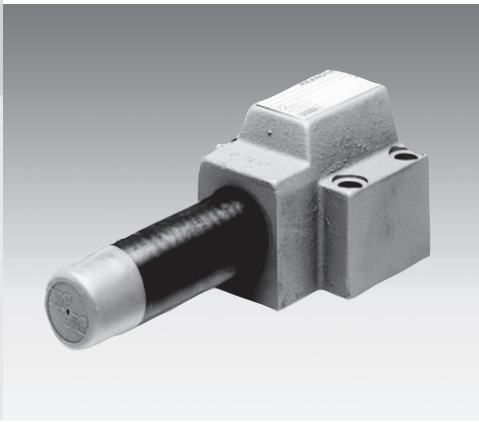
Rexroth
Bosch Group

# Pressure reducing valve, direct operated

**RA 26580/02.03** **1**/6
Replaces: 06.98

**Model DR 10 DP**



Nominal size 10
Series 4X
Maximum reduced pressure 210 bar (3050 PSI)
Maximum flow 80 L/min (21 GPM)

## Table of contents



## Features

- For subplate mounting:
  Mounts on standard ISO 5781-**06**, NFPA/ANSI **P 06** interface
- For subplates see catalog sheet RE 45 062
  (separate order)
- Four pressure stages
- Four adjustment elements:
  - Rotary knob
  - Set screw with hexagon and protective cap
  - Lockable rotary knob with scale
  - Rotary knob with scale
- With pressure gauge port
- Check valve, optional

## Ordering details

| DR | 10 | D | P | – 4X/ | Y | | | | * |
|---|---|---|---|---|---|---|---|---|---|

Pressure reducing valve = DR
Size 10, P 06 = 10
Direct operated = D
Subplate mounted = P
Rotary handknob = 1
Screw adjustment with locknut and protective cap = 2
Key lock rotary handknob with scale* = 3
Rotary handknob with scale
Series 4X = 4X
(40 to 49, installation and connection dimensions remain unchanged)
Adjustable secondary "reduced" pressure range
... 365 PSI (25 bar) = 25
... 1090 PSI (75 bar) = 75
... 2175 PSI (150 bar) = 150
... 3050 PSI (210 bar) = 210

Y = Internally piloted, externally drained
no desig. = With reverse free-flow check valve
M = Without reverse free-flow check valve
no desig. = NBR seals suitable for petroleum oils (HM, HL, HLP)
V = FPM seals suitable for phosphate ester fluids (HFD-R)
/12 = SAE threaded gauge port
Further details to be written in clear text

* H-key with part no. 008 158

## Standard types

| Type | Material number |
|---|---|
| DR 10 DP1-4X/75YM | R900501038 |
| DR 10 DP1-4X/150Y | R900507303 |
| DR 10 DP1-4X/210Y | R900503336 |
| DR 10 DP2-4X/75Y | R900500471 |
| DR 10 DP2-4X/75YM | R900500547 |
| DR 10 DP2-4X/150Y | R900500051 |
| DR 10 DP2-4X/150YM | R900500226 |
| DR 10 DP2-4X/210Y | R900594125 |
| DR 10 DP2-4X/210YM | R900501385 |
| DR 10 DP3-4X/75YM | R900500258 |

## Functional description, cross-section, symbols

The valve type DR 10 DP is a direct operated pressure reducing valve of 3-way design, i.e. with a pressure relief function on the secondary circuit.

It is used to reduce a system pressure. The secondary pressure is set via the adjustment element (1).

At rest, the valve is normally open and the pressure fluid can flow unhindered from port B to port A. The pressure in port A is at the same time, via the control line (4), present at the spool area opposite to the compression spring (3). When the pressure in port A exceeds the pressure level set at compression spring (3), the control spool (2) moves into the control position and holds the set pressure in port A constant.

The control signal and pilot oil supply is internal and is taken from port A via control line (4).

If the pressure in port A rises still further due to external forces on the actuator then the spool (2) moves still further against the compression spring (3).

This causes a flow path to be opened over control land (5) in the control spool (2) to tank (port Y). Sufficient fluid then flows to tank to prevent any further rise in pressure.

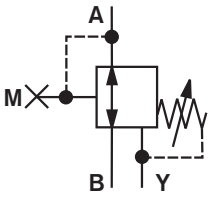
The spring chamber (6) is always drained to tank externally via port Y.

An optionl check valve (7) is available to allow free-flow from port A to port B.

A pressure gauge connection (8), permits the reduced pressure to be monitored.

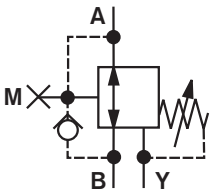
## Symbols

### Version “YM”

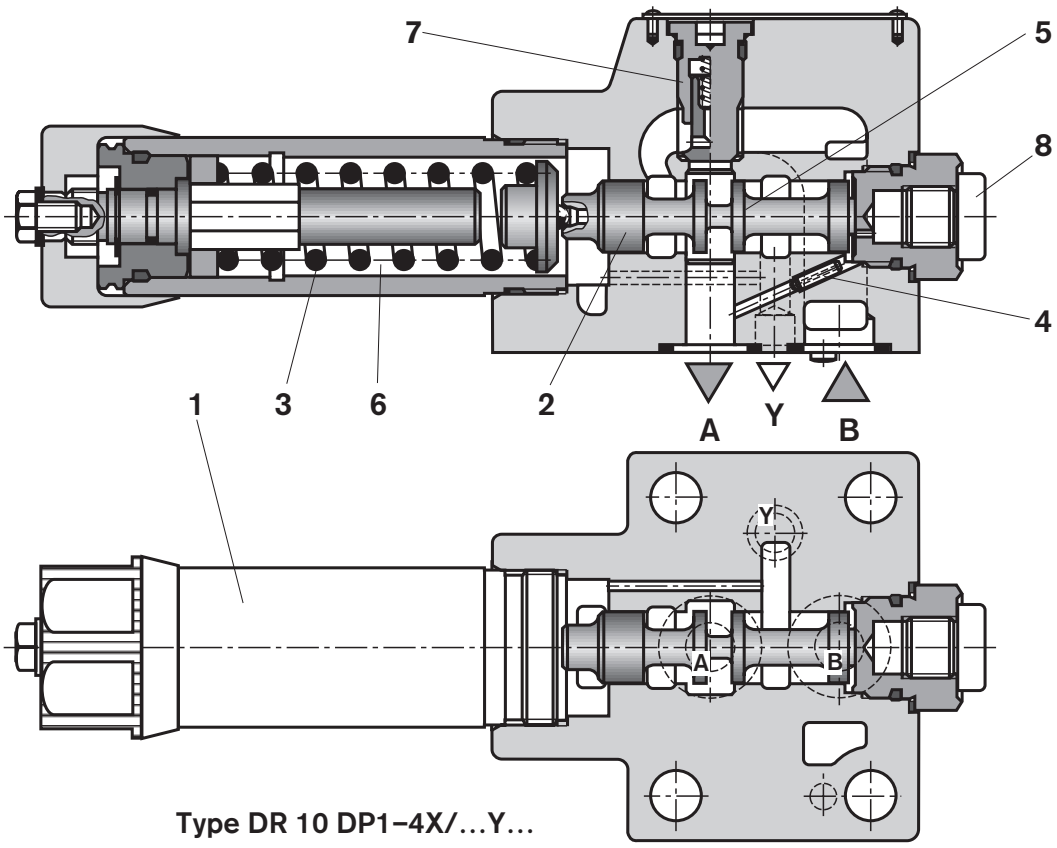



Internal pilot oil supply
external pilot oil drain
**without** check valve

### Version “Y”




Internal pilot oil supply
external pilot oil drain
**with** check valve




**Type DR 10 DP1–4X/…Y…**

## **Technical data** (for applications outside these parameters, please consult us!)

**General**

| | | |
|---|---|---|
| Installation | | Optional |
| Ambient temperature range | °C (°F) | – 30 to + 50 (-22 to 176) for NBR seals |
| | °C (°F) | – 20 to + 50 (-4 to 176) for FKM seals |
| Weight | kg (lbs) | 3 (6.6) |

**Hydraulic**

| | | |
|---|---|---|
| Nominal pressure | bar (PSI) | 210 (3045) |
| Maximum operating pressure at port B | bar (PSI) | 315 (4600) |
| Maximum secondary pressure at port A | bar (PSI) | 25; 75; 150; 210 (365; 1090; 2175; 3050) |
| Maximum back pressure at port Y | bar (PSI) | 160 (2300) |
| Maximum flow | L/min (GPM) | 80 (21) |
| Pressure fluid | | Mineral oil (HL, HLP) to DIN 51 524 [2]; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) [2]; HEPG (polyglycols) [3]; HEES (synthetic ester) [3]; Other pressure fluids on request |
| Pressure fluid temperature range | °C (°F) | – 30 to + 80 (-22 to 176) for NBR seals |
| | °C (°F) | – 20 to + 80 (-4 to 176) for FKM seals |
| Viscosity range | mm²/s (SUS) | 10 to 800 (20 to 3710) |
| Cleanliness class to ISO code | | Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 [3] |

[1] Suitable for NBR **and** FKM seals

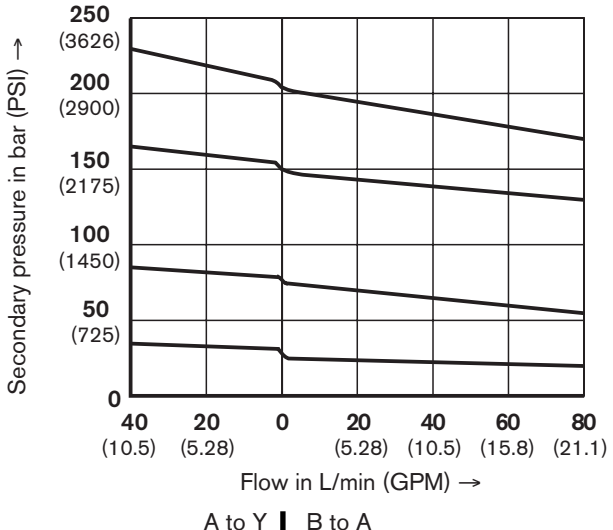
[2] **Only** suitable for FKM seals

[3] The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

For the selection of filters see catalog sheets RE 50 070, RE 50 076 and RE 50 081.

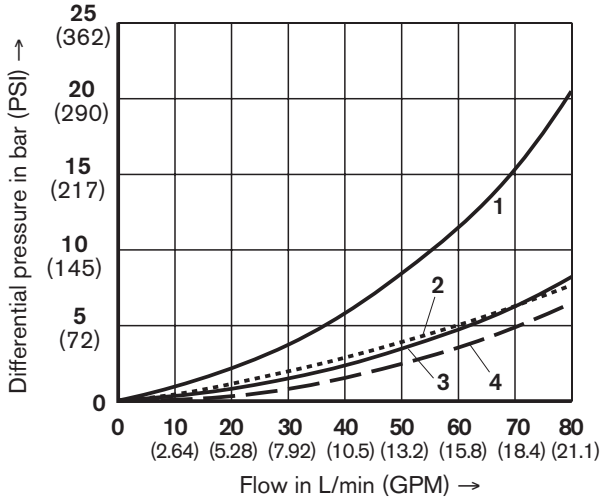
## **Characteristic curves** (measured with HLP46, $\vartheta_{oil} = 40$ °C ± 5 °C)

**$p_A$–$q_V$–characteristic curves**




**Note:**
The curve characteristics remain, with a low set pressure, the same in relation to the pressure rating

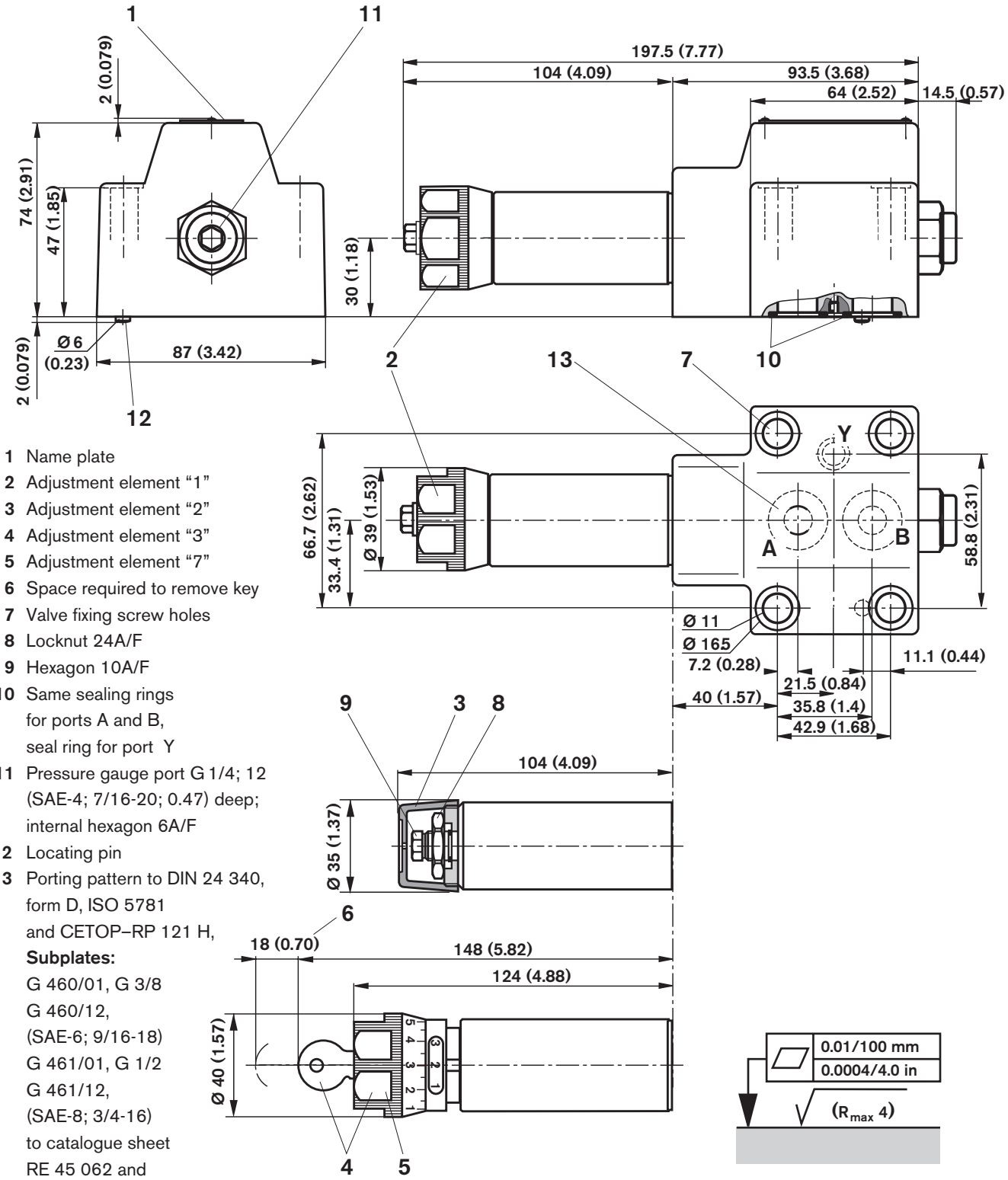
**$\Delta p$–$q_V$–characteristic curves**




**1** $\Delta p$–$q_V$–characteristic curve A to Y
**2** $\Delta p$–$q_V$–characteristic curve B to A
**3** Only via a check valve
**4** Via check valve and spool

**The characteristic curves for the pressure relief function are valid for an outlet pressure = zero over the entire flow range!**

## **Unit dimensions** – dimensions in mm (inches)




Required surface finish of mating piece

**1** Name plate
**2** Adjustment element “1”
**3** Adjustment element “2”
**4** Adjustment element “3”
**5** Adjustment element “7”
**6** Space required to remove key
**7** Valve fixing screw holes
**8** Locknut 24A/F
**9** Hexagon 10A/F
**10** Same sealing rings for ports A and B, seal ring for port Y
**11** Pressure gauge port G 1/4; 12 (SAE-4; 7/16-20; 0.47) deep; internal hexagon 6A/F
**12** Locating pin
**13** Porting pattern to DIN 24 340, form D, ISO 5781 and CETOP–RP 121 H,

**Subplates:**
G 460/01, G 3/8
G 460/12, (SAE-6; 9/16-18)
G 461/01, G 1/2
G 461/12, (SAE-8; 3/4-16)
to catalogue sheet RE 45 062 and

**Valve fixing screws**
M10 x 60 DIN 912 - 10.9, tightening torque $M_A = 75$ Nm (55.3 lb-ft), Must be ordered separately.

## Notes

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