, zinc-plated	G3/8, G1/4	420 bar
R16021-01X-01	277051	Steel, zinc-plated	G1	420 bar

Other line bodies on request

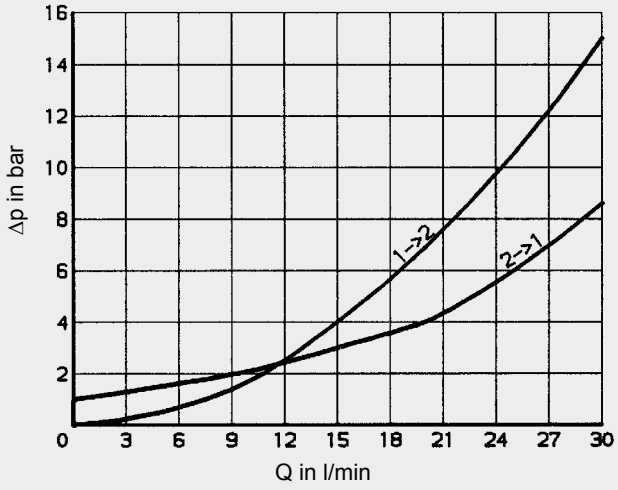
Seal kits

Code		Part No.
Seal kit	SBVE-R1/2-1...FKM	715787
Seal kit	SBVE-R1-0...FKM	715878

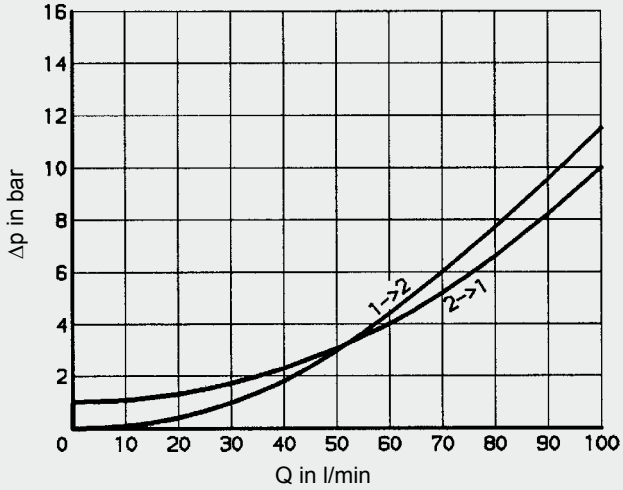
Setting pressure Pe:	The adjustment spring must be set to a value at least 1.2 times higher than the load pressure (Pe > P1 x 1.2) P1 = load pressure (max. pressure required to move the load) max. 350 bar Pe = setting pressure (max. 420 bar)
Control pressure Pctrl:	Control pressure across port 3 required to cancel the shut-off function of the valve (flow from 1 to 2) P2 = pressure across port 2 $Pctrl = \frac{Pe - P1}{\varphi} + P2$

PERFORMANCE

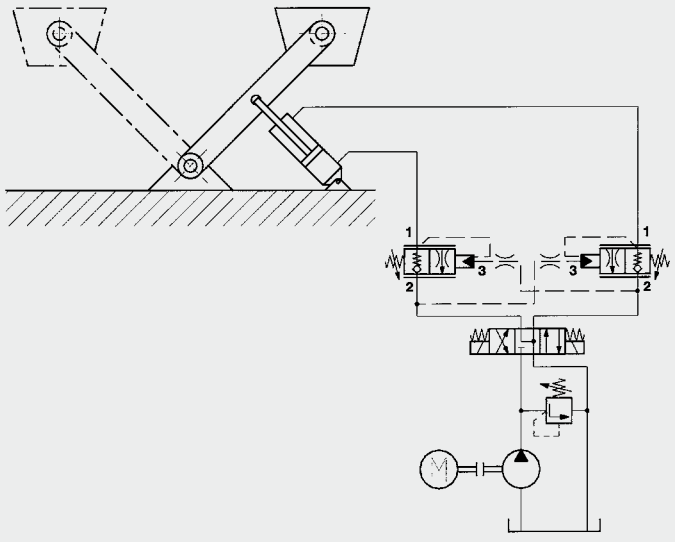
SBVE-R 1/2



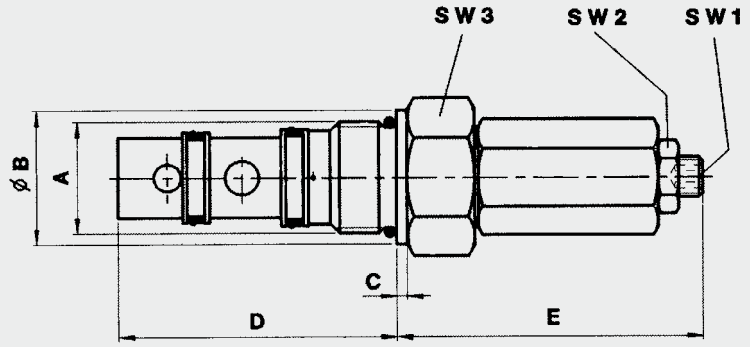
SBVE-R1



CIRCUIT DIAGRAM EXAMPLE

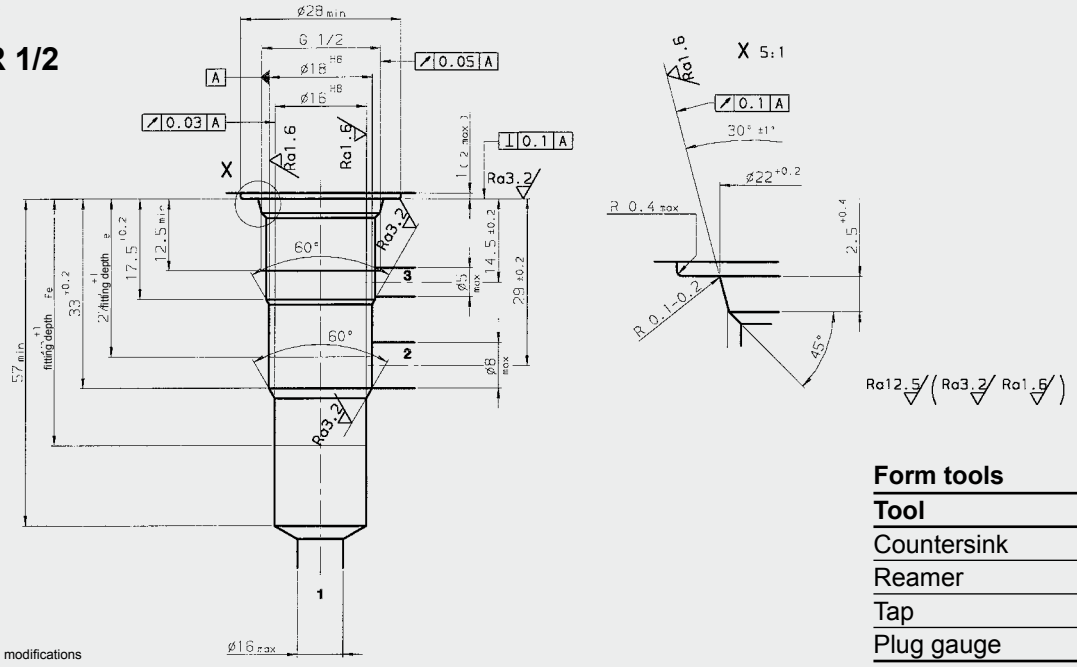


DIMENSIONS



Nominal size	A (ISO 228)	ØB	C	D	E_{max}	SW1	SW2	SW3	Torque
SBVE-R1/2	G 1/2	24	4	56.5	56	4	13	24	30^{+5} Nm
SBVE-R1	G 1	40	3	82	94	6	19	41	150^{+10} Nm

CAVITY
SBVE-R 1/2
08021

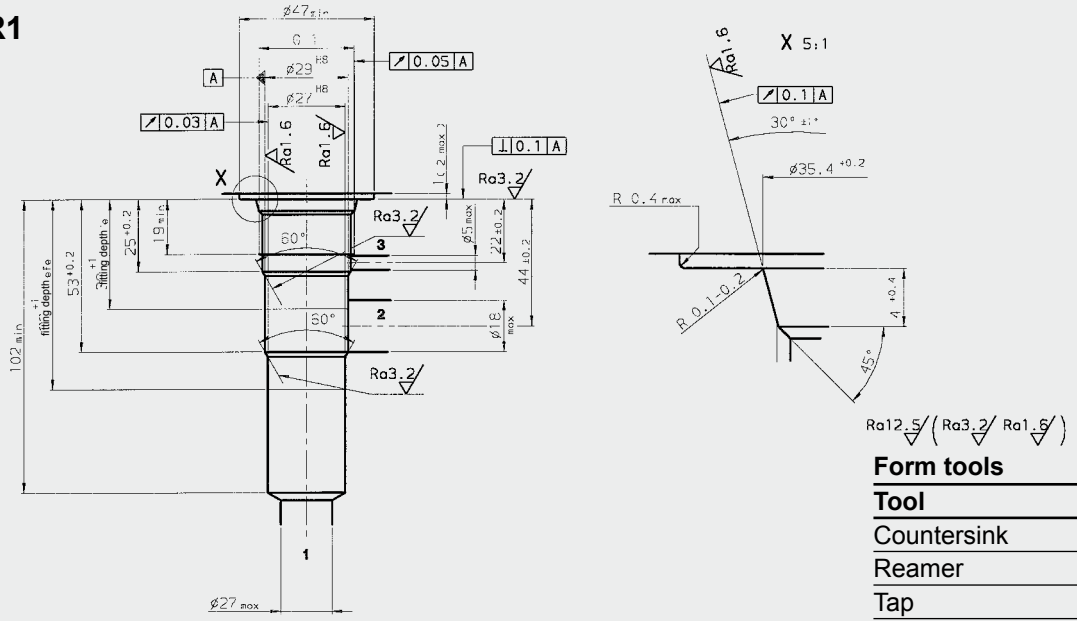


Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

SBVE-R1
16021



Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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