

RE 26 893/02.03

Replaces: 11.02

**Pressure reducing valve,
pilot operated
Type DR**

Nominal sizes 10 and 25

Series 4X

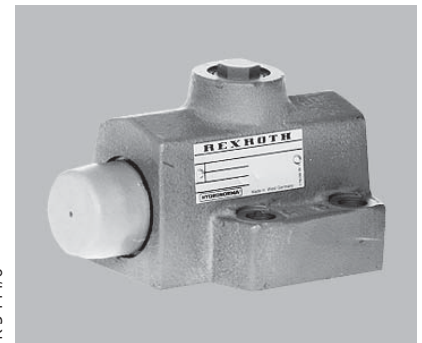
Maximum operating pressure 315 bar

Maximum flow 160 L/min



K 4661-5

DR 20 G-4-4X/..



K 3444/6

DR 10-5-4X/..



K3444/3

DR 20 K-5-1X/..

Overview of contents**Contents**

Features	1
Ordering details	2
Symbols	2
Preferred types	2
Function, section	3
Technical data	4
Characteristic curves	5
Unit dimensions	6 to 8

Features

- For subplate mounting:
 - Porting pattern to DIN 24 340, Form D, ISO 5781 and CETOP-RP 121 H,
 - Subplates to catalogue sheet RE 45 062 (separate order),
- For threaded connections,
- Cartridge version,
- 4 adjustment elements:
 - Rotary knob
 - Sleeve with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- 4 pressure stages



© 2003
by Bosch Rexroth AG, Industrial Hydraulics, D-97813 Lohr am Main

All rights reserved. No part of this document may be reproduced or stored, processed, duplicated or circulated using electronic systems, in any form or by means, without the prior written authorisation of Bosch Rexroth AG. In the event of contravention of the above provisions, the contravening party is obliged to pay compensation.

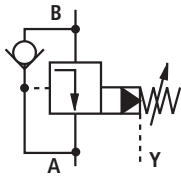
Ordering details

				DR	-	-	/	Y	*	Further details in clear text	
Nom. size	Valve for										No code = NBR seals V = FKM seals (other seals on request) ⚠ Attention! The compatibility of the seals and pressure fluid has to be taken into account!
	Subplate mounting	Version "G"	Version "K"								
Ordering details											No code = With check valve (only for the subplate mounting version) M = Without check valve
10	= 10	= 10 (G 1/2)	-								
25	= 20	= 15 (G 3/4) = 20 (G 1)	= 20								50 = Settable pressure up to 50 bar 100 = Settable pressure up to 100 bar 200 = Settable pressure up to 200 bar 315 = Settable pressure up to 315 bar
For subplate mounting = No code											1X = Series 10 to 19 (only version "K") (10 to 19: unchanged installation and connection dimensions)
For threaded connections = G											4X = Series 40 to 49 (40 to 49: unchanged installation and connection dimensions)
For manifold mounting (cartridge) = K											
Adjustment element											
Rotary knob = 4											
Sleeve with hexagon and protective cap = 5											
Lockable rotary knob with scale = 6 ¹⁾											
Rotary knob with scale = 7											

¹⁾ Key with order no. **R900008158** is included within the scope of supply

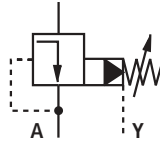
Symbols

For subplate mounting



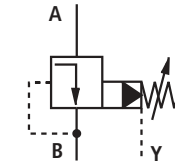
Type DR...-4X/...Y

For subplate mounting as a cartridge valve



Type DR...-4X/...YM
Type DR...K.-1X/...YM
(cartridge)

For threaded connections



Type DR...G.-4X/...YM

Preferred types (readily available)

Type	Material No
DR 10-5-4X/100Y	R900402741
DR 10-5-4X/200Y	R900402064
DR 10-5-4X/315Y	R900479797
DR 10 G5-4X/100YM	R900418436
DR 10 G5-4X/315YM	R900415481
DR 20-5-4X/100Y	R900404828
DR 20-5-4X/200Y	R900402753
DR 20-5-4X/315Y	R900405904
DR 20 G5-4X/100YM	R900417545
DR 20 G5-4X/315YM	R900493572

Type	Material No
DR 20 K5-1X/50YM	R900474524
DR 20 K5-1X/100YM	R900474525
DR 20 K5-1X/200YM	R900474526
DR 20 K5-1X/315YM	R900474527

Further preferred types and standard units can be found in the EPS (Standard Price List).

Function, section

The pressure control valve type DR, series 4X, is a cartridge version, pilot operated pressure reducing valve. It is used to reduce pressure in a system.

The pressure reducing valve comprises of the cartridge and a housing, optionally with or without a check valve (only for the subplate mounting version).

Pressure reducing valves types DR 10 and DR 20

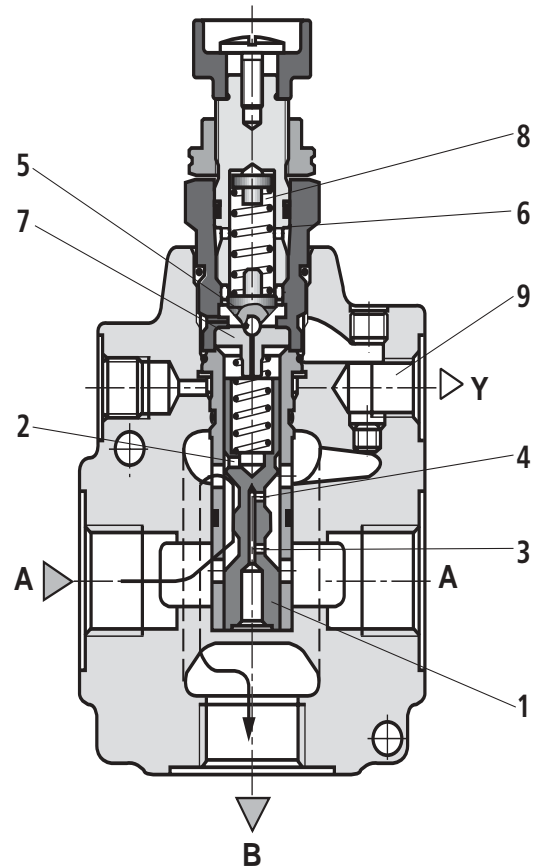
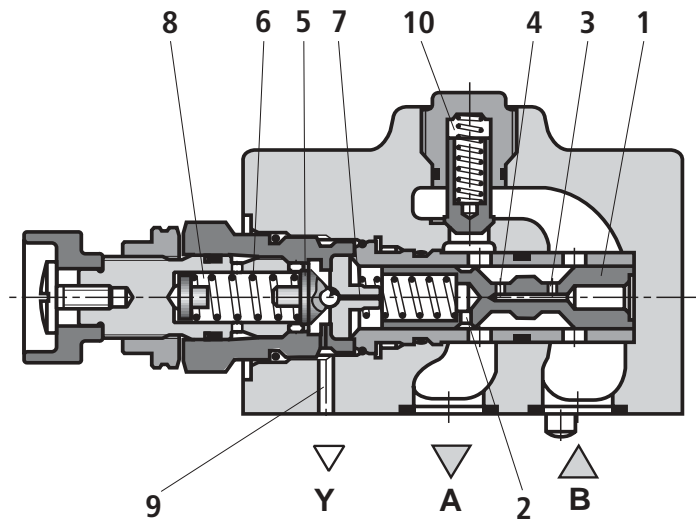
At rest the valve is open. The pressure fluid can pass unhindered from the inlet port via the main spool (1) to the outlet port. The pressure in the output port is applied via the drilling (2) onto the spring loaded side of the main spool assembly (1). At the same time the pressure acts on the spring at the opposite end of the main spool (1) via drillings (3) and (4).

If the pressure in the output port rises above the value set at spring (6), then the pilot poppet (5) opens. Pressure fluid flows from the spring loaded side of the main spool (1) via orifice (7) and the pilot poppet (5) into the spring chamber (8).

The main spool (1) moves into its control position and maintains the value set at the spring (6) in the outlet port. Pilot oil return from the spring chamber (8) is always external via port Y (9). For the subplate mounting version an optional check valve (10) can be fitted to permit free-flow from port A to B.

Remote control

The types DR 10 and DR 20, series 4X, pressure reducing valves can only be remotely controlled via port Y.



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

General

Installation		Optional		
Ambient temperature range		°C – 30 ... + 80 with NBR seals		
		°C – 20 ... + 80 with FKM seals		
Nominal size	NS	10	25	
Weight	Subplate mounting	kg	3.2	3.5
	Threaded connections	kg	3.6	3.3
	Cartridge valve	kg	2.5	2.8

Hydraulic

Nominal pressure	bar	315		
Maximum operating pressure (inlet)	bar	315		
Maximum secondary pressure (outlet)	bar	50; 100; 200; 315		
Maximum back pressure in port Y	bar	250		
Settable pressure	Minimum	bar	Flow dependent (see characteristic curves on page 5)	
	Maximum	bar	50; 100; 200; 315	
Maximum flow	Subplate mounting	L/min	80	160
	Threaded connection	L/min	80	160
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) ¹⁾ ; HEPG (polyglycole) ²⁾ ; HEES (Synthetic ester) ²⁾ ; other pressure fluids on request			
Pressure fluid temperature range		°C – 30 ... + 80 with NBR seals		
		°C – 20 ... + 80 with FKM seals		
Viscosity range	mm ² /s	10 ... 800		
ISO code cleanliness class	Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ³⁾			

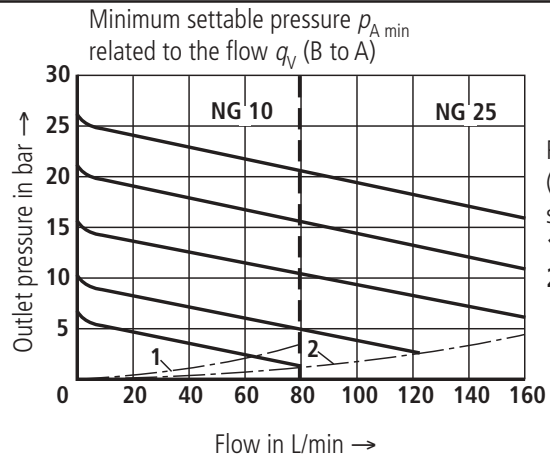
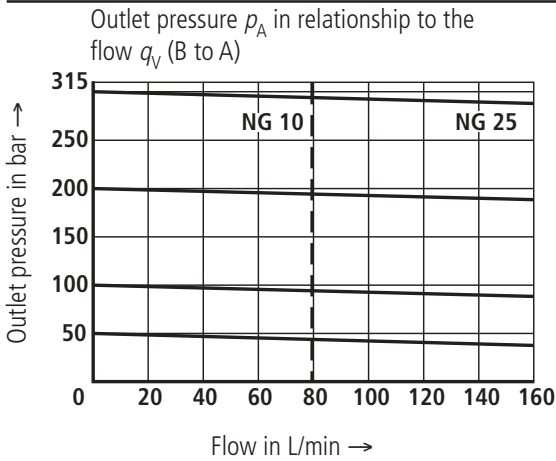
¹⁾ Suitable for NBR **and** FKM seals

²⁾ **Only** suitable for FKM seals

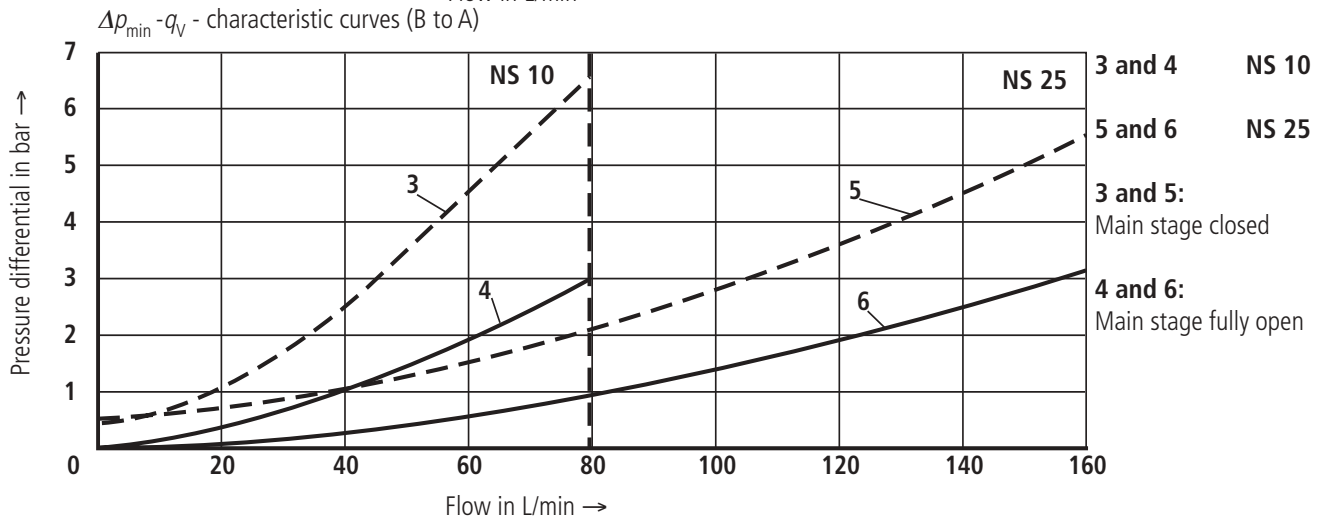
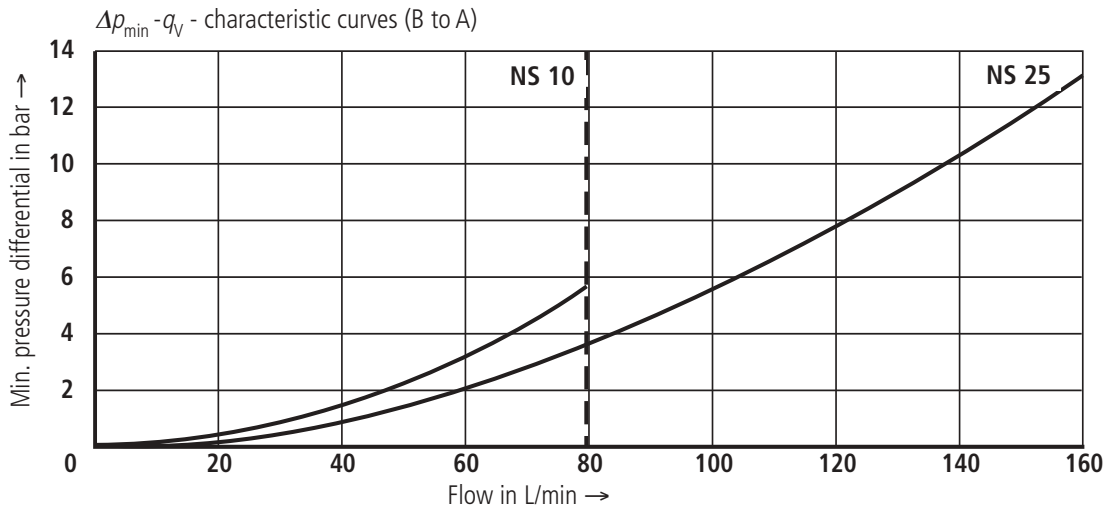
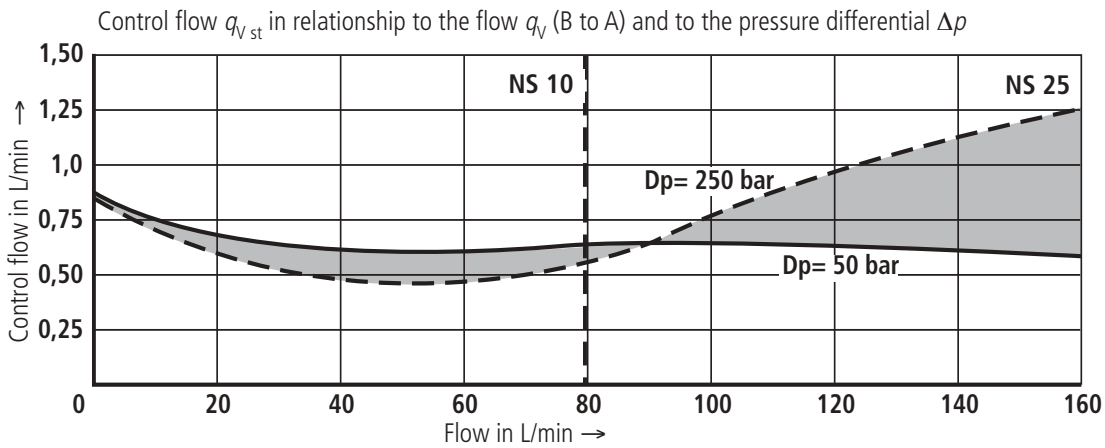
³⁾ The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

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

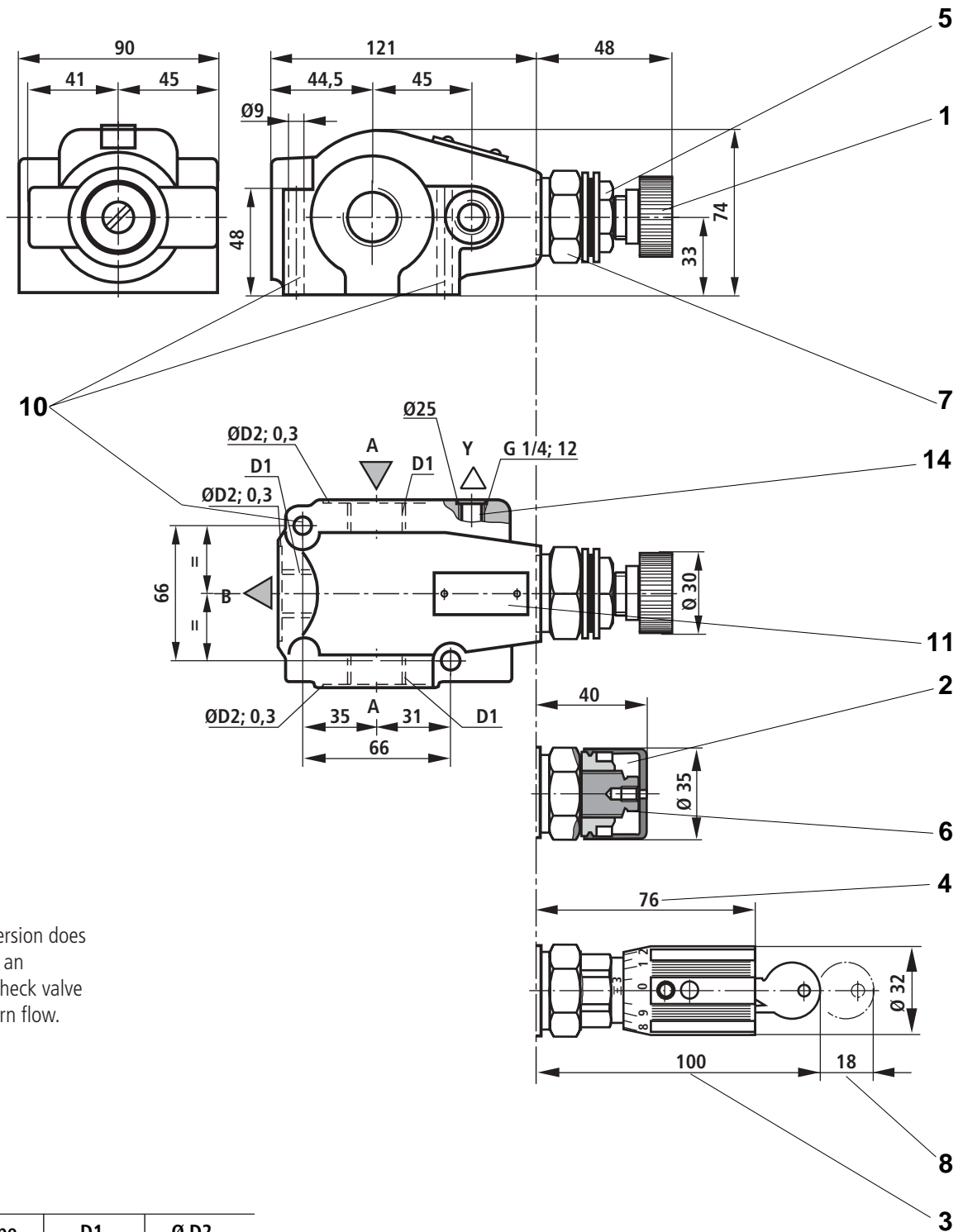
Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)



Performance limit (dependent on the system):
1 NS 10
2 NS 25



Unit dimensions: for threaded connections (dimensions in mm)



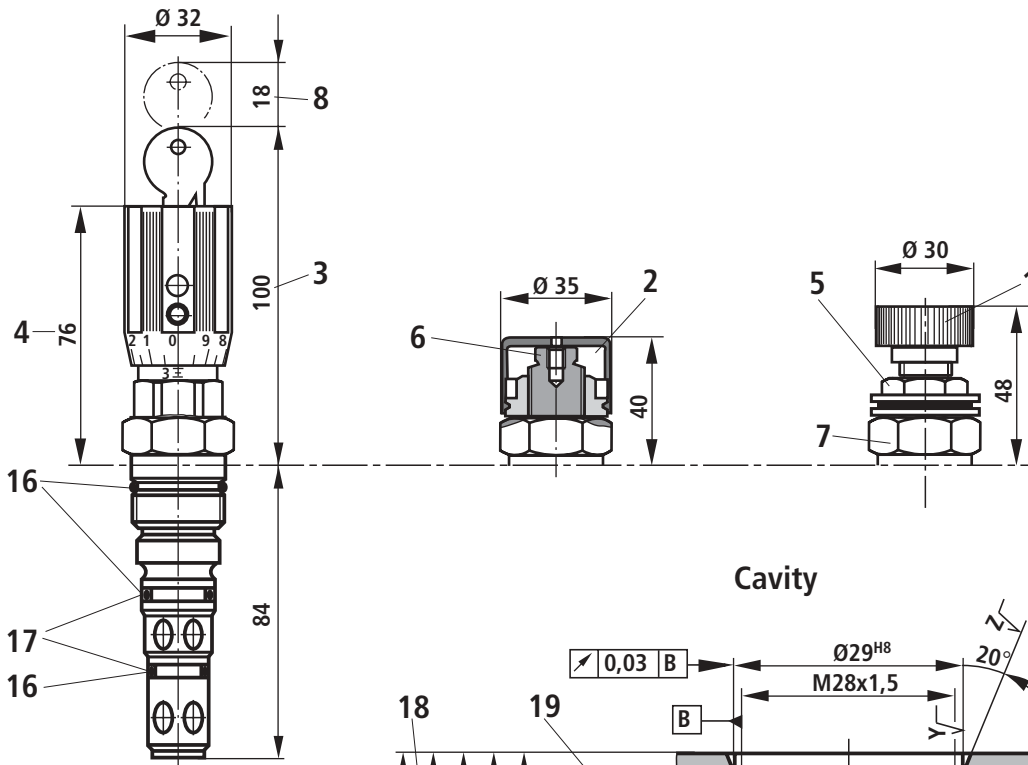
Attention!

This valve version does **not** include an integrated check valve for free return flow.

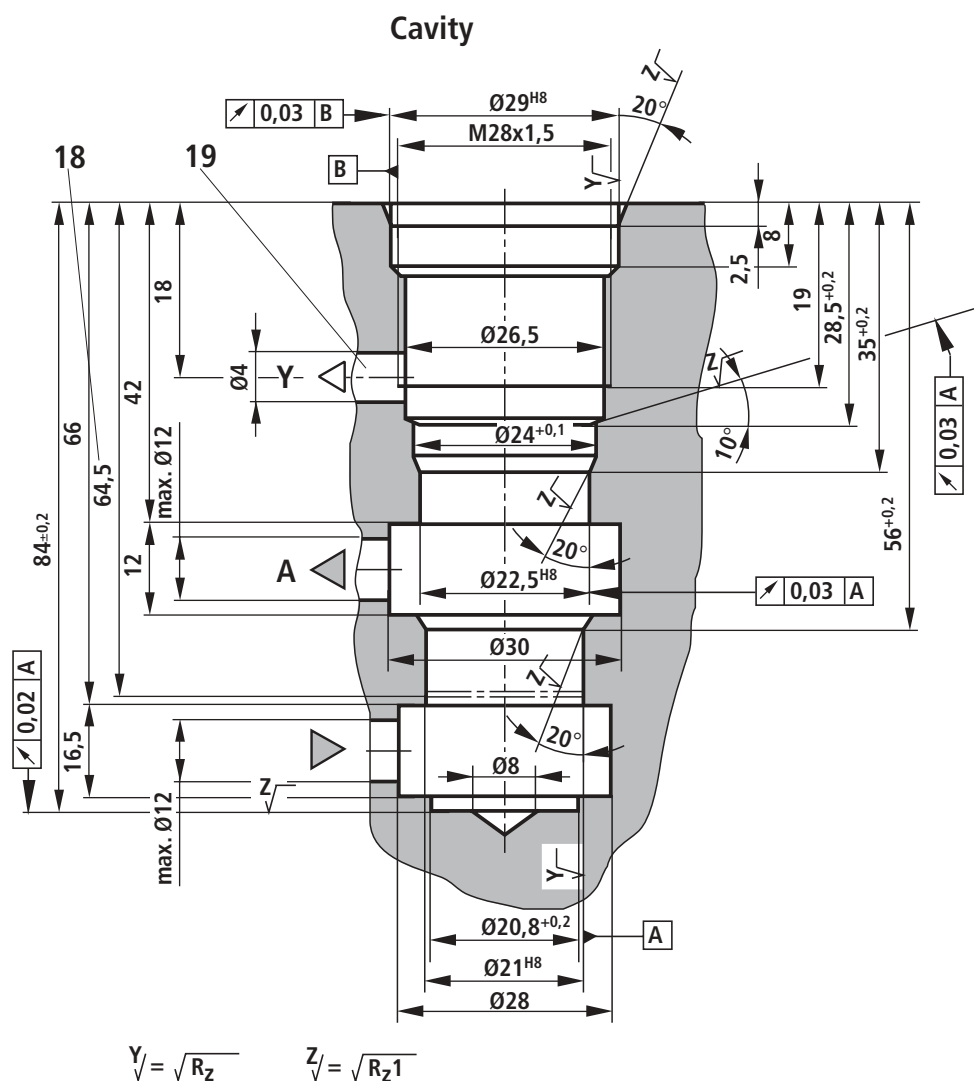
Valve type	D1	Ø D2
DR 10 G	G 1/2	34
DR 15 G	G 3/4	42
DR 20 G	G 1	47

- 1 Adjustment element "4"
- 2 Adjustment element "5"
- 3 Adjustment element "6"
- 4 Adjustment element "7"
- 5 Locknut 22A/F
- 6 Hexagon 10A/F
- 7 Hexagon 30A/F tightening torque $M_A = 50 \text{ Nm}$
- 8 Space required to remove the key
- 10 Valve fixing screw holes
- 11 Name plate
- 14 Port Y for pilot oil drain

Unit dimensions: for manifold mounting (dimensions in mm)



- 1 Adjustment element "4"
- 2 Adjustment element "5"
- 3 Adjustment element "6"
- 4 Adjustment element "7"
- 5 Locknut 22A/F
- 6 Hexagon 10A/F
- 7 Hexagon 30A/F
tightening torque $M_A = 50 \text{ Nm}$
- 8 Space required to remove the key
- 16 Seal ring
- 17 Back-up ring
- 18 Depth of fit
- 19 Connection bores A, B and Y positioned as required around circumference



$$Y_j = \sqrt{R_z} \quad Z_j = \sqrt{R_z1}$$

**Bosch Rexroth AG
Industrial Hydraulics**

D-97813 Lohr am Main
Zum Eisengießer 1 • D-97816 Lohr am Main
Telefon 0 93 52 / 18-0
Telefax 0 93 52 / 18-23 58 • Telex 6 89 418-0
eMail documentation@boschrexroth.de
Internet www.boschrexroth.de

Bosch Rexroth Limited

Cromwell Road, St Neots
Cambs, PE19 2ES
Tel: 0 14 80/22 32 56
Fax: 0 14 80/21 90 52
E-mail: info@boschrexroth.co.uk

The data specified above only serves to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The details stated do not release you from the responsibility for carrying out your own assessment and verification. It must be remembered that our products are subject to a natural process of wear and ageing.