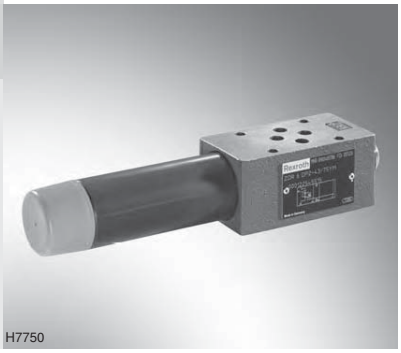
Pressure reducing valve, direct operated

RE 26570/05.11 1/8
Replaces: 02.03

Type ZDR

Size 6
Component series 4X
Maximum operating pressure 210 bar
Maximum flow 50 l/min


H7750

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- Sandwich plate valve
- Porting pattern according to DIN 24340 form A
- Porting pattern according to ISO 4401-03-02-0-05 (**with** locating hole)
- 4 pressure ratings
- 4 adjustment types:
  - Rotary knob
  - Bushing with hexagon and protective cap
  - Lockable rotary knob with scale
  - Rotary knob with scale
- Pressure reduction in channel A, B or channel P
- Check valve, optional (only version "A")

Ordering code

Z	DR	6	D		–4X/	Y				*

Sandwich plate

Pressure reducing valve

Size 6 **= 6**

Direct operated

Pressure reduction in channel A② **= A**
Pressure reduction in channel B② **= B**
Pressure reduction in channel P① **= P**

Adjustment type
Rotary knob **= 1**
Bushing with hexagon and protective cap **= 2**
Lockable rotary knob with scale **= 3** [1]
Rotary knob with scale **= 7**

Component series 40 to 49 **= 4X**
(40 to 49: unchanged installation and connection dimensions)

Y = Pilot oil supply internal, pilot oil return external

25 = Secondary pressure up to 25 bar
75 = Secondary pressure up to 75 bar
150 = Secondary pressure up to 150 bar
210 = Secondary pressure up to 210 bar

No code = **With** check valve (only with version "A")
M = **Without** check valve

Seal material
No code = NBR seals
V = FKM seals
(other seals upon request)
Attention!
Observe compatibility of seals with hydraulic fluid used!

No code = Without locating hole
/60 [2] **=** With locating hole
/62 = With locating hole and locating pin ISO 8752-3x8-St

Further details in the plain text

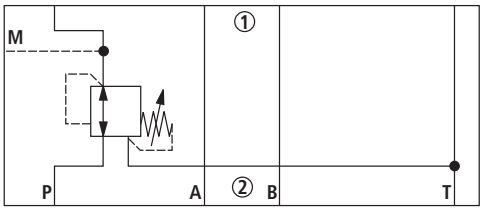
[1] H key with material no. **R900008158** is included in the delivery.

[2] Locating pin ISO 8752-3x8-St, Material no. **R900005694** (separate order)

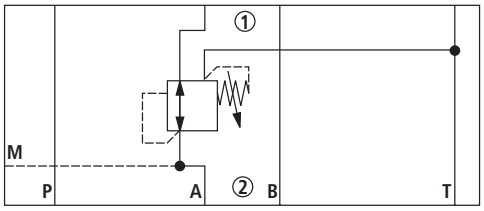
Standard types and standard units are contained in the EPS (standard price list).

Symbols (① = component side, ② = plate side)

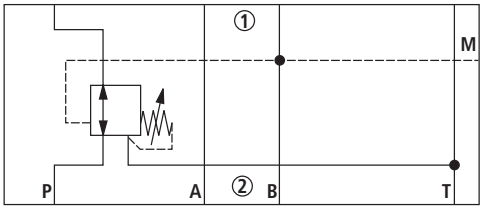
Type ZDR 6 DP…YM…



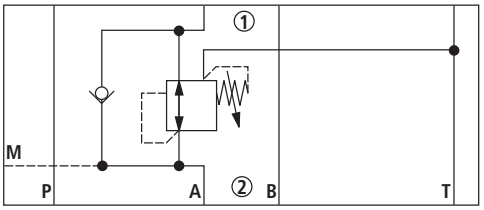
Type ZDR 6 DA…YM…



Type ZDR 6 DB…YM…



Type ZDR 6 DA…Y…



Function, section

The valve type ZDR is a direct operated pressure reducing valve in sandwich plate design with pressure limitation of the secondary circuit. It is used to reduce the system pressure.

The pressure reducing valve basically comprises of a housing (1), a control spool (2), a compression spring (3), adjustment type (4) and an optional check valve.

The secondary pressure is set via the adjustment type (4).

Version "A"

In the initial position the valve is open. Hydraulic fluid can flow from channel A① to channel A② without limitation. Via the pilot line (5), the pressure in channel A② is simultaneously applied to the spool face vis-à-vis the compression spring (3). If the pressure in channel A② rises above the value set at the compression spring (3), the control spool (2) moves against the compression spring (3) into the control position and thereby holds the set pressure in channel A② constant.

Control signal and pilot oil are provided internally, via the control line (5), from channel A②.

If the pressure in channel A② continues to increase due to external forces at the actuator, the control spool (2) moves further against the compression spring (3).

Thus, channel A② is, via control edge (9) at the control spool (2) and housing (1) connected with the tank. Hydraulic fluid continues to flow to the tank until the pressure no longer increases.

The leakage oil drain from the spring chamber (7) is always realized externally, via bore (6) and channel T (Y).

A pressure gauge connection (8) allows for the control of the secondary pressure at the valve.

With version "A", a check valve can be used for free flow back from channel A② to A①.

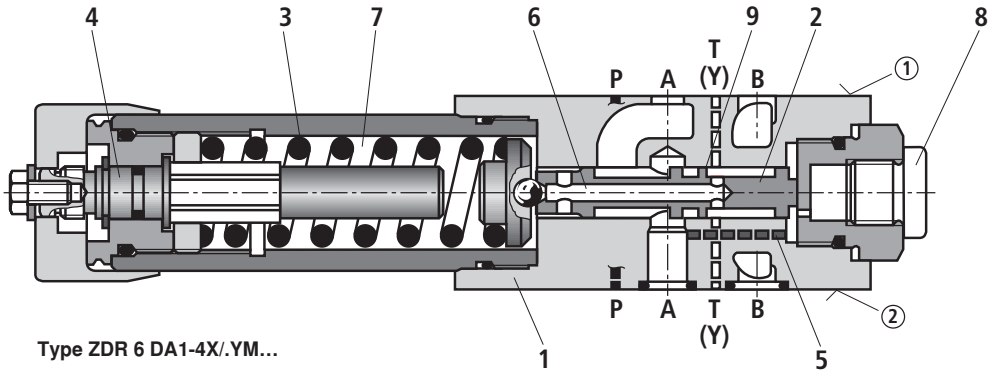
Versions "P" and "B"

With version "P", the pressure is reduced in channel P①. Control signal and pilot oil are provided internally, from channel P①.

With version "B", the pressure is reduced in channel P①, the pilot oil is, however, taken from channel B.

Attention!

If the directional valve is in spool position P to A, the pressure in channel B must not exceed the set secondary pressure. Otherwise, the pressure in channel A will be reduced.



Type ZDR 6 DA1-4X/.YM...

① = component side
② = plate side

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

general

Weight	kg	Approx. 1.2
Installation position		Any
Ambient temperature range	°C	–30 to +80 (NBR seals) –20 to +80 (FKM seals)

hydraulic

Maximum operating pressure	– Input	bar	315
Maximum secondary pressure	– Output	bar	25; 75; 150; 210
Maximum backpressure	– Port T(Y)	bar	160
Maximum flow		l/min	50
Hydraulic fluid			See table below
Hydraulic fluid temperature range		°C	–30 to +80 (NBR seals) –20 to +80 (FKM seals)
Viscosity range		mm^2/s	10 to 800
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			Class 20/18/15 [1]

Hydraulic fluid		**Classification**	**Suitable sealing materials**	**Standards**
Mineral oils and related hydrocarbons		HL, HLP, HLPD	NBR, FKM	DIN 51524
Environmentally compatible	– Insoluble in water	HETG	NBR, FKM	ISO 15380
		HEES	FKM	
	– Soluble in water	HEPG	FKM	ISO 15380
Flame-resistant	– Water-free	HFDU, HFDR	FKM	ISO 12922
	– Water-containing	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	NBR	ISO 12922

☞ **Important information on hydraulic fluids!**

– For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!

– There may be limitations regarding the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!

– **Flame-resistant – water-containing**:
  - Maximum operating pressure 210 bar
  - Maximum hydraulic fluid temperature 60 °C
  - Expected service life as compared to HLP hydraulic oil 30 % to 100 %

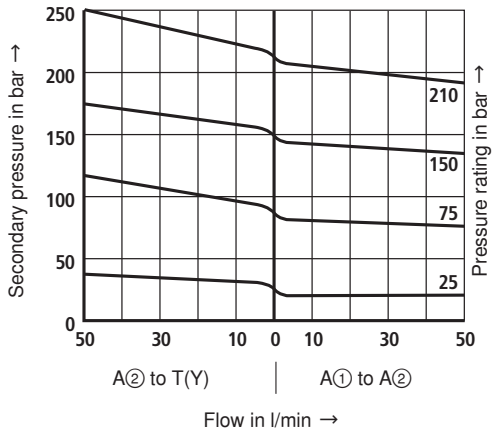
[1] The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

For the selection of the filters see www.boschrexroth.com/filter.

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

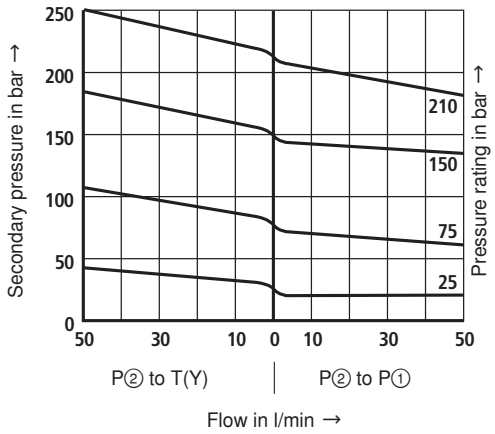
Version "A"

p_A-q_V characteristic curves



Version "B" and "P"

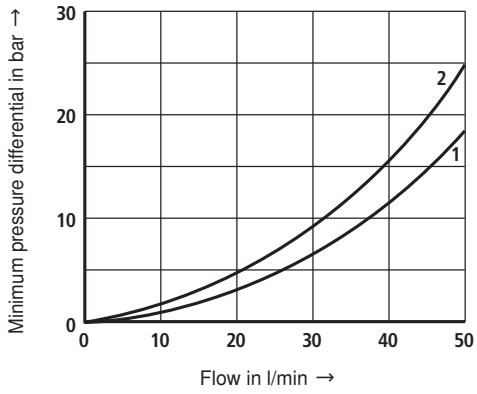
p_A-q_V characteristic curves



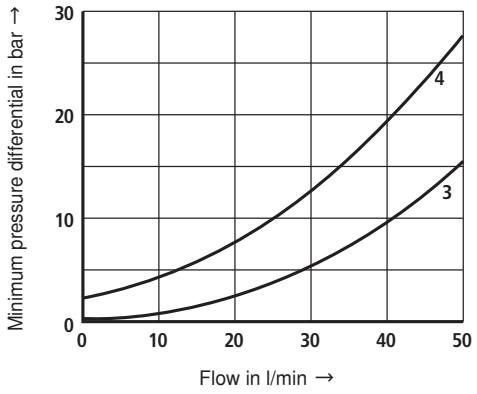
Note!

The curve development is maintained according to the pressure rating if the pressure is set lower.

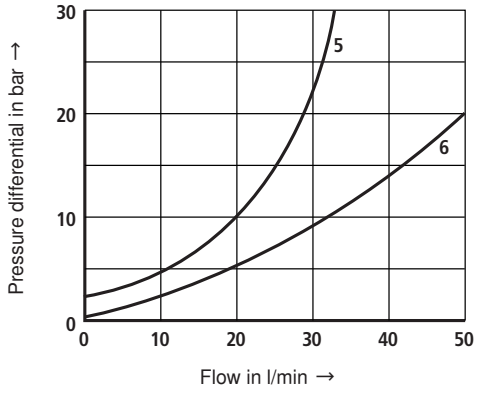
Δp_{min}-q_V characteristic curves



Δp_{min}-q_V characteristic curves



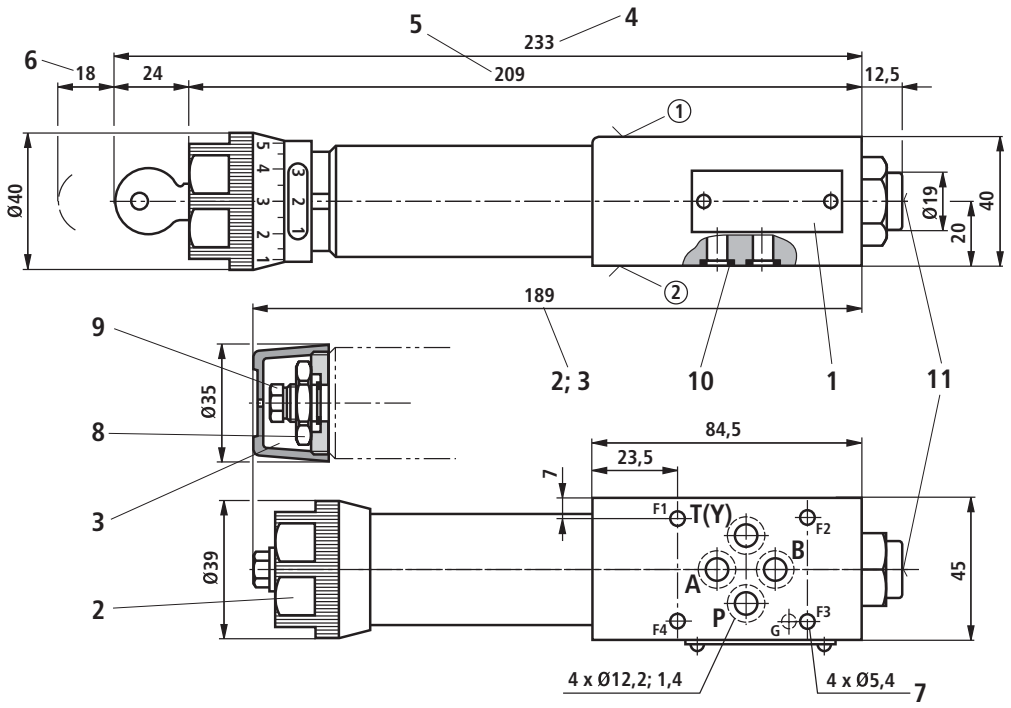
Δp-q_V characteristic curves



1 A① to A②
2 A② to T(Y) (3rd way)
3 P② to P①
4 P① to T(Y) (3rd way)
5 A② to A①; flow only via check valve
6 A② to A①; flow via check valve and completely opened control cross-section

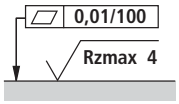
The characteristic curves apply to the pressure at the valve output p_T = 0 bar across the entire flow range.

Unit dimensions: Version "B" and "P" (dimensions in mm)



① Component side – porting pattern according to DIN 24340 form A (**without** locating hole), or ISO 4401-03-02-0-05 (**with** locating hole Ø3 x 5 mm deep)

② Plate side – porting pattern according to DIN 24340 form A (**without** locating hole), or ISO 4401-03-02-0-05 (**with** locating hole for locating pin ISO 8752-3x8-St; version "/60")



Required surface quality of the valve mounting face

1 Name plate
2 Adjustment type "1"
3 Adjustment type "2"
4 Adjustment type "3"
5 Adjustment type "7"
6 Space required to remove the key
7 Valve mounting bores
8 Lock nut SW24
9 Hexagon SW10
10 Identical seal rings for ports A, B, P, T(Y)
11 Pressure gauge connection G1/4; 12 deep; internal hexagon SW6

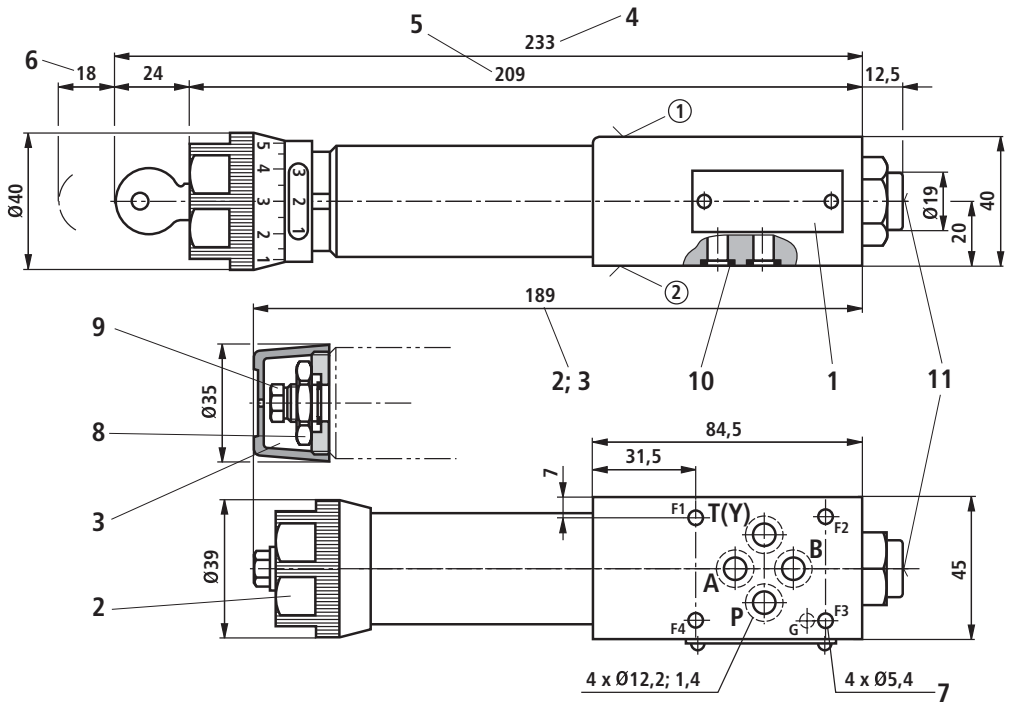
Valve mounting screws (separate order)

4 hexagon socket head cap screws ISO 4762 - M5 - 10.9

☞ **Note!**

Length and tightening torque of the valve mounting screws must be calculated according to the components mounted under and over the sandwich plate valve.

Unit dimensions: Version "A" (dimensions in mm)



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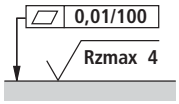

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Notes