

Pilot-operated pressure relief valve Series DBV

Stepless mechanical adjustment
External relief
Control electromechanical
or by external hydraulic signal

Short description

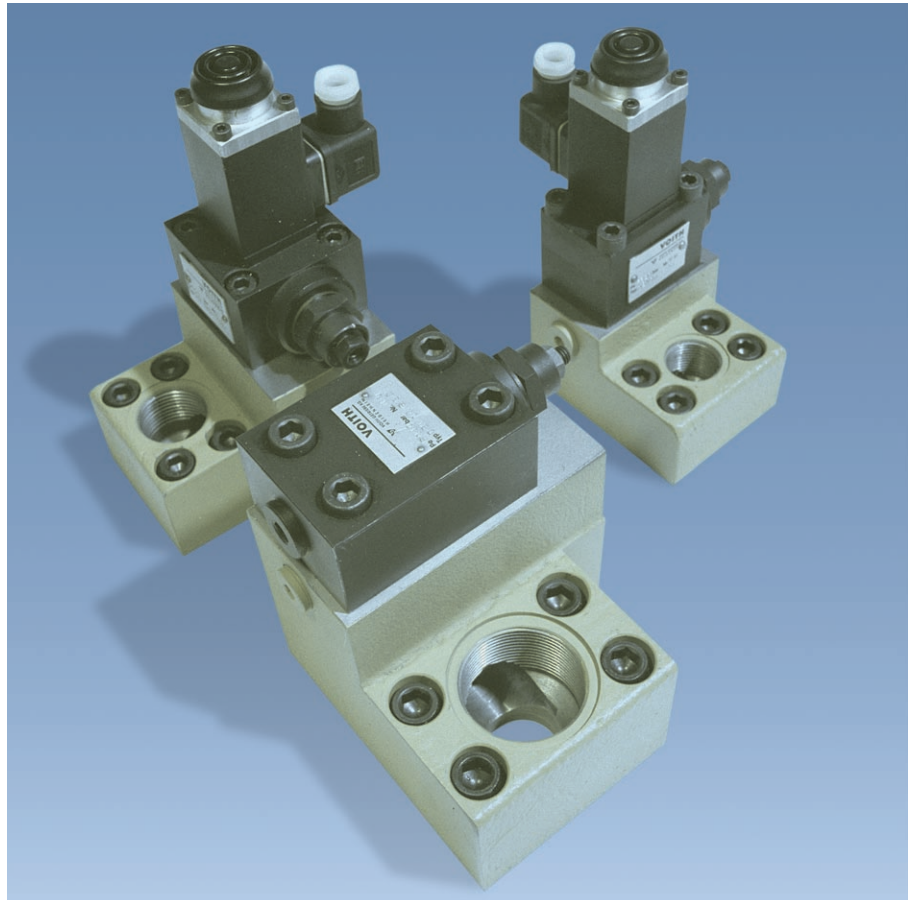
Pressure relief valves of the DBV series control and limit the pressure and flow in a hydraulic system.

Pressure limiting is effected by means of a steplessly and mechanically adjustable spring-loaded pilot valve which opens as soon as the set pressure is reached. As a result of the restricted pilot oil, a pressure difference is formed across the main valve which causes this to open. Oil can now flow unimpeded from the pump to the tank.

Pressure relief of the hydraulic system is possible by hydraulic or electrical means or via an external pilot, irrespective of the set maximum operating pressure.

The flow is automatically cut in and out on the basis of pressure in the case of types DBV 50/60 (Accumulator loading valves). Hysteresis normally 10% of set pressure.

DBV valves are especially suitable for direct fitting to hydropumps (e. g. Voith IP pumps) with SAE flange mountings and are available in four internal diameters (10, 16, 25, 32 mm). Any installation position is possible.



Advantages

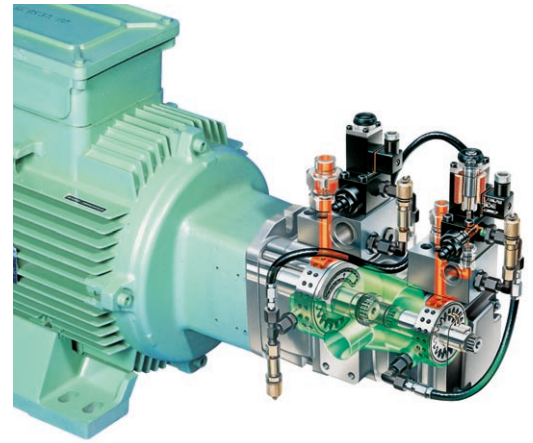
- Pressure limiting, sequencing, and control with one valve.
- Simple hydraulic circuits allowing fixed displacement pumps to be used as an alternative to variable displacement pumps.
- Optimum utilisation of efficiency of multiple flow pumps.
- Suitable for systems with pressures up to 345 bar.
- Cost-saving due to direct fitting to hydraulic pump.
- Optional electrical or hydraulic unloading.
- Modular principle.
- Short response times.
- Trouble-free operation.
- Minimal pressure rise and low pressure peaks.

Design and mode of operation

Voith pressure relief valves are designed according to the proven cartridge principle. They guarantee trouble-free operation with short response times, low pressure rise and minimum pressure peaks.

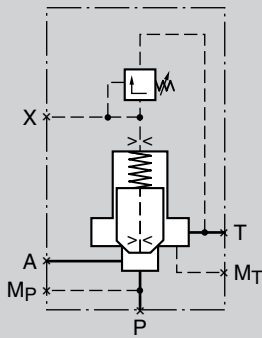
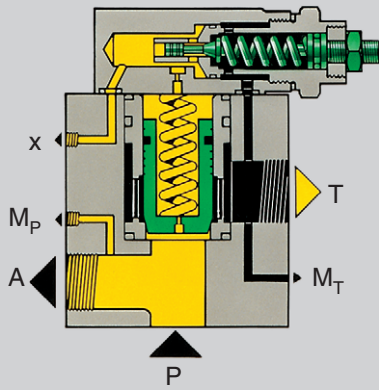
Simplified sectional view

- A Working line
- P Inlet
- M_P Pump pressure
- M_T Measuring connection for return pressure
- T Outlet
- x, z Control lines
- y external pilot oil drain



Types

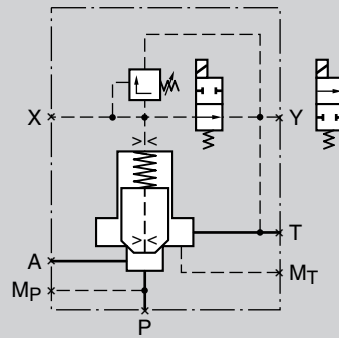
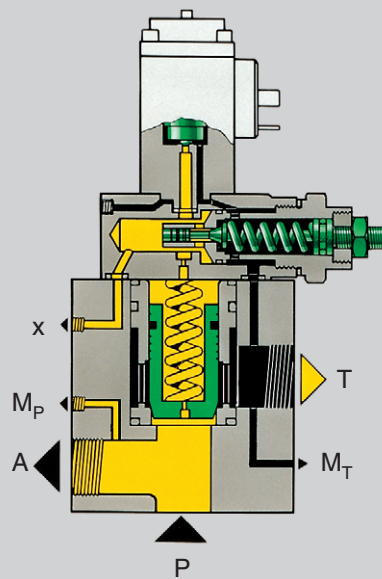
DBV 10



①

②

DBV 20



①

①

②

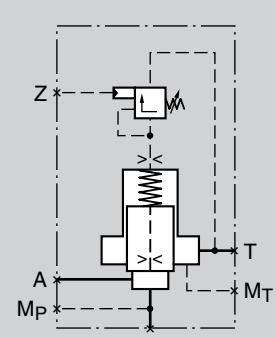
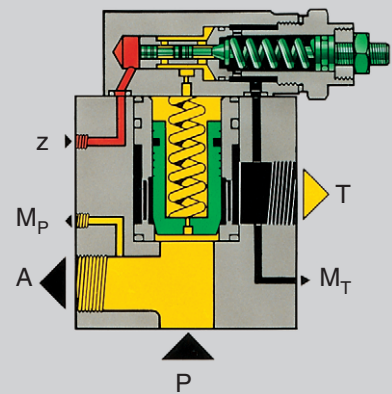
②

④

⑤

DBV 21

DBV 30



①

③

Application

Limitation of pressure of single and multifold pumps, process control in hydrostatically driven machines on the basis of path, pressure, time, or speed by cutting flows in and out.

Four examples are described in brochure G 1267.08. Please ask for this brochure.

Features

- ① Stepless mechanical adjustment of pressure limitation.
- ② Control by external pilot relief via existing port "x".
- ③ Control by external pilot pressure via existing port "z".
- ④ Control by pressure relief via an electro-magnetic 2/2-way valve (de-energized = off pressure).
- ⑤ Control by pressure relief via an electro-magnetic 2/2-way valve (de-energized = pressure).
- ⑥ Pressure relief valves for accumulator loading applications.

DBV 40 **DBV 41**

①	①
③	③
④	
	⑤

DBV 50

①
⑥

DBV 60 **DBV 61**

①	①
④	
	⑤
⑥	⑥

Technical data

Valve	NW	a	b	c	d	e	e'	e''	e'''	f	f'	g	h	i	k	l	m ¹⁾	n ¹	n ²	s ²⁾	A,T	M _T M _P ³⁾
E 10	10	40	20	88	80	80	90	95	105	177	187	58	64	38.1	17.5	44	18.64-3.53	36	44	M 8x50	G 1/2	G 1/4
E 16	16	37	24	100	82	90	100	105	115	187	197	58	64	47.6	22.2	52	24.99-3.53	40	46	M 10x35	G 3/4	G 1/4
E 25	25	37	24	119	90	128	130	128	130	210	212	58	64	52.4	26.2	64	32.92-3.53	58	60	M 10x40	G 1	G 1/4
E 32	32	48	31	137	120	145	150	145	150	227	232	58	72	70	36	75	37.22-3.53	73	83	M 12x45	G 1 1/2	G 1/4

Assignment nominal width / port

Valve SAE J 518c code 61

E 10 1/2"

E 16 3/4"

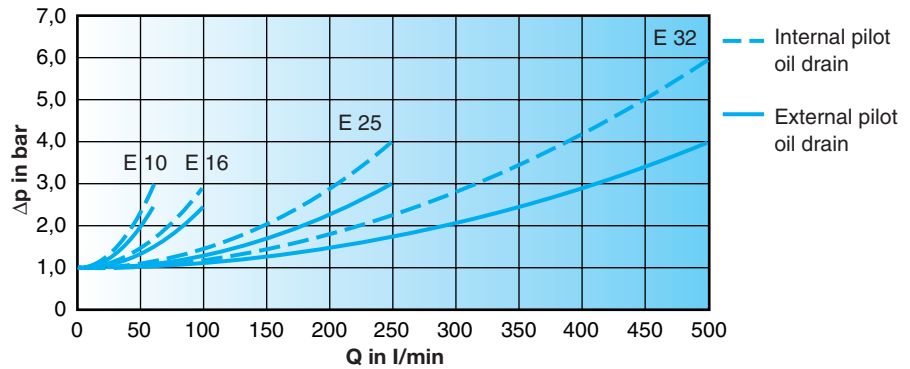
E 25 1"

E 32 1 1/2"

1) O-ring

2) Bolt DIN 912
material 10.9

Δp-Q-characteristic [t = 50 °C, v = 35 cSt]

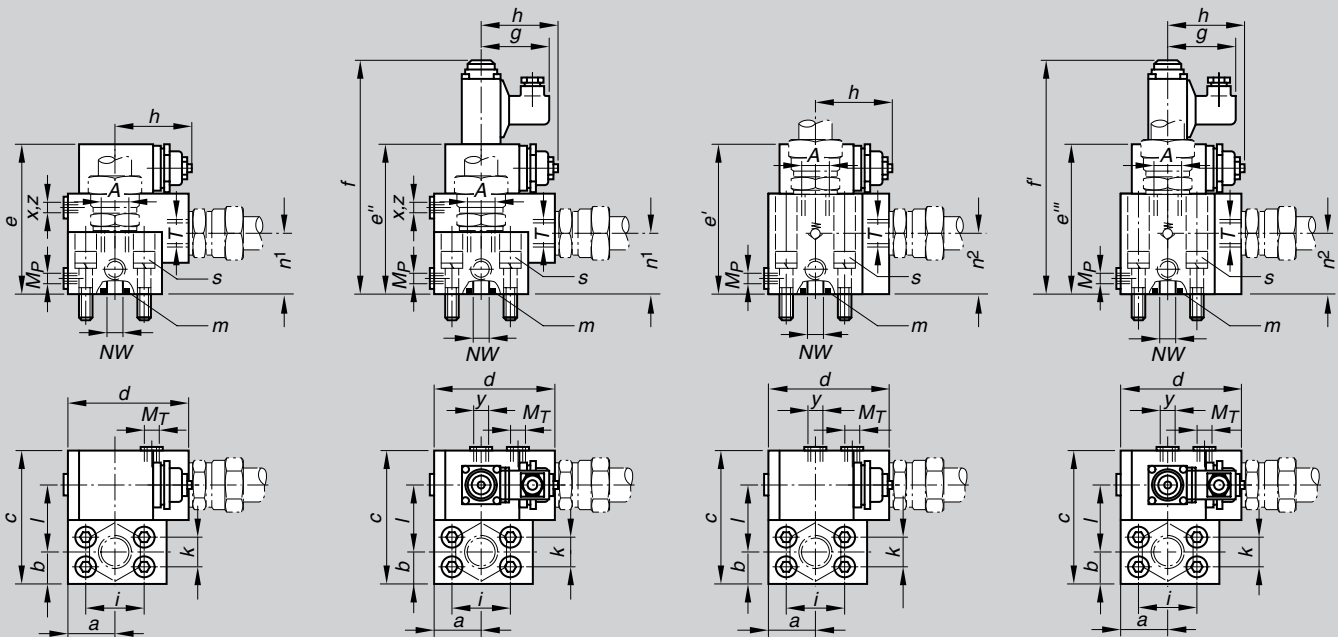


DBV 10 DBV 30

DBV 20 DBV 40
DBV 21 DBV 41

DBV 50

DBV 60 DBV 61



Technical data

Internal diameter		NW 10	NW 16	NW 25	NW 32
Pilot control range $p_{\min} \dots p_{\max}$	[bar]	8...345	8...345	8...345	8...345
Flow (max)	[l/min]	60	100	250	500
Control volume V	[cm ³]	0.5	1.15	3.1	7.85
Viscosity range	[cSt]	15...200			
Temperature range $\delta_{\min} \dots \delta_{\max}$	[°C]	-15...70			
Ambient temperature range $\delta_{\min} \dots \delta_{\max}$	[°C]	-10...45			
Opening pressure	[bar]	0.5			
Filtration	[μ]	25			
Electrical data Solenoid					
Power consumption P	[W]	30			
Rated current J (at 24 V)	[mA]	1250			
Resistance (at 25 °C and 24 V)	[ohms]	19			
Response time at 150 bar	[ms]	20			
Rated voltage U	[V =]	24			
Special voltage U	[V]	12 =	115/50 Hz, 230/50 Hz		
Duty cycle	[%]	100			
Degree of protection of solenoid		P 54			
Electrical connection of solenoid		Plug with PG 9			
Manual emergency operation		Standard			

Variants

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Standard variants														
Type	Size		Pressure adjustment		Pilot oil drain		Electrical relief		Pressure range		Hysteresis	Voltage		
DBV 10	NW 10	E 10	fixed	F	internal	O	Solenoid only for DBV 20, 21, DBV 40, 41,	M	bar	140		24 V =	24	
DBV 20*	NW 16	E 16							bar	320				
DBV 21**	NW 25	E 25							bar	8 – 345				
DBV 30	NW 32	E 32												
DBV 40*														
DBV 41**														
Accumulator loading valves														
DBV 50	NW 10	E 10	fixed	F	external	Y	Solenoid only for DBV 60, 61	M	bar	70	of system pressure	10 %	24 V =	24
DBV 60*	NW 16	E 16							bar	140				
DBV 61**	NW 25	E 25							bar	210				
	NW 32	E 32							bar	320				
									bar	140-210				
									bar	8 – 70				
Alternatives														
			Hand-wheel	H	external	Y	only for DBV 20 up to 41				of system pressure	16,5 %	12 V =	12
												23 %	115 V	115
													50 Hz	
													230 V	230
													50 Hz	

We reserve the right of technical modification.

Voith-Druck G 818-e 8.01-1000 AW/Wa

Ordering code

* de-energized = unloaded
 **de-energized = loaded