

Pump safety block

Types DBA and DBAW



- Sizes 32 and 40
- Component series 1X
- Maximum operating pressure 350 bar
- Maximum flow 650 l/min



Features

- Depressurized start-up and circulation of the pump
- To be mounted directly onto the SAE pressure port of the pump
- Solenoid-actuated unloading via a built-on directional valve
- Integrated check valve, optional
- Switching shock damping, optional (DBAW type only)
- CE conformity according to the Low-Voltage Directive 2014/35/EU for electrical voltages > 50 VAC or > 75 VDC
- UKCA conformity according to the "Electrical Equipment (Safety) Regulations SI 2016/1101" for electrical voltages > 50 VAC or > 75 VDC
- Solenoid coil as approved component with UR marking according to UL 906, edition 1982, optional

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Type-examination tested safety valves type DBA...E according to Pressure Equipment Directive 2014/68/EU

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Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
DBA							N	1X	/							K4				

01	Pump safety block	DBA
02	Without directional valve	no code
	With attached directional valve	W
03	Without check valve	no code
	With check valve	R ¹⁾
04	Size 32	30
	Size 40	40
05	Normally closed	A ²⁾
	Normally open	B ²⁾

Connection / SAE flange³⁾

06	Standard flange (200 ... 250 bar)	F
	High-pressure flange (350 bar)	H

Adjustment type for pressure adjustment

07	Rotary knob	1
	Sleeve with hexagon and protective cap	2
	Lockable rotary knob with scale	3 ⁴⁾
	Rotary knob with scale	7
08	With main spool Ø28 mm	N
09	Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	1X

Pressure rating

10	Set pressure up to 50 bar	50
	Set pressure up to 100 bar	100
	Set pressure up to 200 bar	200
	Set pressure up to 250 bar (only size 32 and version "F")	250
	Set pressure up to 315 bar (only version "H")	315
	Set pressure up to 350 bar (only version "H")	350

Pilot oil flow

11	Internal pilot oil supply, internal pilot oil return (standard)	– ⁵⁾
	Internal pilot oil supply, external pilot oil return	Y
12	Standard version	no code
	Valve for minimum cracking pressure (not suitable for mutual relief)	U
13	Without switching shock damping	no code
	With switching shock damping (only version "W")	S
14	Without directional valve	no code
	With directional spool valve (data sheet 23178)	6E ²⁾
	With directional seat valve (data sheet 22058)	6SM ²⁾
15	Direct voltage 24 V	G24 ²⁾
	DC voltage 205 V	G205 ²⁾
	Alternating voltage 230V 50/60Hz (version "6E" only)	W230 ²⁾

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
DBA							N	1X	/							K4				

16	Without manual override	no code	◇
	With manual override (version "6E" only)	N ²⁾	
	With concealed manual override (standard)	N9 ²⁾	

Electrical connection

17	Connector 3-pole (2 + PE) according to EN 175301-803	K4 ^{2; 6)}
18	Nozzles – Ø1.2 mm in channel B of the directional spool valve	R12 ⁷⁾
	Nozzles – Ø1.2 mm in channel P of the directional seat valve	B12 ⁷⁾


Seal material (observe compatibility of seals with hydraulic fluid used, see page 8)

19	NBR seals	no code	◇
	FKM seals	V	

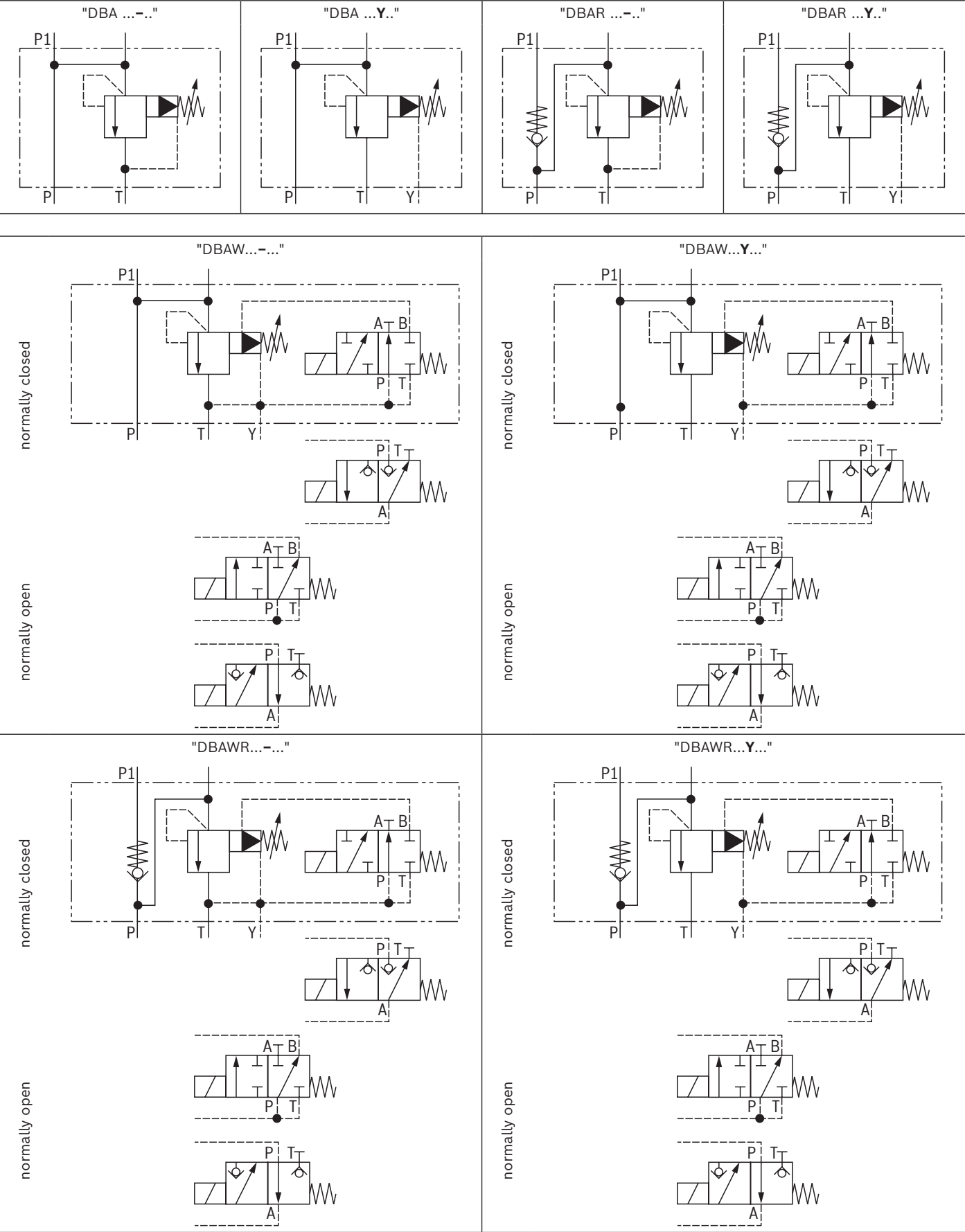
Type-examination procedure

20	Without type-examination procedure	no code	◇
	Type-examination tested safety valve according to Pressure Equipment Directive 2014/68/EU	E	
21	Standard version	no code	◇
	Solenoid coil is an approved component with UR-marking according to UL 906	=UR	

- 1) Only up to 315 bar
- 2) Ordering code only required if 02 = "W"
- 3) Please observe pressure ratings and connection dimensions (see page 13)
- 4) H-key with material no. **R900008158** is included in the scope of delivery.
- 5) Dash "-" only required if 02 = "W" and 12 and 13 = "no code"
- 6) Mating connectors, separate order, see data sheet 08006
- 7) Ordering code only required if 02 = "W" and 13 = "S"

 **Notice:** ◇ = Preferred type

Symbols



Function, sections

Pump safety blocks of types DBA/DBAW are pilot-operated pressure relief valves which are integrated into a block and intended to be mounted directly onto the SAE pressure port of pumps.

They are used for limitation (type DBA) or limitation and solenoid-actuated unloading (type DBAW) of the operating pressure.

Pump safety blocks (DBA) basically consist of a valve block (1), main spool insert (3) and pilot control valve (2) with adjustment type for pressure adjustment. The valve housing has a port P for the hydraulic fluid input and port P1 for the output. In a branch of the through-bore between these two ports there is the main spool insert. When this is open there is a connection to port T (tank line).

Pump safety block type DBA

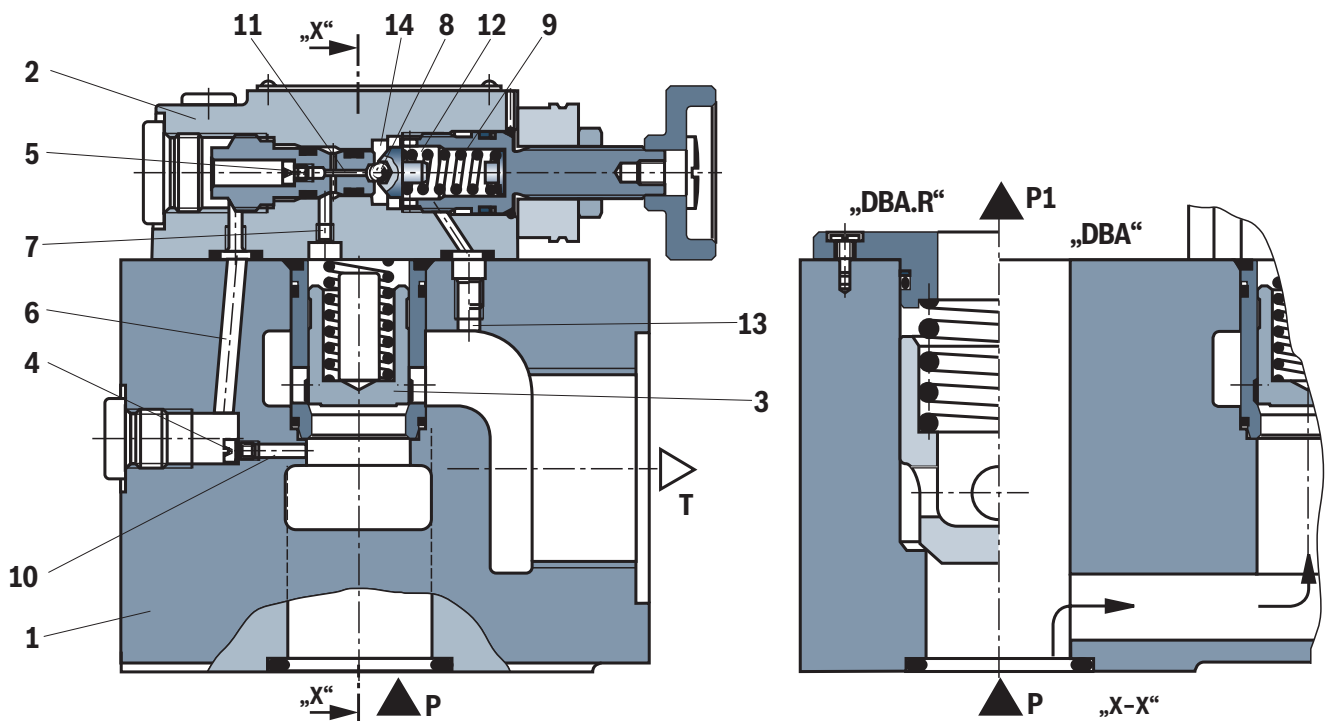
The pressure applied in the through-bore acts on the main spool (3). At the same time, pressure is applied to the spring-loaded side of the main spool (3) and to the ball (8) in the pilot control valve (2) via the control lines (6) and (7) which are equipped with nozzles (4) and (5). If the pressure in the through-bore exceeds the value set at spring (9), ball (8) opens against spring (9).

The signal for this is provided internally from the through-bore via control lines (10) and (6). The hydraulic fluid on the spring-loaded side of the main spool (3) now flows via the control line (7), nozzle bore (11) and ball (8) into the spring chamber (12). From here, it is fed into the tank, either internally ("–") via the control line (13), or externally ("Y") via the control line (14). Nozzles (4) and (5) cause a pressure drop to occur at the main spool (3), hence the connection from channel P to channel T opens. The hydraulic fluid now flows from channel P to channel T, whilst the set operating pressure is maintained.

Pump safety block type DBAR (with check valve)

The integrated check valve maintains the system pressure when the pump is disconnected and prevents the hydraulic fluid from returning to the pump.

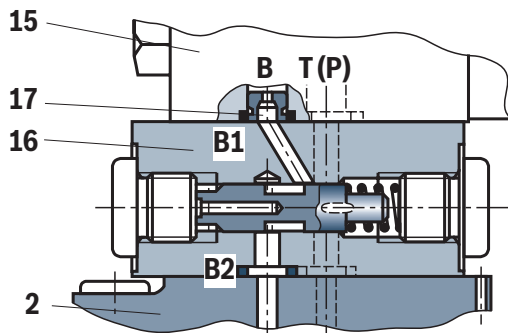
If this valve is selected, no separate check valve is needed.



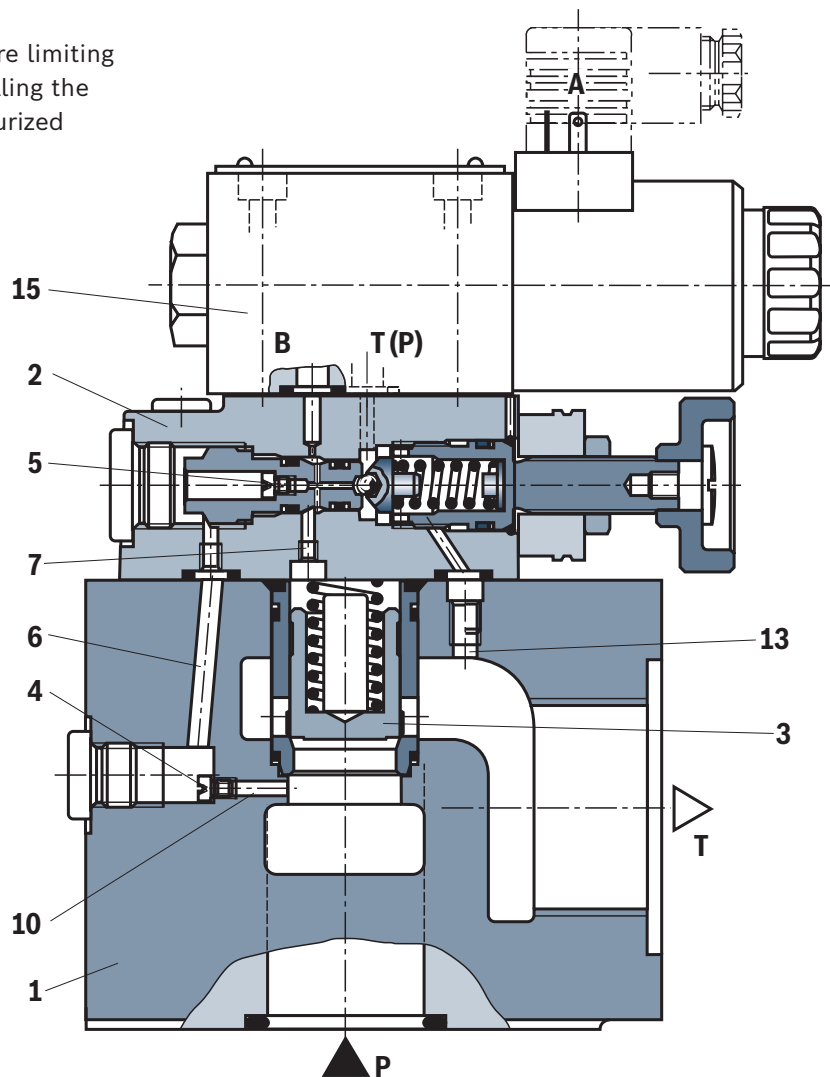
Function, sections, symbols

Pump safety block type DBAW...

In addition, it can be switched from the pressure limiting function to depressurized circulation by controlling the built-on directional valve (15). Thus, a depressurized start-up of the pump is possible.



Representation: Directional valve open

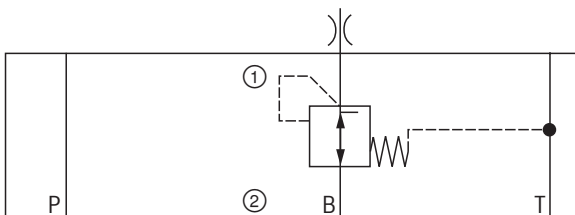


Pump safety block with switching shock damping (sandwich plate), version "DBAW...S6E...R12" and "DBAW...S6SM...B12"

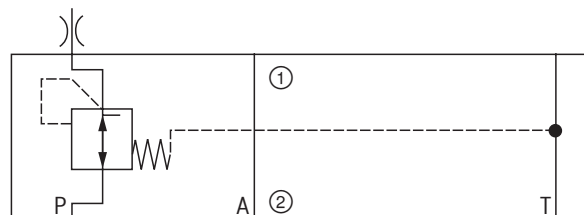
The opening of the connection from B2 to B1 or P2 to P1 is delayed by means of the switching shock damping valve (16). Pressure peaks and acoustic decompression shocks in the return line can thus be avoided. It is installed between the pilot control valve (2) and the directional valve (15).

The degree of damping (decompression shock) is determined by the size of the nozzle (17). By default, a nozzle $\varnothing 1.2$ mm is installed (ordering code..R12.. or ..B12..).

"DBAW...S6E...R12"



"DBAW...S6SM...B12"



Technical data

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

General				
Size		NG	32	40
Type of connection			Flange connection	
Porting pattern	► Version "F"		ISO 6162-1	
	► Version "H"		ISO 6162-2	
Mass	► Type DBA...	kg	8	11.4
	► Type DBAW...	kg	9.2	12.6
	► Check valve "R"	kg	+0.3	+0.4
	► Switching shock damping "S"	kg	+0.6	+0.6
Installation position			any	
Ambient temperature range	► Type DBA...		-20 ... +80 (NBR seals) -15 ... +80 (FKM seals)	
	► Type DBAW...		-20 ... +50 (NBR seals) -15 ... +50 (FKM seals)	
Conformity	► CE according to Low-Voltage Directive 2014/35/EU ¹⁾ , tested according to		EN 61000-6-2 and EN 61000-6-3 (classified as component)	
	► UKCA according to "Electrical Equipment (Safety) Regulations SI 2016/1101" ¹⁾ , tested according to		EN 61000-6-2 and EN 61000-6-3 (classified as component)	

Hydraulic				
Maximum operating pressure	► Port P	bar	350	
	► Port T	bar	315	
	► Port Y	– Type DBA	bar	315
	► Port Y, T	– Type DBAW	bar	210 (version "6EG") 180 (version "6EG...=UR") 160 (version "6EW" and "6EW...=UR") 100 (version "6SM")
Cracking pressure (type DBAR...)		bar	0.5	
Hydraulic fluid			see table on page 8	
Hydraulic fluid temperature range (at the valve working ports)		°C	–20 ... +80 (NBR seals) –15 ... +80 (FKM seals)	
Viscosity range		mm²/s	10 ... 800	
Maximum admissible degree of contamination of the hydraulic fluid; cleanliness class according to ISO 4406 (c)			Class 20/18/15 ²⁾	
Maximum flow	► Type DBA; DBAW	l/min	600	750
	► Type DBAR; DBAWR	l/min	350	450
Minimum set pressure		bar	flow-dependent (see characteristic curves page 9 and 10)	
Maximum set pressure		bar	50; 100; 200; 315; 350	

¹⁾ Type DBAW with nominal voltages >50 VAC or >75 VDC.

²⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.

Notice:

- Technical data for directional seat valve see data sheet 22058, for directional spool valve data sheet 23178.
- Deviating technical data for type-examination tested safety valves can be found on page 16.

Technical data

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

Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP, HLPD, HVLP, HVLDP	NBR, FKM	DIN 51524	90220
Bio-degradable	► insoluble in water	HETG	FKM	ISO 15380	90221
		HEES	FKM		
	► soluble in water	HEPG	FKM	ISO 15380	
Flame-resistant	► water-free	HFDU (glycol base)	FKM	ISO 12922	90222
		HFDU (ester base)	FKM		
		HFDR	FKM		
	► containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	NBR	ISO 12922	90223

**Important information on hydraulic fluids:**

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).
- The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.
- **Bio-degradable and flame-resistant – containing water:**
If components with galvanic zinc coating (e.g. version "J3" or "J5") or parts containing zinc are used, small amounts of dissolved zinc may get into the hydraulic system and cause accelerated aging of the hydraulic fluid. Zinc soap may form as a chemical reaction product, which may clog filters, nozzles and solenoid valves – particularly in connection with local heat input.

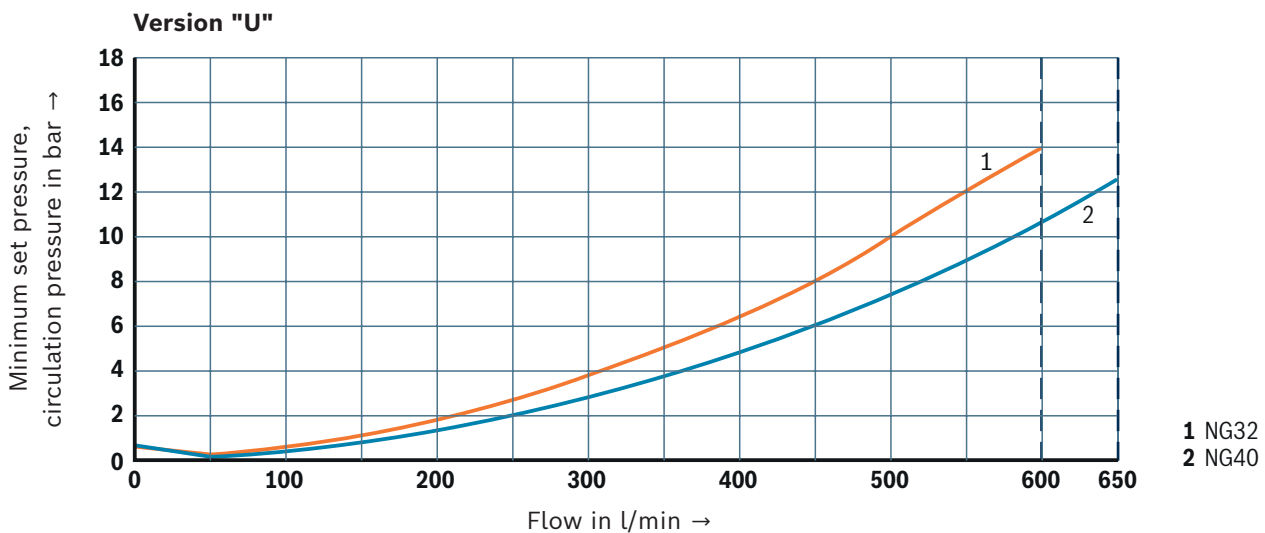
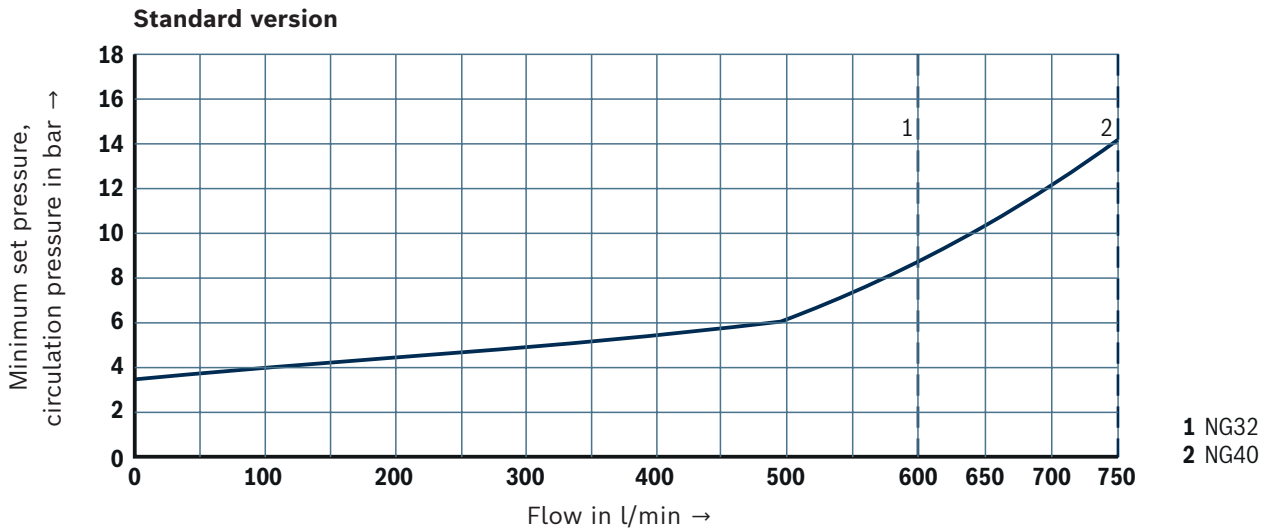
► Flame-resistant – containing water:

- Due to the increased cavitation tendency with the use of HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to the use with mineral oil HLP. In order to reduce the cavitation effect, it is recommended – if possible specific to the installation – backing up the return flow pressure in ports T to approx. 20% of the pressure differential at the component.
- Dependent on the hydraulic fluid used, the maximum ambient and hydraulic fluid temperature must not exceed 50 °C. In order to reduce the heat input into the component, a maximum duty cycle of 50% in continuous operation has to be set for on/off valves (measuring time 300 s). If this is not possible for functional reasons, an energy-reducing control of these components is recommended, e.g. via a PWM plug-in amplifier.

Characteristic curves

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

Minimum set pressure and circulation pressure dependent on the flow



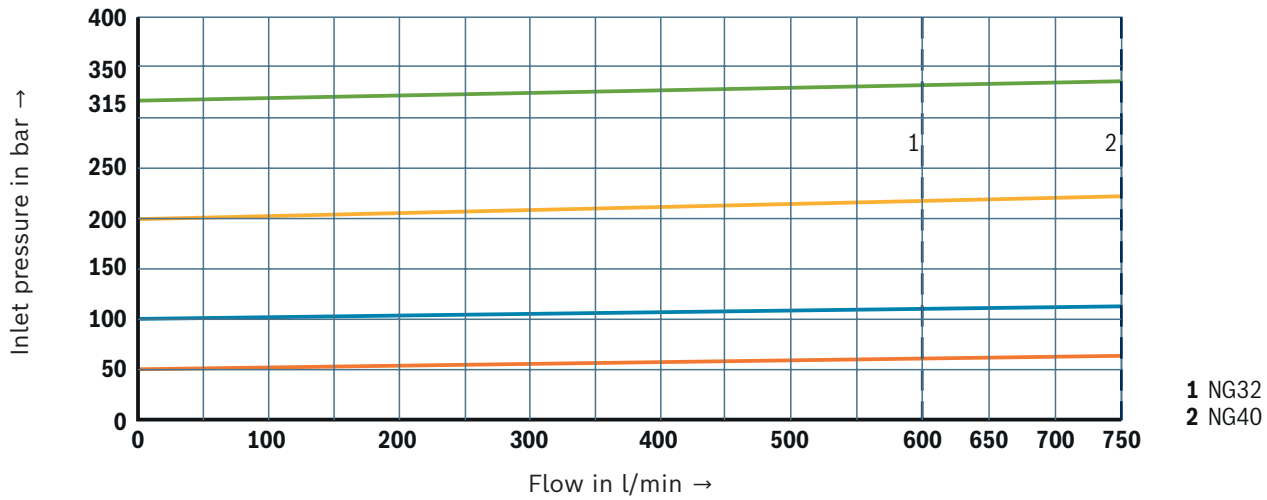
Notice:

- ▶ The characteristic curves were measured with an **external, depressurized pilot oil return**.
With internal pilot oil returns, the inlet pressure increases by the output pressure present in port T.
- ▶ The characteristic curves apply for output pressure $p_T = 0$ bar in the entire flow range.
- ▶ Typical characteristic curves which are subject to tolerance variations.

Characteristic curves

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

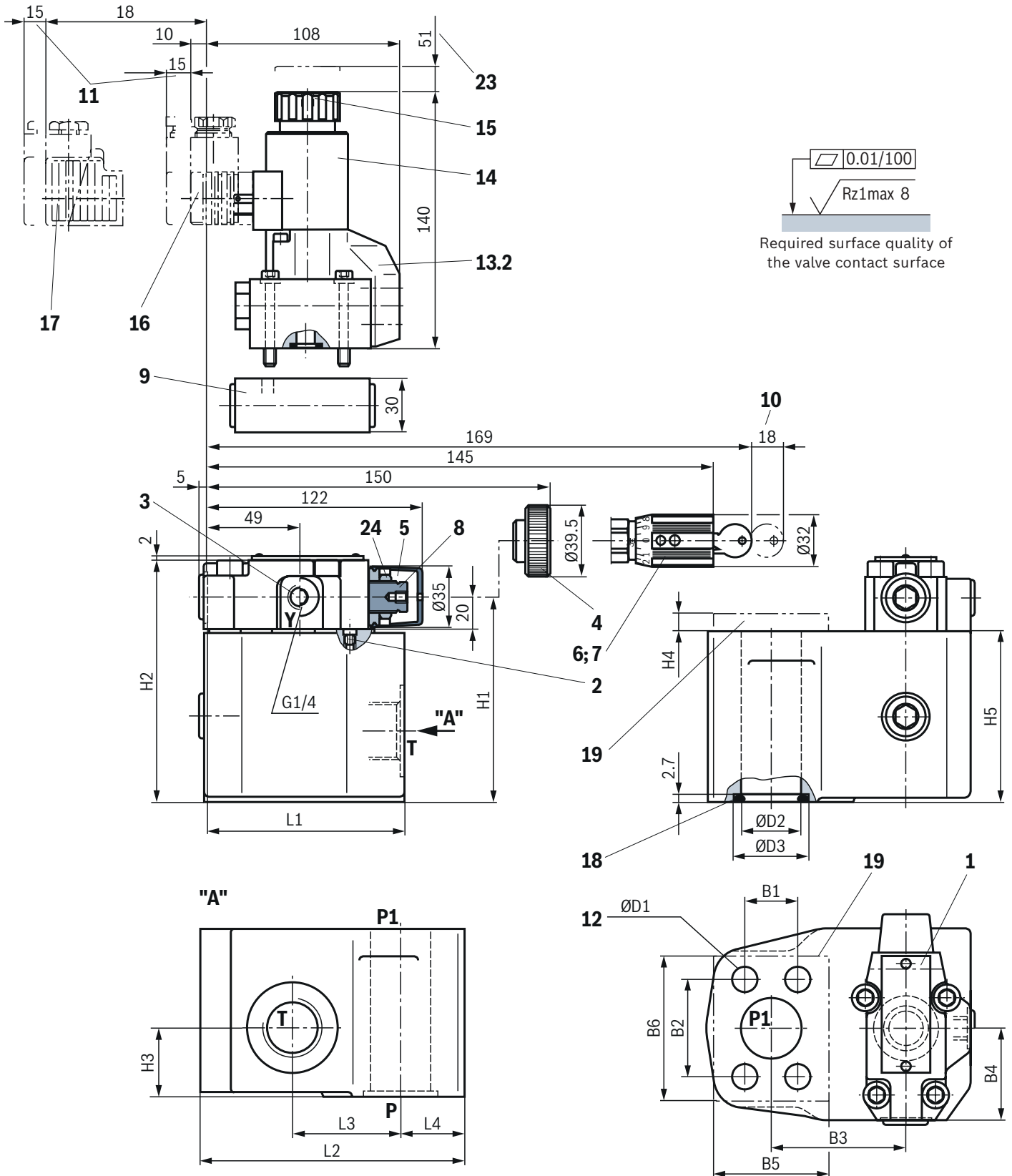
Inlet pressure dependent on the flow



Notice:

- The characteristic curves were measured with an **external, depressurized pilot oil return**.
With internal pilot oil returns, the inlet pressure increases by the output pressure present in port T.
- The characteristic curves apply for output pressure $p_T = 0$ bar in the entire flow range.
- Typical characteristic curves which are subject to tolerance variations.

Dimensions: With directional seat valve
(dimensions in mm)



Item explanations see page 14.

Dimensional tables see page 13.

Dimensions

(dimensions in mm)

Standard flanges, version "DBA...F" according to ISO 6162-1

NG	L1	L2	L3	L4	B1	B2	B3	B4	B5 ¹⁾	B6 ¹⁾	H1	H2	H3	H4 ¹⁾	H5	ØD1	ØD2	ØD3
32	121	138	55	38.5	30.2	58.7	65	48.3	60	80	105	125	43	9	85	11	32	45
40	138	156	54.5	49.5	35.8	69.9	74.5	54.7	60	100	118	138	50	8	98	13	40	54

Standard flanges, version "DBAR..F" to ISO 6162-1

NG	L1	L2	L3	L4	B1	B2	B3	B4	B5 ¹⁾	B6 ¹⁾	H1	H2	H3	H4 ¹⁾	H5	ØD1	ØD2	ØD3
32	121	138	55	38.5	30.2	58.7	65	48.3	60	80	105	125	43	9	85	11	25	40
40	138	156	54.5	49.5	35.8	69.9	74.5	54.7	60	100	118	138	50	8	98	13	30	54

NG	Version	Line connections		4 hexagon socket head cap screws ISO 4762 - 10.9 ²⁾		Tightening torque M_A in Nm ³⁾	Admissible pressures (flange connections according to ISO 6162-1) in bar	
		P and P1	T		Material no.			
32	"DBA"	SAE 1 1/4"	G1 1/4	M10 x 120	R913015560	52	250	
	"DBAR"			M10 x 125	R913015561			
40	"DBA"	SAE 1 1/2"	G1 1/2	M12 x 135	R913015592	77	200	
	"DBAR"			M12 x 140	R913015593			

High-pressure flanges, version "DBA...H" according to ISO 6162-2

NG	L1	L2	L3	L4	B1	B2	B3	B4	B5 ¹⁾	B6 ¹⁾	H1	H2	H3	H4 ¹⁾	H5	ØD1	ØD2	ØD3
32	121	138	55	38.5	31.8	66.7	65	48.3	60	90	105	125	43	8	85	15	32	45
40	138	156	54.5	49.5	36.6	79.4	75.5	54.7	65	110	118	138	50	8	98	17	40	54

High-pressure flanges, version "DBAR..H" according to ISO 6162-2

NG	L1	L2	L3	L4	B1	B2	B3	B4	B5 ¹⁾	B6 ¹⁾	H1	H2	H3	H4 ¹⁾	H5	ØD1	ØD2	ØD3
32	121	138	55	38.5	31.8	66.7	65	48.3	60	90	105	125	43	8	85	15	25	40
40	138	156	54.5	49.5	36.6	79.4	75.5	54.7	65	110	118	138	50	8	98	17	30	54

NG	Version	Line connections		4 hexagon socket head cap screws ISO 4762 - 10.9 ²⁾		Tightening torque M_A in Nm ³⁾	Admissible pressures (flange connections according to ISO 6162-2) in bar	
		P and P1	T		Material no.			
32	"DBA"	SAE 1 1/4"	G1 1/4	M14 x 135	R913024230	113	350	
	"DBAR"			M14 x 145	R913024233			
40	"DBA"	SAE 1 1/2"	G1 1/2	M16 x 155	R913024234	184	350	
	"DBAR"			M16 x 160	R913015647			

¹⁾ Only for version with check valve "R"

²⁾ **Valve mounting screws** (separate order)
(friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$)

Notice:

For reasons of stability, only the specified valve mounting screws may be used.
Depending on the operating pressure, flange height and thread depth of the pump plate, other screw lengths may be necessary.

³⁾ Notice:


The tightening torques stated are guidelines when using screws with the specified friction coefficients and when using a manual torque wrench (tolerance $\pm 10\%$).

Dimensions

- 1 Name plate
2 Omitted with internal pilot oil return
3 Port Y for external pilot oil return
4 Adjustment type "1"
5 Adjustment type "2"
6 Adjustment type "3"
7 Adjustment type "7"
8 Hexagon, wrench size 10
9 Switching shock damping sandwich plate, optional
10 Space required to remove the key
11 Space required to remove the mating connector
12 Valve mounting bore
13.1 Directional spool valve NG6 (data sheet 23178)
13.2 Directional seat valve NG6 (data sheet 22058)
- 14 Solenoid "a"
15 Manual override, optional
16 Mating connector without circuitry, separate order, see data sheet 08006
17 Mating connector with circuitry, separate order, see data sheet 08006
18 Seal ring
19 Integrated check valve, version "R"
20 Dimensions for valve without manual override
21 Dimensions for valve with concealed manual override "N9"
22 Dimensions for valve with manual override "N"
23 Space required to remove the coil
24 Lock nut, wrench size SW17, tightening torque $M_A = 10^{+5}$ Nm

Admissible pumps (selection)

Pump	Type	Component series/series	Data sheet
Internal gear pump	PGH	3X	10227
	PGH	2X	10223
Displacement pump	A2FO	Series 6	91401
Industrial-type variable displacement pump	A4VSO	Series 3	92050
	A4VG	Series 3	92003
Variable displacement pump	A7VO	Series 63	92203
	A7VO	Series 63	92202
	A10VSO	Series 31	92711
	A10VSO	Series 32	92714


Notice:

Ensure that the connection dimensions are appropriate when selecting the pump, see page 11 ... 13.

Ordering code: Type-examination tested safety valves, version "DBA...E", component series 1X according to Pressure Equipment Directive 2014/68/EU

NG	Type designation	Component marking
32	DBA 30 <div><div>23</div><div><div></div><div></div></div>N1X/<div><div>456</div><div><div></div><div></div><div></div></div>E</div></div>	TÜV.SV. <div><div></div></div> -1150.22.F.G.p
	DBAR 30 <div><div>23</div><div><div></div><div></div></div>N1X/<div><div>456</div><div><div></div><div></div><div></div></div>E¹⁾</div></div>	
	DBAW 30 <div><div>123</div><div><div></div><div></div><div></div></div>N1X/<div><div>45</div><div><div></div><div></div></div>6<div><div>*</div><div></div></div>E</div></div>	
	DBAWR 30 <div><div>123</div><div><div></div><div></div><div></div></div>N1X/<div><div>45</div><div><div></div><div></div></div>6<div><div>*</div><div></div></div>E¹⁾</div></div>	
40	DBA 40 <div><div>23</div><div><div></div><div></div></div>N1X/<div><div>456</div><div><div></div><div></div><div></div></div>E</div></div>	TÜV.SV. <div><div></div></div> -1150.22.F.G.p
	DBAR 40 <div><div>23</div><div><div></div><div></div></div>N1X/<div><div>456</div><div><div></div><div></div><div></div></div>E¹⁾</div></div>	
	DBAW 40 <div><div>123</div><div><div></div><div></div><div></div></div>N1X/<div><div>45</div><div><div></div><div></div></div>6<div><div>*</div><div></div></div>E</div></div>	
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1	Directional valve, normally closed	A
	Directional valve, normally open	B
2	Standard flange	F
	High-pressure flange	H

Adjustment type

3	Hand wheel (pressure adjustment sealed, unloading or setting of a lower response pressure possible.)	1
	With sealed protective cap (no adjustment/unloading possible)	2

Pressure

4	To be entered by the customer, e.g. pressure adjustment ≥ 30 bar and possible in 5 bar steps.	e.g. 150
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Pilot oil flow

5	Internal	- ²⁾
	Recommendation: Internal pilot oil supply, external pilot oil return (ordering code according to symbols page 4)	Y

Electrical specifications

*	See page 3	e.g. EG24N9K4
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Seal material

6	NBR seals	no code
	FKM seals	V
<input type="text"/>	Value entered at the factory	

¹⁾ Only version "315"

²⁾ Hyphen "-" required only if 02 = "W" and 12 and 13 = "no code" (see pages 2 and 3)

Deviating technical data: Type-examination tested safety valves, version "DBA...E" according to Pressure Equipment Directive 2014/68/EU

General	
Conformity	CE according to Pressure Equipment Directive 2014/68/EU
	CE according to Low-Voltage Directive 2014/35/EU (only type "DBAW...E" with nominal voltages >50 VAC or >75 VDC)

Hydraulic	
Hydraulic fluid	see table below
Hydraulic fluid temperature range (= TS)	°C –10 ... +80
Viscosity range	mm ² /s 12 ... 230
Maximum flow (with pilot oil return)	see table below and diagrams on page 18 and 19
Set response pressure	see table below

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP	FKM	DIN 51524	90220
Flame-resistant	▶ water-free	HFDU (glycol base)	ISO 12922	90222
		HFDU (ester base)		
		HFDR		
	▶ containing water	HFC (Fuchs: Hydrotherm 46M, Renosafe 500; Petrofer: Ultra Safe 620; Houghton: Safe 620; Union: Carbide HP5046)	ISO 12922	90223



Important information on hydraulic fluids:

- ▶ The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.

▶ Flame-resistant – containing water:

- Due to the increased cavitation tendency with the use of HFC hydraulic fluids, the life cycle of the component may be reduced by up to 30% as compared to the use with mineral oil HLP.
- Dependent on the hydraulic fluid used, the maximum ambient and hydraulic fluid temperature must not exceed 50 °C.

	Maximum flow $q_{V \max}$ in l/min				Set response pressure p_A in bar
	Pilot oil return				
	external "Y"		internal "–"		
Size	HL, HLP	HFDU, HFC	HL, HLP	HFDU, HFC	
32	200	180	175	155	30 ... 60
	400	360	260	230	61 ... 110
	600	540	360	320	111 ... 210
	700	630	520	465	211 ... 350
40	350	315	300	270	30 ... 60
	450	405	350	315	61 ... 110
	550	495	500	450	111 ... 210
	700	630	600	540	211 ... 350

Safety instructions: Type-examination tested safety valves, version "DBA...E" according to Pressure Equipment Directive 2014/68/EU

- ▶ Before ordering a type-examination tested safety valve, it must be ensured that at the desired **response pressure p** , the maximum admissible **flow $q_{V \max}$** (= numerical value at the position of letter "G" in the component marking) of the safety valve is higher than the maximum possible flow of the system/accumulator to be secured. The applicable regulations must be observed here.
- ▶ According to **Pressure Equipment Directive 2014/68/EU**, the increase in the system pressure due to the flow must not exceed 10% of the set response pressure (see component marking page 15).
- ▶ Discharge lines of safety valves must end in a risk-free manner. The accumulation of fluids in the discharge lines must not be possible (AD2000 - data sheet A2).

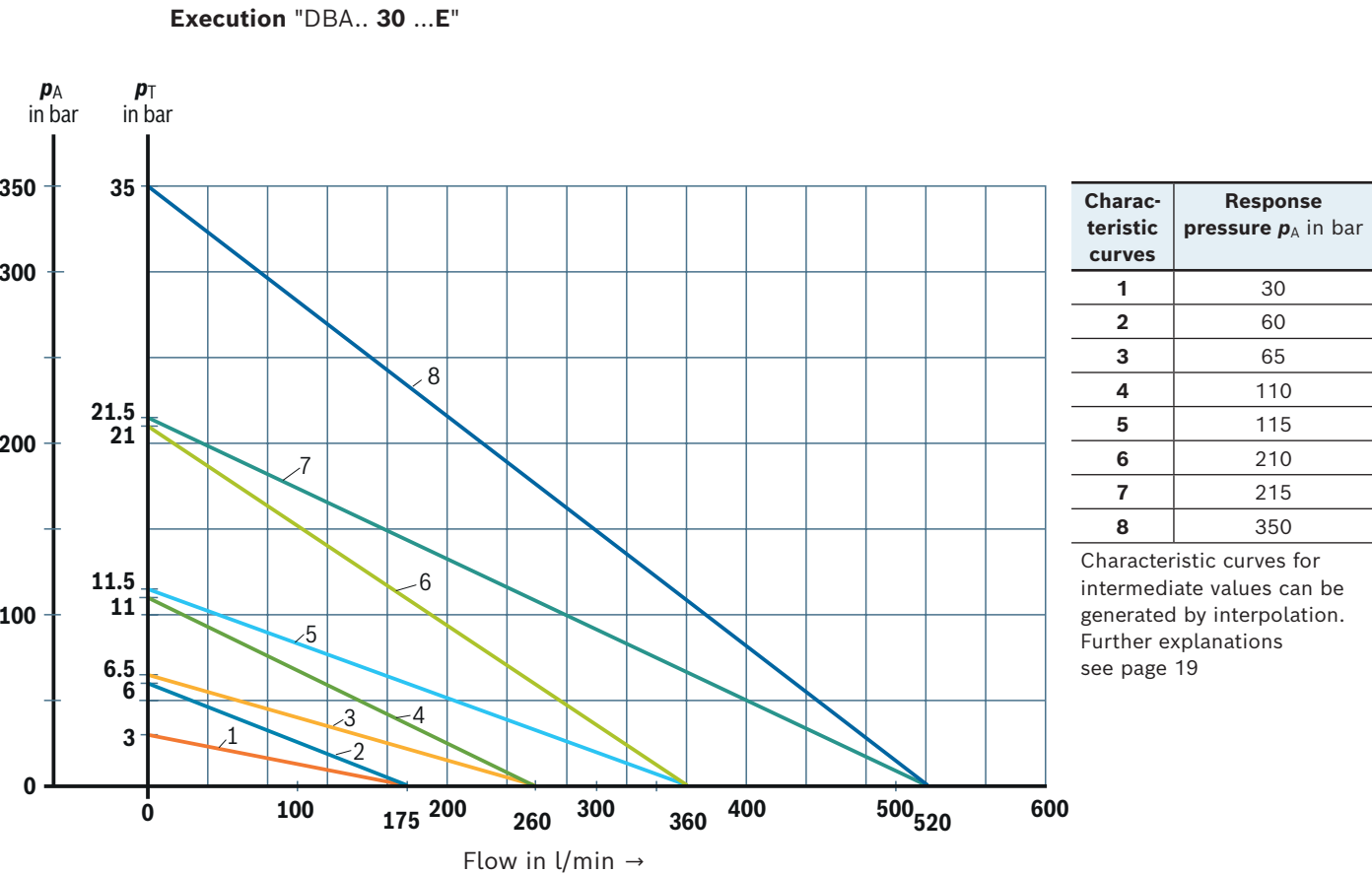


Application notes must always be observed

- ▶ In the plant, the response pressure specified in the component marking is set with a flow of 11 l/min.
- ▶ The maximum admissible flow stated in the component marking (= numerical value instead of the character "G" in the component marking, see page 15) must not be exceeded.
It applies to:
 - **External** pilot oil return "**Y**" without counter pressure in the pilot oil return, admissible counter pressure in the discharge line (port T) <15bar
 - **Internal** pilot oil return "**-**" without counter pressure in the discharge line (port T)
With internal pilot oil return, the system pressure increases with increasing volume flow according to the counter pressure in the discharge line (connection T) (note AD 2000 Data Sheet A 2, para. 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 dependent on the counter pressure in the discharge line (port T) (see characteristic curves on pages 18 and 19).
- ▶ By removing a lead seal at the safety valve, the approval according to the Pressure Equipment Directive becomes void.
- ▶ Basically, the requirements of the Pressure Equipment Directives and of AD 2000 data sheet A 2 have to be observed.

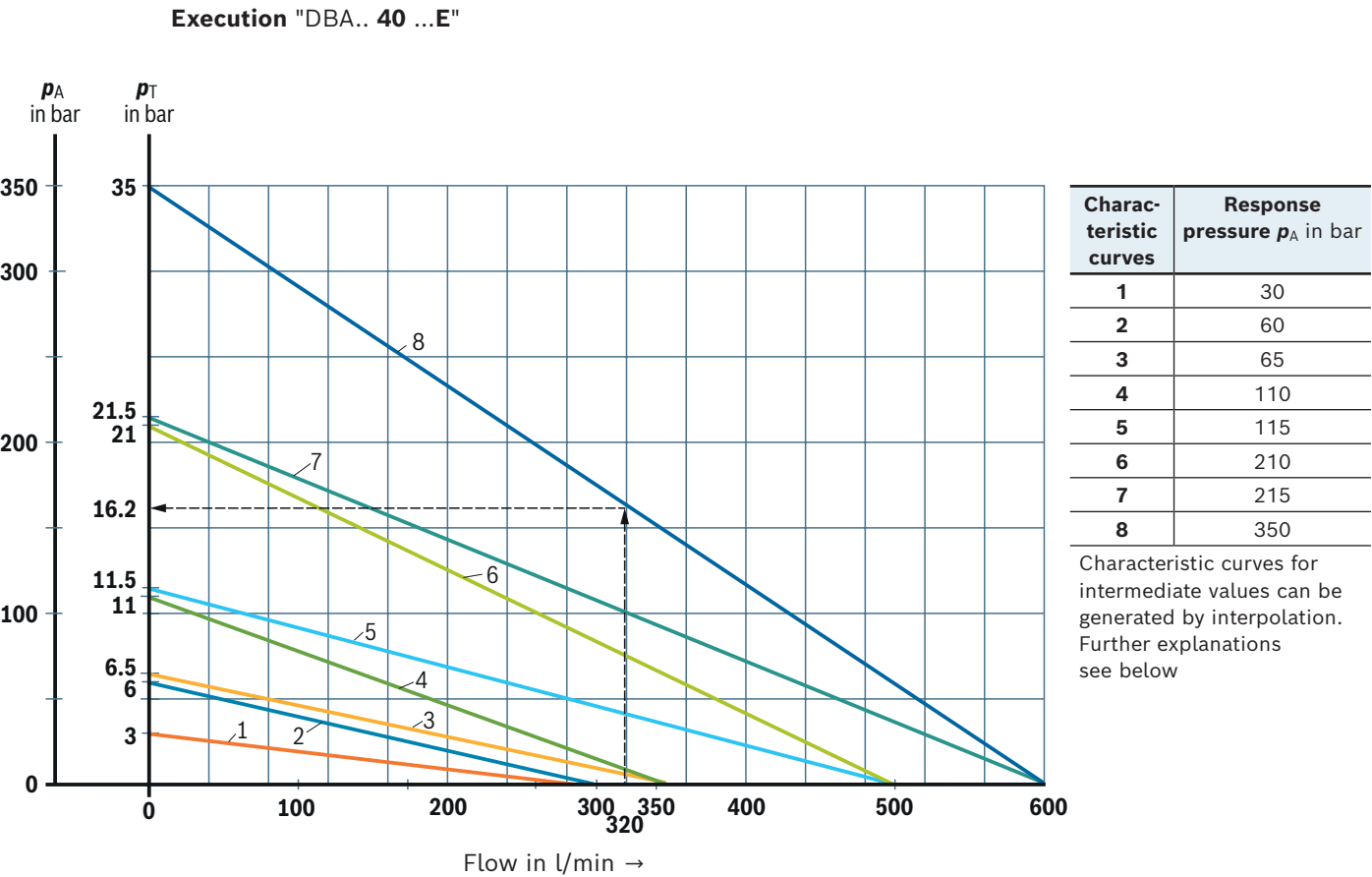
Characteristic curves: Counter pressure in the discharge line – size 32

Maximum counter pressure p_T in the discharge line (port T) dependent on the flow q_V with different response pressures p_A .



Characteristic curves: Counter pressure in the discharge line – size 40

Maximum counter pressure p_T in the discharge line (port T) dependent on the flow q_V with different response pressures p_A .



p_A Response pressure in bar
 p_T Maximum counter pressure in the discharge line (port T) in bar (total of all possible counter pressures, see also AD 2000 leaflet A 2)
 $p_{T \max} = 10\% \times p_A$ (with $q_V = 0$ l/min) according to PED 2014/68/EU
 $q_{V \max}$ Maximum flow in l/min

Explanation of the diagrams (example: type DBA 40...E):

known: Flow of the system/accumulator that has to be secured $q_{V \max} = 320$ l/min
Set response pressure of the safety valve $p_A = 350$ bar

unknown: p_T admissible

solution: See arrows (dashed line "-----") in the diagram above
 $p_{T \text{ admissible}} (320 \text{ l/min; } 350 \text{ bar}) = 16.2 \text{ bar}$

Project planning information

- ▶ The unloading function (directional valve function with version "W") must not be used for safety functions.
- ▶ With version **"B"**, the lowest adjustable pressure (circulation pressure) is set in case of power failure or cable break. With version **"A"**, the pressure limiting function is set in case of power failure or cable break.
- ▶ Hydraulic counter pressures in port T with internal pilot oil return and/or port Y with external pilot oil return add 1:1 to the response pressure of the valve set at the pilot control.

Example:

Pressure adjustment of the valve by spring preload (item 9 on page 5) in the pilot control valve/adjustment type $p_{\text{spring}} = 200 \text{ bar}$

Hydraulic counter pressure in port T with internal pilot oil return $p_{\text{hydraulic}} = 50 \text{ bar}$

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

Further information

- | | |
|--|--|
| ▶ Directional spool valve | Data sheet 23178 |
| ▶ Directional seat valve | Data sheet 22058 |
| ▶ Hydraulic fluids on mineral oil basis | Data sheet 90220 |
| ▶ Environmentally compatible hydraulic fluids | Data sheet 90221 |
| ▶ Flame-resistant, water-free hydraulic fluids | Data sheet 90222 |
| ▶ Flame-resistant hydraulic fluids – containing water (HFAE, HFAS, HFB, HFC) | Data sheet 90223 |
| ▶ Pump safety block (type-examination tested safety valves) | Operating instructions 25880-B |
| ▶ Mating connectors and cable sets for valves and sensors | Data sheet 08006 |
| ▶ Hydraulic valves for industrial applications | Operating instructions 07600-B |
| ▶ Information on available spare parts | www.boschrexroth.com/spc |

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