

Pressure relief valve, direct operated

Type DBD

RE 25402

Edition: 2014-08

Replaces: 10.10



- ▶ Size 6 ... 30
- ▶ Component series 1X
- ▶ Maximum operating pressure 630 bar [9150 psi]
- ▶ Maximum flow 330 l/min [87 US gpm]

Features

- ▶ As screw-in cartridge valve (cartridge)
- ▶ For threaded connection
- ▶ For subplate mounting
- ▶ Adjustment types for pressure adjustment, optionally:
 - Bushing with hexagon and protective cap
 - Rotary knob
 - Hand wheel
 - Lockable rotary knob

Contents

Features	1
Ordering code	2, 3
Function, section, symbol	3
Technical data	4
Characteristic curves	5
Dimensions	6 ... 10

Type-examination tested safety valves type DBD...E according to Pressure Equipment Directive 97/23/EC (PED for short in the following text)

Ordering code	11
Deviating technical data	11
Dimensions	12
Characteristic curves	13
Safety instructions	14 ... 16
More information	16

Ordering code

01	02	03	04	05	06	07	08	09	10
DBD				1X	/				*

01	Pressure relief valve, direct operated	DBD
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Adjustment type for pressure adjustment

02		Size 6	Size 8	Size 10	Size 15	Size 20	Size 25	Size 30	
	Bushing with hexagon and protective cap	✓	✓	✓	✓	✓	✓	✓	S
	Rotary knob ¹⁾	✓	✓	✓	✓	✓	-	-	H
	Hand wheel ²⁾	-	-	-	-	-	✓	✓	H
	Lockable rotary knob ^{1,3,5)}	✓	✓	✓	✓	✓	-	-	A

03	Size 6 (port G1/4)	6
	Size 8 (port G3/8)	8
	Size 10 (port G1/2)	10
	Size 15 (port G3/4)	15
	Size 20 (port G1)	20
	Size 25 (port G1 1/4)	25
	Size 30 (port G1 1/2)	30

Type of connection

04		Size 6	Size 8	Size 10	Size 15	Size 20	Size 25	Size 30	
	As screw-in cartridge valve (cartridge)	✓	-	✓	-	✓	-	✓	K
	For threaded connection ⁴⁾	✓	✓	✓	✓	✓	✓	✓	G
	For subplate mounting	✓	-	✓	-	✓	-	✓	P

05	Component series 10 ... 1Z (10 ... 1Z: unchanged installation and connection dimensions)	1X
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Pressure rating ⁶⁾

06		Size 6	Size 8	Size 10	Size 15	Size 20	Size 25	Size 30	
	Set pressure up to 25 bar [362 psi]	✓	✓	✓	✓	✓	✓	✓	25
	Set pressure up to 50 bar [725 psi]	✓	✓	✓	✓	✓	✓	✓	50
	Set pressure up to 100 bar [1450 psi]	✓	✓	✓	✓	✓	✓	✓	100
	Set pressure up to 200 bar [2900 psi]	✓	✓	✓	✓	✓	✓	✓	200
	Set pressure up to 315 bar [4568 psi]	✓	✓	✓	✓	✓	✓	✓	315
	Set pressure up to 400 bar [5800 psi]	✓	✓	✓	✓	✓	-	-	400
	Set pressure up to 630 bar [9150 psi]	-	-	✓	-	-	-	-	630

Seal material

07	NBR seals	no code
	FKM seals	V
	Attention! Observe compatibility of seals with the hydraulic fluid used! (Other seals on request)	

Line connection

08	Pipe thread according to ISO 228/1	no code
	SAE thread	12

Equipment Directive

09	Without type-examination procedure	no code
	Type-examination tested safety valve according to PED 97/23/EC	E

10	Further details in the plain text	
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Explanation of the footnotes see page 3.

 **Notice:** Preferred types and standard units are contained in the EPS (standard price list).

Ordering code

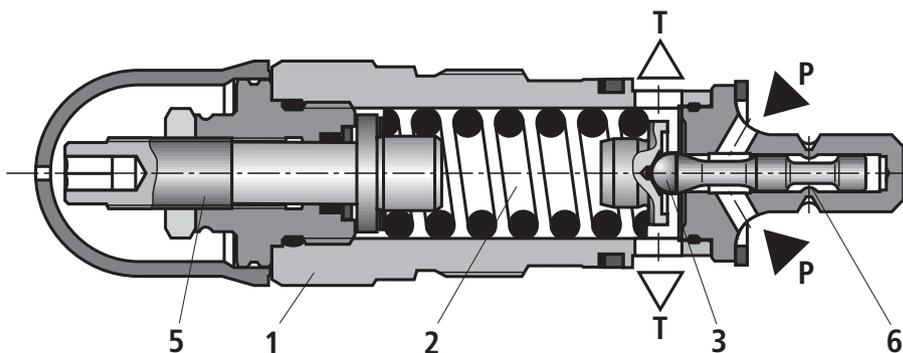
- 1) At size 20 only available for the pressure ratings 25, 50 or 100 bar.
- 2) Only available for pressure ratings 25, 50 or 100 bar.
- 3) Key with the material no. **R900008158** is included in the scope of delivery.
- 4) Not available for type-examination tested safety valves sizes 8, 15 and 25.
- 5) Not available for type-examination tested safety valves.
- 6) When selecting the pressure rating, please note the characteristic curves and instructions on page 5!
- 7) With versions "G" and "P", only available as "SO292", see page 6 and 9!

Function, section, symbol

Type DBD pressure relief valves are direct operated seat valves. They are used for limiting a system pressure. The valves consist mainly of a sleeve (1), spring (2), poppet with damping piston (3) (pressure rating 25 ... 400 bar) or ball (4) (pressure rating 630 bar) and adjustment type (5). The system pressure can be set steplessly via the adjustment type (5). The spring (2) pushes the poppet (3) or the ball (4) onto the seat. The P channel is connected to the system. The pressure in the system acts on the poppet surface (or ball).

If the pressure in channel P exceeds the value set at spring

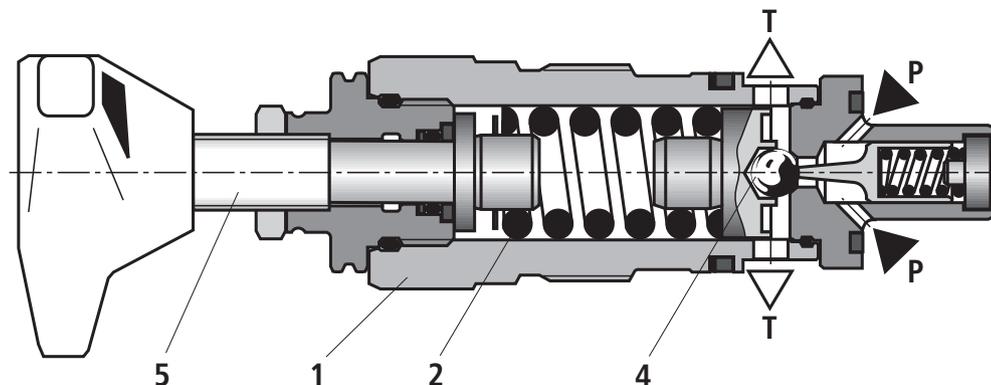
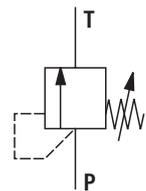
(2), the poppet (3) or the ball (4) opens against spring (2). The hydraulic fluid flows out of the P channel into channel T. The stroke of the poppet (3) is limited by the embossing (6). To achieve a good pressure adjustment over the entire pressure range, the entire pressure range has been divided into 7 pressure ratings. A pressure rating corresponds to a specific spring for a maximum adjustable operating pressure.



Type DBDS..K1X/...

Version pressure rating 25 ... 400 bar (poppet seat valve)

Symbol



Type DBDH 10 K1X/...

Version pressure rating 630 bar (ball seat valve, only size 10)

Notices:

- ▶ The adjustment type (5) is designed to protect it from loss. The cardanic suspension means that the adjustment element remains loosely (movable) in the adjustment type (5) when fully unloaded.
- ▶ Pressure rating "25": If the minimum pressure is not set despite the adjustment type being fully unloaded, the adjustment element must be "pulled back" to the stop due to the low spring or restoring force.
- ▶ The adjustment element can then be screwed in again to adjust/increase the pressure.

Technical data

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

General					
Nominal size	NS	6, 8	10	15, 20	25, 30
Weight	See pages 6, 8 and 10				
Installation position	any				
Ambient temperature range	°C [°F]	-30 ... +80 [-22 ... +176] (NBR seals) -15 ... +80 [5 ... 176] (FKM seals)			
Minimum stability of the housing materials	Housing materials are to be selected so that there is sufficient safety for all imaginable operating conditions (e.g. with regard to compressive strength, thread stripping strengths and tightening torques).				

Hydraulic						
Maximum operating pressure	- Input	bar [psi]	400 [5800]	630 [9150]	400 [5800]	315 [4568]
	- Output	bar [psi]	315 [4568]	315 [4568]	315 [4568]	315 [4568]
Maximum flow (standard valves)	See characteristic curves page					
Hydraulic fluid	See table below					
Hydraulic fluid temperature range	°C [°F]	-30 ... +80 [-22 ... +176] (NBR seals) -15 ... +80 [5 ... 176] (FKM seals)				
Viscosity range	mm ² /s [SUS]	10 ... 800 [60 ... 3710]				
Maximum permissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)	Class 20/18/15 ¹⁾					

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP	NBR, FKM	DIN 51524
Bio-degradable	- insoluble in water	HETG	ISO 15380
		HEES	
	- soluble in water	HEPG	ISO 15380

Important information on hydraulic fluids!

- ▶ For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!

¹⁾ The cleanliness classes stated for the components has to be maintained in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.
For the selection of the filters see www.boschrexroth.com/filter.

Deviating technical data for type-examination tested safety valves can be found on page 11.

Notice:

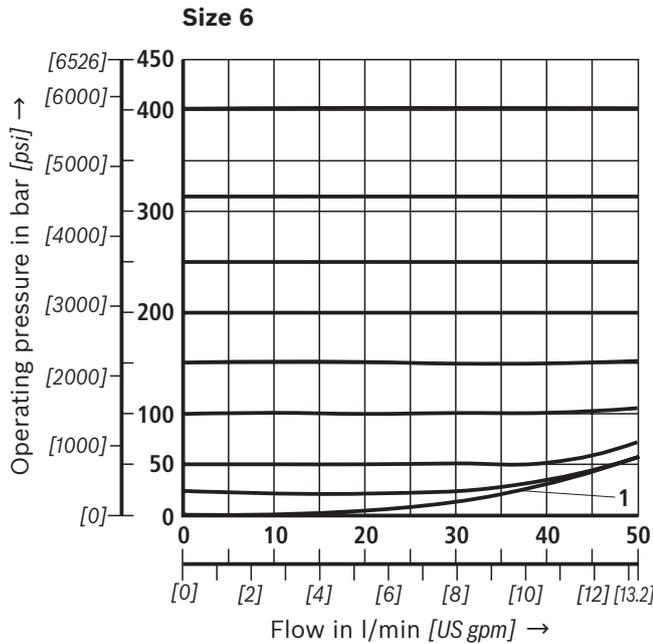
Hydraulic counter pressures in port T add 1:1 to the response pressure of the valve set on the adjustment type.

Example:

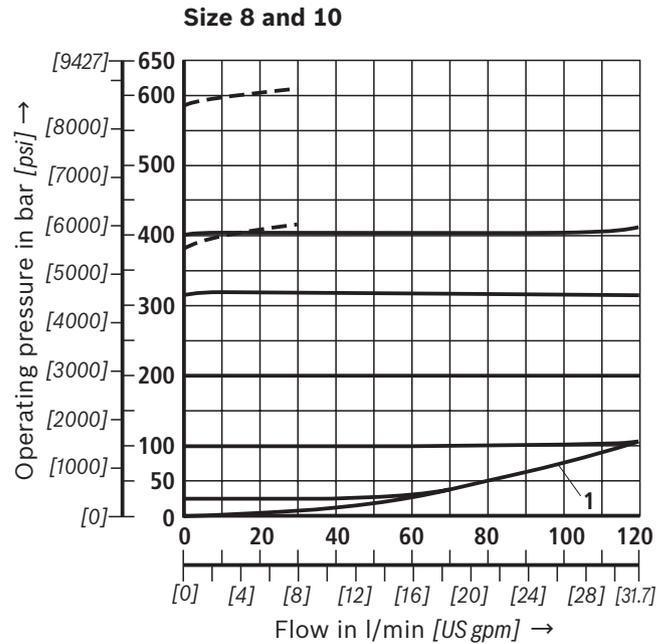
- ▶ Pressure adjustment of the valve by spring preload (item 9 on page 3) $p_{\text{spring}} = 200 \text{ bar}$
- ▶ Hydraulic counter pressure in port T: $p_{\text{hydraulic}} = 50 \text{ bar}$
- ▶ \Rightarrow response pressure = $p_{\text{spring}} + p_{\text{hydraulic}} = 250 \text{ bar}$

Characteristic curves

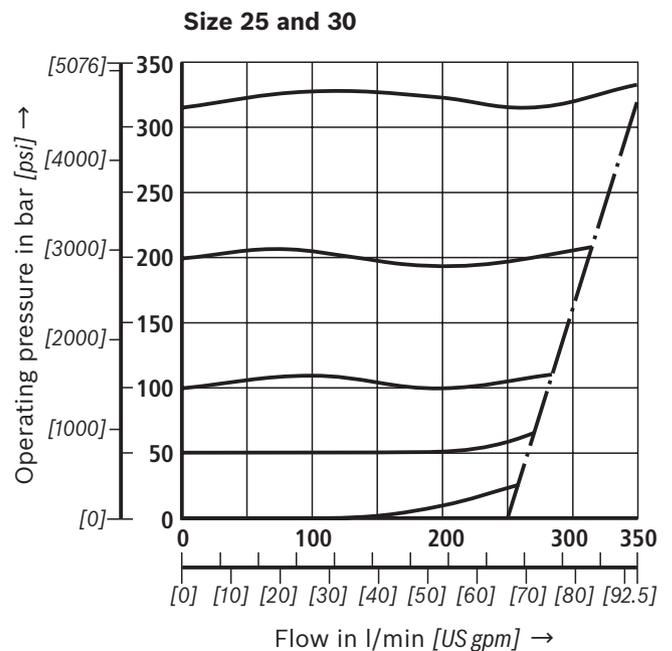
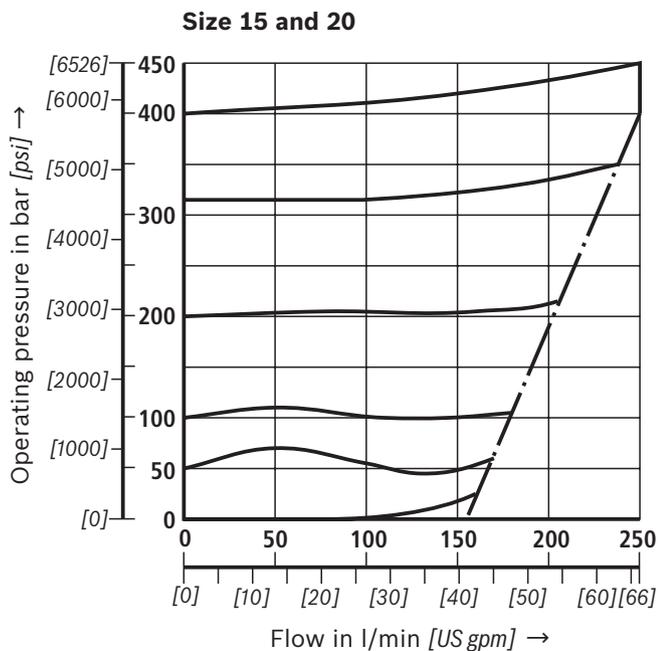
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$ [$104 \pm 9 \text{ }^\circ\text{F}$])



1 = lowest settable pressure



--- = pressure rating 630 bar [9150 psi] (only size 10)

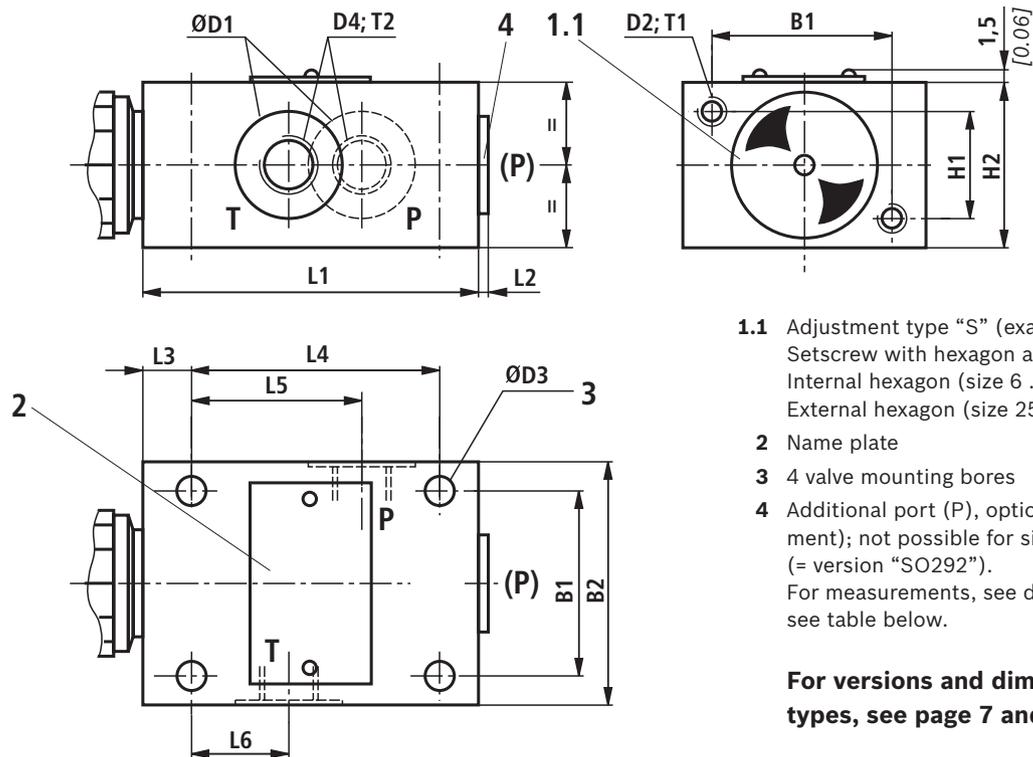


Notice!

- ▶ The characteristic curves apply to the pressure at the valve output $p = 0$ bar across the entire flow range.
- ▶ The characteristic curves only apply for the specified ambient and temperature conditions. Please note that the characteristic curve is influenced by variations in the boundary conditions!

- ▶ The characteristic curves relate to the specified pressure ratings (e.g. 200 bar). The further the pressure setting deviates from the nominal pressure rating (e.g. < 200 bar), the larger the pressure increase with increasing flow.

Dimensions: Threaded connection
(dimensions in mm [inch])



- 1.1** Adjustment type "S" (example)
Setscrew with hexagon and protective cap;
Internal hexagon (size 6 ... size 20)
External hexagon (size 25 and 30)
- 2** Name plate
- 3** 4 valve mounting bores
- 4** Additional port (P), optional (e.g. for pressure measurement); not possible for size 10 and pressure rating > 400 bar (= version "SO292").
For measurements, see dimensions D4, tightening torque, see table below.

For versions and dimensions of the adjustment types, see page 7 and 8.

NS	B1	B2	ØD1	D2	ØD3	D4	Tightening torques M_A in Nm [ft-lbs] for fittings ¹⁾	
							Plug screw (4)	Pipe fittings
6	45 [1.77]	60 [2.36]	25 [0.98]	M6	6.6 [0.26]	G1/4	30 [22]	60 [44]
8	60 [2.36]	80 [3.15]	28 [1.10]	M8	9 [0.35]	G3/8	40 [29]	90 [66]
10	60 [2.36]	80 [3.15]	34 [1.34]	M8	9 [0.35]	G1/2	60 [44]	130 [95]
15	70 [2.76]	100 [3.94]	42 [1.65]	M8	9 [0.35]	G3/4	80 [59]	200 [147]
20	70 [2.76]	100 [3.94]	47 [1.85]	M8	9 [0.35]	G1	135 [99]	380 [280]
25	100 [3.94]	130 [5.12]	56 [2.21]	M10	11 [0.43]	G1 1/4	480 [354]	500 [368]
30	100 [3.94]	130 [5.12]	65 [2.56]	M10	11 [0.43]	G1 1/2	560 [413]	600 [442]

NS	H1	H2	L1	L2	L3	L4	L5	L6	T1	T2	Weight, approx. in kg [lbs]
6	25 [0.98]	40 [1.57]	80 [3.15]	4 [0.16]	15 [0.59]	55 [2.17]	40 [1.57]	20 [0.79]	10 [0.39]	12 [0.47]	1.5 [3.3]
8	40 [1.57]	60 [2.36]	100 [3.94]	4 [0.16]	20 [0.79]	70 [2.76]	48 [1.89]	21 [0.83]	15 [0.59]	12 [0.47]	3.7 [8.2]
10	40 [1.57]	60 [2.36]	100 [3.94]	4 [0.16]	20 [0.79]	70 [2.76]	48 [1.89]	21 [0.83]	15 [0.59]	14 [0.55]	3.7 [8.2]
15	50 [1.97]	70 [2.76]	135 [5.32]	4 [0.16]	20 [0.79]	100 [3.94]	65 [2.56]	34 [1.34]	18 [0.71]	16 [0.63]	6.4 [14.1]
20	50 [1.97]	70 [2.76]	135 [5.32]	5.5 [0.22]	20 [0.79]	100 [3.94]	65 [2.56]	34 [1.34]	18 [0.71]	18 [0.71]	6.4 [14.1]
25	60 [2.36]	90 [3.54]	180 [7.09]	5.5 [0.22]	25 [0.98]	130 [5.12]	85 [3.35]	35 [1.38]	20 [0.79]	20 [0.79]	13.9 [30.6]
30	60 [2.36]	90 [3.54]	180 [7.09]	5.5 [0.22]	25 [0.98]	130 [5.12]	85 [3.35]	35 [1.38]	20 [0.79]	22 [0.87]	13.9 [30.6]

¹⁾ The tightening torques are guidelines based on the maximum operating pressure and using a manual torque wrench (tolerance $\pm 10\%$).

Dimensions: Screw-in cartridge valve (dimensions in mm [inch])

Screw-in cartridge valve

NS	ØD11	ØD12	ØD13	L17	L18	L19	L20	L21	L22	L23	L24
6	34 [1.34]	60 [2.36]	–	72 [2.83]	11 [0.43]	83 [3.26]	28 [1.10]	20 [0.79]	–	–	64,5 [2.54]
10	38 [1.50]	60 [2.36]	–	68 [2.68]	11 [0.43]	79 [3.11]	28 [1.10]	20 [0.79]	–	–	77 [3.03]
20	48 [1.89]	60 [2.36]	–	65 [2.56]	11 [0.43]	77 [3.03]	28 [1.10]	20 [0.79]	–	–	106 [4.17]
30	63 [2.48]	–	80 [3.15]	83 [3.26]	–	–	–	–	11 [0.43]	56 [2.21]	131 [5.16]

NS	SW1	SW2	SW3	SW4	SW5	SW6	Tightening torques M_A in Nm [ft-lbs] for screw-in cartridge valves ²⁾			Weight, approx. in kg [lbs]
							Pressure rating in bar [psi]			
							up to 200 [2900]	up to 400 [5800]	up to 630 [9150]	
6	32	30	19	6	–	30	50±5 [37±3.7]	80±5 [59±4]	–	0.4 [0.88]
10	36	30	19	6	–	30	100±5 [74±3.5]	150±10 [110±3.5]	200±10 [148±7.5]	0.5 [1.10]
20	46	36	19	6	–	30	150±10 [111±7.5]	300±15 [221±11]	–	1 [2.21]
30	60	46	19	–	13	–	350±20 [258±19.5]	500±30 [369±22]	–	2.2 [4.85]

²⁾ The tightening torques are guidelines with a friction coefficient $\mu_{\text{tot}} = 0.12$ and using a manual torque wrench.

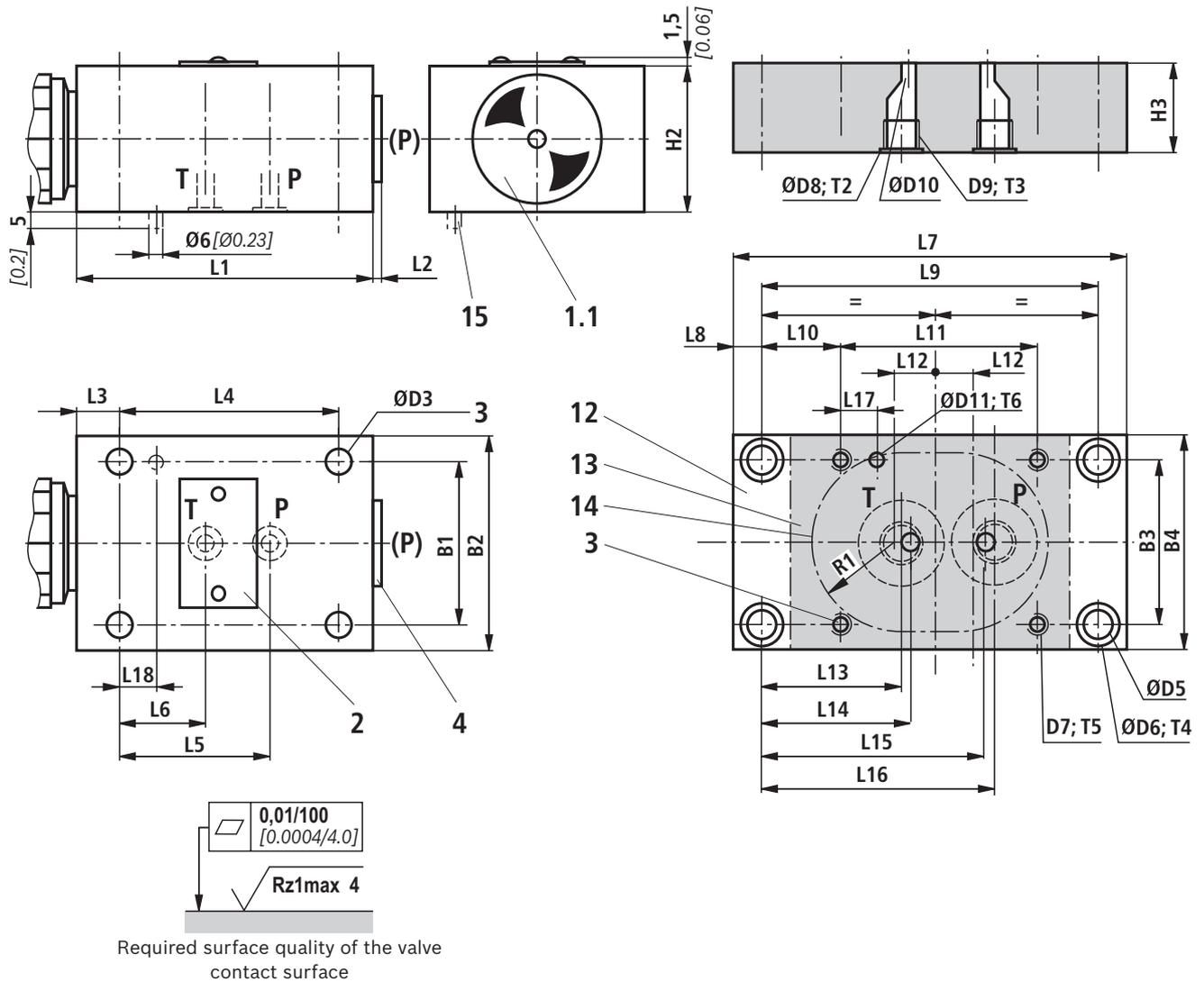
Mounting cavity

NS	D14	ØD15	ØD16	ØD17	ØD18	ØD19
6	M28 x 1.5	25H9 [0.9843+0.002]	6 [0.24]	15 [0.59]	24,9 ^{+0,152} _{-0,2} [0.9803] ^{+0.006} _[-0.00786]	12 [0.47]
10	M35 x 1.5	32H9 [1.2598+0.0024]	10 [0.39]	18,5 [0.73]	31,9 ^{+0,162} _{-0,2} [1.2559] ^{+0.0064} _[-0.0079]	15 [0.59]
20	M45 x 1.5	40H9 [1.5748+0.0024]	20 [0.79]	24 [0.95]	39,9 ^{+0,162} _{-0,2} [1.5709] ^{+0.0063} _[-0.0079]	22 [0.87]
30	M60 x 2	55H9 [2.1654+0.0029]	30 [1.18]	38,75 [1.53]	54,9 ^{+0,174} _{-0,2} [2.1614] ^{+0.0069} _[-0.0079]	34 [1.34]

NS	L25	L26	L27	L28	L29	L30	L31	α1
6	15 [0.59]	19 [0.75]	30 [1.18]	36 [1.42]	45 [1.77]	56,5±5,5 [2.22±0.217]	65 [2.56]	15°
10	18 [0.71]	23 [0.91]	35 [1.38]	41,5 [1.63]	52 [2.05]	67,5±7,5 [2.66±0.295]	80 [3.15]	15°
20	21 [0.83]	27 [1.06]	45 [1.77]	55 [2.17]	70 [2.76]	91,5±8,5 [3.60±0.335]	110 [4.33]	20°
30	23 [0.91]	29 [1.14]	45 [1.77]	63 [2.48]	84 [3.31]	113,5±11,5 [4.47±0.453]	140 [5.51]	20°

- 1.1 Adjustment type "S" – grub screw with hexagon and protective cap; internal hexagon (size 6 ... size 20), external hexagon (size 30)
- 1.2 Adjustment type "H" – rotary knob (size 6 ... size 20), hand wheel (size 30)
- 1.3 Adjustment type "A" – lockable rotary knob size 6 ... size 10 (size 20 to 100 bar [1450 psi])
- 4 Connection P, anywhere on circumference or on front side
- 5 Connection T, anywhere on circumference
- 6 Type designation
- 7 Pressure rating (stamped)
- 8 Marking (adjustment of the zero position after the valve has been screwed in, then fixing of the ring by horizontal shifting until it engages on the reducing piece plug screw SW6)
- 9 Depth of fit
- 10 Lock nut, tightening torque $M_A = 10^{+5}$ Nm [7.4^{+3.7} ft-lbs]
- 11 Space required to remove the key
- 12 Minimum stability of the housing materials, see Technical data page 4.

Dimensions: Subplate mounting
(dimensions in mm [inch])



- 1.1 Adjustment type "S" (example) grub screw with hexagon and protective cap; internal hexagon (size 6 ... size 20), external hexagon (size 30)
- 2 Name plate
- 3 4 valve mounting bores
- 4 Additional port (P), optional (e.g. for pressure measurement); not possible for size 10 and pressure rating > 400 bar (= version "SO292"). Tightening torques, see dimensional tables page 6)
- 12 Subplate (type designation, see table page 10)
- 13 Valve contact surface
- 14 Front panel break-through
- 15 Locking pin (only for type-examination tested safety valves)

For reasons of stability, exclusively the following valve mounting screws may be used (separate order):
4 hexagon socket head cap screws ISO 4762 - f1Zn-240h-L ¹⁾
 (Friction coefficient $\mu_{tot} = 0.09 \dots 0.14$)

NS	Dimensions	Property class	M_A in Nm [ft-lbs] ²⁾	Material number
6	M6 x 50	10.9	12.5 [9.2]	R913000151
10	M8 x 70	10.9	28 [20.7]	R913000149
20	M8 x 90	12.9	28 [20.7]	R913000150
30	M10 x 110	12.9	56 [41.3]	R913000148

4 hexagon socket head cap screws UNC on request

¹⁾ Alternatively, relevant screws in accordance with DIN 912 can also be used.
²⁾ Use a manual torque wrench with a tolerance of $\leq 10\%$ for tightening.

For versions and dimensions of the adjustment types, see page 7 and 8.

Dimensions: Subplate mounting (dimensions in mm [*inch*])

Pressure relief valve

NS	B1	B2	ØD3	H2	L1	L2	L3
6	45 [1.77]	60 [2.36]	6,6 [0.26]	40 [1.57]	80 [3.15]	4 [0.16]	15 [0.59]
10	60 [2.36]	80 [3.15]	9 [0.35]	60 [2.36]	100 [3.94]	4 [0.16]	20 [0.79]
20	70 [2.76]	100 [3.94]	9 [0.35]	70 [2.76]	135 [5.32]	5.5 [0.22]	20 [0.79]
30	100 [3.94]	130 [5.12]	11 [0.43]	90 [3.54]	180 [7.09]	5.5 [0.22]	25 [0.98]

NS	L4	L5	L6	L18	Port (P)	Weight, approx. in kg [lbs]
6	55 [2.17]	40 [1.57]	20 [0.79]	15 [0.59]	G1/4	1.5 [3.3]
10	70 [2.76]	45 [1.77]	21 [0.83]	15 [0.59]	G1/2	3.7 [8.2]
20	100 [3.94]	65 [2.56]	34 [1.34]	15 [0.59]	G3/4	6.4 [14.1]
30	130 [5.12]	85 [3.35]	35 [1.37]	15 [0.59]	G1 1/4	13.9 [30.6]

Subplates

NS	Type	B3	B4	ØD5	ØD6	D7	ØD8	D9
6	G300/01 [G300/12]	45 [1.77]	60 [2.36]	6.6 [0.26]	11 [0.43]	M6 [1/4-20 UNC]	25 [0.98]	G1/4 [SAE 4; 7/16-20]
10	G661//01	60 [2.36]	80 [3.15]	6.6 [0.26]	11 [0.43]	M8	25 [0.98]	G3/8
	G662/01	60 [2.36]	80 [3.15]	6.6 [0.26]	11 [0.43]	M8	34 [1.34]	G1/2
20	G303/01	70 [2.76]	100 [3.94]	11 [0.43]	18 [0.71]	M8	42 [1.65]	G3/4
	G304/01	70 [2.76]	100 [3.94]	11 [0.43]	18 [0.71]	M8	47 [1.85]	G1
30	G305/01	100 [3.94]	130 [5.12]	11 [0.43]	18 [0.71]	M10	56 [2.20]	G1 1/4
	G306/01	100 [3.94]	130 [5.12]	11 [0.43]	18 [0.71]	M10	65 [2.56]	G1 1/2

NS	ØD10	ØD11	H3	L7	L8	L9	L10	L11	L12
6	6 [0.24]	8 [0.32]	25 [0.98]	110 [4.33]	8 [0.32]	94 [3.70]	22 [0.87]	55 [2.17]	10 [0.39]
10	10 [0.39]	8 [0.32]	25 [0.98]	135 [5.32]	10 [0.39]	115 [4.53]	27.5 [1.08]	70 [2.76]	12.5 [0.49]
	10 [0.39]	8 [0.32]	25 [0.98]	135 [5.32]	10 [0.39]	115 [4.53]	27.5 [1.08]	70 [2.76]	12.5 [0.49]
20	15 [0.59]	8 [0.32]	40 [1.57]	170 [6.69]	15 [0.59]	140 [5.51]	20 [0.79]	100 [3.94]	20 [0.79]
	20 [0.79]	8 [0.32]	40 [1.57]	170 [6.69]	15 [0.59]	140 [5.51]	20 [0.79]	100 [3.94]	20 [0.79]
30	30 [1.18]	8 [0.32]	40 [1.57]	190 [7.48]	12,5 [0.49]	165 [6.50]	17,5 [0.67]	130 [5.12]	22,5 [0.89]

NS	L13	L14	L15	L16	L17	T2	T3	T4	T5
6	39 [1.54]	42 [1.65]	62 [2.44]	65 [2.56]	15 [0.59]	1 [0.039]	15 [0.59]	9 [0.35]	15 [0.59]
10	40,5 [1.59]	48,5 [1.91]	72,5 [2.85]	80,5 [3.17]	15 [0.59]	1 [0.039]	15 [0.59]	9 [0.35]	12 [0.47]
	40,5 [1.59]	48,5 [1.91]	72,5 [2.85]	80,5 [3.17]	15 [0.59]	1 [0.039]	16 [0.63]	9 [0.35]	15 [0.59]
20	45 [1.77]	54 [2.13]	85 [3.35]	94 [3.70]	15 [0.59]	1 [0.039]	20 [0.79]	13 [0.51]	22 [0.87]
	42 [1.65]	54 [2.13]	85 [3.35]	97 [3.82]	15 [0.59]	1 [0.039]	20 [0.79]	13 [0.51]	22 [0.87]
30	42 [1.65]	52,5 [2.07]	102,5 [4.04]	113 [4.45]	15 [0.59]	1 [0.039]	24 [0.95]	11,5 [0.45]	22 [0.87]

NS	T6	R1	Weight, approx. in kg [lbs]
6	6 [0.24]	25 ⁺² [0.98 ^{+0.079}]	1,5 [3.3]
10	6 [0.24]	30 ⁺⁵ [1.18 ^{+0.197}]	2 [4.4]
20	6 [0.24]	40 ⁺³ [1.57 ^{+0.118}]	5.5 [12.1]
30	6 [0.24]	55 ⁺⁴ [2.16 ^{+0.157}]	8 [17.6]

Notice:

The specified subplates are **not** approved for use with type-examination tested safety valves according to Pressure Equipment Directive 97/23/EC!

Ordering code: Type-examination tested safety valves type DBD 1)

NS	Type designation	Component marking	NS	Type designation	Component marking
6	DBDS 6K1X/ <input type="checkbox"/> E	TÜV.SV.□-849.5.F. _G ^{α_w} .p.	20	DBDS 20K1X/ <input type="checkbox"/> E	TÜV.SV.□-361.10.F.α _w .p.
	DBDH 6K1X/ <input type="checkbox"/> E			DBDH 20K1X/ <input type="checkbox"/> E	
	DBDS 6G1X/ <input type="checkbox"/> E			DBDS 20G1X/ <input type="checkbox"/> E	
	DBDH 6G1X/ <input type="checkbox"/> E			DBDH 20G1X/ <input type="checkbox"/> E	
	DBDS 6P1X/ <input type="checkbox"/> E			DBDS 20P1X/ <input type="checkbox"/> E	
	DBDH 6P1X/ <input type="checkbox"/> E			DBDH 20P1X/ <input type="checkbox"/> E	
10	DBDS 10K1X/ <input type="checkbox"/> E	TÜV.SV.□-850.6.F. _G ^{α_w} .p.	30	DBDS 30K1X/ <input type="checkbox"/> E	TÜV.SV.□-362.15.F.α _w .p.
	DBDH 10K1X/ <input type="checkbox"/> E			DBDH 30K1X/ <input type="checkbox"/> E	
	DBDS 10G1X/ <input type="checkbox"/> E	TÜV.SV.□-390.4.5.F.30.p. ²⁾		DBDS 30G1X/ <input type="checkbox"/> E	
	DBDH 10G1X/ <input type="checkbox"/> E			DBDH 30G1X/ <input type="checkbox"/> E	
	DBDS 10P1X/ <input type="checkbox"/> E			DBDS 30P1X/ <input type="checkbox"/> E	
	DBDH 10P1X/ <input type="checkbox"/> E			DBDH 30P1X/ <input type="checkbox"/> E	

Pressure in the type designation must be entered by the customer; Pressure adjustment ≥ 30 bar [435 psi] and in steps of 5 bar [72 psi] possible.

Value entered at the factory

¹⁾ Component series 1X according to Pressure Equipment Directive 97/23/EC

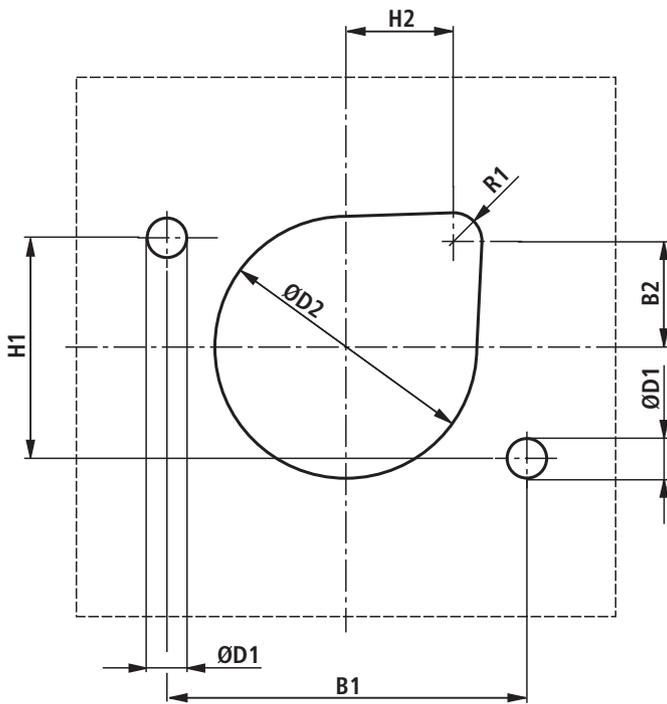
²⁾ Component marking for DBD. 10.1X/...; 400 bar [5801 psi] < p ≤ 630 bar [9150 psi]

Deviating technical data: Type-examination tested safety valves type DBD 1)

Hydraulic		
Maximum flow		See characteristic curves page 13 ... 16
Hydraulic fluid		Mineral oil (HL, HLP) according to DIN 51524-1 and DIN 51524-2
Hydraulic fluid temperature range	°C [°F]	-20 ... +60 [-4 ... +140] (NBR seals) -15 ... +60 [5 ... 140] (FKM seals)
Viscosity range	mm ² /s [SUS]	12 ... 230 [55 ... 1066]

¹⁾ Component series 1X, according to Pressure Equipment Directive 97/23/EC (For applications outside these parameters, please consult us!)

Dimensions: Plate cutout for front panel mounting for type-examination tested safety valves sizes type DBD ¹⁾ (dimensions in mm [inch])



NS	B1	B2	H1	H2
6	45 [1.77]	12.5 [0.49]	25 [0.98]	22.5 [0.89]
10	60 [2.36]	20.5 [0.81]	40 [1.57]	20,5 [0.81]
20	70 [2.76]	24 [0.94]	50 [1.97]	24 [0.94]
30	100 [3.94]	29.5 [1.16]	60 [2.36]	29.5 [1.16]

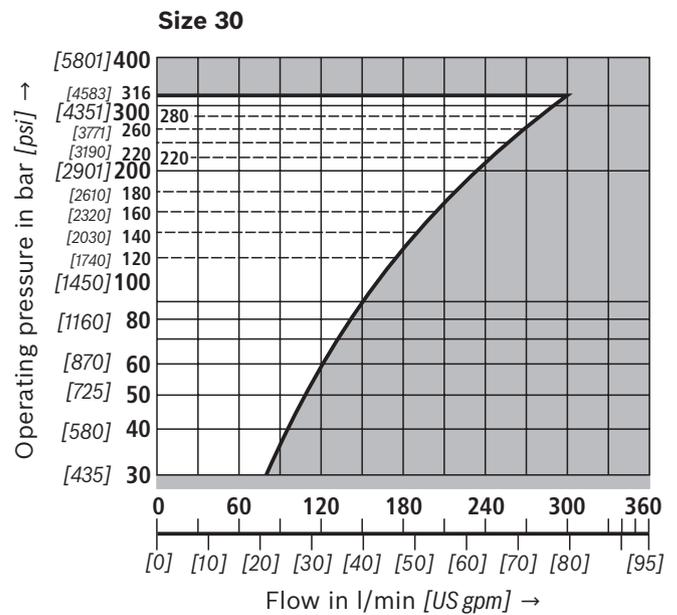
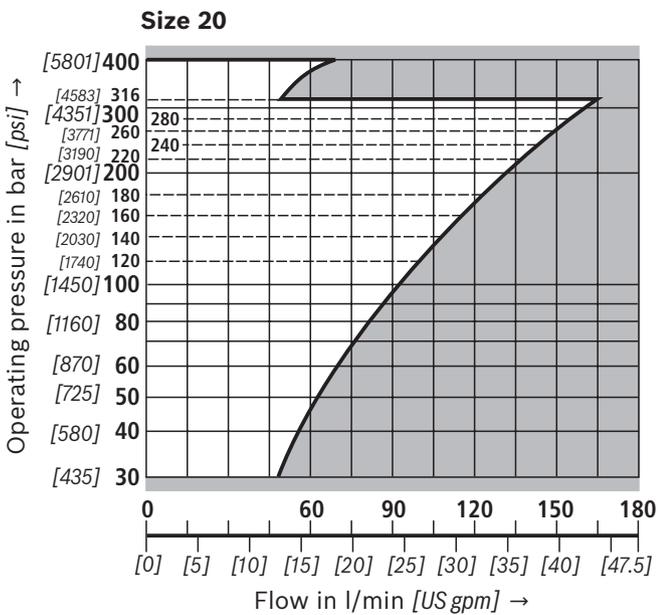
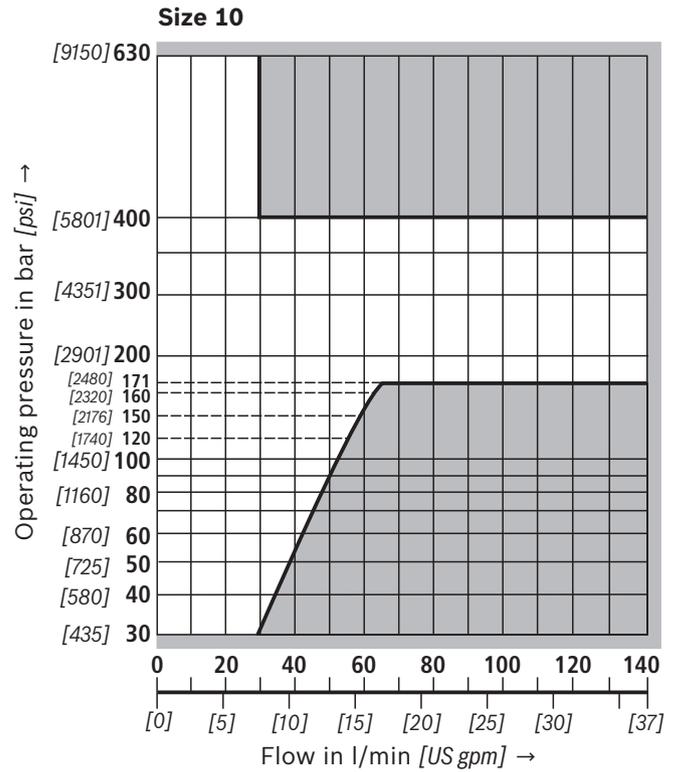
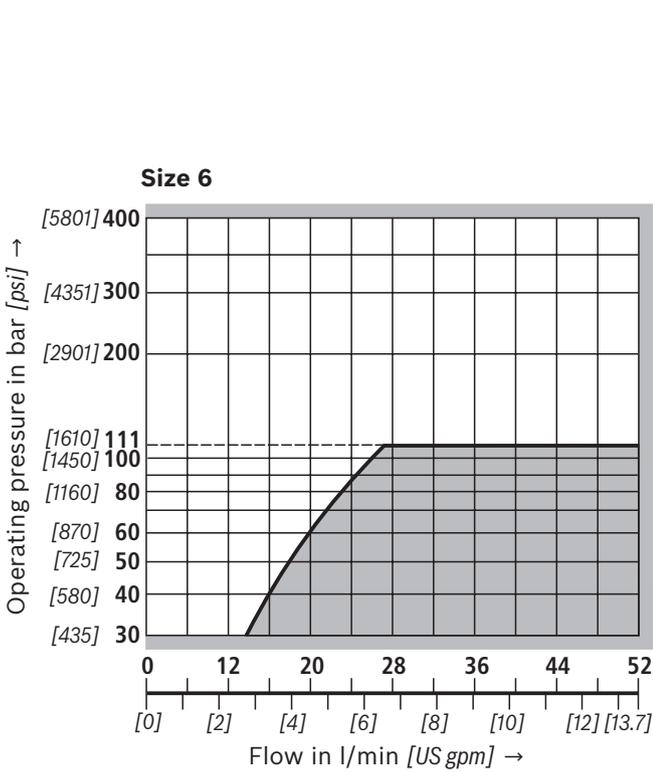
NS	ØD1H13	ØD2H13	R1
6	7 [0.27]	40 [1.57]	8 [0.32]
10	9 [0.35]	44 [1.73]	8 [0.32]
20	9 [0.35]	55 [2.17]	8 [0.32]
30	11 [0.43]	73 [2.87]	8 [0.32]

Notice:

For type DBDH.K..1X/..E valves, the hand wheel must be dismantled and mounted again before front panel installation of the screw-in cartridge valve.

¹⁾ Component series 1X according to Pressure Equipment Directive 97/23/EC

Characteristic curves: Type-examination tested safety valves type DBD 1)



Notice:

Values in the areas of the characteristic curves that are highlighted in grey are **not** permitted with this valve.

1) Component series 1X according to Pressure Equipment Directive 97/23/EC

Safety instructions: Type-examination tested safety valves type DBD ¹⁾

- ▶ Before ordering a type-examination tested safety valve, it must be ensured that, for the desired **response pressure p** , the maximum permissible **flow q_{Vmax}** of the safety valve is greater than the maximum possible flow of the system/accumulator to be secured. According to the Pressure Equipment Directive **97/23/EC**, the increase of system pressure due to the flow must not exceed 10% of the set response pressure (see component marking page 11).
- ▶ The maximum permissible flow q_{Vmax} specified in the part identification must not be exceeded.
- ▶ Discharge lines of safety valves must end in a risk-free manner. Accumulation of fluids in the discharge lines must **not** be possible (see AD 2000 data sheet A 2).



It is imperative to observe the application notes!

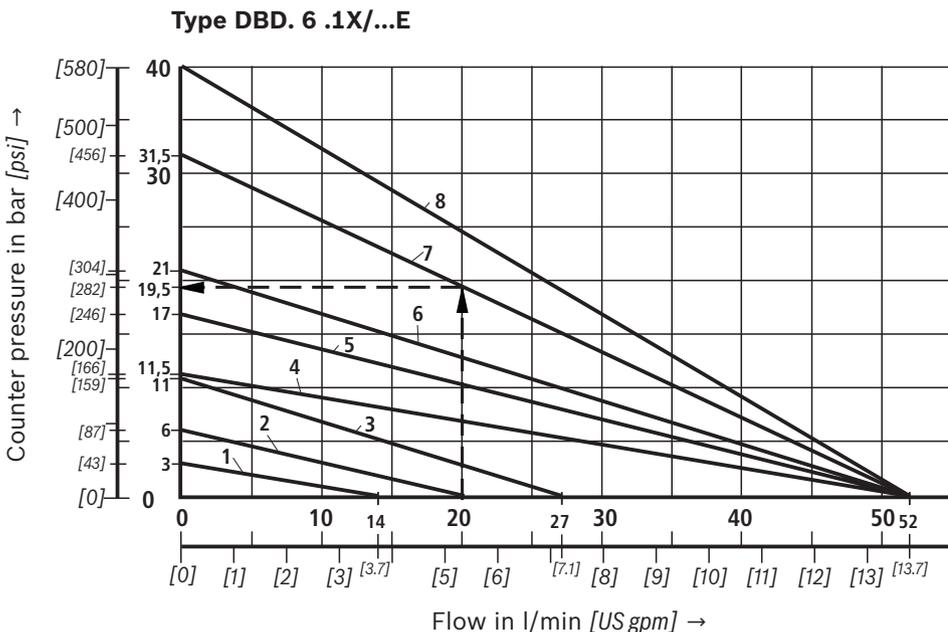
- ▶ In the plant, the response pressure specified in the component marking is set at a flow of 2 l/min [0.53 US gpm].
- ▶ The maximum flow stated in the component marking applies for applications without counter pressure in the discharge line (port T).
- ▶ Removing a lead seal on the safety valve, invalidates approval according to the Pressure Equipment Directive!
- ▶ The requirements of the Pressure Equipment Directive and data sheet AD 2000 A 2 must be observed!
- ▶ It is advisable to secure type-examination tested safety valves against unauthorized disassembly by wiring and sealing with the housing/block (bore in the adjustment type).



Notice:

The system pressure increases by the counter pressure in the discharge line (port T) due to the increasing flow. (observe AD 2000 data sheet A 2, point 6.3!) To ensure that this increase in system pressure caused by the flow does not exceed 10% of the set response pressure, the admissible flow has to be reduced according to the counter pressure in the discharge line (port T) (see diagrams on pages 14 ... 16).

Maximum admissible flow q_{Vmax} dependent on the counter pressure p_T in the discharge line



Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	115 [1668]
5	170 [2465]
6	210 [3046]
7	315 [4568]
8	400 [5800]

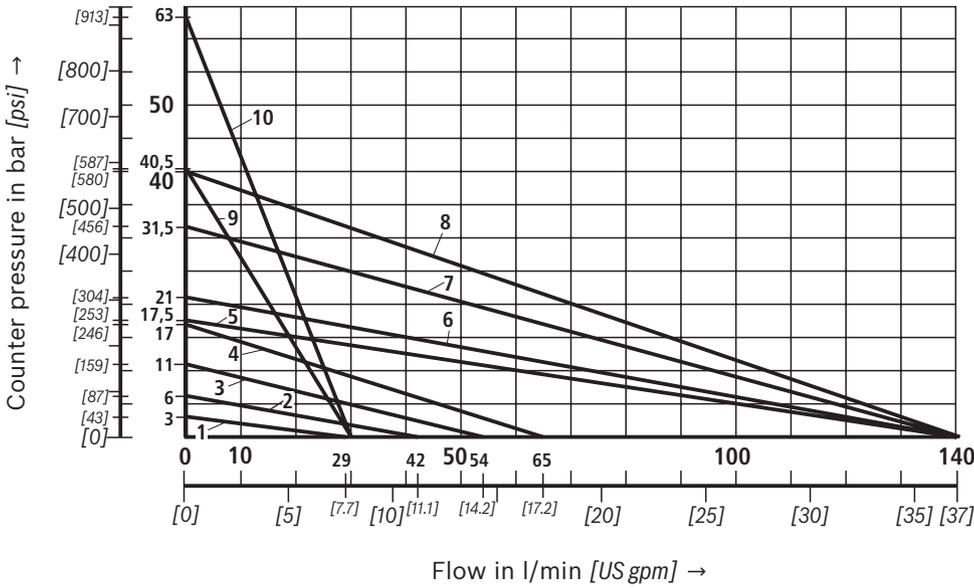
Characteristic curves for intermediate values can be generated by interpolation. Further explanations see page 16

¹⁾ Component series 1X according to Pressure Equipment Directive 97/23/EC

Safety instructions: Type-examination tested safety valves type DBD ¹⁾

Maximum admissible flow q_{Vmax} dependent on the counter pressure p_T in the discharge line

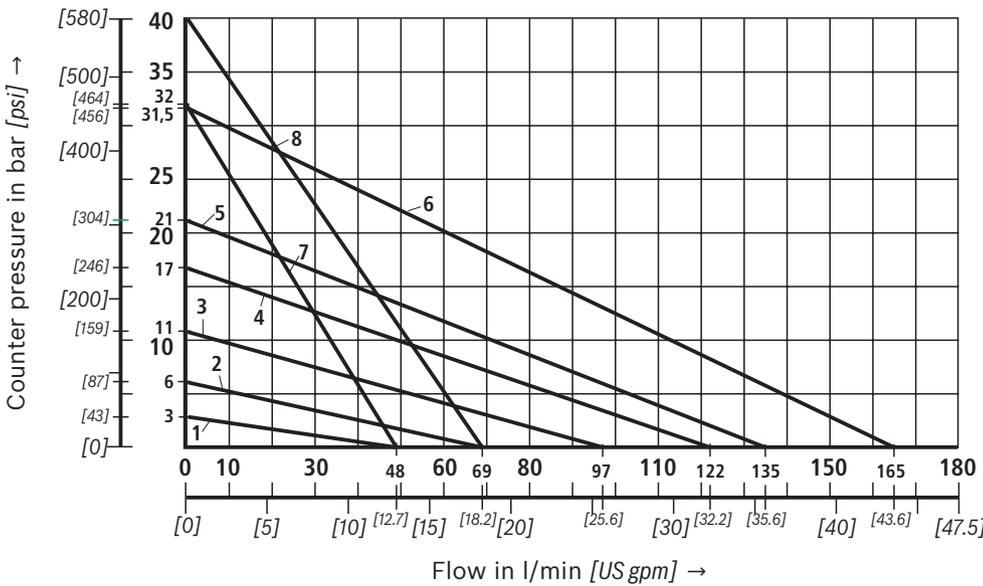
Type DBD. 10 .1X/...E



Character-istic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	175 [2538]
6	210 [3046]
7	315 [4568]
8	400 [5800]
9	405 [5874]
10	630 [9150]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 16.

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



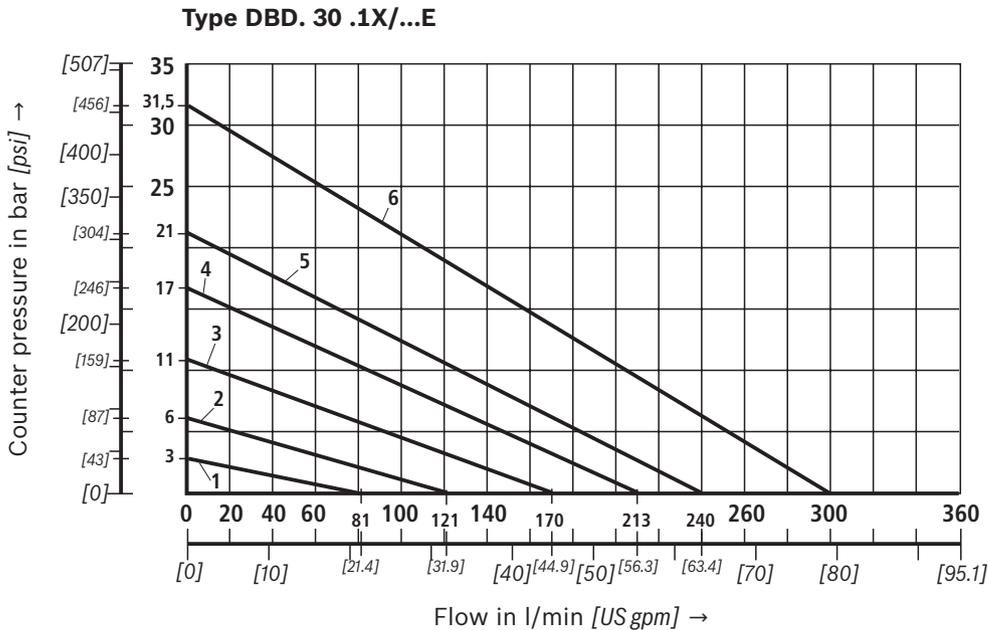
Character-istic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	210 [3046]
6	315 [4568]
7	320 [4641]
8	400 [5800]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 16.

¹⁾ Component series 1X according to Pressure Equipment Directive 97/23/EC

Safety instructions: Type-examination tested safety valves type DBD 1¹⁾

Maximum admissible flow q_{Vmax} dependent on the counter pressure p_T in the discharge line



Characteristic curves	Response pressure p_A in bar [psi]
1	30 [435]
2	60 [870]
3	110 [1595]
4	170 [2465]
5	220 [3191]
6	315 [4568]

Characteristic curves for intermediate values can be generated by interpolation. Further explanations see below

¹⁾ Component series 1X according to Pressure Equipment Directive 97/23/EC

p_A = Response pressure in bar

p_T = maximum admissible counter pressure in bar (sum of all possible tank pressures; see also AD2000 - data sheet A2)

q_{Vmax} = maximum admissible flow in l/min

PED: $p_{Tmax} = 10\% \times p_A$ (at $q_V = 0$)

Explanation of the diagrams (Example: Type DBD 6 ...E, page 14):

known: ▶ Flow of the system/accumulator that has to be secured $q_{Vmax} = 20$ l/min
▶ Set response pressure of the safety valve $p_A = 315$ bar

unknown: $p_{Tadmissible}$

Solution: See arrows in the diagram page 14 (type DBD 6 ...E)
 $p_{Tpermitted}$ (20 l/min; 315 bar) = 19.5 bar

More information

- ▶ Safety equipment to protect against excessive pressure – safety valves
- ▶ Mineral-oil-based hydraulic fluids
- ▶ Reliability characteristics according to EN ISO 13849
- ▶ Hydraulic valves for industrial applications
- ▶ Filter range

AD 2000 data sheet A 2

Data sheet 90220

Data sheet 08012

Operating Instructions 07600-B

www.boschrexroth.com/filter

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