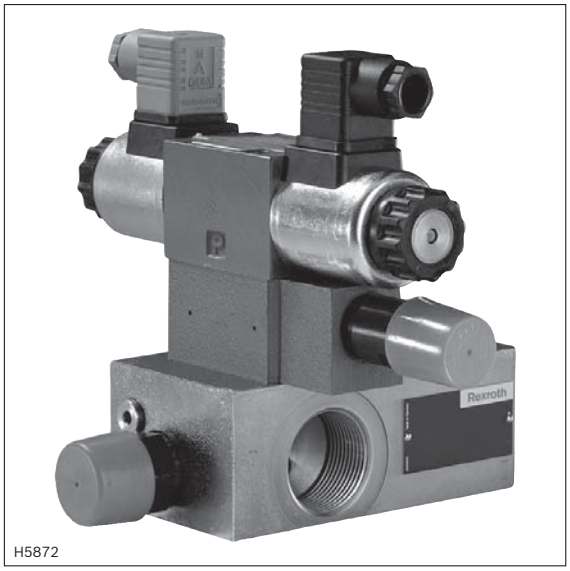
The Drive & Control Company

Rexroth Bosch Group

Pump safety block

Type DBA, DBAW, DBAE, DBAEE, DBAEA

RE 25891
Edition: 2017-07
Replaces: 2013-05



H5872

- Size 16, 25, 32
- Component series 2X
- Maximum operating pressure 350 bar
- Maximum flow 400 l/min

Features

- Depressurized start-up and circulation of the pump
- Intended for direct mounting onto the SAE pressure port of the pump
- Low circulation pressure due to short distance
- Low compression volume for soft switching to depressurized circulation
- Quick pressure build-up
- 4 adjustment types for pressure adjustment, optionally:
  - Rotary knob
  - Bushing with hexagon and protective cap
  - Lockable rotary knob with scale
  - Rotary knob with scale
- 5 pressure ratings, optional
- Low noise level due to direct flange mounting onto the pump

Contents

Ordering code	2, 3
Model code	4
General circuit example set-up	5
Circuit examples	6 ... 9
Function, sections	10 ... 12
Technical data	13, 14
Characteristic curves	14, 15
Dimensions	16 ... 23
Admissible pumps	24, 25
Mating connectors	30
General information	30
Further information	31
Type-examination tested safety valves type DBA...E according to Pressure Equipment Directive 2014/68/EU	
Ordering code	26
Safety instructions	27
Deviating technical data	27
Diagrams	28, 29

Ordering code

01	02	03	04	05	06	07	08		09	10	11	12	13	14	15	16	17	18	19	20
DBA							2X	/												

01	Pump safety block	**DBA**
02	**Without** directional valve	**no code**
	With mounted directional spool valve (data sheet 23178)	**W**
	With mounted proportional pressure relief valve for external control electronics, Type DBET-6X/.Y... [1]	**E**
	With mounted proportional pressure relief valve with integrated control electronics, Type DBETE-6X/.Y... [1]	**EE**
	With mounted proportional pressure relief valve (pressure-controlled) with integrated control electronics, type DBETA-6X/...	**EA**
03	Size 16	**15**
	Size 25	**25**
	Size 32	**30**
04	**Without** directional valve	**no code**
	With mounted directional valve, normally closed	**A** [2]
	With mounted directional valve, normally open; generally type DBAE(E)	**B** [2]
Type of connection / SAE flange [3]		
05	Standard flange (250 ... 350 bar)	**F**
	High-pressure flange (350 bar)	**H**
Adjustment type for pressure adjustment [4]		
06	Rotary knob	**1**
	Bushing with hexagon and protective cap	**2**
	Lockable rotary knob with scale	**3** [5]
	Rotary knob with scale	**7**
07	**Without** pressure switch	**–**
	With mounted pressure switch type HED 8 OH... (connector according to DIN EN 175301-803, without mating connector), (data sheet 50061)	**D** [6]
08	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	**2X**
Pressure rating [7]		
09	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 315 bar	**315**
	Set pressure up to 350 bar	**350**
10	**Without** additional pressure relief valve	**no code**
	With mounted pressure relief valve type ZDB 6 VB...-4X/..SO2 (data sheet 25751)	**Z** [7]
	With mounted pressure relief valve type Z2DB 6 VC...-4X/..SO2 (data sheet 25751)	**ZZ** [7; 8]
11	Standard version	**no code**
	Valve for minimum cracking pressure (not type DBAE(E))	**U**
12	**Without** directional valve	**no code**
	With directional spool valve (only type DBAW)	**6E** [2]
13	DC voltage 24 V (in general with version "DBAE(E)...")	**G24** [2]
	DC voltage 205 V	**G205** [2]
	AC voltage 230 V 50/60 Hz	**W230** [2]

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

Bosch Rexroth AG, RE 25891, edition: 2017-07

Ordering code

01	02	03	04	05	06	07	08		09	10	11	12	13	14	15	16	17	18	19	20
DBA							**2X**	**/**												

14	**With** concealed manual override (standard)	**N9** [2; 9]
	With manual override	**N** [2; 9]
	Without manual override	**no code**

Electrical connection [1]

15	**Individual connection**	
	Without mating connector; connector DIN EN 175301-803	**K4** [6]
	Without mating connector; connector DIN EN 175201-804 (only version "DBAEE...")	**K31** [6]

Interface electronics

16	**Without** electronics (versions "DBA..." and "DBAW")	**no code**
	Command value 0 ... 10 V (only version "DBAEE" and "DBAEA")	**A1**
	Command value 4 ... 20 mA (only version "DBAEE" and "DBAEA")	**F1**
	External control electronics (only version "DBAE")	**H1**

Nozzle fitting

17	**Displacement pumps**	
	Lateral channel closed, transverse channel open, pilot oil bore open; (standard for displacement pumps; pure DB-/DBW function)	**no code**
	Variable displacement pumps	
	Lateral channel closed, transverse channel open, pilot oil bore closed (e.g. for axial piston variable displacement pump type A4VSO140 with DRG controller)	**A00**
	Nozzle Ø0.8 mm in lateral channel, transverse channel open; pilot oil bore closed (standard for control pumps with DFR1 or DFLR controller)	**A08** [10]
	Nozzle Ø1.0 mm in lateral channel, transverse channel open; pilot oil bore closed (for nozzle fitting of the block, refer to the circuit examples on page 6 ... 8)	**A10** [10]

Seal material

18	NBR seals	**no code**
	FKM seals	**V**
	Observe compatibility of seals with hydraulic fluid used. (Other seals upon request)	

Type-examination procedure

19	**Without** type-examination procedure	**no code**
	Type-examination tested safety valve according to PED 2014/68/EU	**E**

20	Standard solenoid coil	**no code**
	Solenoid coil is an approved component with UR-marking according to UL 906 (only version "6E")	**= UR**

1) Externally discharge the pilot oil from the proportional pressure relief valve type DBET(E)
2) The ordering code only necessary for versions with mounted directional spool valve version "DBAW" or proportional pressure relief valve version "DBAE", "DBAEE" and "DBAEA".
3) Please observe pressure ratings and connection dimensions on page 22!
4) Adjustment type for pressure switch type HED 8 in brackets!
5) H-key with material no. **R900008158** is included in the scope of delivery.
6) Mating connectors, separate order, see page 30 and/or page 20 for version "DBAEE" and "DBAEA".
7) The same pressure rating at pressure limitation screw-in cartridge valves type DB 20 K, pressure relief valve (sandwich plate valve) type Z(2)DB 6 and pressure switches type HED 8.
8) Only if used for pressure limitation and control of variable displacement pumps type A10VSO
9) **Notice:** Accidental activation of the manual override may lead to uncontrolled machine movements.
10) If used on variable displacement pumps with DFLR controllers, the nozzle at port X of the pump control must be removed.

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Model code

01	02	03	04	05	06	07	08		09	10	11	12	13	14	15	16	17	18	19	20
DBA							2X	/												*

		02							07	10		17.1			17.2	17.3
		Cover plate HSA 06 A 001 ...	4WE 6 H 6X..	4WE 6 HB 6X..	4WE 6 L37B.6X/..	DBET-6X/.Y.K4	DBETE-6X/.Y.K31	DBETA-6X/...	HED 8 OH 2X/...K14..	ZDB 6 VB.4X/...SO2	Z2DB 6 VC.4X/...SO2	Nozzle Ø0.8 in lateral channel	Nozzle Ø1.0 in lateral channel	Plug in lateral channel	Plug in pilot oil bore/cartridge	Plug in pilot oil bore
01	**DBA**	X														
02	**W**		X	X	X											
	E					X										X
	EE						X									X
	EA							X						X	X	
04	**A** (normally closed)				X											
	B (normally open)		X[1]	X[2]		X[3]	X[4]									
07	**–** (without pressure switch)								–							
	D (with pressure switch)								X							
10	**–** (standard valve [5])									–	–					
	Z (max. 2 pressure limitations)									X						
	ZZZ (max. 3 pressure limitations)										X					
17	**no code** [6]													X		
	A00													X	X	
	A08											X			X	
	A10												X		X	

1) For version "DBAW" with pressure relief valve type Z(2)DB
2) For version "DBAW" without pressure relief valve type Z(2)DB
3) For version "DBAE" for external electronic controls/amplifier card
4) For version "DBAEE" with internal electronic controls/amplifier card
5) Only 1 pressure limitation
6) Standard for displacement pumps

General circuit example set-ups can be found on page 5.

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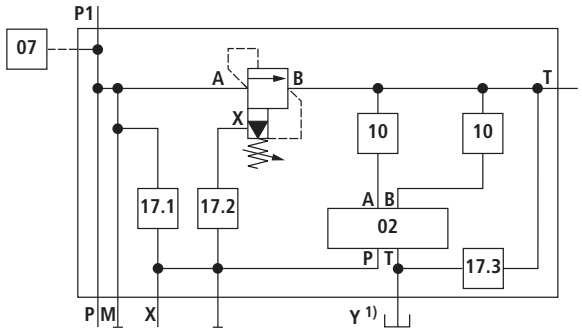
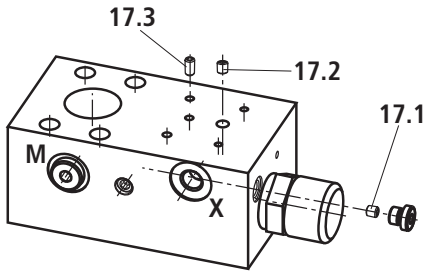
General circuit example set-up

Symbol



Disposition of nozzles/plugs item 17.1, 17.2 and 17.3

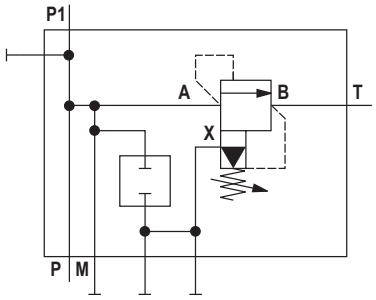


1) Only type DBAE(E)

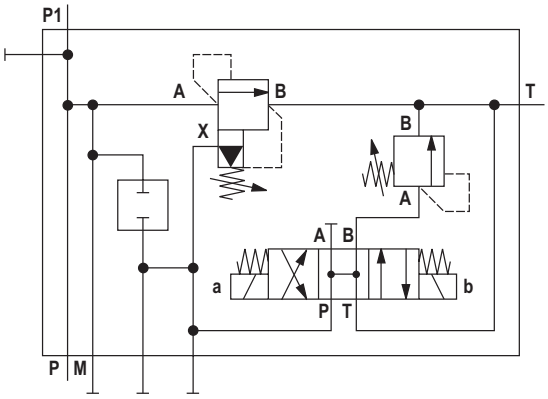
Model codes can be found on page 4.

Circuit examples: for displacement pumps (selection)

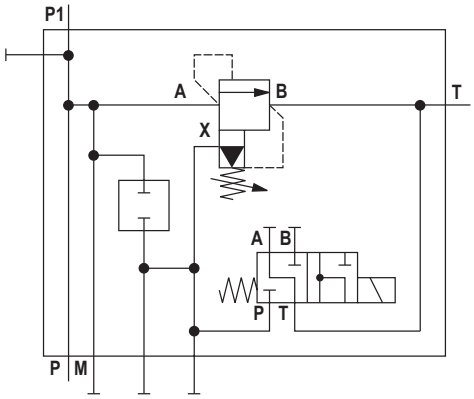
Type DBA...2X/...



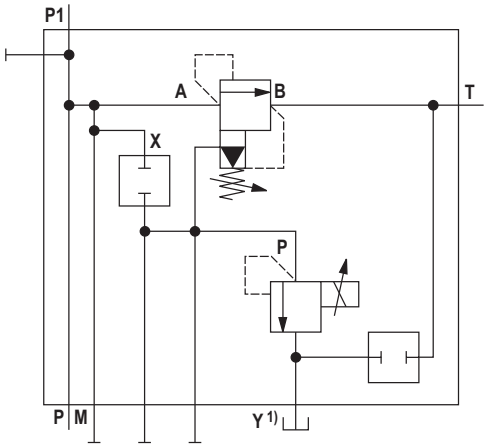
Type DBAW.B...2X/.Z



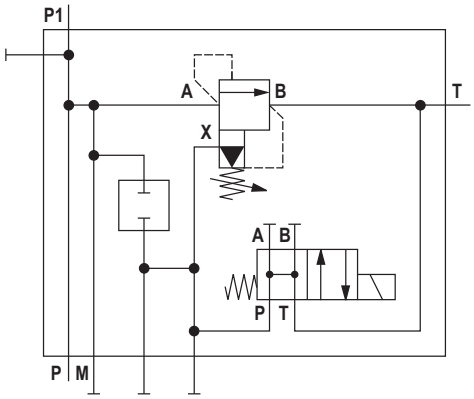
Type DBAW.A...2X/...



Type DBAE(E)...2X/...



Type DBAW.B...2X/...



1) **Notice:**
Port Y of the proportional pressure relief valve type DBET mounted on the pump safety block type DBA must be connected to the tank in a depressurized way (possibly by means of the drain line of the hydraulic system).

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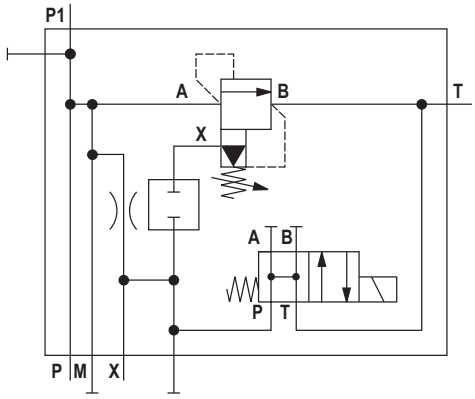
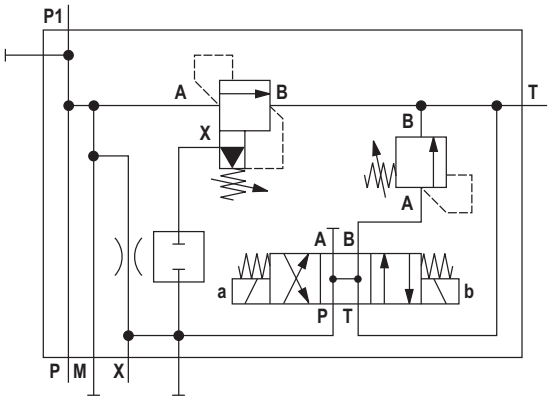
Circuit examples: for variable displacement pumps (selection)

▶ **Preferably for axial piston variable displacement pumps type A10VSO with DR, DFR1 or DFLR controller** [2)]

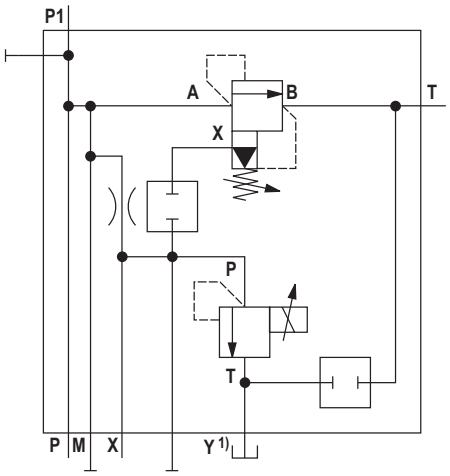
Type DBAW.B...2X/...A08



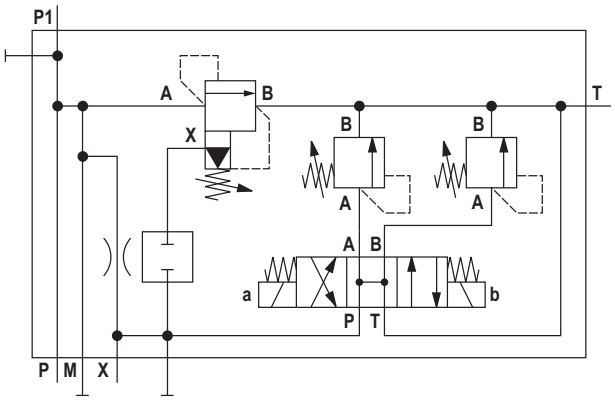
Type DBAW.B...2X/.Z...A08



Type DBAE(E)...2X/...A08



Type DBAW.B...2X/.ZZ...A08



1) **Notice:**
Port Y of the proportional pressure relief valve type DBET mounted on the pump safety block type DBA must be connected to the tank in a depressurized way (possibly by means of the drain line of the hydraulic system).

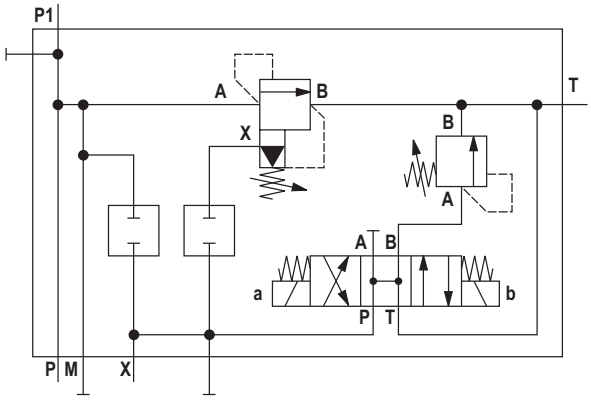
2) **Notice:**
If used on variable displacement pumps with DFLR controllers, the nozzle at port X of the pump control must be removed.

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

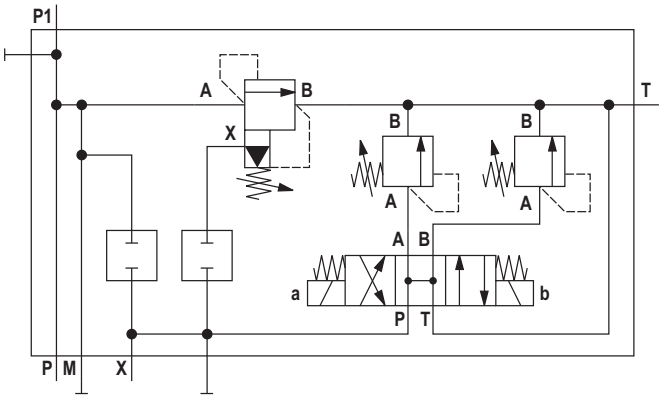
Circuit examples: for variable displacement pumps (selection)

▶ **Preferably for axial piston variable displacement pumps type A10VSO with DRG controller**

Type DBAW.B...2X/.Z...A00



Type DBAW.B...2X/.ZZ...A00

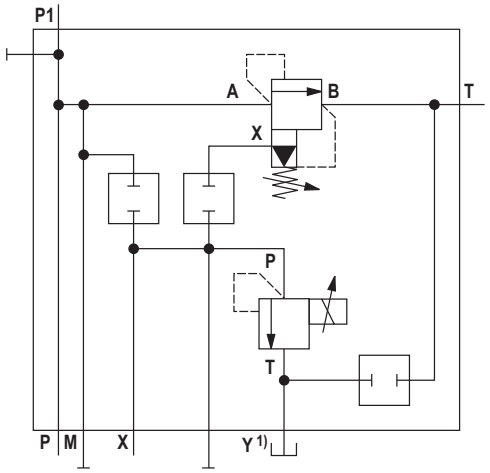


[1] **Notice:**
Port Y of the proportional pressure relief valve type DBET mounted on the pump safety block type DBA must be connected to the tank in a depressurized way (possibly by means of the drain line of the hydraulic system).

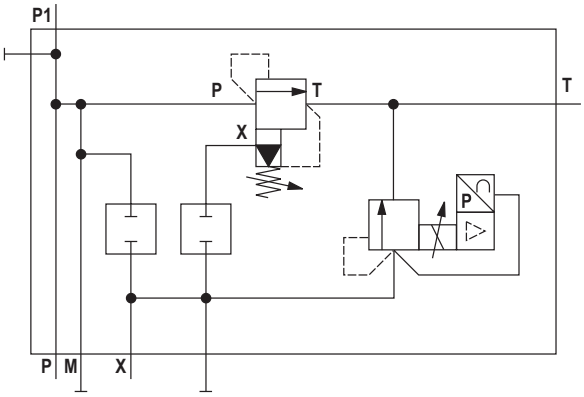
Circuit examples: for variable displacement pumps (selection)

▸ **Preferably for axial piston variable displacement pumps type A10VSO with DRG controller**

Type DBAE(E)...2X/...A00



Type DBAEA...-2X/...A00



1) ☞ **Notice:**
Port Y of the proportional pressure relief valve type DBET mounted on the pump safety block type DBA must be connected to the tank in a depressurized way (possibly by means of the drain line of the hydraulic system).

Function, sections: Type DBA...

General

Pump safety blocks type DBA are pilot operated pressure relief valves which are integrated into a block and intended to be mounted directly onto SAE pressure ports of pumps. They are used for limiting (type DBA) or limiting and solenoid-actuated unloading (type DBAW, DBAE) the operating pressure.

Pump safety blocks generally consist of valve block (1) and pressure limitation screw-in cartridge valve type DB 20 K (2) (data sheet 25818). Optionally, a pressure switch type HED 8 (3) (data sheet 50061) can be installed on the valve block.

The valve housing is equipped with a port P for hydraulic fluid input and port P1 for hydraulic fluid output. In a branch of the through connection between these two ports, the pressure limitation screw-in cartridge valve can be found. By opening this valve, a connection to port T (tank line) is established.

In standard version, connection diagram NG6 is covered with the cover plate (4). The pressure in the through connection (P - P1) has an effect on the main control spool (5) of the pressure limitation screw-in cartridge valve. Via the nozzle bores (6 and 7), the pressure is at the same time applied to the poppet (8). If the pressure in port P exceeds the value set at spring (9), the poppet (8) opens against the spring (9).

Via the nozzle bores (6 and 7), the hydraulic fluid from channel P flows into the spring chamber (10) and is here internally directed via the control line (11) into the tank. Due to the state of equilibrium at the main control spool (5), hydraulic fluid flows from channel P to channel T, maintaining the set operating pressure.

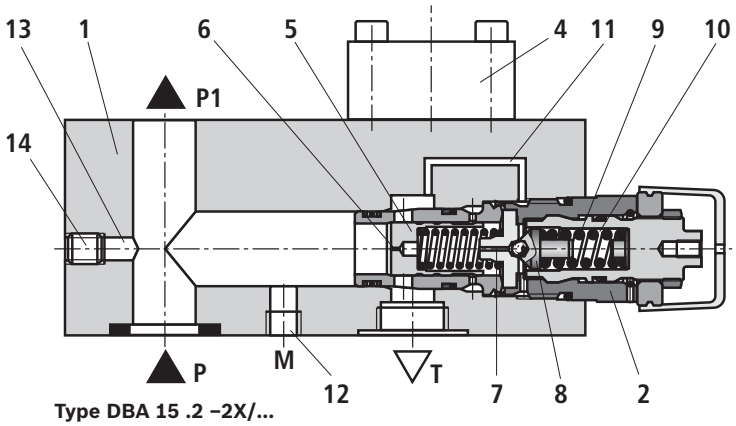
A pressure gauge connection (12) allows for the control of the operating pressure.

Pump safety block type DBA...D (with pressure switch)

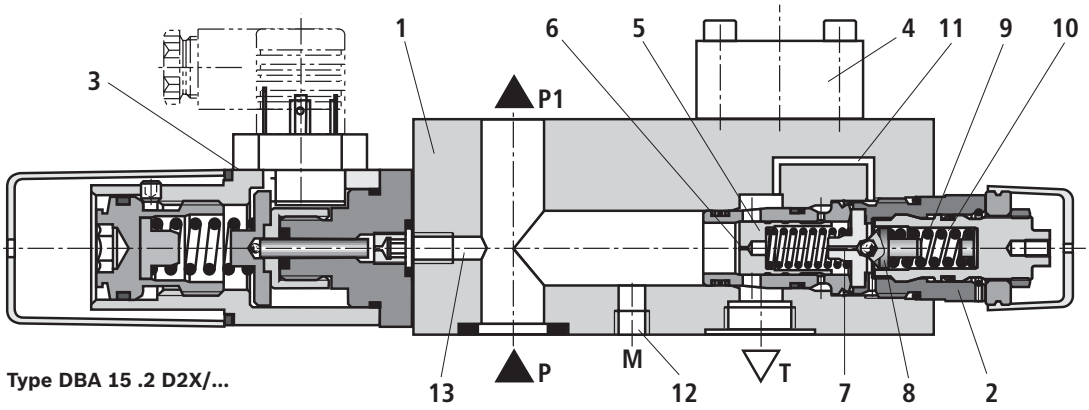
The use of an electrical pressure switch type HED 8 (3) (data sheet 50061) enables activation and deactivation of an electric circuit via the control line (13).

In standard version, the control line (13) is closed with a plug screw (14).

The pressure gauge connection M and tank port T are illustrated with an offset of 90°.



Type DBA 15 .2 –2X/...



Type DBA 15 .2 D2X/...

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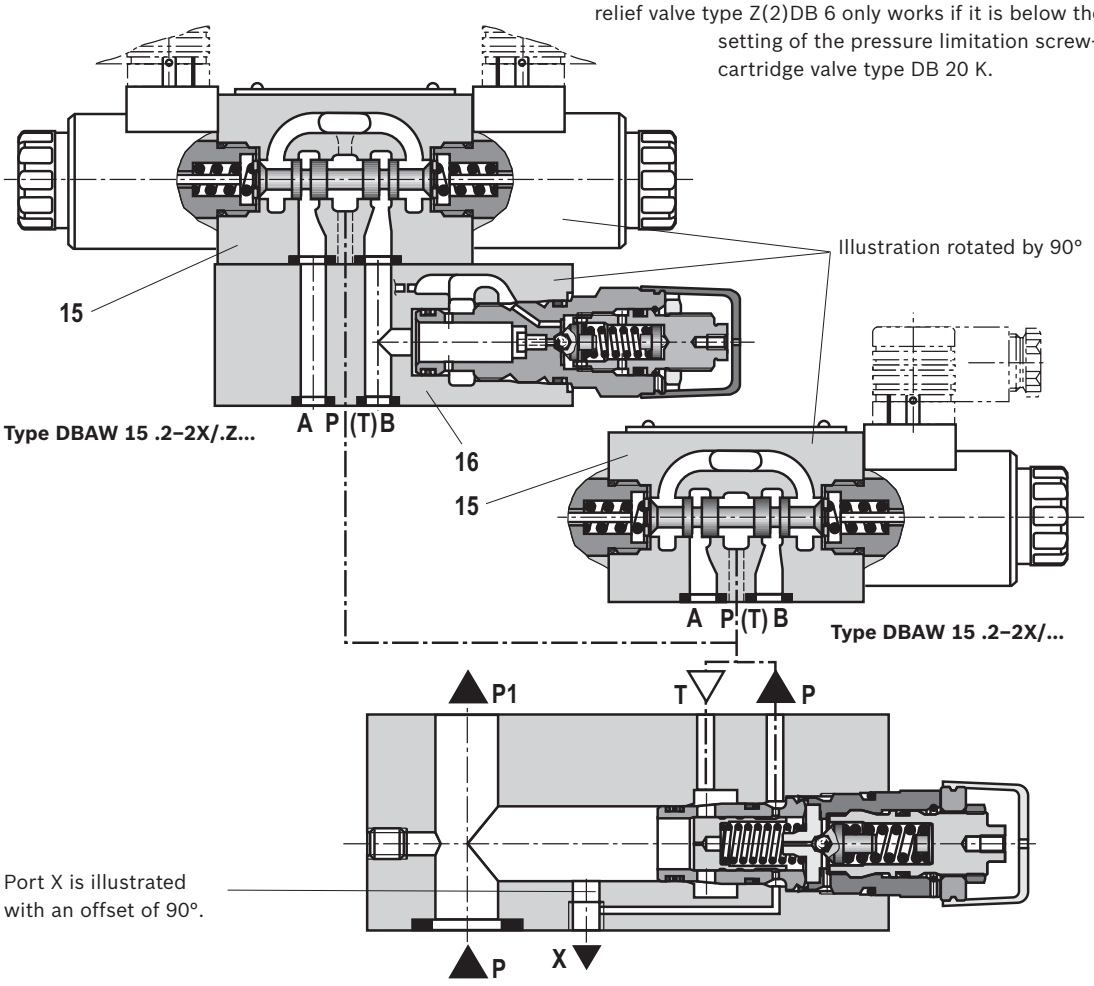
Function, sections: Type DBAW...

Pump safety block type DBAW
The function of this block basically corresponds to the function of block type DBA.... Unloading the main control spool, however, is achieved by controlling the mounted directional valve (15). In this case, no cover plate (4) is required.

Pump safety block type DBAW.B...Z... for displacement pumps (with pressure relief valve)
In general, the function corresponds to type DBAW....
By means of the pressure relief valve type ZDB 6 (16) (data sheet 25751) and actuation of the directional valve (15), the pilot control of the pressure limitation screw-in cartridge valve type DB 20 K is deactivated and the pressure set at the pressure relief valve type ZDB 6 is activated. The pressure adjustment at the pressure relief valve type ZDB 6 only works if it is below the setting of the pressure limitation screw-in cartridge valve type DB 20 K.

Pump safety block type DBAW.B...Z...A for control pump A10V... (with pressure relief valve)
In general, the function corresponds to type DBAW....
By means of the pressure relief valve type ZDB 6 (16) (data sheet 25751) and by actuation of the directional valve (15), a pressure change is achieved at control port X. The pressure change set at the pressure relief valve type ZDB 6 acts on the controller of the pump. The pressure adjustment at the pressure relief valve type ZDB 6 only works if it is below the setting of the pressure limitation screw-in cartridge valve type DB 20 K.

Pump safety block DBAW.B...ZZ...A for control pump A10V.. (with pressure relief valve)
In general, the function corresponds to type DBAW....
By means of the pressure relief valve type Z(2)DB 6 (16) (data sheet 25751) and by actuation of the directional valve (15), two pressure adjustments are possible at control port X. The pressure adjustment at the pressure relief valve type Z(2)DB 6 only works if it is below the setting of the pressure limitation screw-in cartridge valve type DB 20 K.



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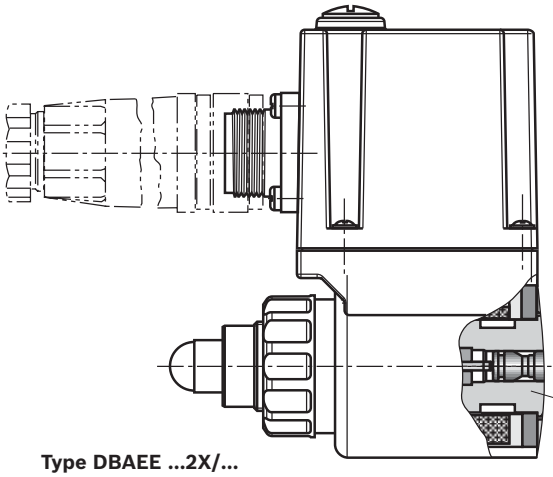
Function, sections: Type DBAE(E)... and DBAEA...

Pump safety block type DBAE(E) for displacement pump (with proportional pressure relief valve)
In general, the function corresponds to type DBA....
Unloading at the main control spool, however, is achieved by control of the mounted proportional pressure relief valve type DBET(E)-6X/.Y... (17) (data sheet 29162). The cover plate (4) is not required.

The pressure adjustment at the proportional pressure relief valve type DBET(E) only works if it is below the setting of the pressure limitation screw-in cartridge valve type DB 20 K.

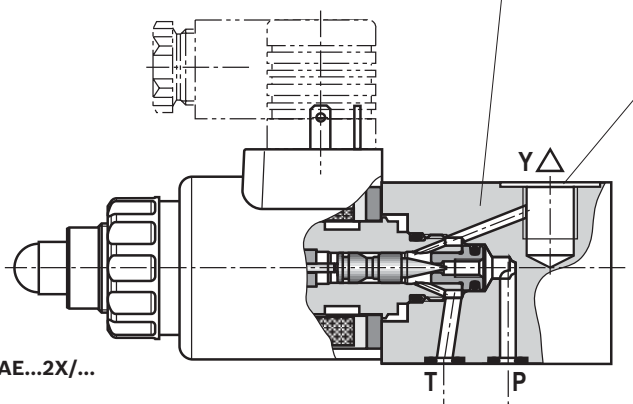
Pump safety block type DBAE(E) and DBAEA for variable displacement pumps type A10V.. (with proportional pressure relief valve)
In general, the function corresponds to type DBA....
By means of the proportional pressure relief valve type DBET(E)(A)-6X/.Y... (17), a pressure change is achieved at the control port X. The pressure change acts on the controller of the pump. The cover plate (4) is not required.
The pressure adjustment at the proportional pressure relief valve type DBET(E)(A) only works if it is below the setting of the pressure limitation screw-in cartridge valve type DB 20 K.
At type DBAEA, pump control is pressure-controlled. This way, linear and stable behavior as well as increased accuracy of pump adjustment can be achieved.



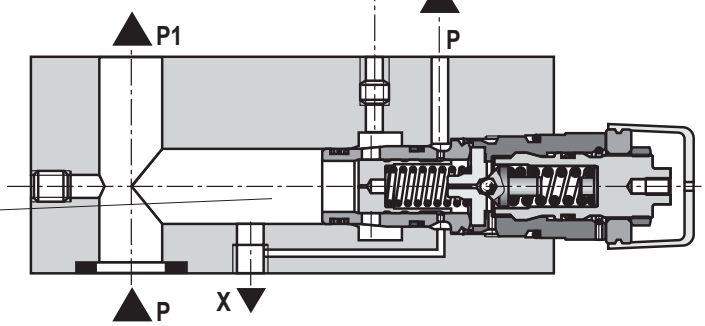
Type DBAEE ...2X/...

17 Illustration rotated by 90°

Port Y must be connected to the tank in a depressurized way (possibly by means of the drain line of the hydraulic system).



Type DBAE...2X/...



Port X is illustrated with an offset of 90°.

Bosch Rexroth AG, RE 25891, edition: 2017-07

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

general								
Size		NG	16		25		32	
Weight	of SAE flange	psi	3000	5000	3000	5000	3000	5000
▶ Pump safety block	– Type DBA...	kg	5.4	5.4	5.4	5.3	5.4	6.0
	– Type DBAW...	kg	6.1	6.1	6.1	6.0	6.1	6.7
	– Type DBAW...Z...	kg	7.9	7.9	7.9	7.8	7.9	8.5
	– Type DBAW...ZZ...	kg	8.1	8.1	8.1	8.0	8.1	8.7
	– Type DBAE...	kg	6.4	6.4	6.4	6.3	6.4	7.0
	– Type DBAEE...	kg	7.0	7.0	7.0	6.9	7.0	7.6
	– Type DBAEA...	kg	7.0	7.0	7.0	6.9	7.0	7.6
▶ Pressure switch	– Type HED 8...	kg	+0.8					
Installation position			any					
Ambient temperature range			NBR seals		FKM seals			
	– Type DBA...	°C	–30 ... +80		–15 ... +80			
	– Type DBAW...	°C	–30 ... +50		–15 ... +50			
	– Type DBAE(E)(A)...	°C	–20 ... +50		–15 ... +50			

hydraulic					
Maximum operating pressure	– Port P	bar	350		
Maximum counter pressure	– Type DBA...	bar	250		
▶ Port T	– Type DBAW...	bar	210 with DC solenoids (180 for version "=UR") 160 with AC solenoids		
	– Type DBAEA...	bar	30 [1]		
▶ Port Y	– Type DBAE(E)...	bar	depressurized to the tank		
Minimum set pressure		bar	flow-dependent (see characteristic curves page 14)		
Maximum set pressure		bar	50; 100; 200; 315; 350		
Maximum flow		l/min	300	400	400
Hydraulic fluid			see table page 14		
Hydraulic fluid temperature range			NBR seals	FKM seals	
	– Type DBA(W)...	°C	–30 ... +80	–20 ... +80	
	– Type DBAE(E)(A)...	°C	–20 ... +80	–15 ... +80	
Viscosity range	– Type DBA(W)...	mm²/s	10 ... 800		
	– Type DBAE(E)(A)...	mm²/s	20 ... 380, preferably 30 ... 46		
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 20/18/15 [2]		

[1] Tank preloading (30 bar) to be added to the minimum set pressure. A short-time, static pressure of 300 bar is admissible.

[2] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.
For the selection of the filters, see www.boschrexroth.com/filter.

For more technical data refer to the data sheets:

- ▶ Directional spool valve 23178
- ▶ Pressure relief valve (sandwich plate) 25751
- ▶ Proportional pressure relief valve 29162, 29262
  - – Corresponding amplifier (for type DBAE) type VT-VSPA1-2-1X 30115
- ▶ Pressure switch 50061

Deviating technical data for type-examination tested safety valves can be found on page 27.

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

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

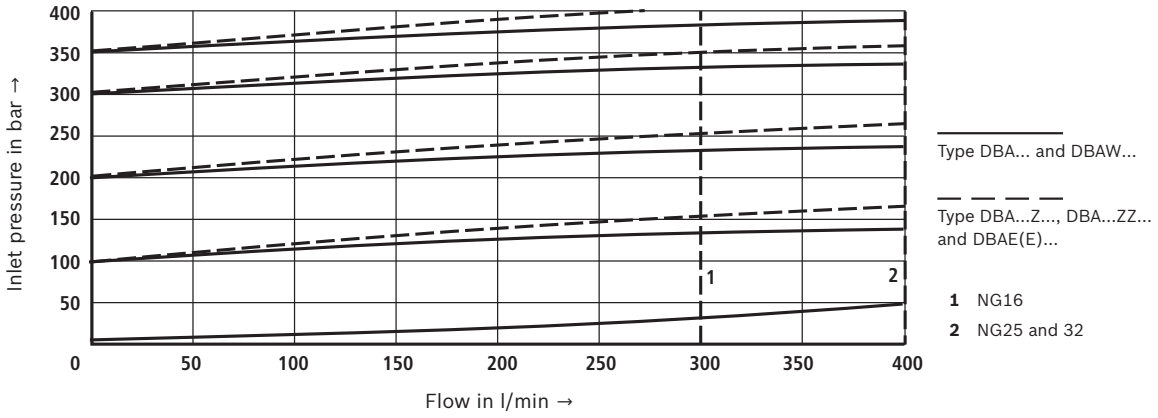
Hydraulic fluid		Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils		HL, HLP	NBR, FKM	DIN 51524	90220
Bio-degradable	▶ Insoluble in water	HETG 2)	NBR, FKM	ISO 15380	90221
		HEES 1)	FKM		
	▶ Soluble in water	HEPG 1; 2)	FKM	ISO 15380	
Flame-resistant	▶ Water-free	HFDU, HFDR 2)	FKM	ISO 12922	90222
	▶ Containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	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 40 K higher than the maximum surface temperature.
- **Flame-resistant – containing water**:
  - Maximum pressure differential per control edge 50 bar
  - Pressure pre-loading at the tank port >20% of the pressure differential, otherwise increased cavitation
  - Life cycle as compared to operation with mineral oil HL, HLP 50 ... 100%
- **Bio-degradable and flame-resistant:** If this hydraulic fluid is used, small amounts of dissolved zinc may get into the hydraulic system.

1) Not for version "DBAE(E)"
2) Not for version "DBAEA"

Characteristic curves
(measured with HLP46, ϑ_{oil} = 40 ±5 °C)

Inlet pressure dependent on the flow 2)



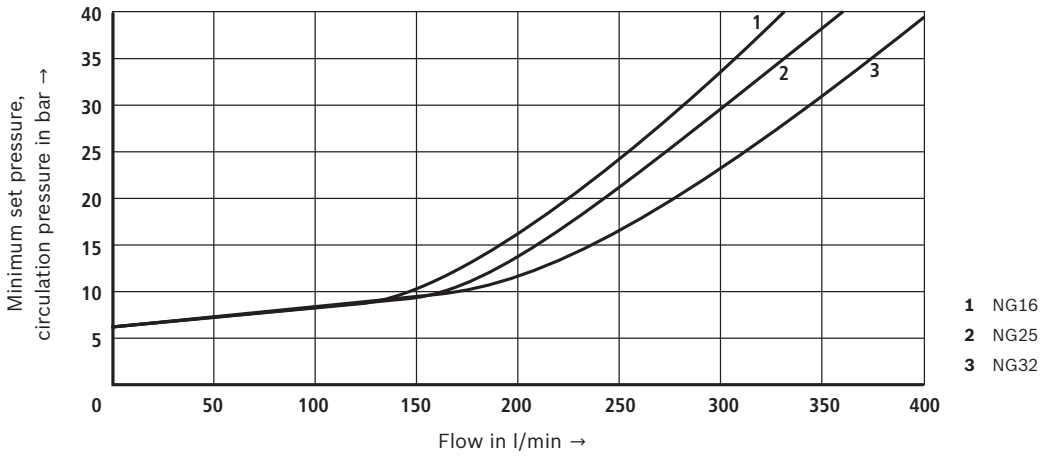
2) The characteristic curves apply for output pressure p_T = 0 bar in the entire flow range!

☞ **Notice:**
The characteristic curves were measured with **internal pilot oil return**.
With internal pilot oil return, the inlet pressure increases by the output pressure present in port T.

Bosch Rexroth AG, RE 25891, edition: 2017-07

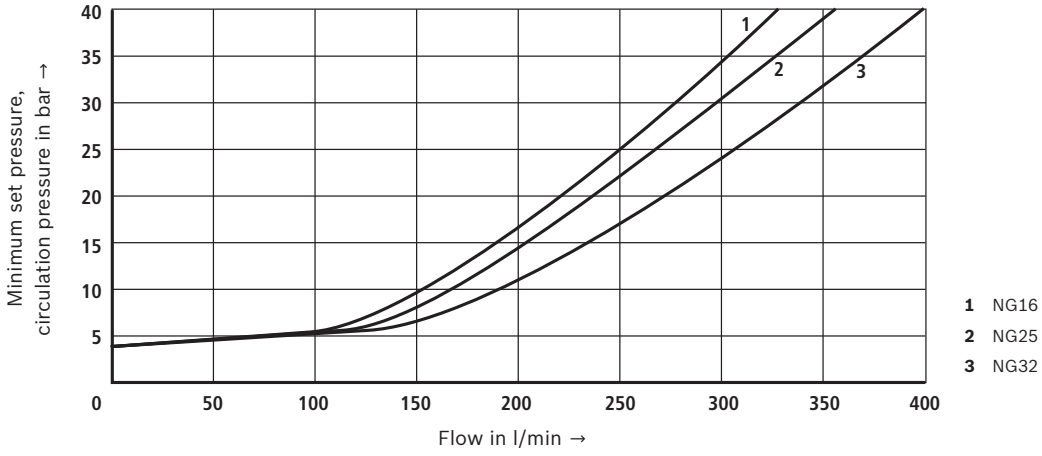
Characteristic curves
(measured with HLP46, ϑ_{Oil} = 40 ±5 °C)

Minimum set pressure and circulation pressure dependent on the flow [1)]
Standard version



1 NG16
2 NG25
3 NG32

Minimum set pressure and circulation pressure dependent on the flow [1)]
Version "U"

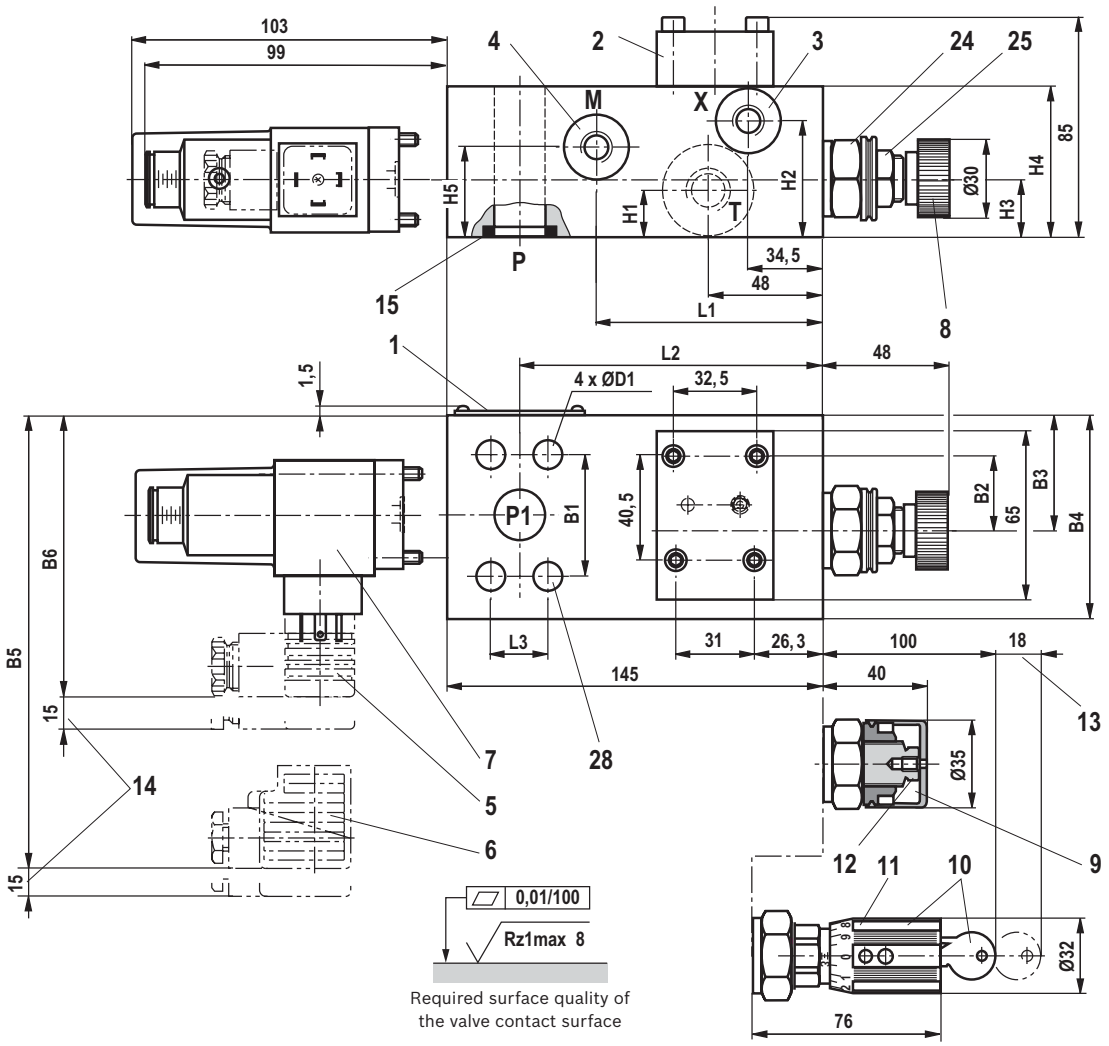


1 NG16
2 NG25
3 NG32

[1)] The characteristic curves apply for output pressure p_T = 0 bar in the entire flow range!

☞ **Notice:**
The characteristic curves were measured with **internal pilot oil return**.
With internal pilot oil return, the inlet pressure increases by the output pressure present in port T.

Dimensions: Type DBA...
(dimensions in mm)



Standard flanges type DBA...**F**...

NG	L1	L2	L3	B1	B2	B3	B4	B5	B6	H1	H2	H3	H4	H5	ØD1
16	88	117	22.2	47.6	28.5	45	80	110	105	24	47	22	60	37	11
25	88	115.5	26.2	52.4	28.5	45	80	110	105	24	47	22	60	37	11
32	108.5	108.5	30.2	58.7	30.5	47	80	110	105	30	47	20	60	41	11.5

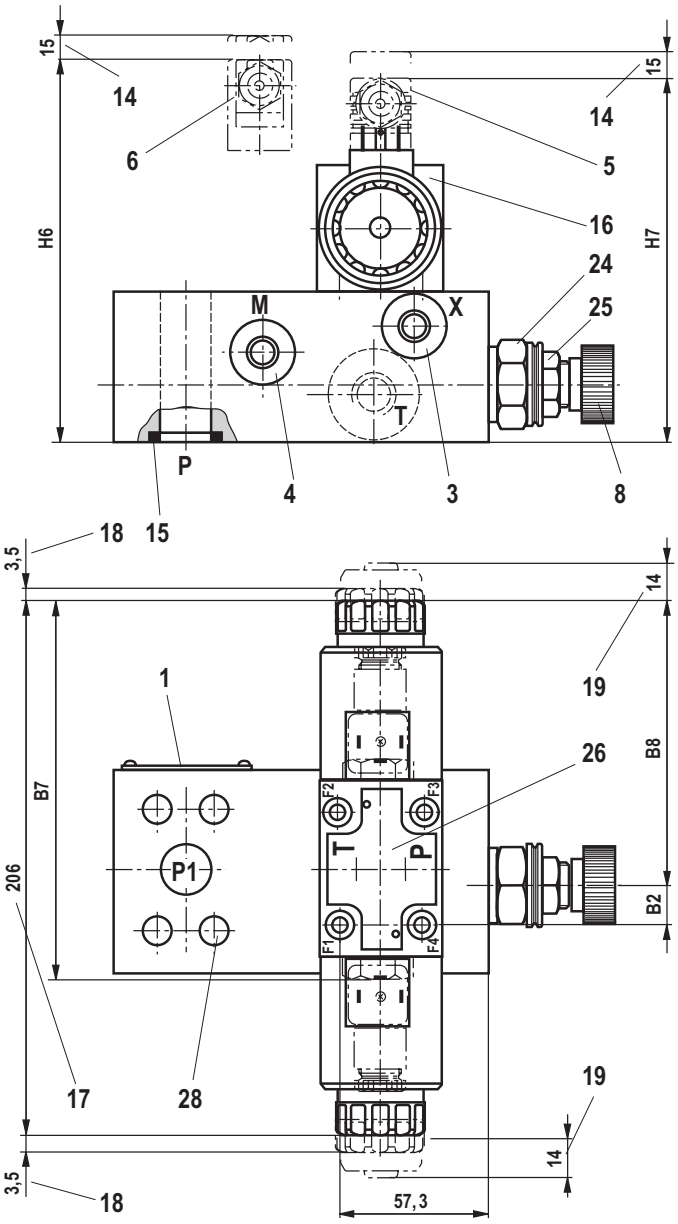
High-pressureflanges type DBA...**H**...

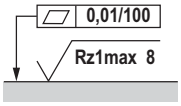
NG	L1	L2	L3	B1	B2	B3	B4	B5	B6	H1	H2	H3	H4	H5	ØD1
16	88	117	23.8	50.8	28.5	45	80	110	105	24	47	22	60	37	11
25	84	115.5	27.8	57.2	28.5	45	80	110	105	24	47	22	60	37	13
32	108.5	108.5	31.8	66.7	26	52	90	115	110	30	50	20	64	41	15

Item explanations can be found on page 23.

Bosch Rexroth AG, RE 25891, edition: 2017-07

Dimensions: Type DBAW...
(dimensions in mm)





Required surface quality of the valve contact surface

Item explanations can be found on page 23, **Dimensions** for pump safety block, pressure switch type HED 8 and further adjustment types can be found on page 16.

Standard flanges type DBAW...**F**...

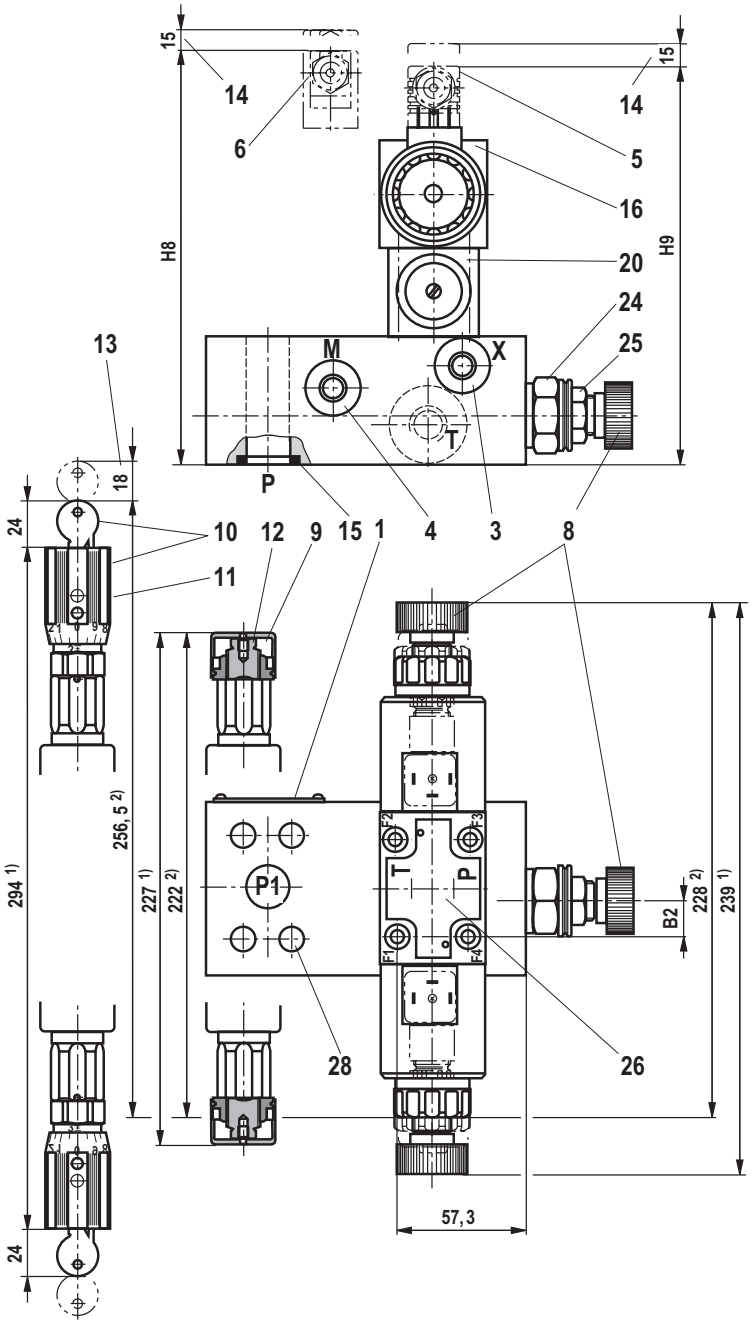
NG	B2	B7	B8	H6	H7
16	12	144.5	109.5	159	153
25	12	144.5	109.5	159	153
32	10	144.5	111.5	159	153

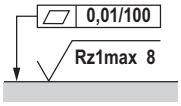
High-pressure flanges type DBAW...**H**...

NG	B2	B7	B8	H6	H7
16	12	144.5	109.5	159	153
25	12	144.5	109.5	159	153
32	14.5	145	107	163	157

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Dimensions: Type DBAW...Z...
(dimensions in mm)





Required surface quality of the valve contact surface

Item explanations can be found on page 23, **dimensions** for pump safety block, pressure switch type HED 8 and other adjustment types can be found on page 16, **dimensions** for directional spool valves type WE can be found on page 17.

1) Version "ZZ"
2) Version "Z"

Standard flanges type DBAW..**F**...Z...

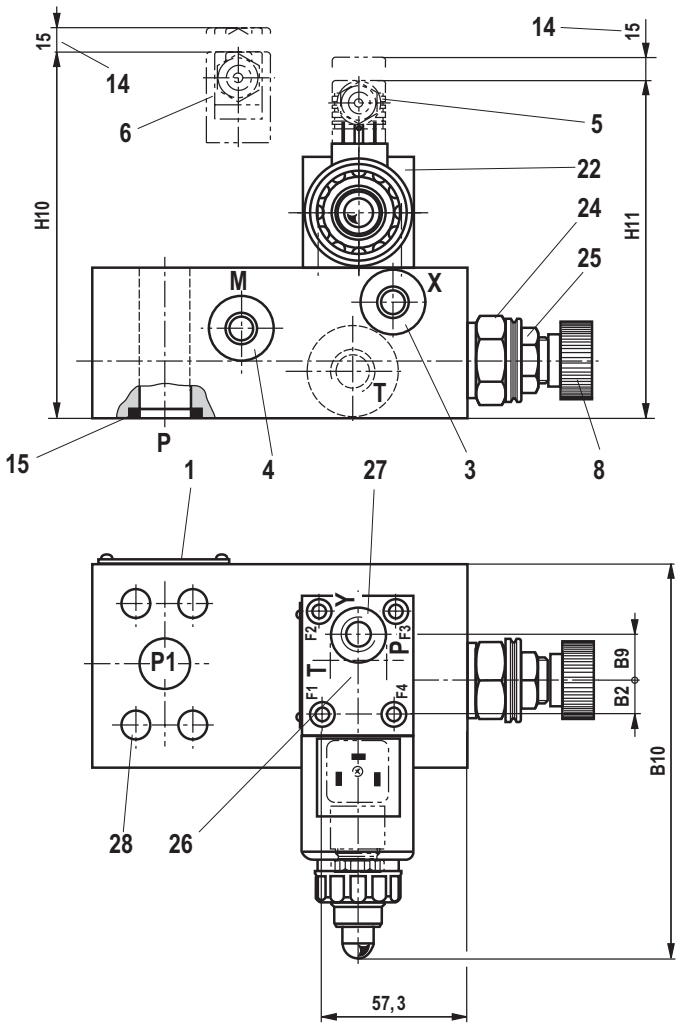
NG	B2	H8	H9
16	12	199	193
25	12	199	193
32	10	199	193

High-pressure flanges type DBAW..**H**...Z...

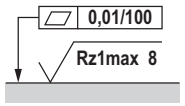
NG	B2	H8	H9
16	12	199	193
25	12	199	193
32	14.5	203	197

Bosch Rexroth AG, RE 25891, edition: 2017-07

Dimensions: Type DBAE...
(dimensions in mm)



Item explanations can be found on page 23, **Dimensions** for pump safety block, pressure switch type HED 8 and further adjustment types can be found on page 16.



Required surface quality of the valve contact surface

Standard flanges type DBAE(E)...**F**

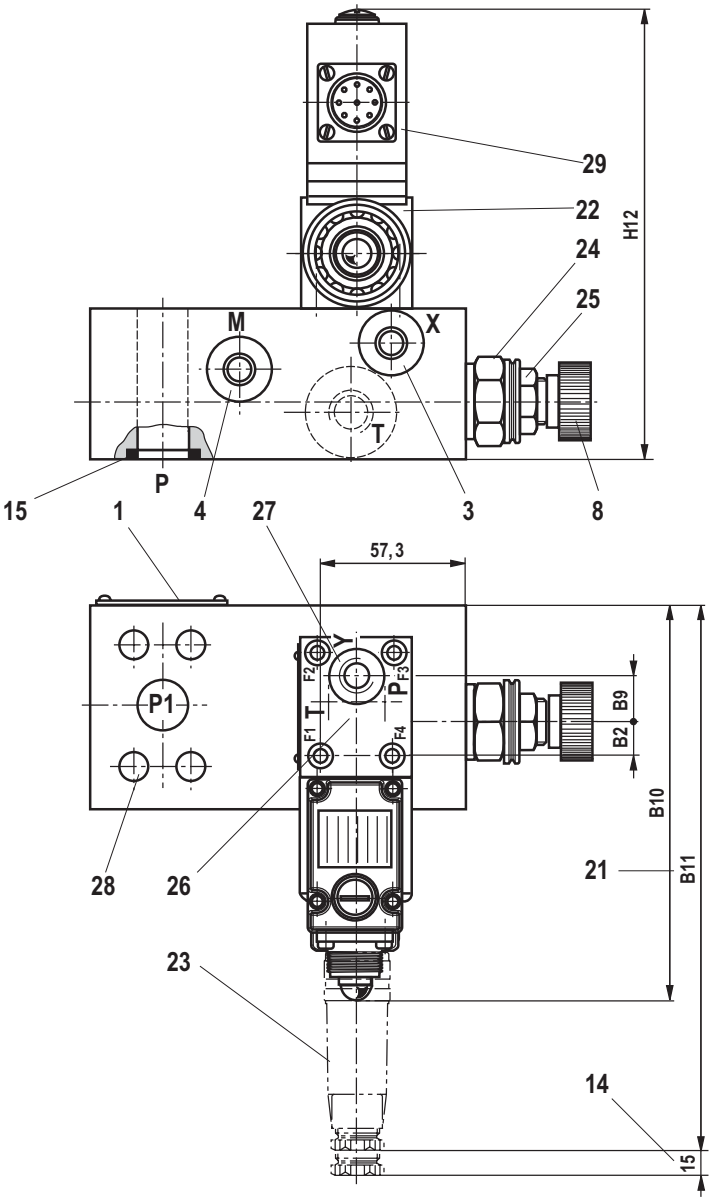
NG	B2	B9	B10	H10	H11
16	12	18.8	158	161	155
25	12	18.8	158	161	155
32	10	20.8	158	161	155

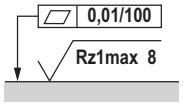
High-pressure flanges type DBAE(E)...**H**

NG	B2	B9	B10	H10	H11
16	12	18.8	158	161	155
25	12	18.8	158	161	155
32	14.5	16.3	169	166	160

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Dimensions: Type DBAEE...
(dimensions in mm)





Required surface quality of the valve contact surface

Item explanations can be found on page 23, **Dimensions** for pump safety block, pressure switch type HED 8 and further adjustment types can be found on page 16.

Standard flanges type DBAE(E)...**F**

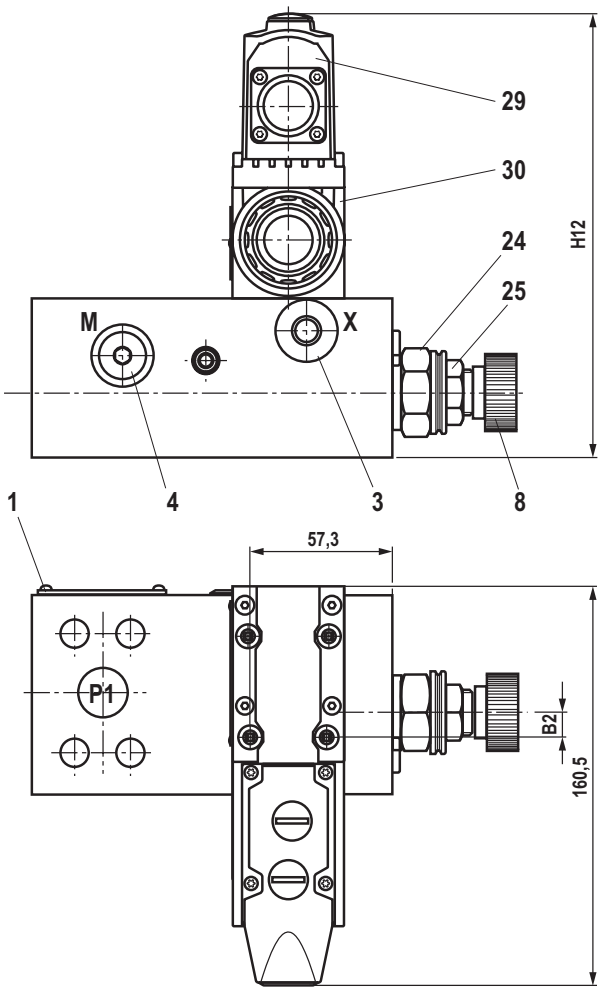
NG	B2	B9	B10	B11	H12
16	12	18.8	158	225	175
25	12	18.8	158	225	175
32	10	20.8	158	225	175

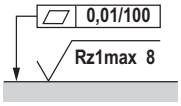
High-pressure flanges type DBAE(E)...**H**

NG	B2	B9	B10	B11	H12
16	12	18.8	158	225	175
25	12	18.8	158	225	175
32	14.5	16.3	169	235	179

Bosch Rexroth AG, RE 25891, edition: 2017-07

Dimensions: Type DBAEA...
(dimensions in mm)





Required surface quality of the valve contact surface

Item explanations can be found on page 23, **Dimensions** for pump safety block, pressure switch type HED 8 and further adjustment types can be found on page 16.

Standard flanges type DBAEA...**F**

NG	B2	H12
16	12	174.5
25	12	174.5
32	10	174.5

High-pressure flanges type DBAEA...**H**

NG	B2	H12
16	12	174.5
25	12	174.5
32	14.5	178.5

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Dimensions
(dimensions in mm)

Standard flanges type DBA...**F**... according to DIN ISO 6162-1

NG	Line connections			4 valve mounting screws ISO 4762 - 10.9 [1]		Tightening torque M_A in Nm [2]
	P and P1	T	X, M		Material no.	
16	SAE 3/4"	G3/4	G1/4	M10 x 95	R913015585	52
25	SAE 1"	G1	G1/4	M10 x 95	R913015585	52
32	SAE 1 1/4"	G1 1/4	G1/4	M10 x 95	R913015585	52

Admissible pressures (Flange connection according to DIN ISO 6162-1)		
	in psi	in bar
SAE 3/4"	5000	350
SAE 1"	4500	315
SAE 1 1/4"	3600	250

High-pressure flanges type DBA...**H**... according to DIN ISO 6162-2

NG	Line connections			4 valve mounting screws ISO 4762 - 10.9 [1]		Tightening torque M_A in Nm [2]
	P and P1	T	X		Material no.	
16	SAE 3/4"	G3/4	G1/4	M10 x 95	R913015585	52
25	SAE 1"	G1	G1/4	M12 x 105	R913000659	66
32	SAE 1 1/4"	G1 1/4	G1/4	M14 x 105	R913000660	113

Admissible pressures (Flange connection according to DIN ISO 6162-2)		
	in psi	in bar
SAE 3/4"	5000	350
SAE 1"	5000	350
SAE 1 1/4"	5000	350

[1] **Valve mounting screws** (separate order)
4 hexagon socket head cap screws ISO 4762 - 10.9-flZn-240h-L
(with friction coefficient μ_{total} = 0.09 ... 0.14)

☞ **Notice:**
For reasons of stability, other valve mounting screws must not be used!
Depending on the operating pressure, flange height and thread depth of the pump plate, other screw lengths may be necessary!

[2] ☞ **Notice:**
The tightening torques stated are guidelines when using screws with the specified friction coefficients and when using a manual torque wrench (tolerance ± 10%).

Bosch Rexroth AG, RE 25891, edition: 2017-07

Dimensions

1 Name plate
2 Cover plate type HSA 06 A001-3X... (data sheet 48042)
3 Port X for variable displacement pump type A10VSO (otherwise closed); G1/4
4 Port M for pressure gauge; G1/4
5 Mating connector **without** circuitry (separate order, see page 30)
6 Mating connector **with** circuitry (separate order, see page 30)
7 Pressure switch type HED 8 OH...(data sheet 50061)
8 Adjustment type "1" [1)]
9 Adjustment type "2" [1)]
10 Adjustment type "3" [1)]
11 Adjustment type "7" [1)]
12 Hexagon SW10
13 Space required to remove the key
14 Space required for removing the mating connector
15 Seal ring
16 Directional spool valve type WE 6 (data sheet 23178)
17 Dimensions for solenoid **with concealed** manual override "**N9**" (standard) – The manual override can only be operated up to approx. 50 bar tank pressure. Avoid damage to the bore of the manual override. (Special tool for the operation, separate order, material no. **R900024943**)
18 Dimensions for valve **with** manual override "**N**"
19 Dimensions for valve **without** manual override
20 Pressure relief valve (sandwich plate) type Z(2)DB 6 ... (data sheet 25751)
21 Dimensions for valve with integrated electronics type DBAEE...
22 Proportional pressure relief valve type DBET(E)-6X.Y... (data sheet 29162)
23 Mating connector for type DBAEE according to DIN EN 175201-804 (separate order, material no. **R90021267**)
24 Hexagon SW30, tightening torque M_A = 50 Nm (For tightening, a manual torque wrench with a tolerance of ≤10% must be used.)
25 Lock nut SW22, tightening torque $M_A = 10^{\pm 5}$ Nm
26 Porting pattern according to DIN 24340 form A (without locating hole), or ISO 4401-03-02-0-05 (with locating hole for locking pin ISO 8752-3x8-St, material no. **R900005694**, separate order)
27 Port Y (G1/4) must be connected to the tank in a depressurized way (possibly by means of the drain line L of the hydraulic system)
28 Valve mounting bores
29 Integrated electronics (OBE)
30 Proportional pressure relief valve type DBETA-6X... (data sheet 29262)

[1)] **Type DBAW...Z**:
Identical adjustment types for pressure limitation screw-in cartridge valve type DB 20 K and pressure relief valve type Z(2)DB 6.

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Admissible pumps: Standard flange (3000 psi)

Pump safety block			NG16	NG25	NG32
	Port P	Data sheet	SAE 3/4"	SAE 1"	SAE 1 1/4"
Pump type	▶ **Variable displacement pump**				
	Type A10VO, series 31	92701	A10VO28 –	A10VO45 A10VO71	– –
	Type A10VO, series 5X	92703	A10VO28 –	A10VO45 A10VO60	– –
	Type A10VSO, series 31	92711	A10VO28 – AV10SO18	A10VSO45 A10VSO71 –	– – –
	Type A10VSO, series 32	92714	–	A10VSO71	–
	▶ **Internal gear pump**				
	Type PGF3, component series 3X [1]	10213	PGF3-3X/020 PGF3-3X/025 PGF3-3X/032 PGF3-3X/040	– – – –	– – – –
	Type PGP3, component series 3X [1]	10231	PGP3-3X/032	–	–
	▶ **Vane pump** [2]				
	Type PV7, component series 1X	10515	– –	– –	PV7-1X/63-71 PV7-1X/63-94

[1] When using the pump in combination with a SAE flange as pressure connection, the ordering code of the pump contains "..07..".

[2] Depending on the drive motor, a distance plate may be required, e.g. height = 23 mm, material no. **R900058716**
or alternatively a 90° plate:
Height = 40 mm, material no. **R900241813**

Bosch Rexroth AG, RE 25891, edition: 2017-07

Admissible pumps: High-pressure flange (5000 psi)

Pump safety block			NG16	NG25	NG32
	Port P	Data sheet	SAE 3/4"	SAE 1"	SAE 1 1/4"
Pump type	▶ **Displacement pump**				
	Type A2FO, series 6	91401	A2FO45 A2FO56 A2FO63 – –	A2FO80 A2FO90 A2FO107 – –	A2FO125 A2FO160 A2FO180 A2FO200 A2FO250
	Type A4FO, series 1	91455	–	A4FO71	–
	Type A4FO, series 3	91455	A4FO16 A4FO22 A4FO40	– –	A4FO125 –
	▶ **Variable displacement pump**				
	Type A4VSO, series 1	92050	A4VSO40	A4VSO71	–
	Type A4VSO, series 3	92050	– –	– –	A4VSO125 A4VSO180
	Type A11VO, series 1	92500	A11VO40 A11VO60 –	A11VO75 A11VO95 A11VO130 [3] A11VO145 [3]	A11VLO130 [2] A11VLO145 [2] – –
	Type A10VSO, series 31 Type A10VSO, series 32	92711 92714	– –	– –	A10VSO100 A10VSO140
	Type A10VO, series 31	92701	– –	– –	A10VO100 A10VO140
	Type A10VO, series 5X [1]	92703	–	–	A10VO85
	Type A7VO, series 6 [1]	92202	A7VO28 A7VO55	A7VO80 A7VO107	A7VO160 –
	Type A7VO, series 6 [1]	92203	–	–	A7VO250
	▶ **Adjustable double pump**				
	Type A8VO, series 6X	93010	A8VO55 – –	A8VO80 A8VO107 A8VO140	A8VO200 – –
	▶ **Internal gear pump**				
	Type PGH4, PGH5, component series 2X	10223	PGH4-2X/020 PGH4-2X/025 PGH4-2X/032 PGH4-2X/040	PGH4-2X/050 PGH5-2X/063 – –	PGH5-2X/080 PGH5-2X/100 PGH5-2X/125 –
	Type PGH4, PGH5, component series 3X	10227	PGH4-3X/020 PGH4-3X/025 –	PGH4-3X/032 PGH4-3X/040 PGH4-3X/050	PGH5-3X/063 PGH5-3X/080 –

[1] A direct pressure switch attachment opposite of the pressure limitation screw-in cartridge valve type DB 20 K is not possible!
[2] With charging pump
[3] Without charging pump

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Ordering code: Type-examination tested safety valves type DBA...E, component series 2X according to Pressure Equipment Directive 2014/68/EU

NG	Type designation	Component marking	Maximum admissible flow q_{Vmax} in l/min with pilot oil return	Set response overpressure p in bar
16	DBA 15 [2][3][4] 2X/ [5][6][7] E	TÜV.SV.[ ]–1001.14,4.F.G.p	60 100 150 200 250	30 ... 60 61 ... 110 111 ... 210 211 ... 315 316 ... 350
	DBAW 15 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAE 15 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAEE 15 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
25	DBA 25 [2][3][4] 2X/ [5][6][7] E	TÜV.SV.[ ]–1001.14,4.F.G.p	70 100 150 200 300	30 ... 60 61 ... 110 111 ... 210 211 ... 315 316 ... 350
	DBAW 25 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAE 25 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAEE 25 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
32	DBA 30 [2][3][4] 2X/ [5][6][7] E	TÜV.SV.[ ]–1001.14,4.F.G.p	70 100 150 200 300	30 ... 60 61 ... 110 111 ... 210 211 ... 315 316 ... 350
	DBAW 30 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAE 30 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			
	DBAEE 30 [1][2][3][4] 2X/ [5][6] 6 [*][7] E			

1	Directional valve, normally closed	**A**
	Directional valve, normally open	**B**
2	Standard flange (250 bar)	**F**
	High-pressure flange (350 bar)	**H**
3	Hand wheel adjustment type (pressure adjustment sealed, unloading or setting of a lower response pressure possible!)	**1**
	Adjustment type with sealed protective cap (no adjustment/unloading possible)	**2**
4	With mounted pressure switch type HED 8 OH... (without mating connector)	**D**
	Without pressure switch	**–**
5	In the designation, the pressure is to be entered by the customer, pressure adjustment ≥ 30 bar and possible in 5-bar steps.	e.g. **150**

2./3. pressure limiting function (see circuit example on page 6 ... 8)

6	**Without** additional pressure relief valve	**no code**
	With mounted pressure relief valve type ZDB 6 VB...-4X/..SO2 (data sheet 25751)	**Z**
	With mounted pressure relief valve type Z2DB 6 VC...-4X/..SO2 (data sheet 25751)	**ZZ**
	Version DBAW...Z(Z)E and DBAE(E)...E are only available with ordering code "A00", "A08" or "A10"	
*	Electrical data ordering codes can be found on page 2 and 3.	e.g. **EG24N9K4**
7	NBR seals	**no code**
	FKM seals	**V**

[ ] Value entered at the factory!

☞ **Important safety instructions on page 27!**

Bosch Rexroth AG, RE 25891, edition: 2017-07

Safety instructions: Type-examination tested safety valves type DBA...E, component series 2X according to Pressure Equipment Directive 2014/68/EU

- Before ordering a type-examination tested safety valve, it must be observed that for the desired **response pressure *p*** , the maximum admissible **flow *q*** $_{Vmax}$ must be larger than the maximum possible flow of the system to be secured.
  In this respect, the applicable regulations must be observed!
- According to **PED 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).
- The maximum admissible flow stated in the component marking q_{Vmax} (= numerical value instead of the character "G" in the component marking, see page 26) must not be exceeded.
- Discharge lines of safety valves must end in a risk-free manner. The accumulation of fluids in the discharge lines must **not** be possible.
- If a lead seal at the safety valve is removed, the approval according to the PED!
- The requirements of the Pressure Equipment Directives 2014/68/EU and of data sheet AD2000 A2 must be generally observed!
- Options DBAE/DBAEE or 2./3. pressure limiting function (6) are only possible for pressure relief valves for variable displacement pumps (also see page 3).
- The unloading function (DBAW../DBAE../DBAEE..) must not be used for safety functions!
- Possible unloading via the directional valve must not be applied for safety-relevant functions! If unloading is required for safety-relevant functions, an additional unloading valve must be installed.

☞ **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 applies for applications without counter pressure in the discharge line (port T).

☞ **Notice:**
The system pressure increases by the counter pressure in the discharge line (port T) with increasing flow (observe AD2000 - data sheet A2 - item 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 following diagrams on pages 28 and 29).

Deviating technical data: Type-examination tested safety valves type DBA...E, component series 2X according to Pressure Equipment Directive 2014/68/EU

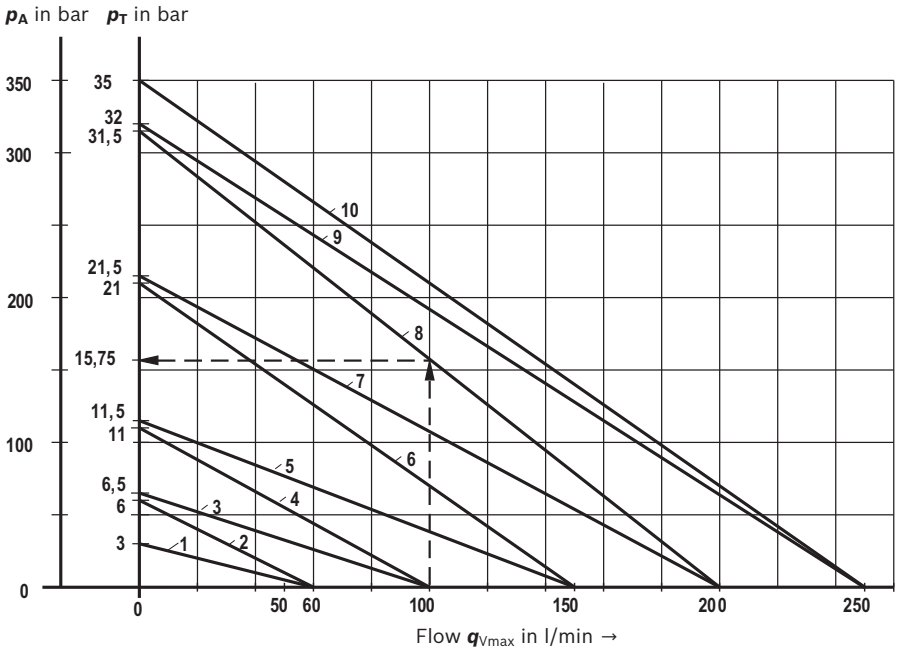
hydraulic		
Maximum flow		see ordering code on page 26 and diagrams on page 28 and 29
Hydraulic fluid		Mineral oil (HL, HLP) according to DIN 51524-1 and DIN 51524-2
Hydraulic fluid temperature range	°C	–10 ... +60
Viscosity range	mm^2/s	12 ... 230

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Safety instructions: Type-examination tested safety valves type DBA...E, component series 2X according to Pressure Equipment Directive 2014/68/EU

Maximum admissible flow q_{Vmax} dependent on the counter pressure p_T in the discharge line with internal pilot oil return

Type DBA 15 ...-2X/...E



Characteristic curves	Response pressure p_A in bar
1	30
2	60
3	65
4	110
5	115
6	210
7	215
8	315
9	320
10	350

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

p_A = Response pressure in bar

p_T = Maximum admissible counter pressure in the discharge line in bar (port T) (sum of all possible counter pressures; also see AD2000 - data sheet A2)

$p_{T\ max}$ = 10% x p_A (at q_V = 0) according to PED 2014/68/EU

$q_{V\ max}$ = Maximum admissible flow in l/min

Explanation of the diagrams (Example: type DBA 15...E):

known:
- Flow of the system/accumulator that has to be secured q_{Vmax} = 100 l/min
- Set response pressure of the safety valve p_A = 315 bar

unknown: $p_{T\ admissible}$

Solution: See arrows in diagram above

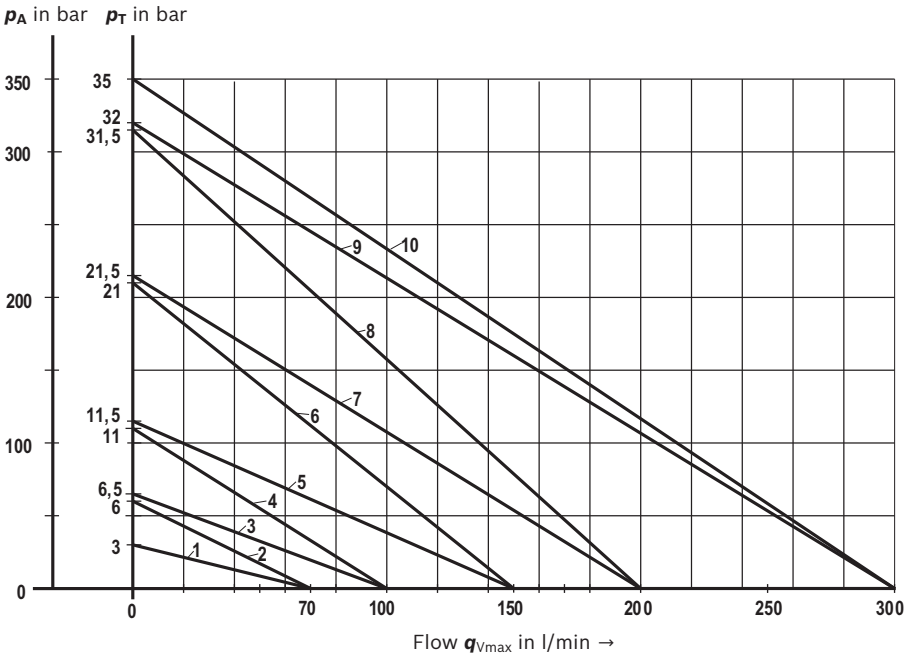
$p_{T\ admissible}$ (100 l/min; 315 bar) = 15.75 bar

Bosch Rexroth AG, RE 25891, edition: 2017-07

Safety instructions: Type-examination tested safety valves type DBA...E, component series 2X according to Pressure Equipment Directive 2014/68/EU

Maximum admissible flow q_{Vmax} dependent on the counter pressure p_T in the discharge line with internal pilot oil return

Type DBA 25 ...-2X/...E and type DBA 30 ...-2X/...E



Characteristic curves	Response pressure p_A in bar
1	30
2	60
3	65
4	110
5	115
6	210
7	215
8	315
9	320
10	350

Characteristic curves for intermediate values can be generated by interpolation. Further explanations can be found on page 28

p_A = Response pressure in bar

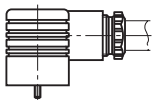
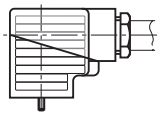
p_T = Maximum admissible counter pressure in the discharge line in bar (port T) (sum of all possible counter pressures; also see AD2000 - data sheet A2)

$p_{T\,max}$ = 10% x p_A (at q_V = 0) according to PED 2014/68/EU

$q_{V\,max}$ = Maximum admissible flow in l/min

RE 25891, edition: 2017-07, **Bosch Rexroth AG**

Mating connectors according to DIN EN 175301-803 for connector "K4"

For details and more mating connectors, see data sheet 08006				
	Material number			
Color	Without circuitry	With indicator light 12 ... 240 V	With rectifier 12 ... 240 V	With indicator light and Z-diode-suppressor 24 V
gray	**R901017010**	**–**	**–**	**–**
black	**R901017011**	**R901017022**	**R901017025**	**R901017026**

Mating connectors according to DIN EN 175301-803 for connector "K14"

	Material number					
	Without circuitry	With circuitry (indicator light) AC/DC				
	250 V	6 ... 14 V	16 ... 30 V	36 ... 60 V	90 ... 130 V	180 ... 240 V
black	**R901017012**	**R901017030**	**R901017048**	**R901017032**	**R901017035**	**R901017037**
I_{max}	16 A	4 A	4 A	4 A	4 A	4 A

General information

- At version "DBAW.B" and "DBAE/DBAEE/DBAEA", the lowest adjustable pressure (circulation pressure) is set at the pressure relief valve in case of a power failure or cable break. At type DBAW..A, the pressure limiting function is activated.
- The unloading function (DBAW/DBAE/DBAEE/DBAEA) must not be used for safety functions!

Bosch Rexroth AG, RE 25891, edition: 2017-07

Further information

▶ Directional spool valve	Data sheet 23178
▶ Proportional pressure relief valve type DBET(E)	Data sheet 29162
▶ Proportional pressure relief valve type DBETA	Data sheet 29262
▶ Pressure switch HED 8 OH...	Data sheet 50061
▶ Pressure relief valve type Z(2)DB ...	Data sheet 25751
▶ 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
▶ Reliability characteristics according to EN ISO 13849	Data sheet 08012
▶ Hydraulic valves for industrial applications	Operating instructions 07600-B
▶ Selection of the filters	www.boschrexroth.com/filter
▶ Information on available spare parts	www.boschrexroth.com/spc

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