Pressure relief valve, direct operated

RE 25402/05.06 Replaces: 10.05

1/16

Type DBD

Nominal sizes 6 to 30 Component series 1X Maximum operating pressure 630 bar Maximum flow 330 l/min



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Features

- As cartridge valve (cartridge)
- For threaded connections
- For manifold mounting
 - Adjustment elements for pressure adjustment, optional:
 - Sleeve with hexagon and protection cap
 - Rotary knob / hand wheel
 - Lockable rotary knob

For information regarding the available spare parts see: www.boschrexroth.com/spc

Ordering details

							DB	D			1	x /			
Pressure relief valve, direct ope	erated														
Adjustment type			Nor	minal s	ize										
for pressure adjustment	6	8	10	15	20	25	30								
Sleeve with hexagon and protective cap	•	•	•	•	•	•	•	= S							
Rotary knob 1)	•	•	•	•	•	_	_	= H							
Hand wheel ²⁾	_	_	_	_	_	•	•	= H							
Lockable rotary knob ^{1,3)}	•	•	•	•	•	-	_	= A							
Nominal size	= 6	=8	= 10	= 15	= 20	= 25	= 30		e.g.						
(connection)	G1/4	G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2		= 10						
Version					•					_					
As cartridge valve (cartridge)	•	-	•	-	•	-	•			= K					
For threaded connections 4)	•	•	•	•	•	•	•			= G					
For manifold mounting	•	_	•	_	•	_	•			= P					
Component series 10 to 19 (10 to 19: unchanged installation	n and	conne	ction c	limensi	ions)					=	= 1X				
Pressure stage												_			
Pressure setting up to 25 bar	•	•	•	•	•	•	•					= 25			
Pressure setting up to 50 bar	•	•	•	•	•	•	•					= 50			
Pressure setting up to 100 bar	•	•	•	•	•	•	•				=	= 100			
Pressure setting up to 200 bar	•	•	•	•	•	•	•				=	= 200			
Pressure setting up to 315 bar	•	•	•	•	•	•	•				:	= 315			
Pressure setting up to 400 bar	•	•	•	•	•	-	_				=	= 400			
Pressure setting up to 630 bar	_	_	•	_	_	_	_				=	= 630			
Seal material NBR seals FKM seals (other seals on request) Attention!	nd pro	oouro i	fluid io	to bo t	tokon i	nto occ	oount!				=	= No c	ode = V		
The compatibility of the seals a Design testing	nd pre	ssure	fluid is	to be t	taken i	nto ac	count!								
Without design testing Design tested safety valve to D	GRL 9	97/23/	EC									=	No c	ode = E	
Further details in clear text															7

● = Available

- With nominal sizes 15 and 20 only the pressure stages 25, 50 or 100 bar are available
- ²⁾ Only available for pressure stages 25, 50 or 100 bar.
- ³⁾ Key with Material No. **R900008158** is included within the scope of supply.
- ⁴⁾ Nominal sizes 8, 15, and 25 are not available with design tested "E" and adjustment element "S"

Preferred types (readily available)

Туре	Material number
DBDA 6 K1X/25	R900423780
DBDA 6 K1X/50	R900425083
DBDA 6 K1X/100	R900425080
DBDA 6 K1X/200	R900425081
DBDA 6 K1X/315	R900425082
DBDA 6 K1X/400	R900428387
DBDH 6 K1X/25	R900427600
DBDH 6 K1X/50	R900424734
DBDH 6 K1X/100	R900424199
DBDH 6 K1X/200	R900424200
DBDH 6 K1X/315	R900424201
DBDH 6 K1X/400	R900424202
DBDS 6 K1X/25	R900420245
DBDS 6 K1X/50	R900423727
DBDS 6 K1X/100	R900423723
DBDS 6 K1X/200	R900423724
DBDS 6 K1X/315	R900423725
DBDS 6 K1X/400	R900423726
DBDA 10 K1X/25	R900430305
DBDA 10 K1X/20	R900435365
DBDA 10 K1X/100	R900425161
DBDA 10 K1X/200	R900425162
DBDA 10 K1X/200	R900425164
DBDA 10 K1X/400	R900425165
DBDA 10 K1X/630	R900426835
DBDH 10 K1X/25	R900435222
DBDH 10 K1X/50	R900424185
DBDH 10 K1X/100	R900423891
DBDH 10 K1X/200	R900424190
DBDH 10 K1X/315	R900424183
DBDH 10 K1X/400	R900424184
DBDH 10 K1X/630	R900433807
DBDS 10 K1X/25	R900420276
DBDS 10 K1X/20	R900424153
DBDS 10 K1X/100	R900424147
DBDS 10 K1X/200	R900424149
DBDS 10 K1X/200	R900424150
DBDS 10 K1X/400	R900424152
DBDS 10 K1X/630	R900427601
DBDH 20 K1X/25	R900423028
DBDH 20 K1X/50	R900424112
DBDH 20 K1X/100	R900424109
DBDS 20 K1X/25	R900422542
DBDS 20 K1X/50	R900422342 R900424205
DBDS 20 K1X/100	R900424267
DBDS 20 K1X/315	R900424271
DBDS 20 K1X/400	R900424203
2550 20 KTA/400	1,000424200

Туре	Material number
DBDH 30 K1X/25	R900445875
DBDH 30 K1X/50	R900424193
DBDS 30 K1X/25	R900422543
DBDS 30 K1X/50	R900424282
DBDS 30 K1X/100	R900424284
DBDS 30 K1X/200	R900424286
DBDS 30 K1X/315	R900424288
DBDA 6 G1X/25	R900432465
DBDA 6 G1X/50	R900424177
DBDA 6 G1X/100	R900425076
DBDA 6 G1X/200	R900426477
DBDA 6 G1X/315	R900426478
DBDA 6 G1X/400	R900428382
DBDH 6 G1X/25	R900426897
DBDH 6 G1X/50	R900424198
DBDH 6 G1X/100	R900424195
DBDH 6 G1X/200	R900424196
DBDH 6 G1X/315	R900424197
DBDH 6 G1X/400	R900424348
DBDH 6 P1X/25	R900430378
DBDH 6 P1X/50	R900428385
DBDH 6 P1X/100	R900424246
DBDH 6 P1X/200	R900427242
DBDH 6 P1X/315	R900424266
DBDH 6 P1X/400	R900434128
DBDS 6 G1X/25	R900423718
DBDS 6 G1X/50	R900423722
DBDS 6 G1X/100	R900423717
DBDS 6 G1X/200	R900423719
DBDS 6 G1X/315	R900423720
DBDS 6 G1X/400	R900423721
DBDS 6 P1X/25	R900429414
DBDS 6 P1X/50	R900423732
DBDS 6 P1X/100	R900423728
DBDS 6 P1X/200	R900423729
DBDS 6 P1X/315	R900423730
DBDS 6 P1X/400	R900423731
DBDH 10 G1X/50	R900424180
DBDH 10 G1X/100	R900424188
DBDH 10 G1X/200	R900424178
DBDH 10 G1X/315	R900424189
DBDH 10 G1X/630	R900423739

Continued onto page 4

Preferred types (readily available)

Туре	Material number
DBDH 10 P1X/100	R900426901
DBDH 10 P1X/200	R900424186
DBDH 10 P1X/315	R900424187
DBDS 10 G1X/25	R900423743
DBDS 10 G1X/50	R900424745
DBDS 10 G1X/100	R900424738
DBDS 10 G1X/200	R900424140
DBDS 10 G1X/315	R900424742
DBDS 10 G1X/400	R900424744
DBDS 10 P1X/25	R900426905
DBDS 10 P1X/100	R900424155
DBDS 10 P1X/315	R900424158
DBDS 10 P1X/400	R900425660
DBDS 15 G1X/100	R900424162
DBDS 15 G1X/200	R900424163
DBDS 15 G1X/315	R900424165
DBDH 20 G1X/50	R900424108
DBDH 20 G1X/100	R900424103

Туре	Material number
DBDS 20 G1X/25	R900422544
DBDS 20 G1X/50	R900424276
DBDS 20 G1X/100	R900424170
DBDS 20 G1X/200	R900424172
DBDS 20 G1X/315	R900424174
DBDS 20 P1X/100	R900424274
DBDS 20 P1X/200	R900424277
DBDS 20 P1X/315	R900424278
DBDS 25 G1X/25	R900433929
DBDS 25 G1X/100	R900424263
DBDS 25 G1X/200	R900424264
DBDS 25 G1X/315	R900424265
DBDS 30 G1X/25	R900427243
DBDS 30 G1X/50	R900424262
DBDS 30 G1X/100	R900423763
DBDS 30 G1X/200	R900424281
DBDS 30 G1X/315	R900424261
DBDS 30 P1X/25	R900429711
DBDS 30 P1X/200	R900423714
DBDS 30 P1X/315	R900423715

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

Function, section, symbol

The DBD pressure relief valves are direct operated poppet seat valves.

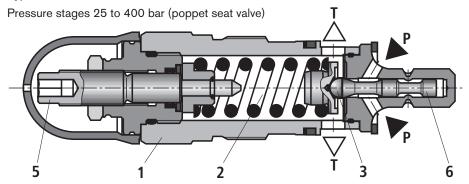
They are used to limit the pressure in a hydraulic system.

The valves mainly consist of sleeve (1), spring (2), poppet with damping spool (3) (pressure stages 25 to 400 bar) or ball (4) (pressure stage 630 bar) and adjustment element (5). The setting of the system pressure is infinitely variable via the adjustment element (5). The spring (2) pushes the poppet (3) or ball (4) onto the seat. The P channel is connected to the system. The pressure present in the system is applied to the poppet area (or ball).

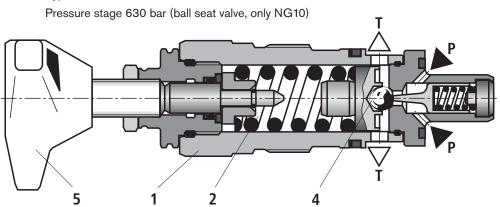
If the pressure in channel P rises above the value set at the spring (2), then the poppet (3) or the ball (4) opens against the spring (2). Now pressure fluid flows from channel P into channel T. The stroke of the poppet (3) is limited by a pin (6).

In order to obtain good pressure settings over the entire pressure range, the pressure range is split into 7 pressure stages. A pressure stage corresponds to a certain spring for a maximum operating pressure which may be set with it.

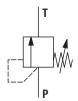




Type DBDH 10 K1X/...



Symbol



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

General											
Nominal size		NG	6 and 8	6 and 8 10 15 and 20 25							
Weight			See pages 8, 9 and 11								
Installation			Optional								
Ambient temperature range		°C	-30 to +80 (NI -15 to +80 (FK	7							
The minimum housing material str	rength	Housing materials are to be so selected that adequate safety is ensured for all conceivable operating pressures (e.g. with reference to the compressive strength, thread strength and tightening torque).									
Hydraulic											
Maximum operating pressure	– Inlet	bar	400	630	400	315					
	- Outlet	bar	315	315 315 315							
Maximum flow (standard valve)			see characteristic curves on page 7								
Pressure fluid			pressure fluids (rape seed oil)	to VDMA 24568	524 ¹⁾ ; fast bio-o 8 (also see RE 9 ylycole) ²⁾ ; HEES on request	0221); HETG					
Pressure fluid temperature range		°C	-30 to +80 (for NBR seals) -15 to +80 (for FKM seals)								
Viscosity range		mm²/s	10 to 800								
Maximum permissible degree of press Cleanliness class to ISO 4406 (c			Class 20/18/15 ³⁾								

¹⁾ Suitable for NBR and FKM seals

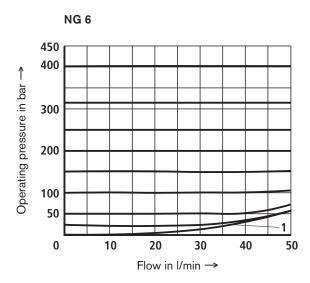
For the selection of filters see data sheets RE 50070, RE 50076, RE 50081, RE 50086 and RE 50088.

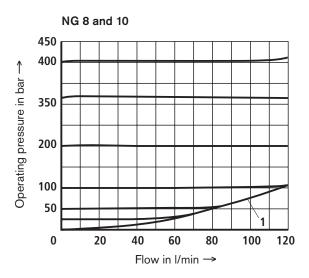
For deviating technical data for design tested safety valves see page 13.

²⁾ Only suitable for FKM seals

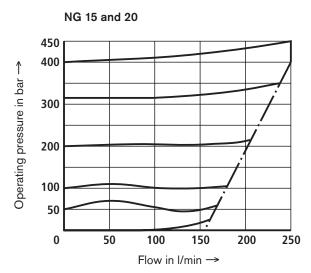
³⁾ The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

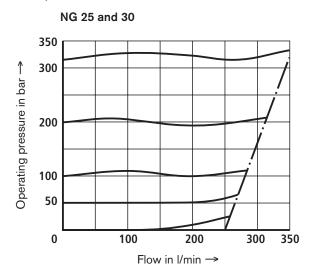
Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40$ °C \pm 5 °C)





1 = Lowest settable pressure





⚠ Attention!

- The characteristic curves are valid for the output pressure
 zero over the entire flow range and are measured without consideration of the housing pressure drop!
- The characteristic curves are only valid with the stated ambient and temperature conditions. It has to be taken into account that the characteristic curve is influenced by the changes in the boundry conditions!
- The characteristic curves refer to the given pressure stages (e.g. 200 bar). The further the pressure setting value is from the nominal pressure stage
- (e.g. \leq 200 bar), the greater the pressure increase with the flow.

General guidelines

Any hydraulic back pressures in port T are added 1:1 to the response pressure set at the adjustment element of the valve.

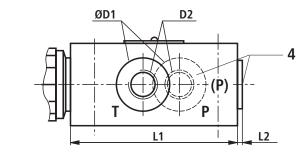
Example:

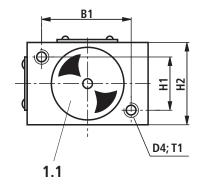
- The valve pressure setting resulting from the spring loading (Pos. 2 on page 5) $p_{\rm spring}$ = 200 bar
- Hydraulic back pressure in port T:

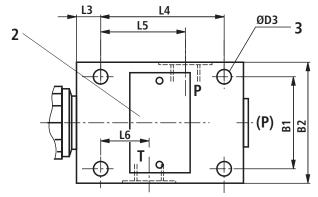
$$p_{\text{hydraulic}} = 50 \text{ bar}$$

 \Rightarrow Response pressure = $p_{\text{spring}} + p_{\text{hydraulic}} = 250 \text{ bar}$

Unit dimensions: threaded connections (nominal dimensions in mm)







For types and dimensions of the adjustment element see page 8

- 1.1 Adjustment type "S" (example) Set screw with hexagon and protective cap; Internal hexagon (up to NG20) External hexagon (NG25 and 30)
- 2 Name plate
- 3 4 off threaded fixing holes
- 4 Connection port (P), optional (e.g. for pressure measuring, dimensions see dimensions D2, for tightening torques see table below

NG	B1	B2	ØD1	D2	ØD3	D4	H1	H2	L1	L2	L3	L4	L5	L6	T1	Weight
6	45	60	25	G1/4	6,6	M6	25	40	80	4	15	55	40	20	10	approx. 1,5 kg
(8) + 10	60	80	(28) 34	(G3/8) G1/2	9	M8	40	60	100	4	20	70	48	21	15	approx. 3,7 kg
(15) + 20	70	100	(42) 47	(G3/4) G1	9	M8	50	70	135	(4) 5,5	20	100	65	34	18	approx. 6,4 kg
(25) + 30	100	130	(56) 65	(G1 1/4) G1 1/2	11	M10	60	90	180	5,5	25	130	85	35	20	approx. 13,9 kg

Tightening	torques $M_{\rm A}$ in Nm for fit	tings ¹⁾ :
	Plug (Pos. 4)	Plug
G1/4	30	60
G3/8	40	90
G1/2	60	130
G3/4	80	200
G1	135	380
G1 1/4	480	500

¹⁾ The tightening torques are standard values relating to the maximum operating pressue and the used of the torque wrench (tolerance ≤ 10%).

600

560

G1 1/2

lightening t	torques	M _A in	Nm for	cartridges 2	' :
	1				

	Pr	Pressue stage in bar											
Nom. size	Up to 200	Up to 400	Up to 630										
6	50±5	80±5	П										
10	100±5	150±10	200±10										
20	150±10	300±15	_										
30	350±20	500±30	-										

²⁾ The tightening torques are standard values with a friction co-efficient of approx. 0.12 and the use of a torque wrench.

L28

5

Rz 16

ØD19-0,2 1)

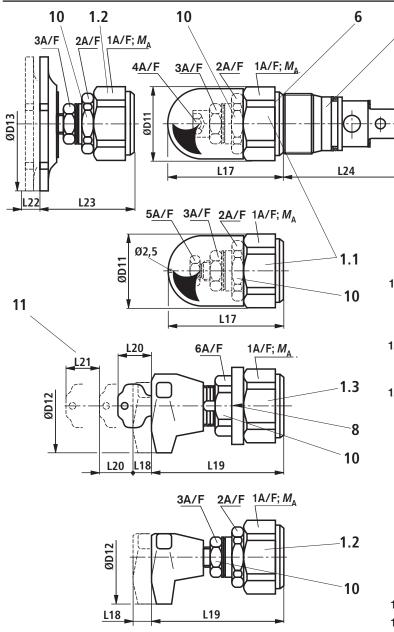
0,5 x 45Y

ØD16

Ø0,1 A

0

Unit dimensions: Cartridge valve (nominal dimensions in mm)



1.1 Adjustment type "S" Set screw with hexagon and protective cap; Internal hexagon (up to NG20) External hexagon (NG30)

L29 L30

L31

1.2 Adjustment type "H"
Rotary knob (up to NG20)
Hand wheel (NG30)

9

D14 ØD15

⋖/_{L25}

L26

L27

© Ø0,05 A

12

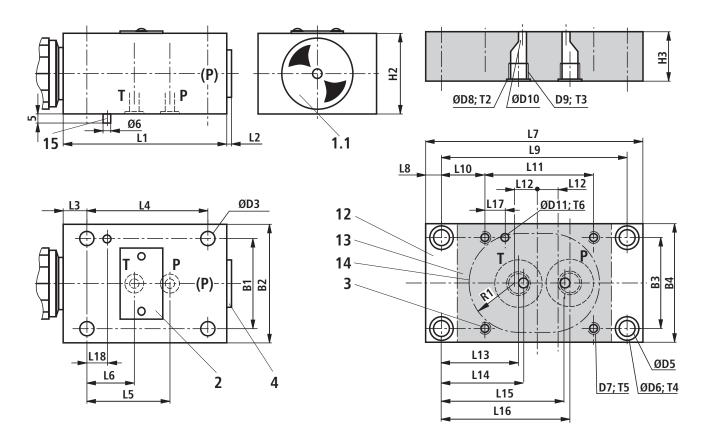
- 1.3 Adjustment type "A" Lockable rotary knob up to NG10 (NG20 to 100 bar)
 - 4 Port P, optional about the circumference or at the bottom
 - 5 Port T, optional about the circumference
 - 6 Type code
- 7 Pressure stage (stamped on)
- 8 Marking (adjustment of zero position after the valve has been screwed in; subsequent fixing of the ring is by a horizonal movement until it locks into place on the 6A/F plug)
- 9 Depth of fit
- 10 Locknut, tightening torque $M_A = 10^{+5} \text{ Nm}$
- 11 Space required to remove the key
- 12 Minimum tensile strength of the housing material, see technical data on page 6

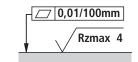
	Cartridge valve																		
NG	ØD11	ØD12	ØD13	L17	L18	L19	L20	L21	L22	L23	L24	1A/F	2A/F	3A/F	4A/F	5A/F	6A/F	M _A	Weight
6	34	60	_	72	11	83	28	20	_	_	64,5	32	30	19	6	_	30	see	approx. 0,4 kg
10	38	60	_	68	11	79	28	20	_	_	77	36	30	19	6	_	30		approx. 0,5 kg
20	48	60	_	65	11	77	28	20	_	_	106	46	36	19	6	_	30	page 8	approx. 1 kg
30	63	_	80	83	_	_	_	_	11	56	131	60	46	19	_	13	_		approx. 2,2 kg

1) Max. dim.

	Installation cavity														
NG	D14	ØD15	ØD16	ØD17	ØD18	ØD19	L25	L26	L27	L28	L29	L30	L31	α1	
6	M28 x 1,5	25 ^{H9}	6		24,9 +0,152		15	19	30	36	45	56,5±5,5	65	15°	
10	M35 x 1,5	32 ^{H9}	10		31,9 +0,162		18	23	35	41,5	52	67,5±7,5	80	15°	
20	M45 x 1,5	40 ^{H9}	20	24	39,9 +0,162	22	21	27	45	55	70	91,5±8,5	110	20°	
30	M60 x 2	55 ^{H9}	30	38,75	54,9 ^{+0,174} _{-0,2}	34	23	29	45	63	84	113,5±11,5	140	20°	

Unit dimensions: manifold mounting (nominal dimensions in mm)





Required surface finish of the valve mounting surface

- 1.1 Adjustment type "S" (example) Set screw with hexagon and protective cap; Internal hexagon (up to NG20) External hexagon (NG30)
- 2 Name plate
- 3 4 off valve threaded fixing holes
- 4 Connection port P, optional (e.g. for pressure measuring, for tightening torques see table 8)
- 12 Subplate (for type codes see page 11)
- 13 Valve contact area
- 14 Panel cut-out
- 15 Locating pin (only for design tested safety valves)

For types and dimensions of the adjustment elements see page 9

Due to strength (tensile) reasons only use the following valve fixing screws (separate order):

- 4 S.H.C.S. ISO 4762 - flZnnc-240h-L (friction co-efficient μ_{total} = 0.09 to 0.14)

	Valve fixing screws to ISO 4765 1)									
NG	Dim.	Tensile strength class	M _A in Nm ²⁾	Material No.						
6	M6 x 50	10.9	12,5	R913000151						
10	M8 x 70	10.9	28	R913000149						
20	M8 x 90	12.9	28	R913000150						
30	M10 x 110	12.9	56	R913000148						

As an alternative appropriatly specified bolts to DIN 912 can be used.

²⁾ For tightening a torque wrench with a tolerance of ≤ 10% is to be used.

Unit dimensions: manifold mounting (nominal dimensions in mm)

	Pressure relief valve												
NG	B1	B2	ØD3	H2	L1	L2	L3	L4	L5	L6	L18	Port (P)	Weight
6	45	60	6,6	40	80	4	15	55	40	20	15	G1/4	approx. 1,5 kg
10	60	80	9	60	100	4	20	70	45	21	15	G1/2	approx. 3,7 kg
20	70	100	9	70	135	5,5	20	100	65	34	15	G3/4	approx. 6,4 kg
30	100	130	11	90	180	5,5	25	130	85	35	15	G1 1/4	approx. 13,9 kg

	Subplates ¹⁾													
NG	Туре	В3	B4	ØD5	ØD6	D7	ØD8	D9	ØD10	ØD11	Н3			
6	G300/01	45	60	6,6	11	M6	25	G1/4	6	8	25			
10	(G301/01) G302/01	60	80	6,6	11	M8	(25) 34	(G3/8) G1/2	10	8	25			
20	(G303/01) G304/01	70	100	11	18	M8	(42) 47	(G3/4) G1	(15) 20	8	40			
30	(G305/01) G306/01	100	130	11	18	M10	(56) 65	(G1 1/4) G1 1/2	30	8	40			

NG	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	T2	T3	T4	T5	T6	R1	Weight
6	110	8	94	22	55	10	39	42	62	65	15	1	15	9	15	6,0	25 ⁺²	1,5 kg
10	135	10	115	27,5	70	12,5	40,5	48,5	72,5	80,5	15	1	(15) 16	9	(12) 15	6,0	30 ⁺⁵	2 kg
20	170	15	140	20	100	20	(45) 42	54	85	(94) 97	15	1	20	13	22	6,0	40+3	5,5 kg
30	190	12,5	165	17,5	130	22,5	42	52,5	102,5	113	15	1	24	11,5	22	6,0	55 ⁺⁴	8 kg

1) **A** Attention!

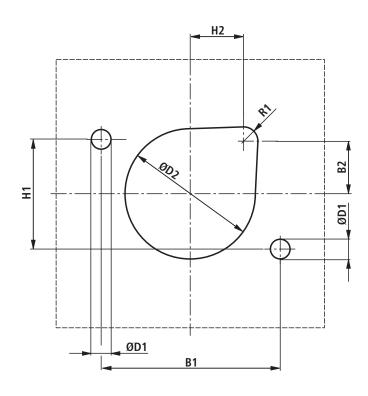
The stated subplates are **not** permitted for use with design tested safety valves in accordance to the pressure component directive 97/23/EC!

Ordering details: design tested safety valve, type DBD, component series 1X in accordance to the pressure component directive 97/23/EC

NG	Designation	Component identification	NG	Designation	Component identification		
	DBDS 6K1X/ E		•	DBDS 20K1X/ E			
	DBDH 6K1X/ E			DBDH 20K1X/ E			
6	DBDS 6G1X/ E	TÜVÇVE BAQEE ^Q w B	20	DBDS 20G1X/ E	TÜV.SV.□–361 .10.F.α _w .p.		
О	DBDH 6G1X/ E	− TÜV.SV.□−849.5.F. ^α _w .p. G	20	DBDH 20G1X/ E			
	DBDS 6P1X/ E			DBDS 20P1X/ E			
	DBDH 6P1X/ E			DBDH 20P1X/ E			
	DBDS 10K1X/ E			DBDS 25G1X/☐ E			
	DBDH 10K1X/ E	TÜVÇVE 950 6 E ^Q w n		DBDH 25G1X/☐ E	TÜV.SV.⊟–362.15.F.α _w .p.		
40	DBDS 10G1X/	− TÜV.SV.□−850.6.F. ^α _w .p. G		DBDS 30K1X/ E			
10	DBDH 10G1X/	TÜV.SV.□-390.4,5.F.30.p. ¹⁾	20	DBDH 30K1X/ E			
	DBDS 10P1X/ E		30	DBDS 30G1X/ E			
	DBDH 10P1X/ E			DBDH 30G1X/☐ E			
				DBDS 30P1X/ E			
	essure in the type code i	must be entered by the		DBDH 30P1X/ E			

Pressure in the type code must be entered by the customer; pressure adjustments ≥ 30 bar and in 5 bar steps are possible.

Unit dimensions: valve panel cut-out for design tested safety valves, type DBD, component series 1X in accordance to the pressure component directive 97/23/EC (nom. dimensions in mm)



NG	B1	B2	H1	H2	ØD1 ^{H13}	ØD2 ^{H13}	R1
6	45	12,5	25	22,5	7	40	8
10	60	20,5	40	20,5	9	44	8
20	70	24	50	24	9	55	8
30	100	29,5	60	29,5	11	73	8

Mer Note!

For the valve types DBDH.K..1X/..E the hand wheel has to be removed, subsequently refitted, before fitting the cartridge valve onto the valve panel.

[□] Details are entered by the manufacturing plant

Component identification for DBD. 10.1X/...;
 400 bar

Deviating technical data: design tested safety valve, type DBD, component series 1X in accordance to the pressure component directive 97/23/EC ¹⁾

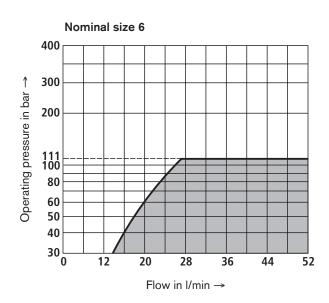
Hydraulic	
Maximum flow	See characteristic curves on pages 13 to 16
Pressure fluid	Mineral oil (HL, HLP) to DIN 51524 and DIN 51525
Pressure fluid temperature range °C	-20 to +60 (for NBR seals) -15 to +60 (for FKM seals)
Viscosity value mm²/s	12 to 230

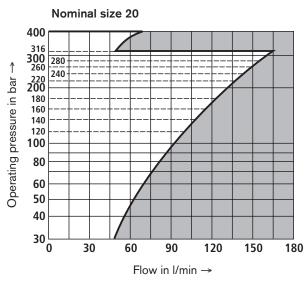
¹⁾ For applications outside these parameters, please consult us!

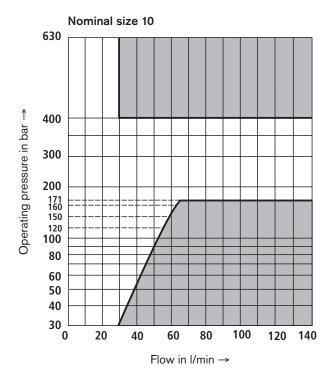
Characteristic curves: design tested safety valves type DBD, component series 1X in accordance to the pressure component directive 97/23/EC

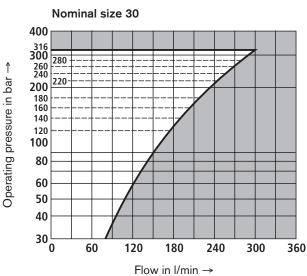
■ Note!

Values which lie under the charateristic curve, in the dark area **cannot** be achieved with this valve!









Safety guidelines: design tested safety valves type DBD, component series 1X in accordance to the pressure component directive 97/23/EC

- Before ordering a design tested safety valve, checks have to be carried out to ensure that at the required **response pressure** *p* the maximum permissible **flow** *q*_{Vmax} of the safety valve is greater than the maximum possible flow of the system / accumulators.
 - The appropriate regulations must be taken into account!
- In accordance to DGRL 97/23/EC the system pressure must not increase, due to the flow, by more than 10 % of the set response pressure (see component identification).
 - The maximum permissible flow $q_{\rm Vmax}$ stated within the component identification must not be exceeded.
 - The return lines from safety valves must vent in a safe manner. Fluid must **not** be able to gather in a venting system (see the AD2000 A2 information sheet).

THE S

Application notes must be taken into account!

- The response value stated within the component identification is set in the manufacturing plant with a flow of 2 l/min.
- The maximum permissible flow stated with the component identification is valid for applications without back pressure in the return line (port T).
- The removal of the seal from a safety valve invalidates the DGRL approval!
- The requirements of the pressure component directive and the AD2000-A2 information sheet must be taken into account!
- It is recommended that design tested safety valves are protected from unauthorised removal from the housing/block by wiring and sealing the cartridge to the housing/block (a hole is provided in the cartridge hexagon).

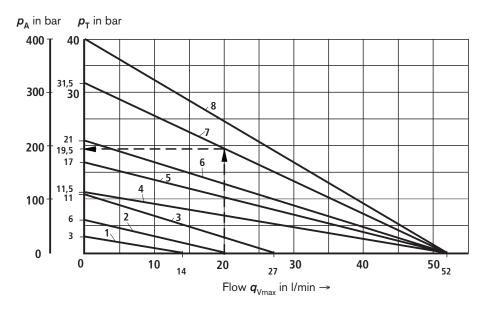
⚠ Attention!

The system pressure increases with an increase in flow by the value of the back pressure in the return line (port T). (the AD2000 - A2 information sheet, point. 6.3 must be taken into account!)

To ensure that the system pressure does not increase, due to the flow, by more than 10 % of the set response pressure, the permissible flow must be reduced in relation to the back pressure in the return line (port T) (see diagrams on pages 14 to 16).

Maximum permissible flow $q_{V_{max}}$ in relationship to the back pressure p_T in the return line

Type DBD. 6 .1X/...E



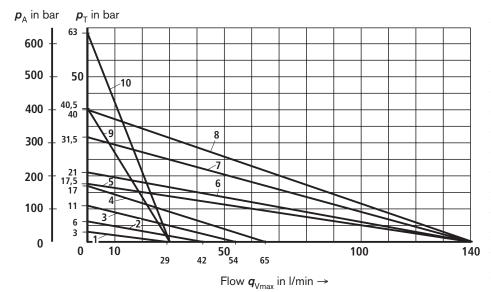
Char. curves	Response pressure p _A in bar
1	30
2	60
3	110
4	115
5	170
6	210
7	315
8	400

Characteritic curves for intermediate values can be obtained by interpolation. For further explanations see page 16

Safety guidelines: design tested safety valve, type DBD, component series 1X in accordance to the pressure component directive 97/23/EC

Maximum permissible flow q_{Vmax} in relationship to the back pressure p_{T} in the return line

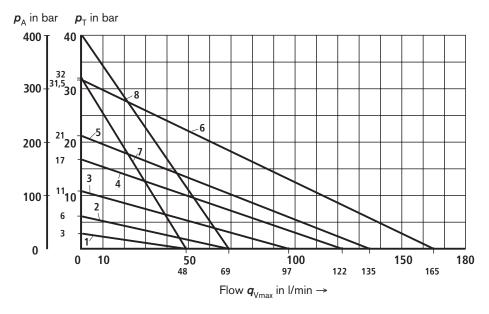
Type DBD. 10 .1X/...E



Char. curves	Response pressure p _A in bar
1	30
2	60
3	110
4	170
5	175
6	210
7	315
8	400
9	405
10	630

Characteristic curves for intermediate values can be obtaineed by interpolation. For further explanations, see page 16

Type DBD. 20 .1X/...E



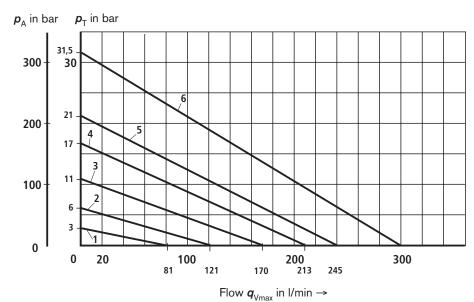
Char. curves	Response pressure p _A in bar
1	30
2	60
3	110
4	170
5	210
6	315
7	320
8	400

Characteristic curves for intermediate values can be obtaineed by interpolation. For further explanations, see page 16

Safety guidelines: design tested safety valve, type DBD, component series 1X in accordance to the pressure component directive 97/23/EC

Maximum permissible flow q_{Vmax} in relationship to the back pressure p_{T} in the return line

Type DBD. 30 .1X/...E



Char. curves	Response pressure p _A in bar
1	30
2	60
3	110
4	170
5	220
6	315

Characteristic curves for intermediate values can be obtaineed by interpolation. For further explanations, see below

p_T = Maximum permissible back pressure in bar (the sum of all of the possible tank pressures; also see AD2000 - A2 information sheet)

 $q_{\rm V \, max}$ = Maximum permissible flow in I/min

DGRL: $\boldsymbol{\rho}_{\text{T max}} = 10 \% \text{ x } \boldsymbol{\rho}_{\text{A}} \text{ (at } \boldsymbol{q}_{\text{V}} = 0)$

 p_{A} = Response pressure in bar

An explanation of the diagram (example: type DBD 6 ...E, page 14):

Given: The flow for which safety has to be provided from the system/accumulator $q_{V_{max}} = 20 \text{ l/min}$

- Safety valve set response pressure $p_A = 315$ bar

Required: **p**_{T permissible}

Solution: See arrows within the diagram on page 14 (type DBD 6 ...E)

 $p_{\text{T permissible}}$ (20 l/min; 315 bar) = 19,5 bar

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Subject to change.