

2-WAY SLIP-IN PRESSURE RELIEF CARTRIDGE VALVES

DBV, DBM, DBE SERIES
ISO 7368 SIZES 16 TO 50



Rev. -, September 2023

FLOW-OPTIMIZED DESIGN FOR UP TO
420 BAR (6,000 PSI) OPERATING PRESSURE

Whenever the highest levels of motion control performance and design flexibility are required, you'll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles. Enhance your machine's performance, and help take your thinking further than you ever thought possible.

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This catalog is for users with technical knowledge. To ensure all the necessary characteristics for the functionality and safety of the system, the user has to check the suitability of the products described herein. The products described herein are subject to change without notice. In case of doubt, please contact Moog.

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For the most current information, visit www.moog.com/industrial or contact your local Moog office.

PRODUCT OVERVIEW

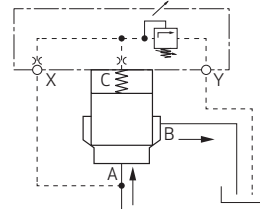
Pilot-operated 2-way slip-in pressure relief cartridge valves are used to protect hydraulic systems against excessively high pressures, and/or for setting and limiting a given system pressure in hydraulic systems. These valves are designed for use in hydraulic manifolds. With a compact design, this product series offers a high power density for high performance hydraulic systems. The valves featured in this catalog are designed for 420 bar (6,000 psi) operation. They are available in sizes 16 to 50 according to ISO 7368.

All configurations shown in this catalog, as well as additional options, can also be generated by using individual cartridges, cartridge covers and pilot valves from the respective catalogs and ordering those components individually. For pressure relief valve sizes between 63 and 100 please also refer to the individual catalogs.

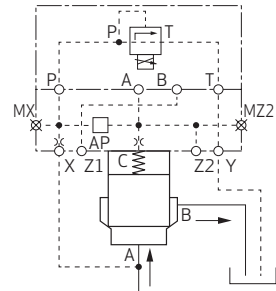
Moog 2-way slip-in pressure relief valves are classified into three separate functions:

- DBV: Standard pressure relief valve with single or multiple pressure settings
- DBM: Pressure relief valve with an electrically operated unloading function, optionally with soft unloading function.
- DBE: Pressure relief valve with an electric proportional pressure relief valve.

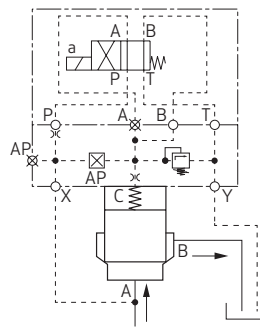
2-Way Pressure Relief Valve - Type DBV



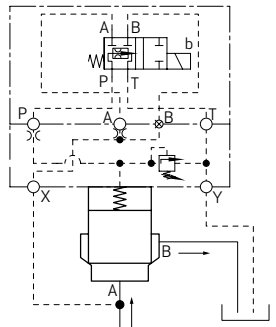
2-way Pressure Relief Valve, with Proportional Setting - Type DBE



2-Way Pressure Relief Valve with Unloading Function - Type DBM



2-way Pressure Relief Valve with Soft Unloading Function - Type DBM



Features and Benefits

Features	Benefits
Flow optimized design that reduces pressure drops, especially for unloading functions	Compact manifold design and minimal energy consumption which reduces operating costs
Rated pressure of up to 420 bar (6,000 psi)	Highest load capability even in extreme environments
Highly reliable and durable design	High degree of system availability
Optimized design of valve seat and shaft seal	Leakage free valve seat and stable pressure control performance
For soft unloading of the relief cartridge valve, an MC1 directional valve is used in combination with a pressure relief pilot valve.	The integrated flow control function of the MC1 directional valve enables a very soft, pressure independent opening without any loss of closing speed of the cartridge valve.

DESCRIPTION OF OPERATION

Operating Principle for Pressure Relief Function

2-Way Slip-in Pressure Relief Valves are vital components of any hydraulic system, and are used to limit the maximum permissible hydraulic pressure where necessary.

Typical applications include limiting pump and cylinder pressures. The limiting of cylinder pressures not only protects the cylinder from damage, but also enables the reliable limitation of the force applied by the cylinder.

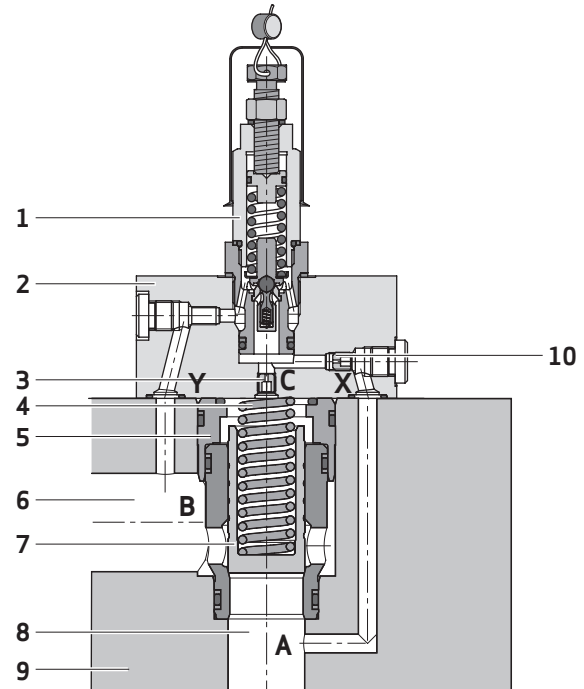
The pressure to be limited is applied to port A (8), and is also routed simultaneously to port C (3) of the cover (2) and the pilot valve (1) via a pilot line (10) equipped with a suitable metering orifice. When the pressure in port A exceeds the pressure setting of the pilot valve, then the poppet (7) opens against the spring force (4) and pressure in C. This process limits a further pressure increase in A.

The available poppets AO and EX have no or only a small control surface at Port B, respectively (see picture below). This leaves two primary control surfaces, surface A working to open the valve, and surface C together with the spring force working to close the valve (see page 8).

By combining the cover and pilot valve, both manual and electrical proportional pressure settings can be realized with or without unloading functionality. In order to get the most out of these functions, it is important to understand the basic operating principles of a pressure cartridge and cover.

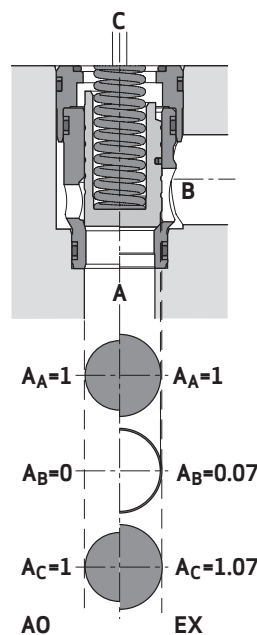
For pressure reducing and compensating functions Moog offers the DMO series of 2-way Slip-in Cartridge Valves with spool design. Please refer to the respective catalog for more information.

2-Way Slip-in Pressure Relief Cartridge Valve



- | | |
|---------------------------------|----------------------------------|
| 1. Pilot valve, pressure relief | 6. B port |
| 2. Cover | 7. Poppet |
| 3. Damping orifice | 8. A port |
| 4. Spring | 9. Manifold |
| 5. Sleeve and cap | 10. X port with metering orifice |

Control Area Ratio



DESCRIPTION OF OPERATION

Type DBV - Standard Pressure Relief Valve

The DBV is a pressure relief valve where the opening (relief) pressure is set via a screw-in pilot valve located in the cover of the DBV.

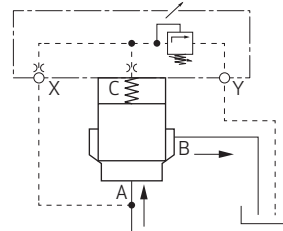
If two or three different opening pressures are needed within the same DBV, additional sandwich plates with screw-in pilot valves can be used. A directional pilot valve then switches between the different pressure settings found in each sandwich plate.

For standard applications, a directional spool type valve can be used (0B0, 1B0 or 2B0 pilot function). Applications that require a leak free valve can make use of a seat type valve (5B0 or 6B0 pilot function).

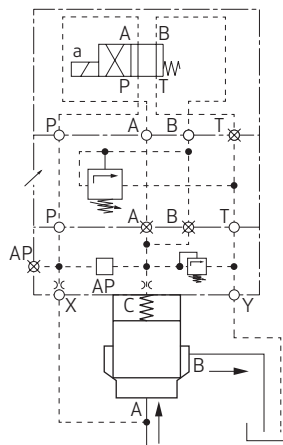
The directional pilot valve, if used, also determines the maximum pressure rating for the DBV:

- 420 bar operating pressure is available for the DBV with no directional pilot valve (only one screw-in pilot valve / pressure setting), or DBV with 3/2-way directional seat type pilot valves.
- 350 bar operating pressure for DBV with directional spool type pilot valves.

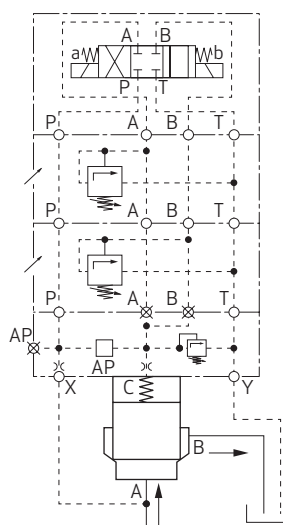
Pressure Relief Valve



Pressure Relief Valve with 2 Pressure Settings



Pressure Relief Valve with 3 Pressure Settings



DESCRIPTION OF OPERATION

Type DBM – 2-way Pressure Relief Valve with Unloading Function

Similar to the DBV, the DBM's opening (relief) pressure is determined by a screw-in pilot valve found in the cover of the DBM.

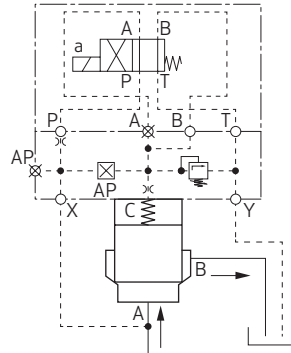
The difference comes with the use of the directional valve to realize an unloading function. A DBM uses one switching position of the directional valve as an unloading function, allowing the pressure in the system to be discharged.

For standard applications, a directional spool type valve can be used for the unloading function (pilot function 0B0, 1B0 or 2B0). Applications that require a leak free valve can make use of a seat type valve (pilot function 5B0 or 6B0).

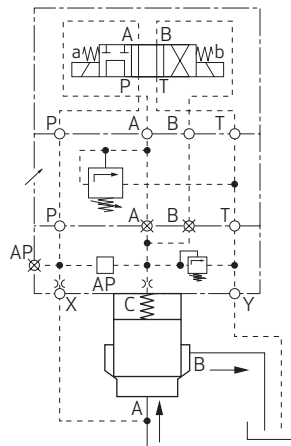
As in type DBV, the directional pilot valve determines the maximum pressure rating:

- 420 bar operating pressure is available for DBM's with 3/2-way directional seat type pilot valves.
- 350 bar operating pressure for DBM's with directional spool type pilot valves.

Pressure Relief Valve with Unloading Function



Pressure Relief Valve with Unloading Function and 2 Pressure Settings



DESCRIPTION OF OPERATION

Type DBM and DBE

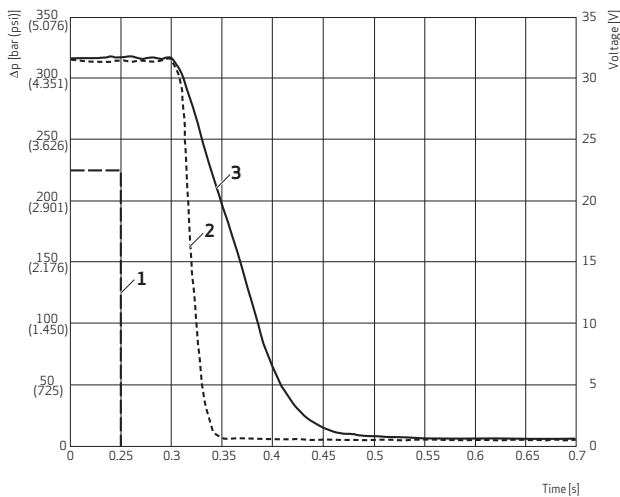
DBM - Pressure Relief Valve with Soft Unloading Function

The soft unloading function can be realized with a combination of an MC1 directional valve and a pressure relief pilot valve.

The integrated flow control function of the MC1 directional valve enables a very soft, pressure independent opening without any loss of closing speed of the cartridge valve.

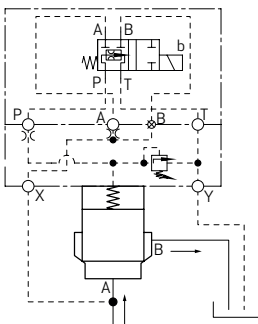
In general, the advantages of a soft unloading (opening) function such as this one can be a benefit to any cartridge valve application.

Pressure Unloading A to B in Relation to Control Signal and Time



1. Control signal
2. Unloading via orifice $\varnothing 0.6$ mm
3. Unloading via MC1 control valve

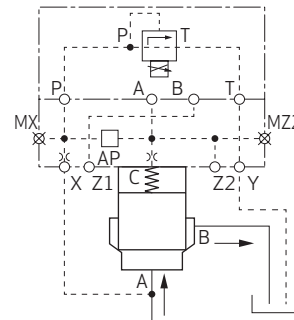
Pressure Relief Valve with Soft Unloading Function



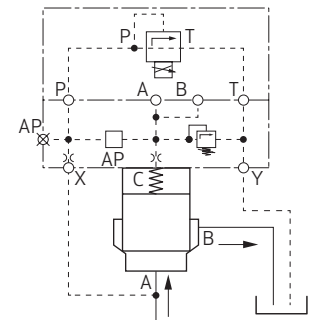
DBE - 2-way Pressure Relief Valve with Electric Proportional Adjustment

The opening (relief) pressure of the DBE is controlled via an electrical proportional pilot valve mounted on the cover of the DBV. Due to pilot valve limitations, the maximum operating pressure of the DBE is limited to 350 bar.

Pressure Relief Valve, Proportionally Operated



Pressure Relief Valve with Manual Maximum Pressure Setting, Proportionally Operated



DESCRIPTION OF OPERATION

Poppet Function

Description of Operation AO and EX Poppet

Two different poppet types are available for the pressure relief function: The AO and EX poppets.

AO Poppet (Without Shaft Seal)

The AO poppet is designed for conventional pressure relief functions. Due to the fact that the poppet has no control surface in port B, the control area ratio is $A_A:A_C = 1:1$.

Please note: For an AO poppet it is important that the pressure in port C does not significantly exceed the pressure in port A, otherwise damage to the valve seat may occur.

EX Poppet (With Shaft Seal)

The EX poppet, with its shaft seal and a control area ratio of $A_A:A_C = 1:1.07$, is ideal for pressure relief applications where it is necessary to seal off port C from port B. The shaft seal (1) installed on the outer diameter of the poppet creates a leak-free seal between the poppet and the cartridge sleeve.

The excess area in the closing direction of the cartridge valve guarantees a tight closing of the valve, when the pressures in ports A and C are balanced. Due to this area ratio, the pilot valve opens at a pressure that is 7 % lower than the cartridge main stage.

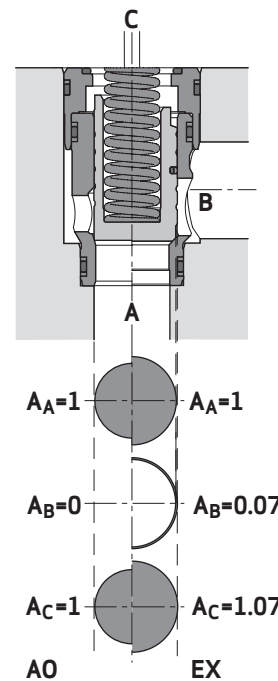
When using a cartridge valve with a shaft seal, Moog recommends using the strongest spring available to ensure a secure closing of the valve against the friction force of the shaft seal.

Optional Internal Pilot Oil Supply

A standard pressure relief valve receives the pilot oil supply through the X port of the cover interface (order code "X", external).

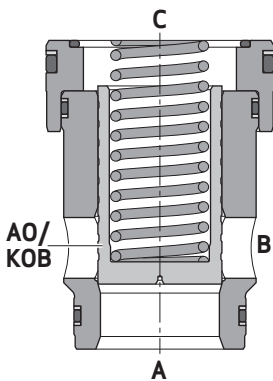
Alternatively, an optional orifice (2) in the cartridge poppet enables an internal pilot oil supply from port A to port C (order code "S", internal).

Control Area Ratios

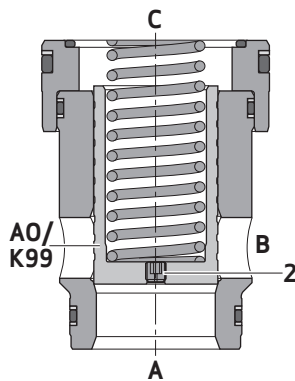


Cartridge With AO Poppet

Pilot oil supply externally through cover interface

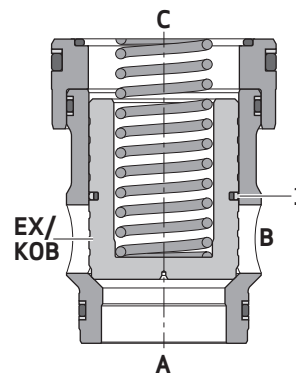


Pilot oil supply internally through orifice (2)

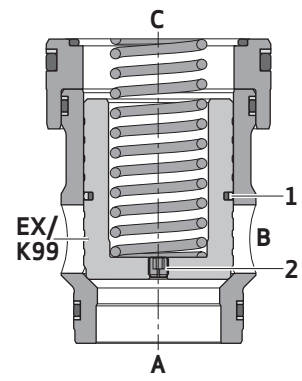


Cartridge With EX Poppet

Pilot oil supply externally through cover interface



Pilot oil supply internally through orifice (2)



- 1 Shaft seal
- 2 Threaded bore in poppet/orifice

DBV, DBE, DBM

General Technical Data

Valve type		2-way Slip-in Cartridge Valve, Pressure Relief Function				
Valve model		DBV, DBE, DBM				
Valve design		Pilot-operated 2-way pressure relief valve				
Mounting type		Manifold mounting				
Flow direction		A → B				
Installation position		Any				
Mounting pattern	Size	16	25	32	40	50
	ISO 7368-	06-1-1-16	08-3-1-16	09-5-1-16	10-7-1-16	11-9-1-16
Storage temperature range	Valve with NBR seals	-30 to +80 °C (-22 to +176 °F)				
	Valve with FKM seals	-20 to +80 °C (-4 to +176 °F)				
Ambient temperature range	Valve with NBR seals	-30 to +80 °C (-22 to +176 °F)				
	Valve with FKM seals	-20 to +80 °C (-4 to +176 °F)				
MTTF_d value according to EN ISO 13849-1		150 years				

Hydraulic Data

Maximum operating pressure port A, B, X		350 bar (5,000 psi) or 420 bar (6,000 psi), depending on pilot valve				
Maximum operating pressure port Y		350 bar ¹⁾				
Maximum recommended flow ²⁾	Size	16	25	32	40	50
	Flow	350 l/min (93 gpm)	800 l/min (212 gpm)	1,400 l/min (370 gpm)	2,000 l/min (529 gpm)	3,500 l/min (926 gpm)
Seal material / hydraulic fluid combination	Valve with NBR seals	<ul style="list-style-type: none"> Mineral oil based hydraulic fluids HFB, HFC hydraulic fluids 				
	Valve with FKM seals	<ul style="list-style-type: none"> Mineral oil based hydraulic fluids HFD hydraulic fluids 				
Temperature range of hydraulic fluid	Valve with NBR seals	-30 to +80 °C (-22 to +176 °F)				
	Valve with FKM seals	-20 to +80 °C (-4 to +176 °F)				
Recommended viscosity range		15 to 46 mm ² /s (cSt)				
Maximum permissible viscosity range		2.8 to 380 mm ² /s (cSt)				
Recommended cleanliness class according to ISO 4406	For functional safety	20/18/15				
	For longer service life	17/14/11				

¹⁾ Y port pressure will influence the opening pressure. It is recommended that the Y port be exposed to as little pressure as possible, e.g. direct connection to leak oil (≈ 0 bar). Pre-set pressure + Y port pressure = opening pressure

²⁾ Maximum flow depends on the particular pressure setting. See the corresponding characteristics curve for details.

CHARACTERISTIC CURVES

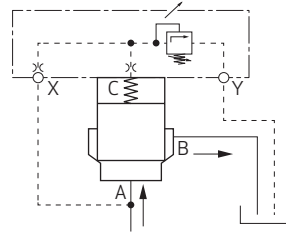
The following diagrams demonstrate the pressure vs. flow curves for different pressure relief valve sizes and poppet types. The relief valves are available in five different pressure ranges (B, E, G, K and L). For each pressure range, the characteristic curves at different pressure settings are shown.

To reach optimal pressure relief valve performance, the curves should be as flat as possible. To achieve this, Moog recommends using the lowest possible pressure range available for the desired pressure setting.

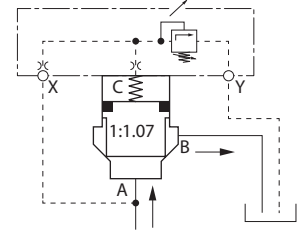
Example: For a pressure setting of 50 bar, a relief valve of pressure range B - 70 bar should be used and not one of pressure range L - 420 bar.

The following schematics show the test setup for the measurement of the characteristic curves:

A0 Poppet (1:1)

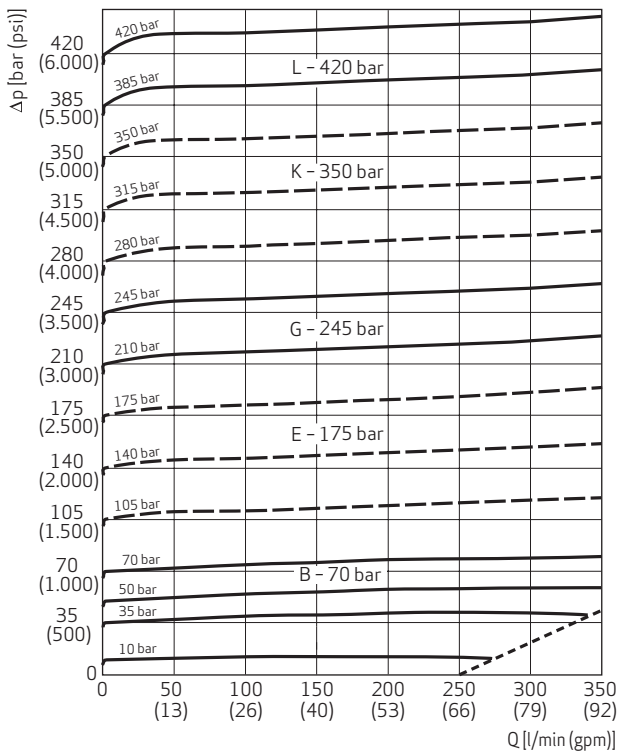


EX Poppet (1:1.07, leakage free)



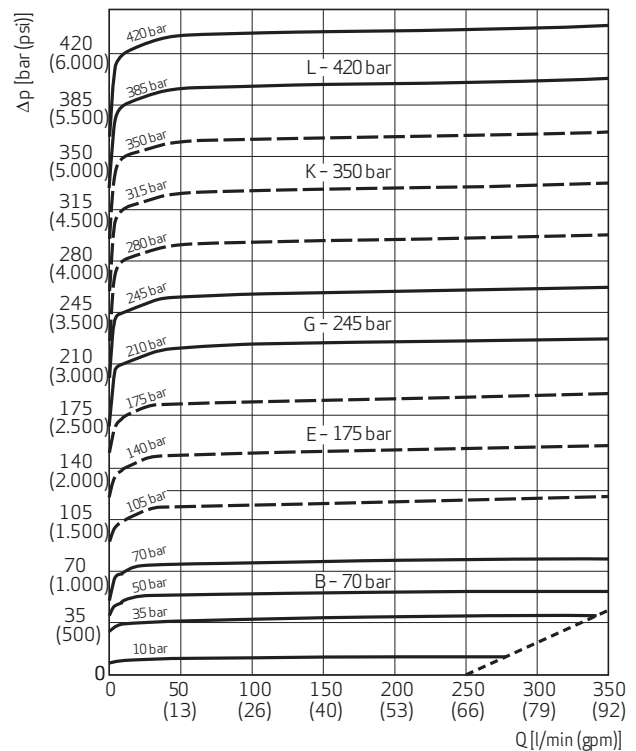
Size 16 with A0 Poppet

Pressures set at 2 l/min (0.53 gpm).



Size 16 with EX Poppet

Pressures set at 8 l/min (2.11 gpm).



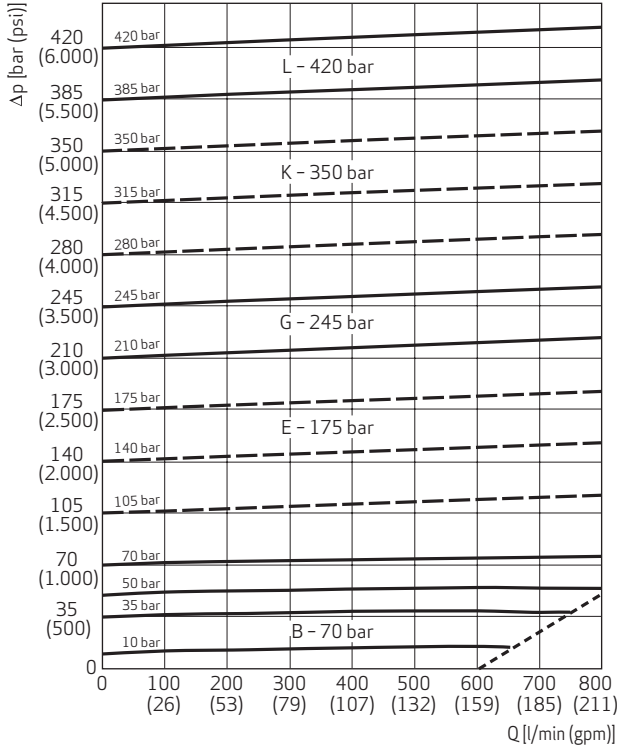
Notes:

The dashed line corresponds to the maximum permissible flow for the respective size. All curves measured with pressureless control oil return (Y). Any pressure at Y-port is additional to the pressure setting. Oil temperature 45 °C (113 °F), oil viscosity 32 mm²/s (cSt).

CHARACTERISTIC CURVES

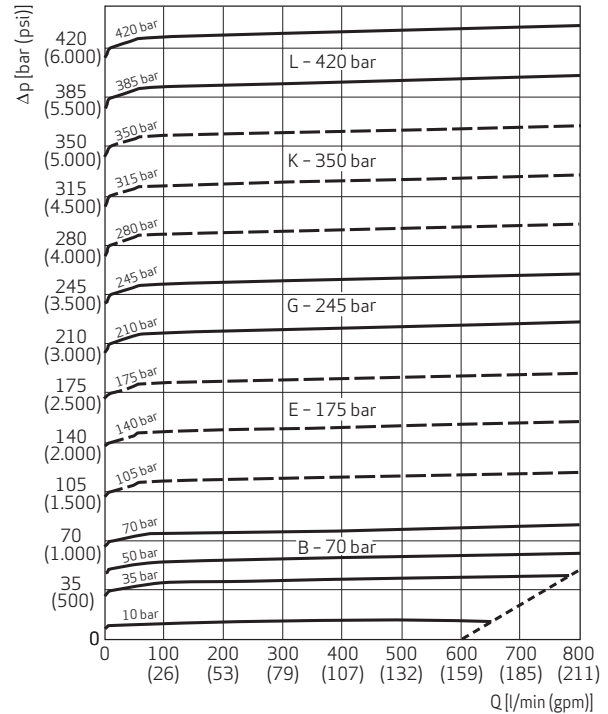
Size 25 with A0 Poppet

Pressures set at 2 l/min (0.53 gpm).



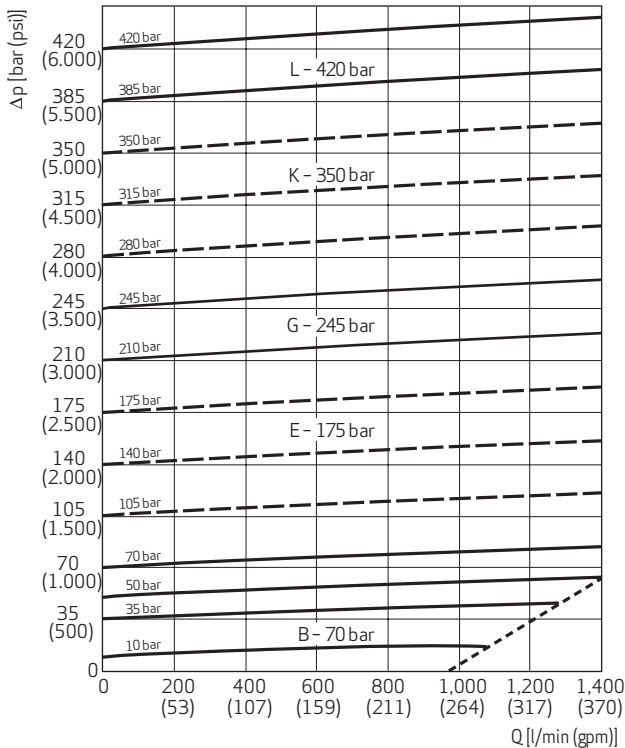
Size 25 with EX Poppet

Pressures set at 8 l/min (2.11 gpm).



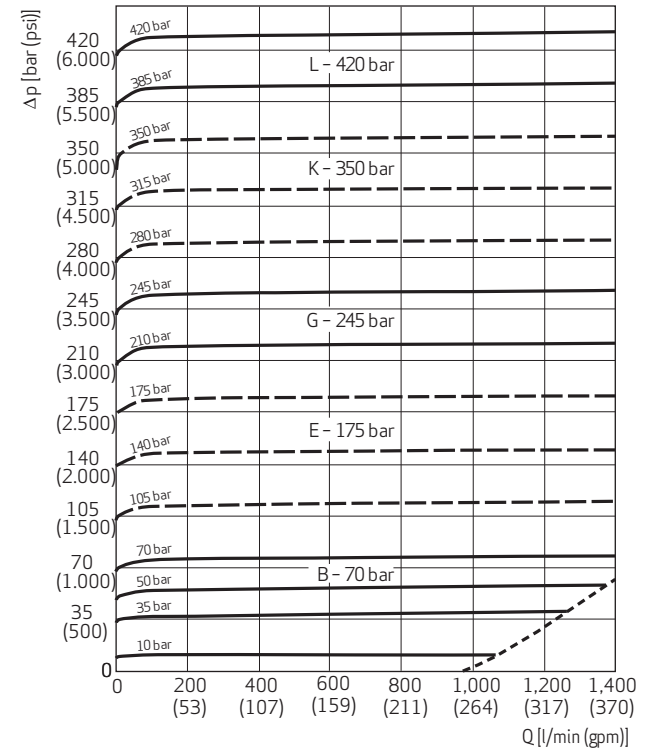
Size 32 with A0 Poppet

Pressures set at 2 l/min (0.53 gpm).



Size 32 with EX Poppet

Pressures set at 8 l/min (2.11 gpm).



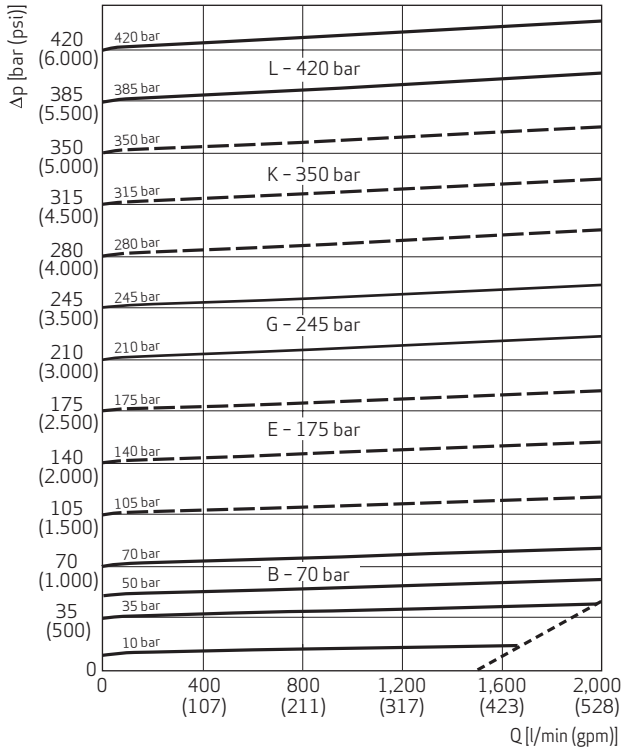
Notes:

The dashed line corresponds to the maximum permissible flow.
 All curves measured with pressureless control oil return (Y). Any pressure at Y-port is additional to the pressure setting.
 Oil temperature 45 °C (113 °F), oil viscosity 32 mm²/s (cSt).

CHARACTERISTIC CURVES

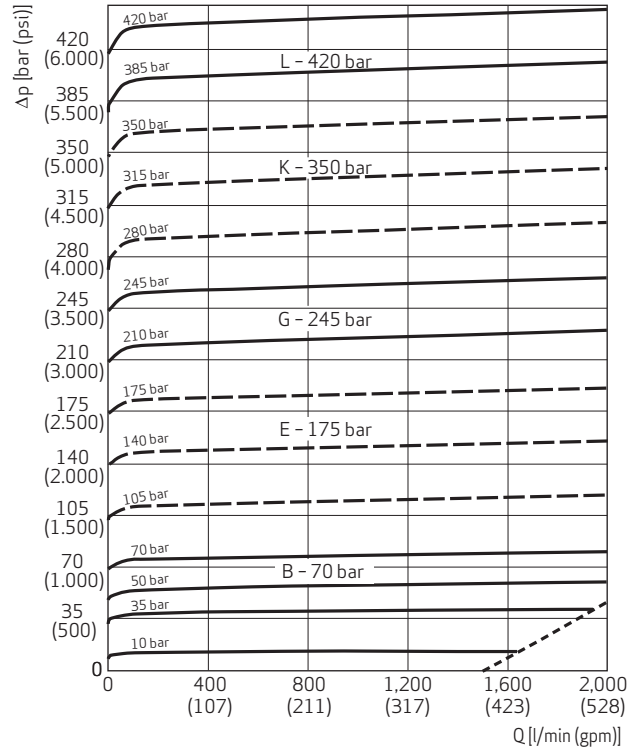
Size 40 with AO Poppet

Pressures set at 2 l/min (0.53 gpm).



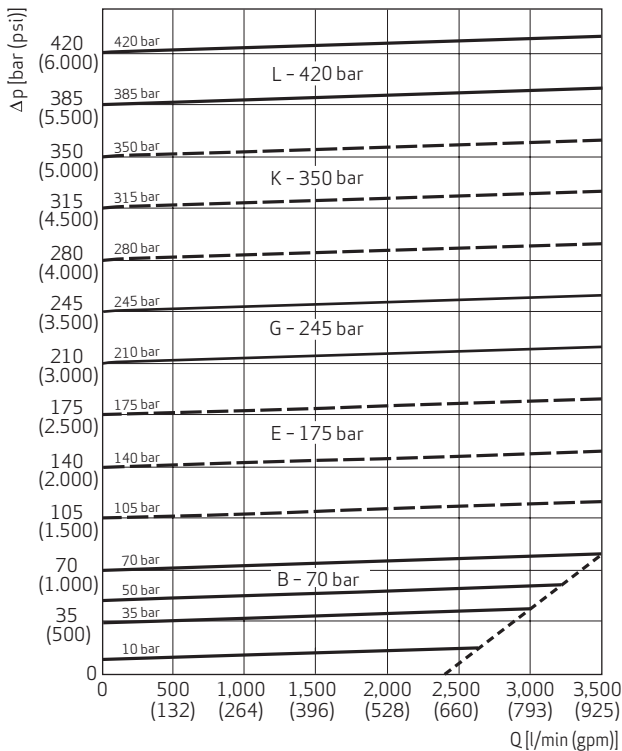
Size 40 with EX Poppet

Pressures set at 8 l/min (2.11 gpm).



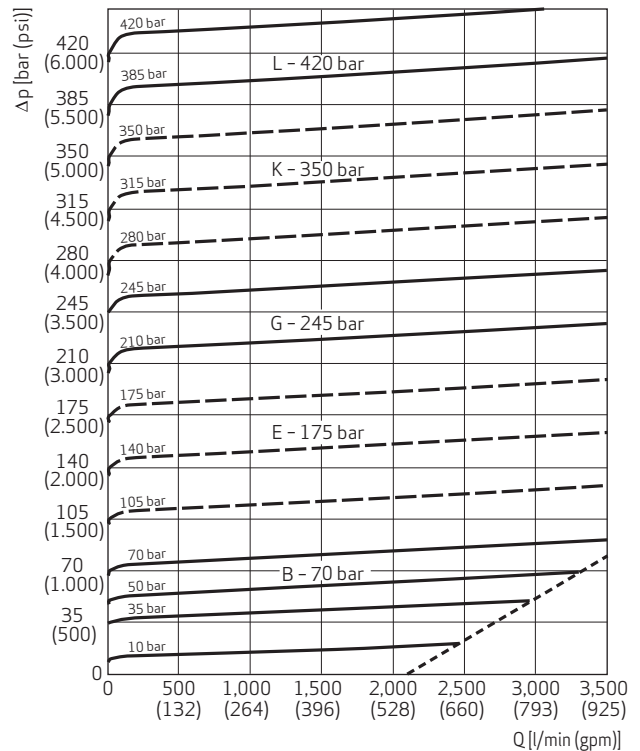
Size 50 with AO Poppet

Pressures set at 2 l/min (0.53 gpm).



Size 50 with EX Poppet

Pressures set at 8 l/min (2.11 gpm).

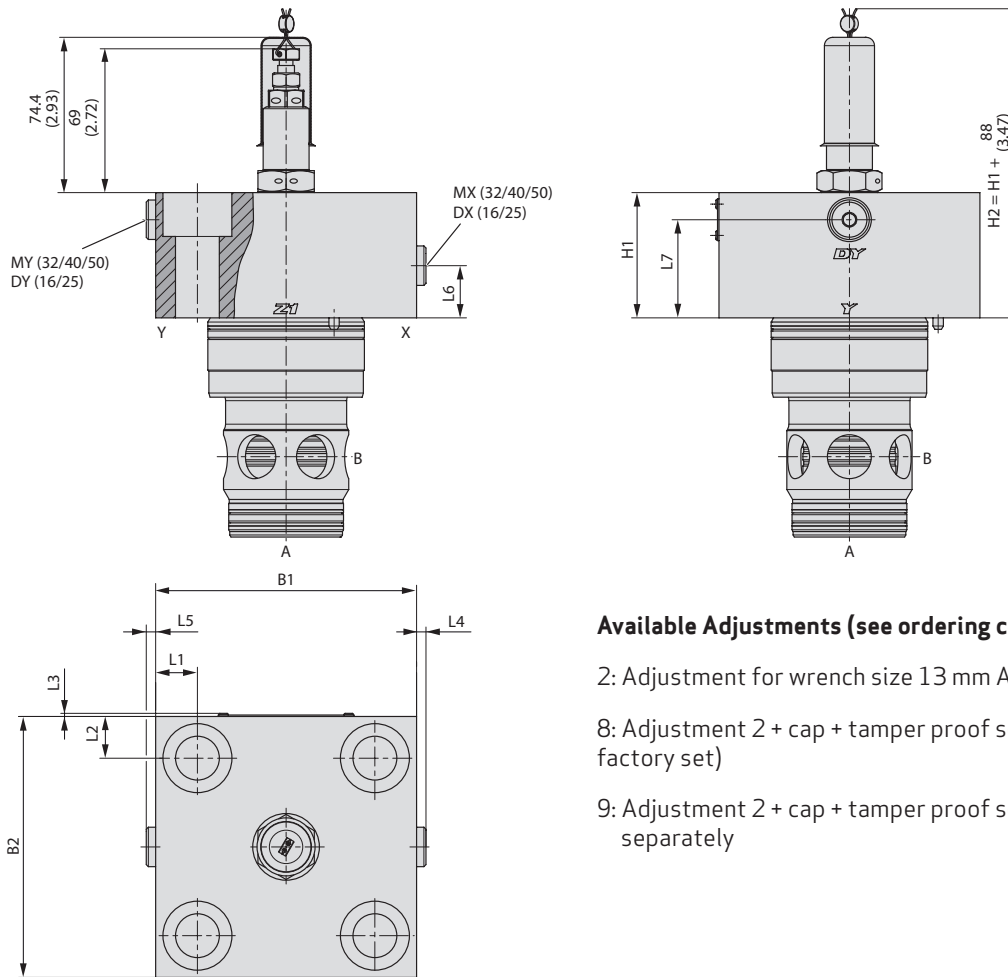


Notes:

The dashed line corresponds to the maximum permissible flow.
 All curves measured with pressureless control oil return (Y). Any pressure at Y-port is additional to the pressure setting.
 Oil temperature 45 °C (113 °F), oil viscosity 32 mm²/s (cSt).

DIMENSIONS

Type DBV Sizes 16 to 50



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

	NG16	NG25	NG32	NG40	NG50
B1 [mm (in)]	80 (3.15) ¹⁾	85 (3.35)	102 (4.02)	125 (4.92)	140 (5.51)
B2 [mm (in)]	65 (2.56)	85 (3.35)	102 (4.02)	125 (4.92)	140 (5.51)
H1 [mm (in)]	35 (1.38)	40 (1.57)	45 (1.77)	60 (2.36)	60 (2.36)
H2 [mm (in)]	123 (4.84)	128 (5.04)	133 (5.24)	148 (5.83)	148 (5.83)
L1 [mm (in)]	17 (0.67)	13.5 (0.53)	16 (0.63)	20 (0.79)	20 (0.79)
L2 [mm (in)]	9.5 (0.37)	13.5 (0.53)	16 (0.63)	20 (0.79)	20 (0.79)
L3 [mm (in)]	1.5 (0.06)	1.5 (0.06)	1.5 (0.06)	1.5 (0.06)	-
L4 [mm (in)]	-	3.5 (0.14)	4.5 (0.18)	4.5 (0.18)	4.5 (0.18)
L5 [mm (in)]	-	-	4.5 (0.18)	4.5 (0.18)	4.5 (0.18)
L6 [mm (in)]	-	12 (0.47)	20 (0.79)	25 (0.98)	25 (0.98)
L7 [mm (in)]	-	-	37.5 (1.48)	47 (1.85)	47 (1.85)
Plug MX/DX	-	G1/8" (SW5)	G1/4" (SW6)	G1/4" (SW6)	G1/4" (SW6)
Plug MY/DY	-	-	G1/4" (SW6)	G1/4" (SW6)	G1/4" (SW6)
M_A for MX, MY [Nm (lbf ft)]	-	14 (0.55)	30 (1.18)	30 (1.18)	30 (1.18)
Weight [kg (lb)]	1.84 (4.06)	2.6 (5.73)	4.6 (10.14)	8.14 (17.95)	11 (24.25)

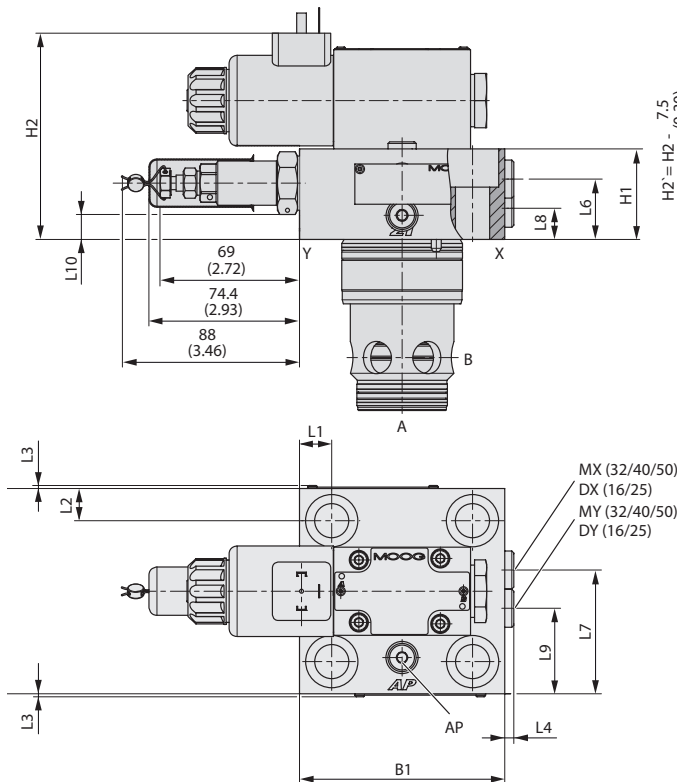
¹⁾ Dimension B1 is larger than defined by ISO 7368.

VALVE DIMENSIONS

Type DBM Sizes 16-32

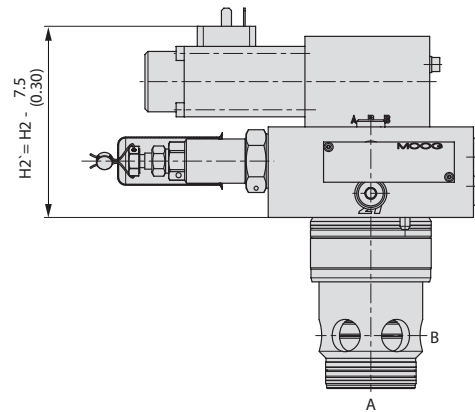
4/2-way Spool Type Valve Type 0B0 / 1B0

DBME_F6A0(EX)_X(S)_0(1)B0
 Series F6: $p_{max} = 350 \text{ bar (5,000 psi)}$



3/2-way Seat Type Valve Type 5B0 / 6B0

DBME_K6A0(EX)_X(S)_5(6)B0
 Series K6: $p_{max} = 420 \text{ bar (6,000 psi)}$



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

	NG16	NG25	NG32
B1 [mm (in)]	80 (3.15) ¹⁾	85 (3.35)	102 (4.02)
B2 [mm (in)]	65 (2.56)	85 (3.35)	102 (4.02)
H1 [mm (in)]	35 (1.38)	40 (1.57)	45 (1.77)
H2 [mm (in)]	132 (5.20)	137 (5.39)	142 (5.59)
L1 [mm (in)]	17 (0.67)	13.5 (0.53)	16 (0.63)
L2 [mm (in)]	9.5 (0.37)	13.5 (0.53)	16 (0.63)
L3 [mm (in)]	1.5 (0.06)	1.5 (0.06)	1.5 (0.06)
L4 [mm (in)]	40 (1.57)	45 (1.77)	50 (1.97)
L5 [mm (in)]	-	-	3.5 (0.14)
L6 [mm (in)]	46 (1.81)	58 (2.28)	49 (1.93)
L7 [mm (in)]	63 (2.48)	75 (2.95)	66 (2.60)
L8 [mm (in)]	76 (2.99)	87 (3.43)	79 (3.11)
L9 [mm (in)]	-	-	27 (1.06)
L10 [mm (in)]	-	-	10.3 (0.41)
Weight [kg (lb)]	3.5 (7.72)	4.2 (9.26)	6.4 (14.11)

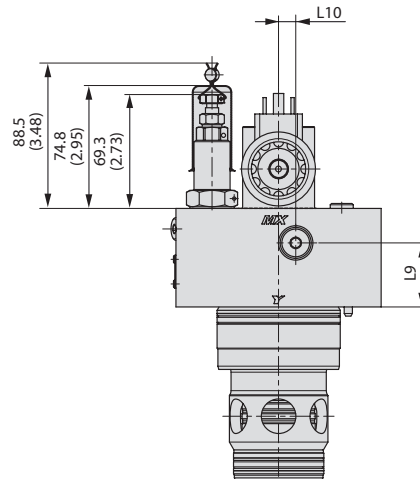
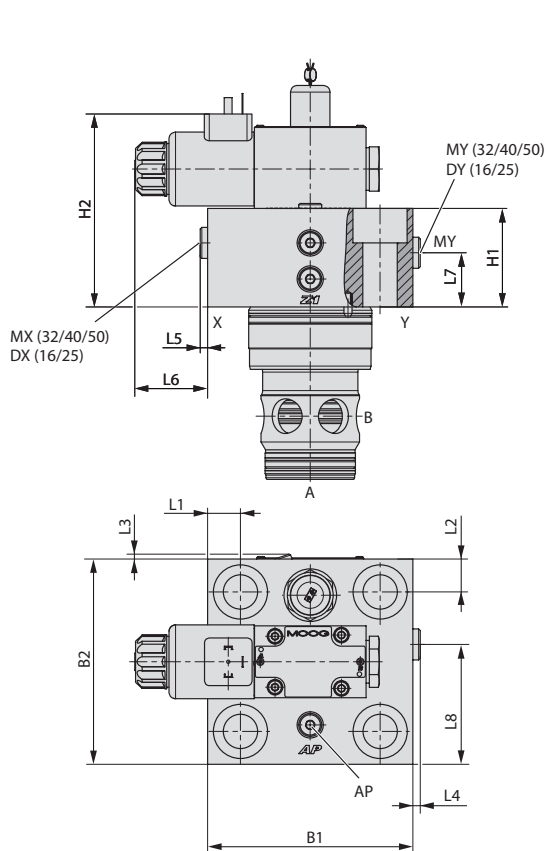
¹⁾ Dimension B1 is larger than defined by ISO 7368.

VALVE DIMENSIONS

Type DBM Sizes 40-50

4/2-way Spool Type Valve Type 0B0 / 1B0

DBME_F6A0(EX)_X(S)_0(1)B0
 Series F6: $p_{max} = 350 \text{ bar (5,000 psi)}$



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

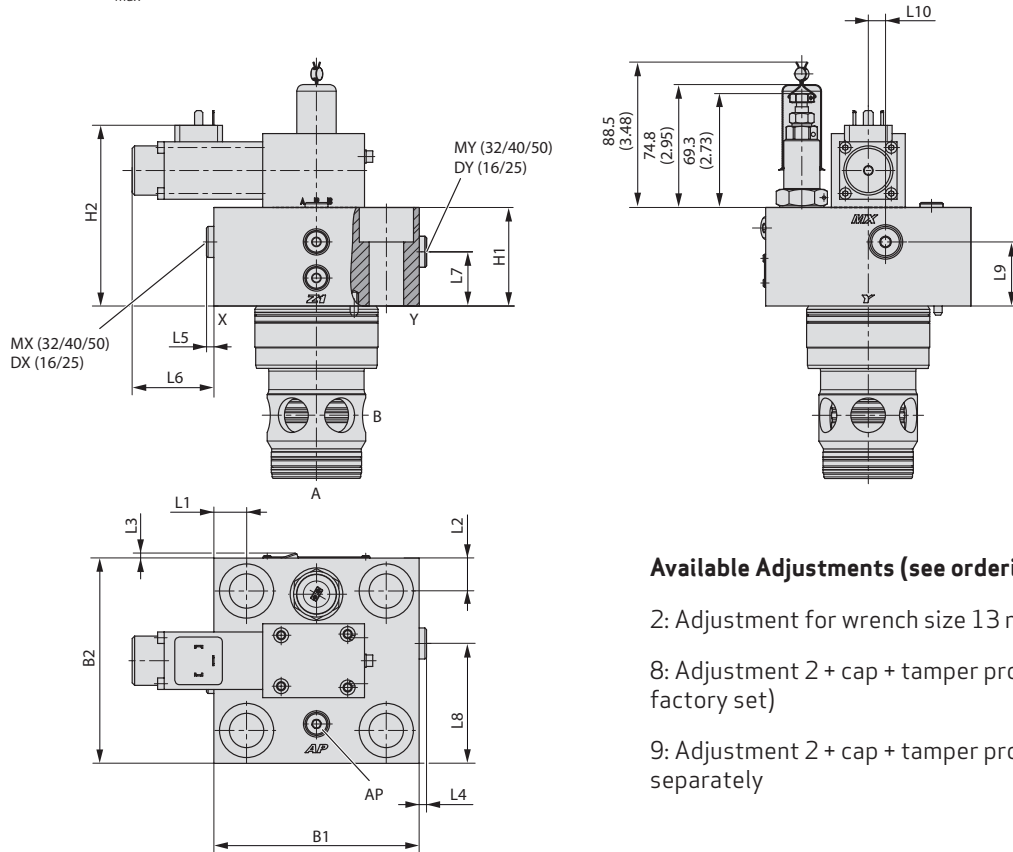
	NG40	NG50
B1 [mm (in)]	125 (4.92)	140 (5.51)
B2 [mm (in)]	125 (4.92)	140 (5.51)
H1 [mm (in)]	60 (2.36)	60 (2.36)
H2 [mm (in)]	157 (6.18)	157 (6.18)
L1 [mm (in)]	20 (0.79)	20 (0.79)
L2 [mm (in)]	20 (0.79)	20 (0.79)
L3 [mm (in)]	1.5 (0.06)	-
L4 [mm (in)]	65 (2.56)	65 (2.56)
L5 [mm (in)]	4.5 (0.18)	4.5 (0.18)
L6 [mm (in)]	38 (1.50)	30 (1.18)
L7 [mm (in)]	55 (2.17)	47 (1.85)
L8 [mm (in)]	67 (2.64)	60 (2.36)
L9 [mm (in)]	60 (2.36)	60 (2.36)
L10 [mm (in)]	10.5 (0.41)	10.5 (0.41)
Weight [kg (lb)]	9.7 (21.38)	13 (28.66)

VALVE DIMENSIONS

Type DBM Sizes 40-50

3/2-way Seat Type Valve Type 5B0 / 6B0

DBME_K6A0(EX)_X(S)_5(6)B0
 Series K6: $p_{max} = 420 \text{ bar (6,000 psi)}$



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

	NG40	NG50
B1 [mm (in)]	125 (4.92)	140 (5.51)
B2 [mm (in)]	125 (4.92)	140 (5.51)
H1 [mm (in)]	60 (2.36)	60 (2.36)
H2 [mm (in)]	157 (6.18)	157 (6.18)
L1 [mm (in)]	20 (0.79)	20 (0.79)
L2 [mm (in)]	20 (0.79)	20 (0.79)
L3 [mm (in)]	1,5 (xx)	-
L4 [mm (in)]	65 (2.56)	65 (2.56)
L5 [mm (in)]	4.5 (0.18)	4.5 (0.18)
L6 [mm (in)]	38 (1.50)	30 (1.18)
L7 [mm (in)]	55 (2.17)	47 (1.85)
L8 [mm (in)]	67 (2.64)	60 (2.36)
L9 [mm (in)]	30 (1.18)	30 (1.18)
L10 [mm (in)]	10.5 (0.41)	10.5 (0.41)
Weight [kg (lb)]	9.7 (21.38)	13 (28.66)

PRESSURE RELIEF SANDWICH VALVE

Type ZDBDP06 according to ISO 4401-03-02-0-05

Mode of Operation/Scope

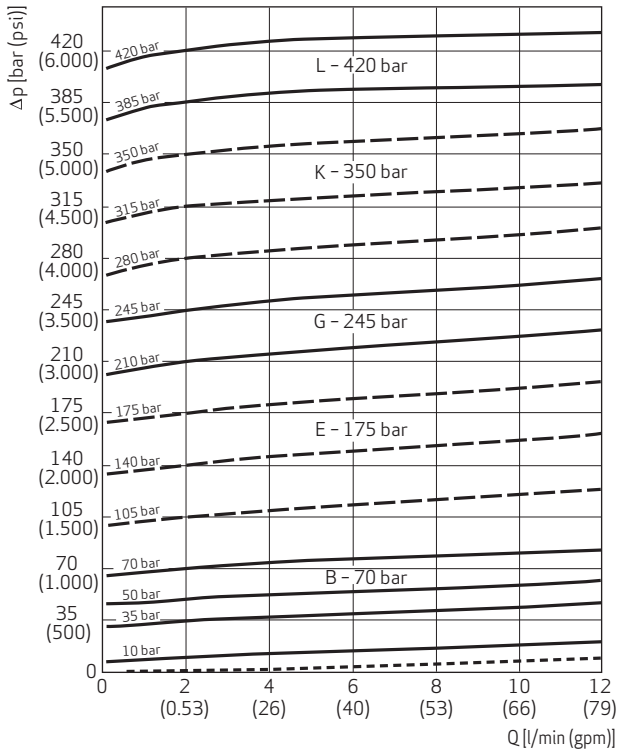
Type ZDBDP06 pressure valves are directly controlled pressure relief valves of a sandwich plate design.

The valve is designed to achieve a maximum operating pressure of 420 bar (6,000 psi).



Characteristic Curves

Pressure set at 2 l/min (0.53 gpm).



Notes:

The dashed line corresponds to the maximum permissible flow.

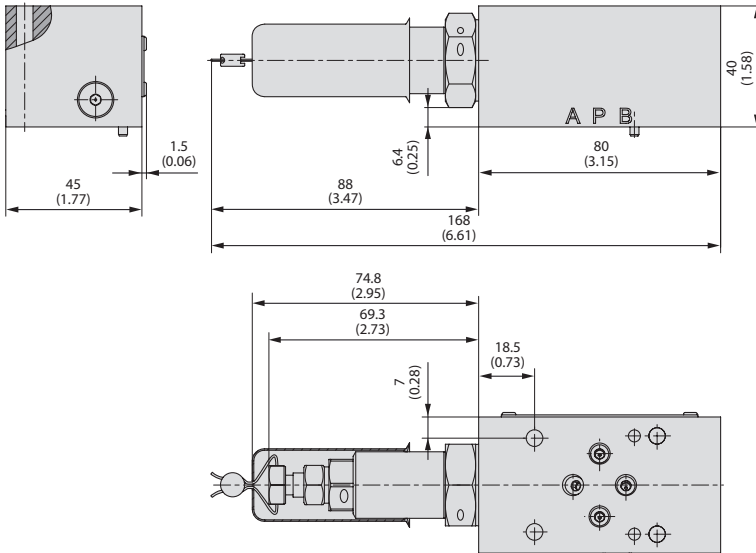
All curves measured with pressureless control oil return (Y). Any pressure at Y-port is additional to the pressure setting.

Oil temperature 45 °C (113 °F), oil viscosity 32 mm²/s (cSt).

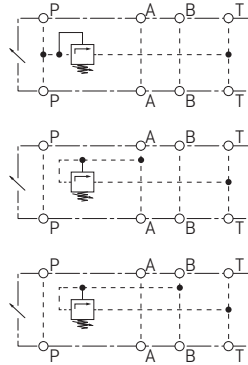
PRESSURE RELIEF SANDWICH VALVE

Type ZDBDP06 according to ISO 4401-03-02-0-05 ¹⁾

Relief Valve Adjustment over A-port (MA)



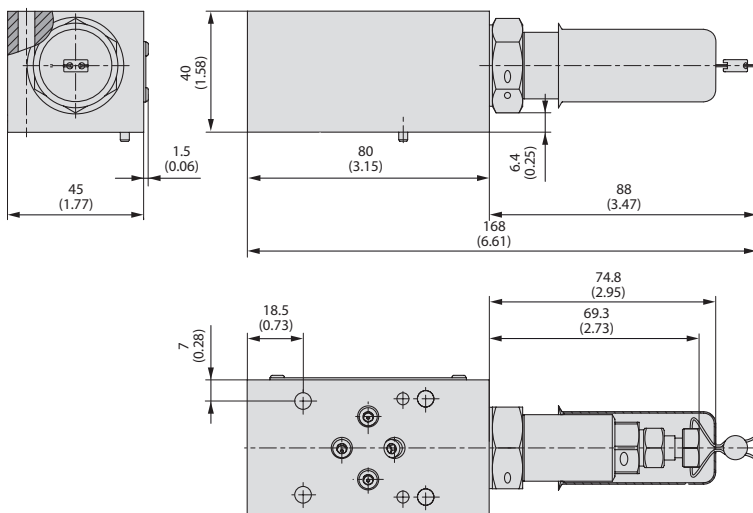
Available Schematics



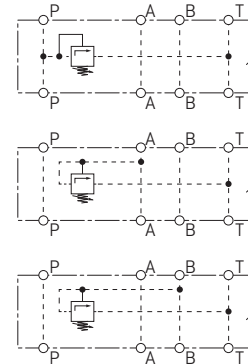
Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

Relief Valve Adjustment over B-port (MB)



Available Schematics



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

¹⁾ For detailed information see datasheet Z_P06

PRESSURE RELIEF VALVE

Type DBDP06 according to ISO 4401-03-02-0-05 ¹⁾

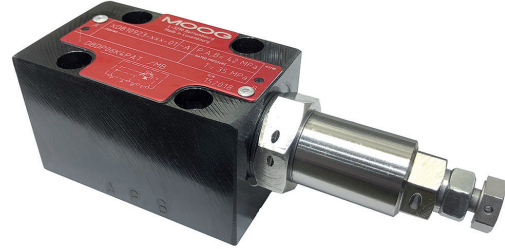
Mode of Operation/Scope

Type DBDP06 pressure valves are direct controlled pressure relief valves with subplate mounting design.

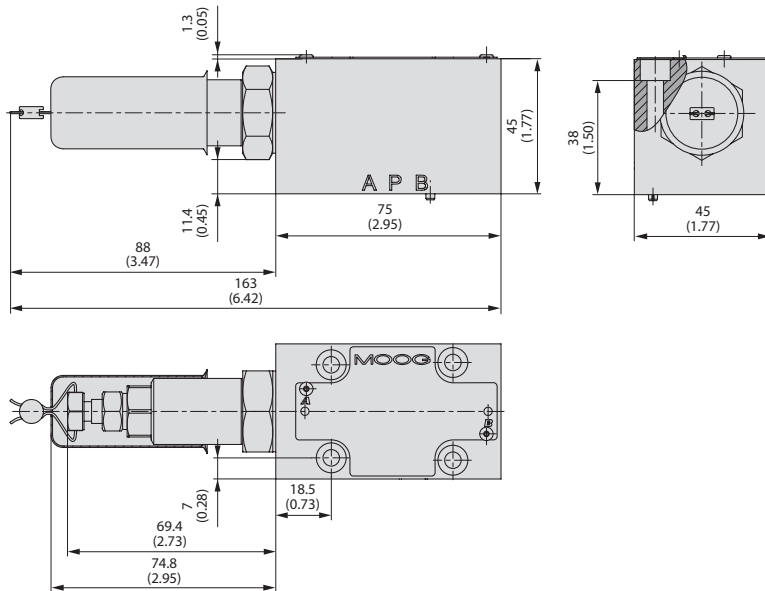
Maximum operating pressure of 420 bar (6,000 PSI).

Characteristic Curves

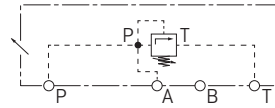
See type ZDBDP06 sandwich plate valves.



Relief Valve Adjustment over A-port (MA)



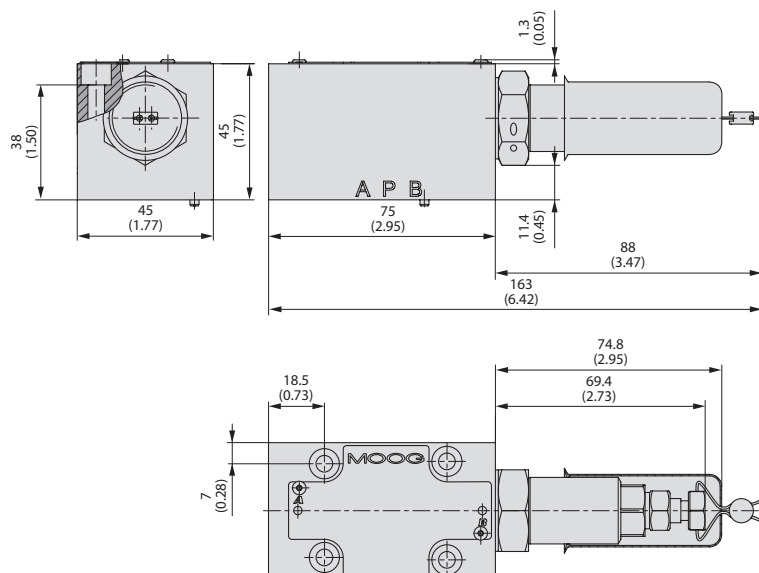
Available Schematics



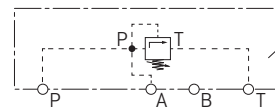
Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

Relief Valve Adjustment over B-port (MB)



Available Schematics



Available Adjustments (see ordering code)

- 2: Adjustment for wrench size 13 mm AF
- 8: Adjustment 2 + cap + tamper proof seal (relief pressure factory set)
- 9: Adjustment 2 + cap + tamper proof seal delivered separately

For detailed information see datasheet Z_P06

PROPORTIONAL PRESSURE RELIEF VALVE

Type DBEP064007 according to ISO 4401-03-02-0-05

Mode of Operation/Scope

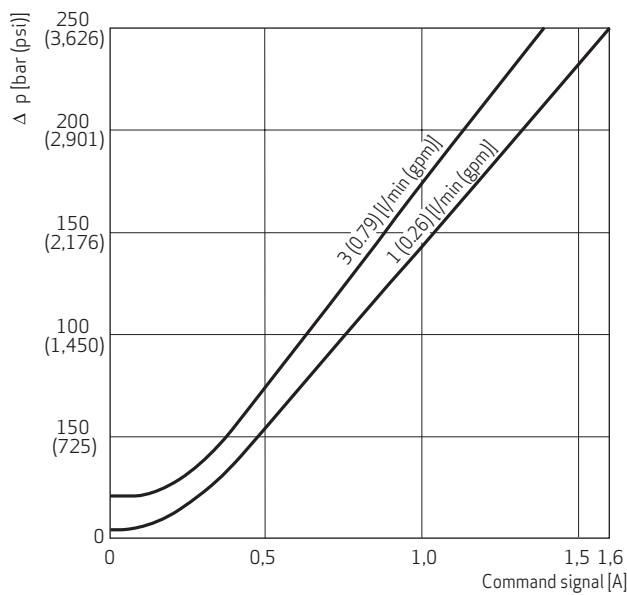
Type DBEP06 proportional pressure relief valves are designed for limiting the pressure in a hydraulic system in proportion to an applied electrical input.

These open-loop, single-stage valves can be used for direct control of pressure in low flow systems (max. 3 l/min), or for pilot control of larger pressure controls, and for such applications as pressure-controlled pumps.

The valves are designed for a maximum operating pressure of 350 bar (5,000 psi).

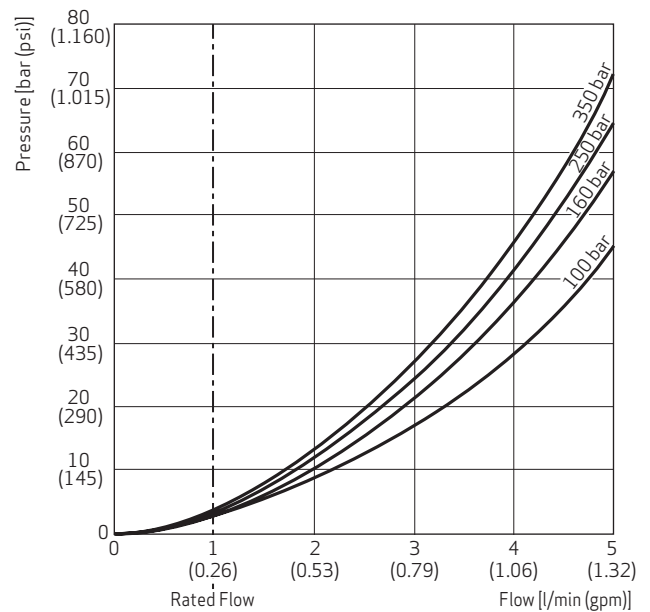
Pressure Gain

Typical pressure vs. command signal response of N-DBEP06H4007GA/MB valves
 Test conditions: $v = 32 \text{ mm}^2/\text{s}$ and $t = 40^\circ \text{ C}$

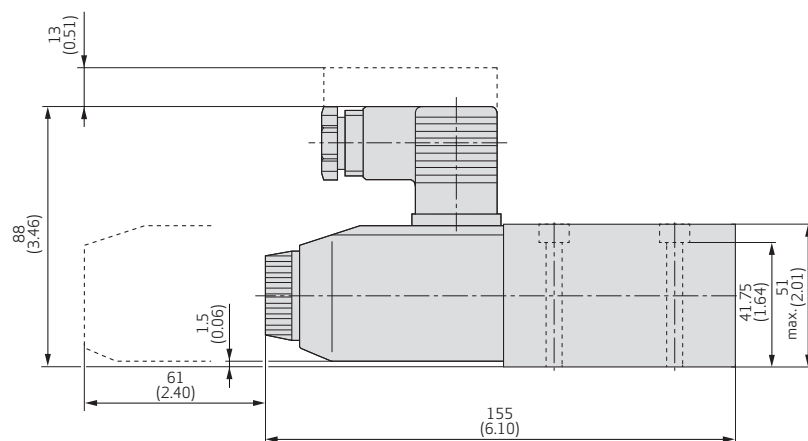


Pressure Override

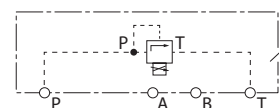
Test conditions: $v = 32 \text{ mm}^2/\text{s}$ and $t = 40^\circ \text{ C}$



Solenoid Over B-port (MB)



Available schematics



ACCESSORIES

Removal Tool for Slip-in Cartridge Valves

Size	Removal tool
16 to 50	XEB19149-001-00

The removal tool for slip-in cartridge valves between size 16 and 50 consists of a locking device and a sliding hammer.

Step A)

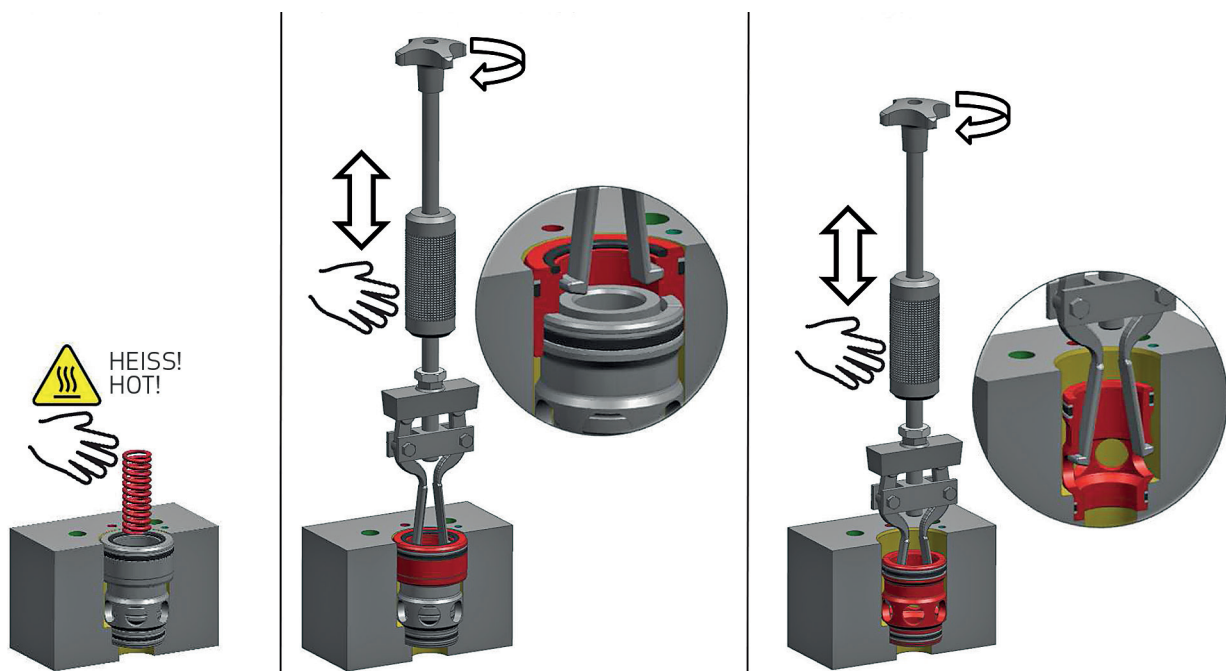
Remove the spring by hand. For sizes 40 and 50 also remove the poppet by hand.

Step B)

Insert the removal tool into the valve. Use the grip to expand the spreader arms making sure that the arms engage with the groove of the sleeve cap. Use the sliding hammer to remove the sleeve cap from the manifold. Afterwards poppet sizes 16, 25 and 32 can be removed by hand.

Step C)

Using the same procedure, remove the valve sleeve from the manifold. It is important that the arms engage below the guide surface of the sleeve in the lateral holes. Otherwise, damage may occur to the guide surface of the sleeve.



SPARE PARTS

Seal Kits for Cartridge Main Stages

Size	Cartridge N-DB_E_AO ¹⁾	Cartridge N-DB_E_EX ¹⁾
16	X731-016_O_D000N00	X731-016_X_D000N00
25	X731-025_O_D000N00	X731-025_X_D000N00
32	X731-032_O_D000N00	X731-032_X_D000N00
40	X731-040_O_D000N00	X731-040_X_D000N00
50	X731-050_O_D000N00	X731-050_X_D000N00

Seal Kits for Cartridge Covers

Size	Cover N-DB_E/DBA ²⁾	Cover N-DB_E/DBD ²⁾	Cover N-DBEE_/1WDB	Cover N-DBME_/DBE
16	XEB19426D000N00	XEB19417D000N00	XEB18541D000N00	XEB19508D000N00
25	XEB19425D000N00	XEB19416D000N00	XEB18520D000N00	XEB19509D000N00
32	XEB19423D000N00	XEB19415D000N00	XEB18505D000N00	XEB19510D000N00
40	XEB19422D000N00	XEB19414D000N00	XEB18446D000N00	XEB19511D000N00
50	XEB19421D000N00	XEB19392D000N00	XEB18428D000N00	XEB19512D000N00

All specified seal sets are with NBR seals.

Further information on other spare parts can be found in the built-in valves catalog.

¹⁾ Applies to valve types DBV, DBM and DBE

²⁾ Applies to valve types DBV and DBM

GENERAL ORDERING INFORMATION

To support the creation of ordering codes for certain configurations of relief valves, the following pages show excerpts of the ordering code for different variants. Those excerpts show the configurations options that are unique or limited for the particular configuration. General options like size or pressure have been left blank, and have to be taken from the complete ordering information table at the end of the catalog.

For the DBV pressure relief function and the DBM simple relief with unloading functions, the preferred configurations including ordering codes are provided in the tables.

DBV - Standard Pressure Relief Valve, Pilot Operated

DBV - Pressure Relief Valve with 2 Pressure Settings

DBV - Pressure Relief Valve with 3 Pressure Settings

DBM - Pressure Relief Valve with Unloading Function

DBM - Pressure Relief Valve Bypassed / Soft Unloading when Solenoid is De-energized

DBM - Pressure Relief Valve with Unloading Function and 2 Pressure Settings

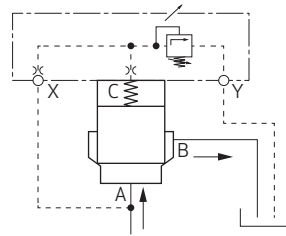
DBE - Pressure Relief Valve, Proportionally operated

DBV - STANDARD PRESSURE RELIEF VALVE, PILOT OPERATED

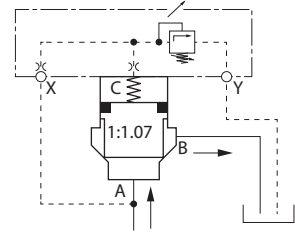
- Valve function DBV
- Poppet type AO or EX
- Control cover type "DBA"

Note:
 A type DBV pilot operated pressure relief valve can only be leakage-free if the EX poppet is used

Poppet Type AO
 (no shaft seal on poppet)



Poppet Type EX
 (with shaft seal on poppet)



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

1	-	DBV	E	5	K	7	6	9	X	11	12	-	/	14a	;	14b	;	14c		
1	-	DBV	E	5	K	7	6	9	X	11	12	-	/	X..	;	C..	;	DBA	;	EP..
												<p>14c Option: Pressure setting (Adjustment 8 only) e. g. EP350 = Relief pressure factory set to 350 bar</p>								
												<p>14b Option: Cover type DBA Cover with integrated pressure relief valve</p>								
												<p>14a Option: Orifice configuration i. e. X10 = orifice Ø 1,0 mm in X-port of the cartridge cover</p>								
<p>1 Seal material</p>																				
<p>5 Size</p>																				
<p>7 Valve spring (cartridge)</p>																				
<p>9 Poppet type</p>																				
<p>11 Adjustment of relief valve in cover</p>																				
<p>12 Pressure range of relief pilot valve in cover</p>																				

DBV - STANDARD PRESSURE RELIEF VALVE, PILOT OPERATED

Preferred Configurations Type

Size	Pressure range		Configuration with AO poppet (no shaft seal on poppet)	Configuration with EX poppet (with shaft seal on poppet)
	bar	psi		
16	70	1,000	N-DBVE16KT6AOX2B/X15;C15;DBA	N-DBVE16KT6EXX2B/X15;C15;DBA
	175	2,500	N-DBVE16KU6AOX2E/X12;C12;DBA	N-DBVE16KU6EXX2E/X12;C12;DBA
	245	3,500	N-DBVE16KU6AOX2G/X12;C12;DBA	N-DBVE16KU6EXX2G/X12;C12;DBA
	350	5,000	N-DBVE16KU6AOX2K/X12;C12;DBA	N-DBVE16KU6EXX2K/X10;C12;DBA
	450	6,500	N-DBVE16KU6AOX2L/X12;C12;DBA	N-DBVE16KU6EXX2L/X09;C12;DBA
25	70	1,000	N-DBVE25KT6AOX2B/X15;C15;DBA	N-DBVE25KT6EXX2B/X15;C15;DBA
	175	2,500	N-DBVE25KU6AOX2E/X12;C12;DBA	N-DBVE25KU6EXX2E/X12;C12;DBA
	245	3,500	N-DBVE25KU6AOX2G/X12;C12;DBA	N-DBVE25KU6EXX2G/X12;C12;DBA
	350	5,000	N-DBVE25KU6AOX2K/X12;C12;DBA	N-DBVE25KU6EXX2K/X10;C12;DBA
	450	6,500	N-DBVE25KU6AOX2L/X12;C12;DBA	N-DBVE25KU6EXX2L/X09;C12;DBA
32	70	1,000	N-DBVE32KT6AOX2B/X15;C15;DBA	N-DBVE32KT6EXX2B/X15;C15;DBA
	175	2,500	N-DBVE32KU6AOX2E/X12;C15;DBA	N-DBVE32KU6EXX2E/X12;C15;DBA
	245	3,500	N-DBVE32KU6AOX2G/X12;C15;DBA	N-DBVE32KU6EXX2G/X12;C15;DBA
	350	5,000	N-DBVE32KU6AOX2K/X12;C15;DBA	N-DBVE32KU6EXX2K/X10;C15;DBA
	450	6,500	N-DBVE32KU6AOX2L/X12;C15;DBA	N-DBVE32KU6EXX2L/X09;C15;DBA
40	70	1,000	N-DBVE40KT6AOX2B/X15;C15;DBA	N-DBVE40KT6EXX2B/X15;C15;DBA
	175	2,500	N-DBVE40KU6AOX2E/X12;C15;DBA	N-DBVE40KU6EXX2E/X12;C15;DBA
	245	3,500	N-DBVE40KU6AOX2G/X12;C15;DBA	N-DBVE40KU6EXX2G/X12;C15;DBA
	350	5,000	N-DBVE40KU6AOX2K/X12;C15;DBA	N-DBVE40KU6EXX2K/X10;C15;DBA
	450	6,500	N-DBVE40KU6AOX2L/X12;C15;DBA	N-DBVE40KU6EXX2L/X09;C15;DBA
50	70	1,000	N-DBVE50KT6AOX2B/X15;C18;DBA	N-DBVE50KT6EXX2B/X15;C18;DBA
	175	2,500	N-DBVE50KU6AOX2E/X12;C18;DBA	N-DBVE50KU6EXX2E/X12;C18;DBA
	245	3,500	N-DBVE50KU6AOX2G/X12;C18;DBA	N-DBVE50KU6EXX2G/X12;C18;DBA
	350	5,000	N-DBVE50KU6AOX2K/X12;C18;DBA	N-DBVE50KU6EXX2K/X10;C18;DBA
	450	6,500	N-DBVE50KU6AOX2L/X12;C18;DBA	N-DBVE50KU6EXX2L/X09;C18;DBA

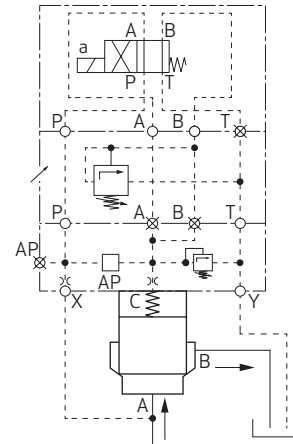
DBV - PRESSURE RELIEF VALVE WITH 2 PRESSURE SETTINGS

- Poppet type AO or EX
- Control cover type "DBD"
- Sandwich plate Type ZDBD_AT_/MA
- Pilot valve WE42P06 spool type 21

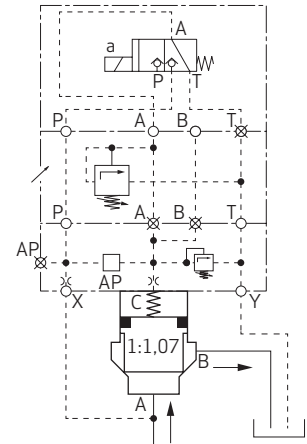
Note:
A pilot operated pressure relief valve type DBV can only be leakage-free if the EX poppet is used in combination with a seat valve.

To achieve a maximum operating pressure of 420 bar (6,000 psi), the pilot valve must be configured as a seat valve.

Pilot Function "0B0" and "1B0"



Pilot Function "5B0" and "6B0"



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

1	-	DBV	E			6		X				/	A00; B00	:	X..	:	C..	:	DBD	:	EP..	:	ZD...
1	Seal material																						
5	Size																						
6	Series																						
F	Max. Operating Pressure 350 bar (Pilot function 0B0 and 1B0)																						
K	Max. Operating Pressure 420 bar (Pilot function 5B0 and 6B0)																						
7	Valve spring (cartridge)																						
9	Poppet type																						
11	Adjustment of relief valve in cover																						
12	Pressure range of relief pilot valve in cover																						
13	Pilot Function																						
0B0	Pressure Relief low-pressure when solenoid is de-energized (4/2-Spool Type Pilot Valve)																						
1B0	Pressure Relief low-pressure when solenoid is energized (4/2-Spool Type Pilot Valve)																						
5B0	Pressure Relief low-pressure when solenoid is de-energized (3/2-Seat Type Pilot Valve)																						
6B0	Pressure Relief low-pressure when solenoid is energized (3/2-Seat Type Pilot Valve)																						
14a	Option: Orifice configuration e.g. X10 = orifice Ø 1,0 mm in X-port of the cartridge cover A00; B00 = A- and B-port in cover plugged																						
14b	Option: Cover type DBD Cover with integrated pressure relief valve and pilot valve interface																						
14c	Option: Pressure setting (Adjustment 8 only) e.g. EP350 = Relief pressure factory set to 350 bar																						
14e	Option: Pressure relief sandwich valves e.g. ZDA9L = ZDBD sandwich valve - Adjustment aligned to A-port - Adjustment 9 (see point 11) - Pressure range L (see point 12)																						

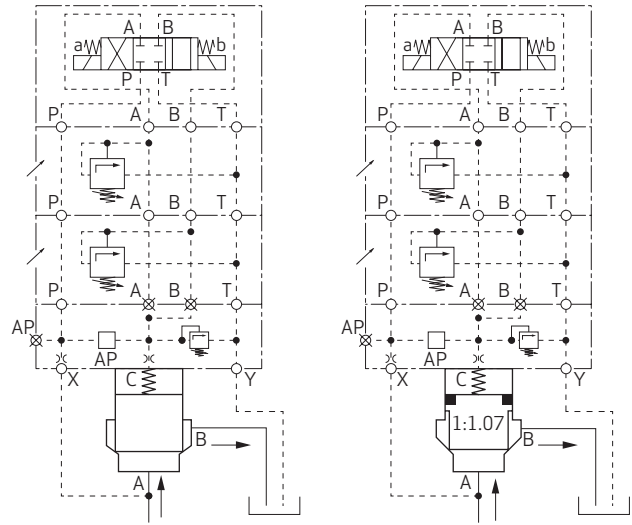
DBV - PRESSURE RELIEF VALVE WITH 3 PRESSURE SETTINGS

- Poppet type AO or EX
- Control cover type "DBD"
- Sandwich plate Type ZDBD_AT_/MA
- Sandwich plate Type ZDBD_BT_/MA
- Pilot valve WE43P06 piston type 03

Note:

A pilot operated pressure relief valve type DBV can only be leakage-free if the EX poppet is used in combination with a seat valve.

With a 4/3-way spool valve, there is still residual leakage through the pilot valve.



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

1	-	DBV	E	5	F	7	6	9	X	11	12	13	/	14a	A00; B00	X..	C..	14b	DBD	14c	EP..	ZD...	14e	ZD...
													<p>14e Option: Pressure relief sandwich valves e.g. ZDA9K = ZDBD sandwich valve - Adjustment aligned to A-port - Adjustment 9 (see point 11) - Pressure range K (see point 12)</p> <p>e.g. ZDA2B = ZDBD sandwich valve - Adjustment aligned to A-port - Adjustment 2 (see point 11) - Pressure range B (see point 12)</p> <p>14c Option: Pressure setting (Adjustment 8 only) e.g. EP350 = Relief pressure factory set to 350 bar</p> <p>14b Option: Cover type DBD Cover with integrated pressure relief valve and pilot valve interface</p> <p>14a Option: Orifice configuration e.g. X10 = orifice Ø 1,0 mm in X-port of the cartridge cover A00; B00 = A- and B-port in cover plugged</p>											
<p>1 Seal material</p> <p>5 Size</p> <p>7 Valve spring (cartridge)</p> <p>9 Poppet type</p> <p>11 Adjustment of relief valve in cover</p> <p>12 Pressure range of relief pilot valve in cover B-K Up to 350 bar (5,000 psi)</p> <p>13 Pilot Function</p> <p>0B0 Pressure Relief low-pressure when solenoid is de-energized (4/3-Spool Type Pilot Valve)</p> <p>2B0 Pressure Relief low-pressure when A-port solenoid is energized (4/3-Spool Type Pilot Valve)</p>																								

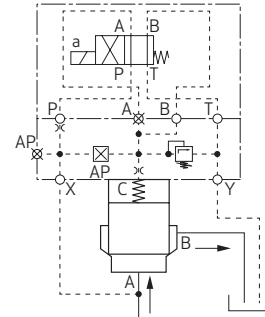
DBM - PRESSURE RELIEF VALVE WITH UNLOADING FUNCTION

- Valve function DBM
- Poppet type AO or EX
- Control cover type "DBD"
- Spool type pilot valve WE42P06 spool "21" or seat type pilot valve

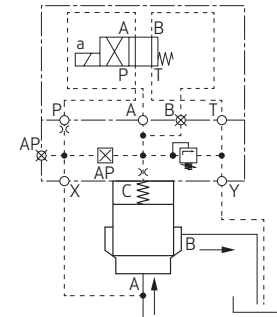
Note:
A DBM type pilot operated pressure relief valve can only be leakage-free if the EX poppet is used in combination with a directional seat type pilot valve.

To achieve a maximum operating pressure of 420 bar (6,000 psi), the pilot valve must be configured as a seat valve. A combination of an AO poppet with a seat type pilot valve (pilot function 5B0 and 6B0) is also possible.

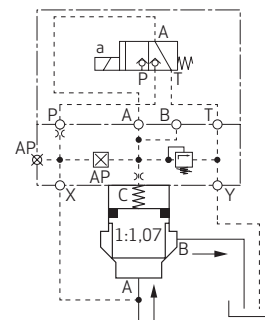
Pilot function "0B0"



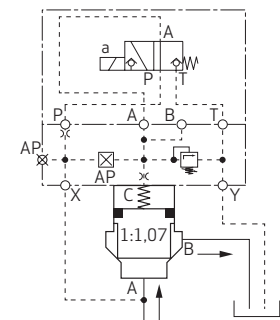
Pilot function "1B0"



Pilot function „5B0“



Pilot function „6B0“



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

1	-	DBM	E			6		X			/	A00	;	P..	;	00..	;	C..	;	DBD	;	EP..
1	Seal material																					
5	Size																					
6	Series																					
F	Max. Operating Pressure 350 bar (Pilot function 0B0 and 1B0)																					
K	Max. Operating Pressure 420 bar (Pilot function 5B0 and 6B0)																					
7	Valve spring (cartridge)																					
9	Poppet type																					
11	Adjustment of relief valve in cover																					
12	Pressure range of relief pilot valve in cover																					
13	Pilot Function																					
0B0	Pressure Relief bypassed when solenoid is de-energized (4/2-Spool Type Pilot Valve)																					
1B0	Pressure Relief bypassed when solenoid is de-energized (4/2-Spool Type Pilot Valve)																					
5B0	Pressure Relief bypassed when solenoid is de-energized (3/2-Seat Type Pilot Valve)																					
6B0	Pressure Relief bypassed when solenoid is energized (3/2-Seat Type Pilot Valve)																					
14c	Option: Pressure setting (Adjustment 8 only) e.g. EP350 = Relief pressure factory set to 350 bar																					
14b	Option: Cover type DBD Cover with integrated pressure relief valve and pilot valve interface																					
14a	Option: Orifice configuration e.g. A00 or B00 = A-port or B-port in cover plugged (see schematic) e.g. P10 = Orifice Ø 1.0 mm in P-port of the cartridge cover A00 = AP-connection in cover plugged																					

DBM - PRESSURE RELIEF VALVE WITH UNLOADING FUNCTION

Preferred Configurations Type

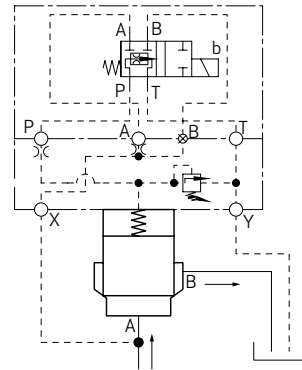
Size	Pressure range		Configuration with AO poppet (no shaft seal on poppet)	Configuration with EX poppet (with shaft seal on poppet)
	bar	psi		
16	70	1,000	N-DBME16FT6AOX2B_B0/P15;C16;DBD;MY	On request
	175	2,500	N-DBME16FU6AOX2E_B0/P12;C15;DBD;MY	
	245	3,500	N-DBME16FU6AOX2G_B0/P12;C15;DBD;MY	
	350	5,000	N-DBME16FU6AOX2K_B0/P12;C15;DBD;MY	
	450	6,500	N-DBME16KU6AOX2L_(pilot function 5B0 or 6B0 only)	
25	70	1,000	N-DBME25FT6AOX2B_B0/P15;C16;DBD;MY	On request
	175	2,500	N-DBME25FU6AOX2E_B0/P15;C16;DBD;MY	
	245	3,500	N-DBME25FU6AOX2G_B0/P15;C16;DBD;MY	
	350	5,000	N-DBME25FU6AOX2K_B0/P15;C16;DBD;MY	
	450	6,500	N-DBME25KU6AOX2L_(pilot function 5B0 or 6B0 only)	
32	70	1,000	N-DBME32FT6AOX2B_B0/P15;C18;DBD;MY	On request
	175	2,500	N-DBME32FU6AOX2E_B0/P15;C18;DBD;MY	
	245	3,500	N-DBME32FU6AOX2G_B0/P15;C18;DBD;MY	
	350	5,000	N-DBME32FU6AOX2K_B0/P15;C18;DBD;MY	
	450	6,500	N-DBME32KU6AOX2L_(pilot function 5B0 or 6B0 only)	
40	70	1,000	N-DBME40FT6AOX2B_B0/P15;C18;DBD	On request
	175	2,500	N-DBME40FU6AOX2E_B0/P15;C18;DBD	
	245	3,500	N-DBME40FU6AOX2G_B0/P15;C18;DBD	
	350	5,000	N-DBME40FU6AOX2K_B0/P15;C18;DBD	
	450	6,500	N-DBME40KU6AOX2L_(pilot function 5B0 or 6B0 only)	
50	70	1,000	N-DBME50FT6AOX2B_B0/P18;C20;DBD	On request
	175	2,500	N-DBME50FU6AOX2E_B0/P18;C20;DBD	
	245	3,500	N-DBME50FU6AOX2G_B0/P18;C20;DBD	
	350	5,000	N-DBME50FU6AOX2K_B0/P18;C20;DBD	
	450	6,500	N-DBME50KU6AOX2L_(pilot function 5B0 or 6B0 only)	

DBM - PRESSURE RELIEF VALVE, BYPASSED / SOFT UNLOADING WHEN SOLENOID IS DE-ENERGIZED

- AO or EX poppet
- DBE cover
- WE42P06_MC1 directional valve

Note:

A DBM type pilot-operated pressure relief valve can only be leakage-free if the EX poppet type is used in combination with a seat valve. With this soft unloading valve, there is still residual leakage through the pilot valve.



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

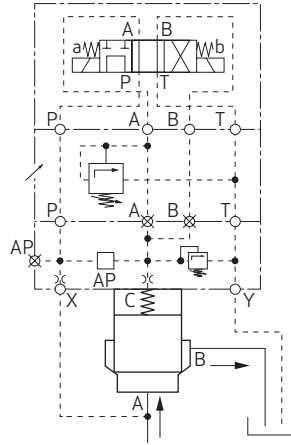
1	-	DBM	E	F	6	X		4B0	/	P..	A..	DBE	EP..
1	Seal material												
5	Size												
7	Valve spring (cartridge)												
9	Poppet type												
11	Adjustment of relief valve in cover												
12	Pressure range of relief pilot valve												
B-K Up to 350 bar (5,000 psi)													
14c Option: Pressure setting (Adjustment 8 only) e.g. EP350 = Relief pressure factory set to 350 bar													
14b Option: Cover type DBE Cover with pilot valve interface for pilot function 4B0 (valve function DBM)													
14a Option: Orifice configuration e.g. P10 = orifice Ø 1,0 mm in P-port of the cartridge cover													

DBM - PRESSURE RELIEF VALVE, UNLOADING FUNCTION, 2 PRESSURE SETTINGS

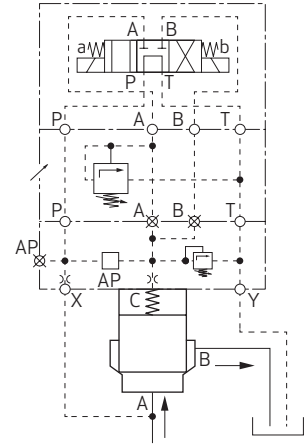
- Poppet type AO or EX
- Control cover type "DBD"
- Sandwich plate Type ZDBD_AT_/MA
- Pilot valve WE43P06

Note:
A pilot-operated pressure relief valve type DBM can only be leakage-free if the EX poppet type is used in combination with a seat valve. With a 4/3-way spool valve, there is still residual leakage through the pilot valve.

Pilot Function "1B0"



Pilot Function "2B0"



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

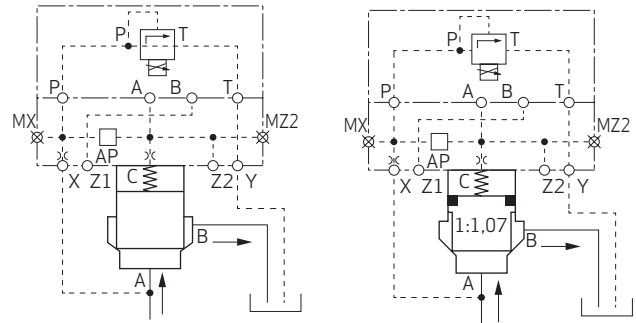
1	-	DBM	E	5	F	7	6	9	X	11	12	13	/	A00;B00	:	X..	:	C..	:	DBD	:	EP..	:	ZD...
1	5	7	9	11	12	13	14a	14b	14c	14e														
1 Seal material	5 Size	7 Valve spring (cartridge)	9 Poppet type	11 Adjustment of relief valve in cover	12 Pressure range of relief pilot valve in cover	13 Pilot Function	14e Option: Pressure relief sandwich valves					14c Option: Pressure setting (Adjustment 8 only)		14b Option: Cover type		14a Option: Orifice configuration								
					B-K Up to 350 bar (5,000 psi)	1B0 Pressure Relief bypassed when A-port solenoid is energized (4/3-Spool Type Pilot Valve)	e.g. ZDA9K = ZDBD sandwich valve					e.g. EP350 = Relief pressure factory set to 350 bar		DBD Cover with integrated pressure relief valve and pilot valve interface		e.g. X10 = orifice Ø 1,0 mm in X-port of the cartridge cover		A00; B00 = A- and B-port in cover plugged						
						2B0 Pressure Relief bypassed when solenoid is de-energized (4/3-Spool Type Pilot Valve)	- Adjustment aligned to A-port																	
							- Adjustment 9 (see point 11)																	
							- Pressure range K (see point 12)																	

DBE - PRESSURE RELIEF VALVE, PROPORTIONALLY OPERATED

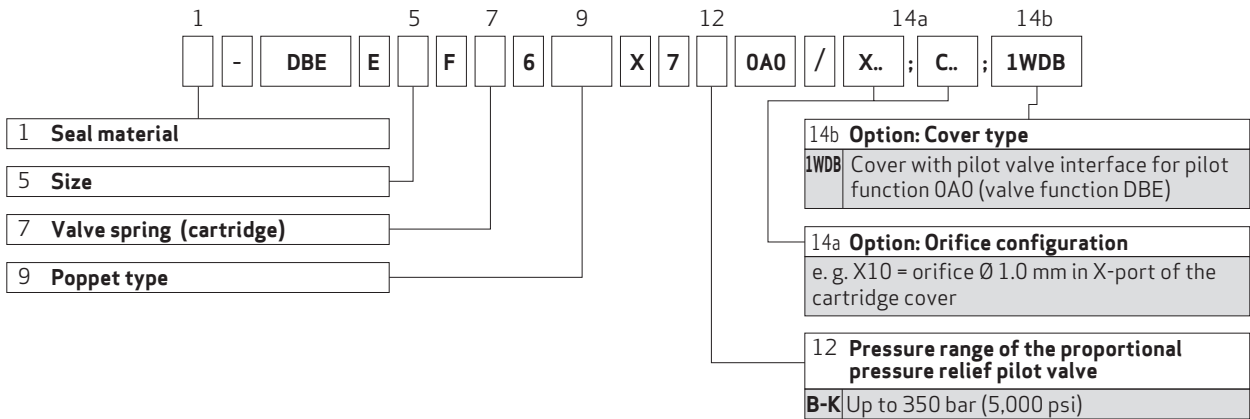
- Poppet type AO or EX
- Control cover type "1WDB"
- Pilot valve DBEP06

Note:

When using poppet type EX, a very small orifice in the X-port of the cover must be selected. This can lead to a longer closing time.



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")

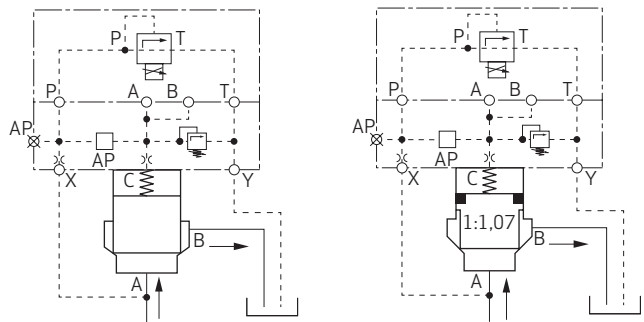


Pressure Relief Valve, proportionally operated with manual maximum pressure setting

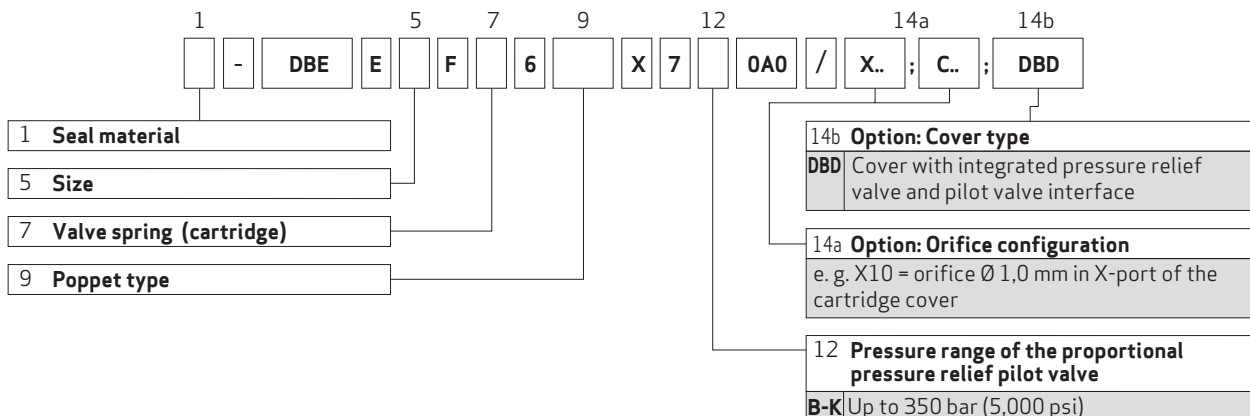
- Poppet type AO or EX
- Control cover type "DBD"
- Pilot valve DBEP06

Note:

When using poppet type EX, a very small orifice in the X-port of the cover must be selected. This can lead to a longer closing time.



Ordering Code Example (Complete Ordering Code in Section "Ordering Code")



ORDERING CODE DBV, DBM, DBE

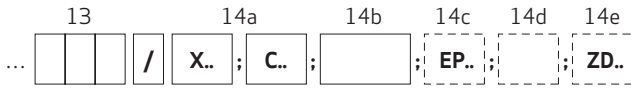
Model number (assigned at the factory)

Type designation

1	-	D	B	3	5	6	7	8	9	10	11	12	...
								6					

1 Seal material	
N NBR	
V FPM/FKM	
2 Valve type	
DBV Relief valve, pilot operated	
DBM Relief valve with electrical unloading function	
DBE Relief valve, proportional pilot operated	
3 Connection	
E Manifold installation	
5 Size	
016 ISO 7368-06-1-1-16	
025 ISO 7368-08-3-1-16	
032 ISO 7368-09-5-1-16	
040 ISO 7368-10-7-1-16	
050 ISO 7368-11-9-1-16	
063 ISO 7368-12-11-1-16	
080 ISO 7368-13-13-1-16	
100 ISO 7368-14-14-1-16	
6 Series	
F Max. operating pressure 350 bar	
K Max. operating pressure 420 bar	
7 Valve spring (cartridge)	
S Spring S	
T Spring T	
U Spring U	
8 Manifold interface	
6 ISO 7368	
9 Poppet type	
AO Standard poppet without shaft seal (1:1)	
EX Poppet with shaft seal (1:1.07)	
10 Pilot oil supply	
X External: X and Y through cover interface	
S Internal: X through poppet, Y through cover interface	
11 Adjustment	
2 Hexagon screw HEX 13 mm	
7 Electrical proportional adjustment	
8 see 2, relief pressure factory set with cap and tamper proof seal	
9 see 2, cap and tamper proof seal delivered separately	
12 Pressure range of relief pilot valve	
B 70 bar (1,015 psi)	
E 175 bar (2,538 psi)	
G 245 bar (3,553 psi)	
K 350 bar (5,076 psi)	
L 420 bar (6,092 psi)	

ORDERING CODE DBV, DBM, DBE



14e Option pressure relief sandwich valves	
e. g. ZDA9L = ZDBD sandwich valve	
- Adjustment aligned to A-port	
- Adjustment 9 (see point 11)	
- Pressure range L (see point 12)	
e. g. ZDA2K = ZDBD sandwich valve	
- Adjustment aligned to A-port	
- Adjustment 2 (see point 11)	
- Pressure range K (see point 12)	
14d Option adjustment alignment	
MX	Adjustment aligned to X-port
MY	Adjustment aligned to Y-port
14c Option pressure setting (adjustment 8 only)	
e. g. EP350 = Relief pressure factory set to 350 bar	
14b Option cover type	
DBA	Cover with integrated pressure relief valve
DBD	Cover with integrated pressure relief valve and pilot valve interface
1WDB	Cover with pilot valve interface for pilot function 0A0 (valve function DBE)
DBE	Cover with pilot valve interface for pilot function 4B0 (valve function DBM)
14a Option orifice configuration	
e. g. X10 = orifice Ø 1.0 mm in X-port of the cartridge cover	
e. g. K12 = orifice Ø 1.2 mm in cartridge poppet	
13 Pilot function	
-	(Leave blank, if not applicable)
0B0	Pressure relief bypassed (low-pressure) when solenoid is de-energized (4/2-Spool Type Pilot Valve)
1B0	Pressure relief bypassed (low-pressure) when solenoid is energized (4/2- or 4/3-Spool Type Pilot Valve)
2B0	Pressure relief bypassed (low-pressure) when solenoid is de-energized (4/3-Spool Type Pilot Valve)
0A0	Proportional solenoid (12V, 0-1600 mA)
4B0	Pressure relief bypassed (soft unloading) when solenoid is de-energized (Spool Type MC1-Pilot Valve)
5B0	Pressure relief bypassed (low-pressure) when solenoid is de-energized (3/2-Seat Type Pilot Valve)
6B0	Pressure relief bypassed (low-pressure) when solenoid is energized (3/2-Seat Type Pilot Valve)

ORDERING CODE DBD, ZDBD

Type designation

Model number
(assigned at the
factory)

1 2 3 4 5 6 7 8 9 10 11
 - **P** **06** **K** **4** /

1 Seal material	
N	NBR
V	FPM/FKM

2 Valve type	
DBD	Pressure Valve, Direct Operated
ZDBD	Pressure Sandwich Plate Valve, Direct Operated

3 Connection type	
P	Subplate mounting

4 Size	
06	ISO 4401-03-02-0-05

5 Series	
K	Maximum operating pressure 420 bar

6 Connection interface	
4	ISO 4401

7 Pressure Relief Function	
PAT	Pressure relief from port P and A to T (valve type DBD only)
PT	Pressure relief from port P to T (valve type ZDBD only)
AT	Pressure relief from port P to T (valve type ZDBD only)
BT	Pressure relief from port B to T (valve type ZDBD only)

11b Option: pressure setting (adjustment 8 only)	
e. g. EP350 = relief pressure factory set to 350 bar	

11a Option: orifice configuration	
e. g. P10 = orifice Ø 1.0 mm in P-port	

10 Adjustment alignment	
MA	Adjustment aligned to A-port
MB	Adjustment aligned to B-port

9 Analog signals	
B	70 bar (1,015 psi)
E	175 bar (2,538 psi)
G	245 bar (3,553 psi)
K	350 bar (5,076 psi)
L	420 bar (6,092 psi)

8 Adjustment	
2	Hexagon Screw HEX 13 mm
8	See 2, relief pressure factory set with cap and tamper proof seal
9	See 2, cap and tamper proof seal delivered separately

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2-way Slip-in Pressure Relief Cartridge Valves
KEM/Rev. -, September 2023, Id. CDL67187-en