

RE 26 892/02.03

Replaces: 05.02

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

Nominal sizes 10 to 32

Series 5X

Maximum operating pressure 350 bar

Maximum flow 400 L/min



K4660-9

Type DR 20-5-5X/315Y...

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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
- For manifold mounting
- 4 adjustment elements:
 - Rotary knob
 - Sleeve with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- 5 pressure stages
- Check valve, optional (only for subplate mounting valves).



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Function, section

Type DR pressure valves are pilot operated pressure reducing valves, which are controlled from the secondary circuit.

They basically consist of main valve (1) with main spool insert (3) and pilot control valve (2) with pressure adjustment element.

At rest, the valves are open, this means that fluid can freely pass from port B, to port A via the main spool insert (3).

Pressure present in port A acts on the under side of the main spool. At the same time there is pressure acting on the ball (6) in the pilot control valve (2) via the orifice (4) on the spring-loaded side of the main spool (3) and via port (5). This pressure also acts on the ball (6), via the orifice (7), control line (8), check valve (9) and orifice (10). Depending on the setting of spring (11), pressure builds up in front of the ball (6), in port (5) and in spring chamber (12), which holds

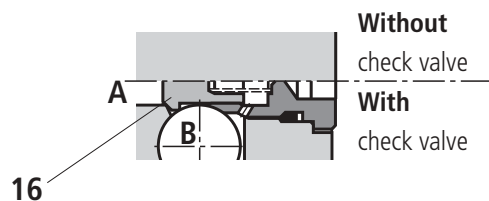
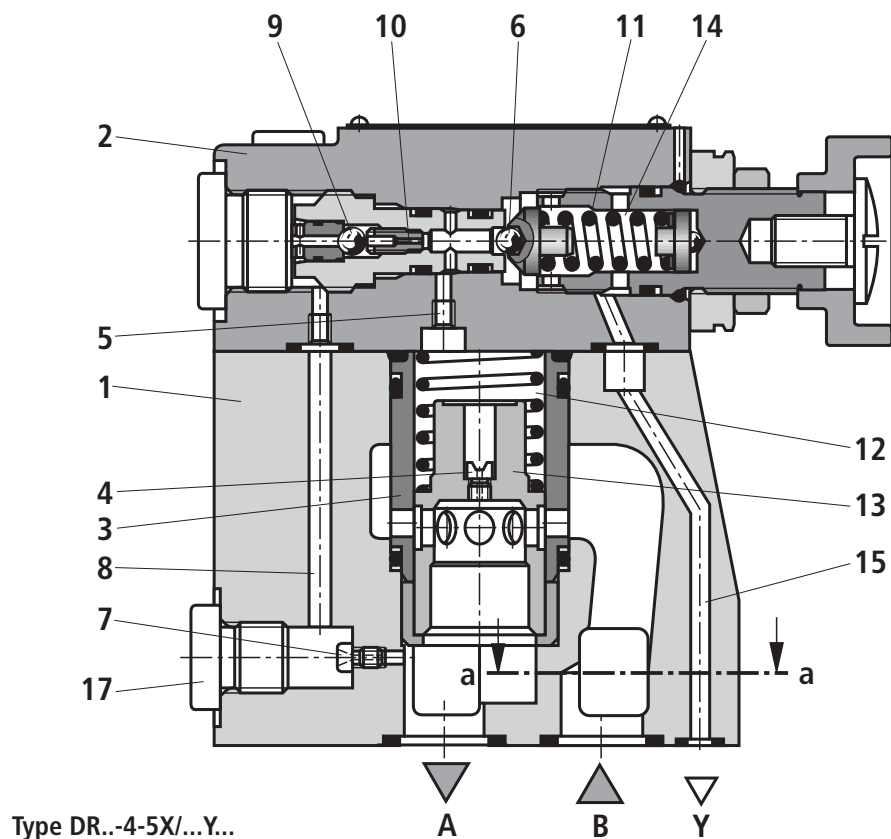
the control spool (13) in the open position. Pressure fluid can freely flow from port B to port A via main spool insert (3) until the pressure in port A exceeds the value set at spring (11) and opens the ball (6). The control spool (13) moves to the closed position.

The desired reduced pressure is achieved, when a balance between the pressure in port A and the pressure set at spring (11) is reached.

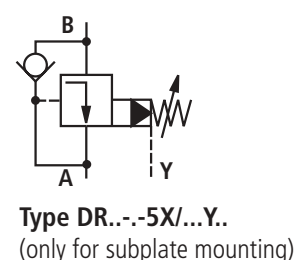
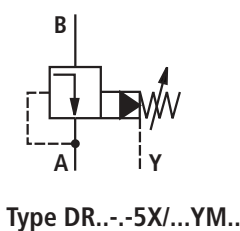
Pilot oil drain from spring chamber (14) to tank always takes place externally via control line (15).

Free return flow from port A to port B can be achieved by installing an optional check valve (16).

A pressure gauge connection (17) allows the reduced pressure in port A to be monitored.



Symbols



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

General

Installation			Optional					
Ambient temperature range			°C	– 30 to + 50 for NBR seals				
			°C	– 20 to + 50 for FKM seals				
Weight	Subplate mounting	DR...	kg	DR 10	DR 16	DR 20	DR 25	DR 32
				3.4	–	5.3	–	8.0
		DRC...	kg	1.2				
	DRC 30...	kg	1.5					
	Threaded connections	DR..G...	kg	5.3	5.2	5.1	5.0	4.8

Hydraulic

Nominal pressure			bar	350 ¹⁾				
Maximum operating pressure at port B			bar	350 ¹⁾				
Operating pressure range at port A			bar	10 to 350 ¹⁾				
Maximum back pressure at port Y			bar	350 ¹⁾				
Settable pressure	Minimum		bar	Flow related (see characteristic curves on page 5)				
	Maximum		bar	50; 100; 200; 315; 350 ¹⁾				
Maximum flow				DR 10	DR 16	DR 20	DR 25	DR 32
	Subplate mounting	L/min		150	–	300	–	400
	Threaded connections	L/min		150	300	300	400	400
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524 ²⁾ ; Fast bio-degradable pressure fluids is 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	– 30 to + 80 for NBR seals				
			°C	– 20 to + 80 for FKM seals				
Viscosity range			mm ² /s	10 to 800				
Cleanliness class to ISO code			Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ⁴⁾					

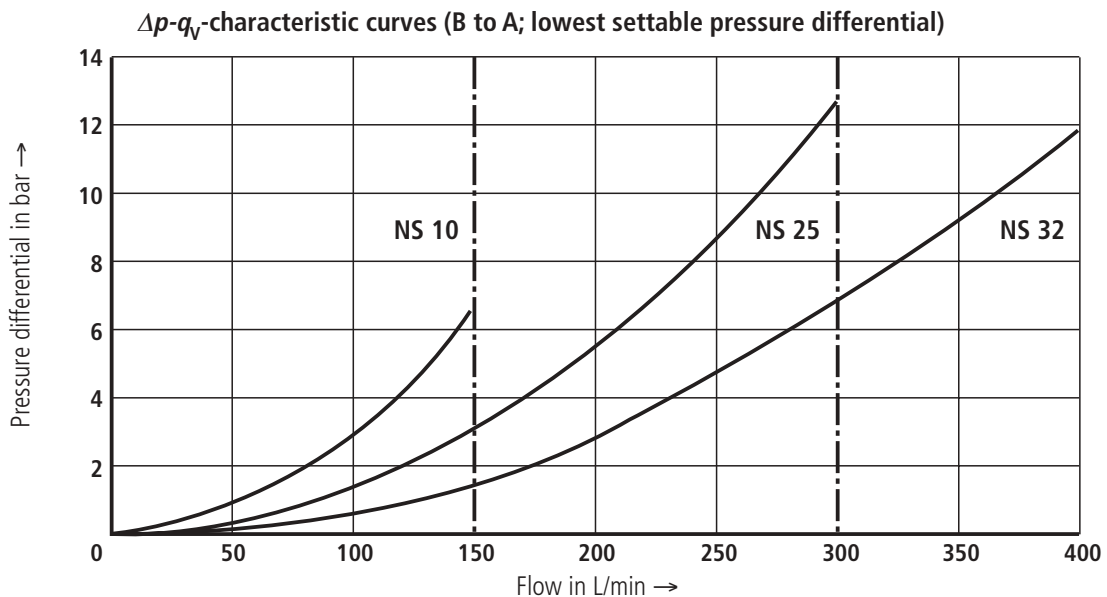
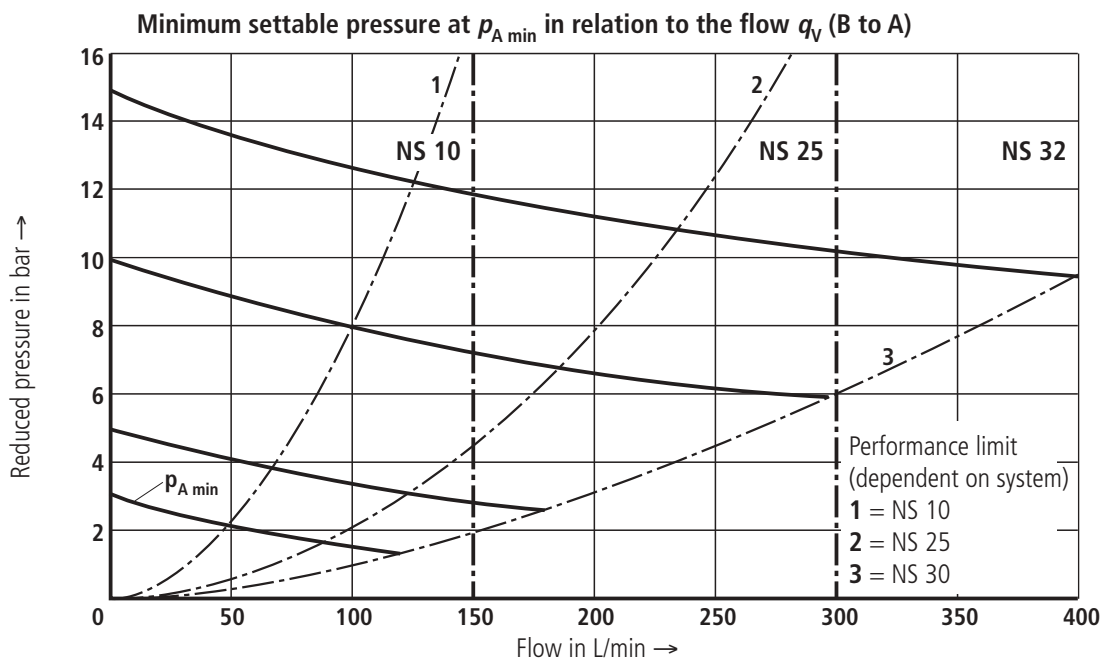
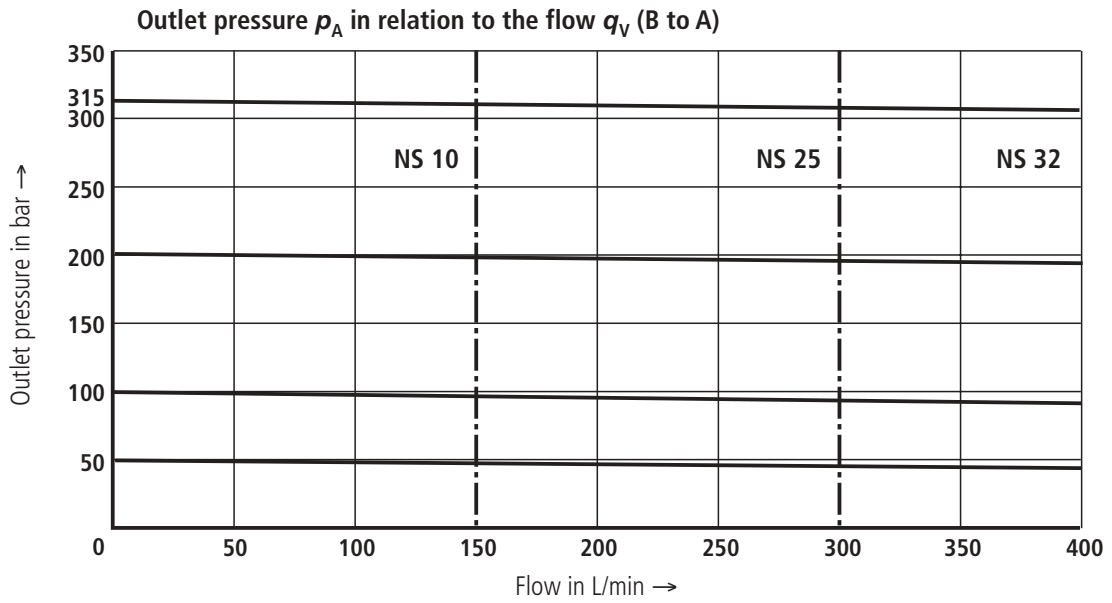
¹⁾ 350 bar only possible for version **without** check valve

²⁾ Suitable for NBR **and** FKM seals

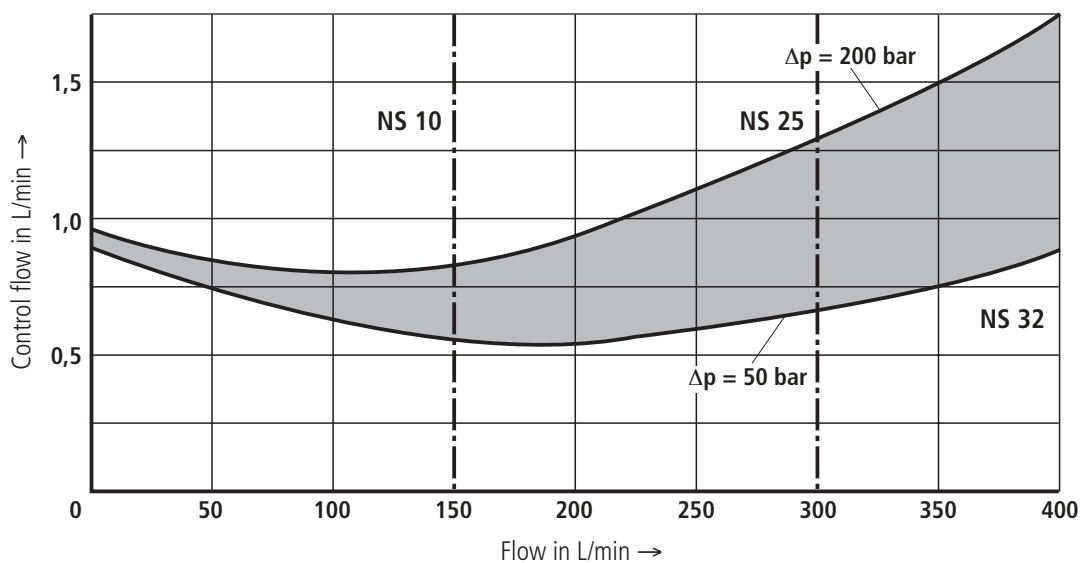
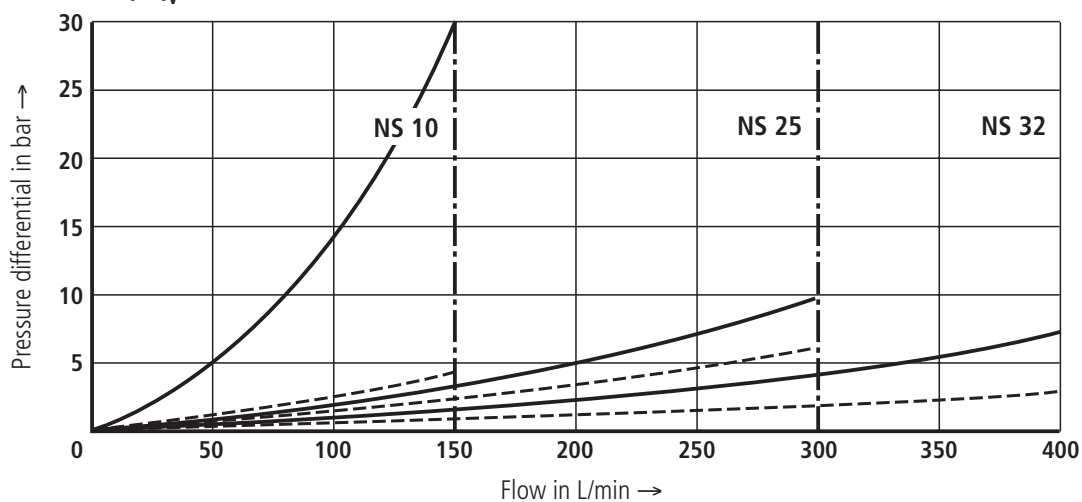
³⁾ **Only** suitable for FKM seals

⁴⁾ The cleanliness class stated for the components must be adhered too 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, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)



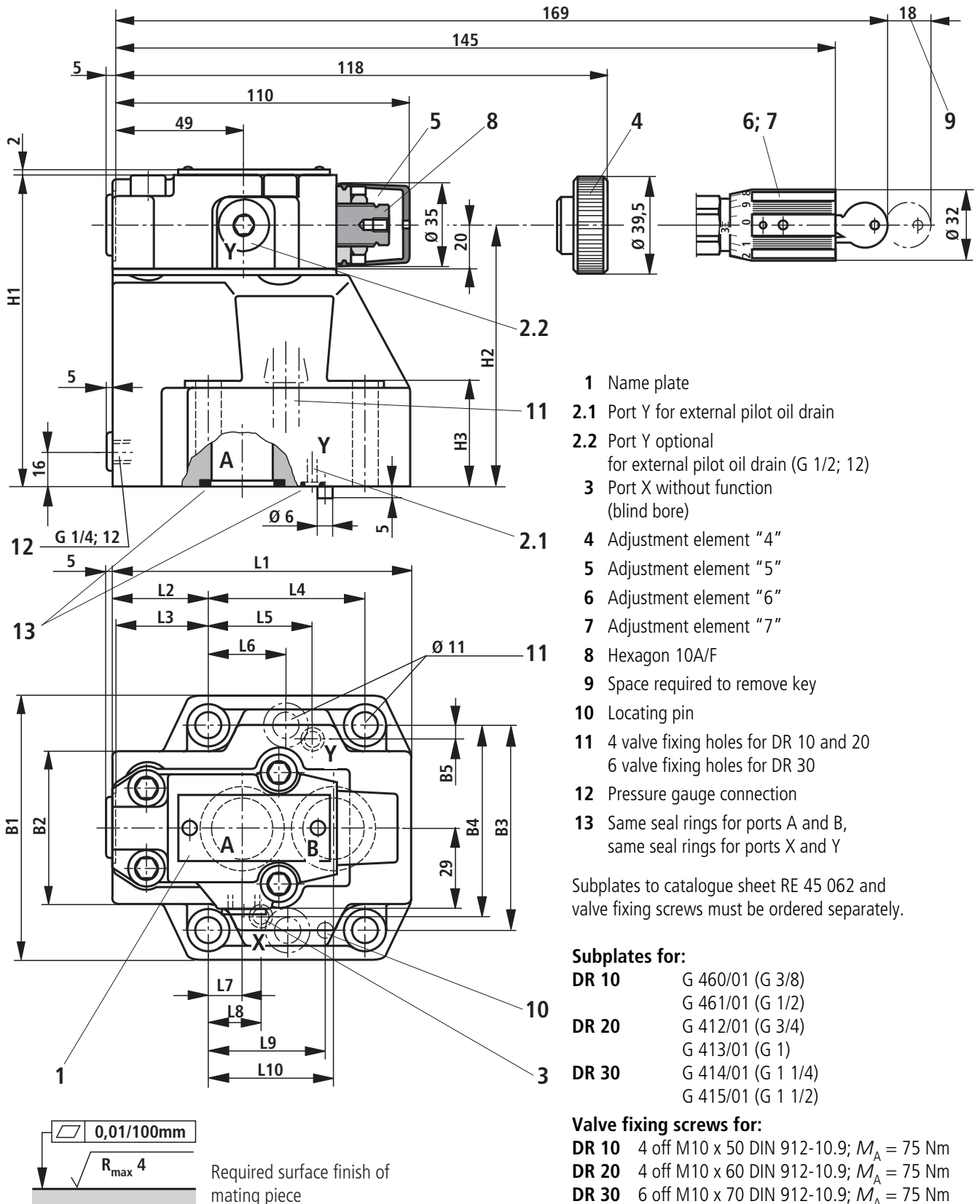
Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40 \text{ °C} \pm 5 \text{ °C}$)

Control flow in relation to the flow (B to A) and to the pressure differential

 Δp - q_v -characteristic curves via the check valve (A to B)


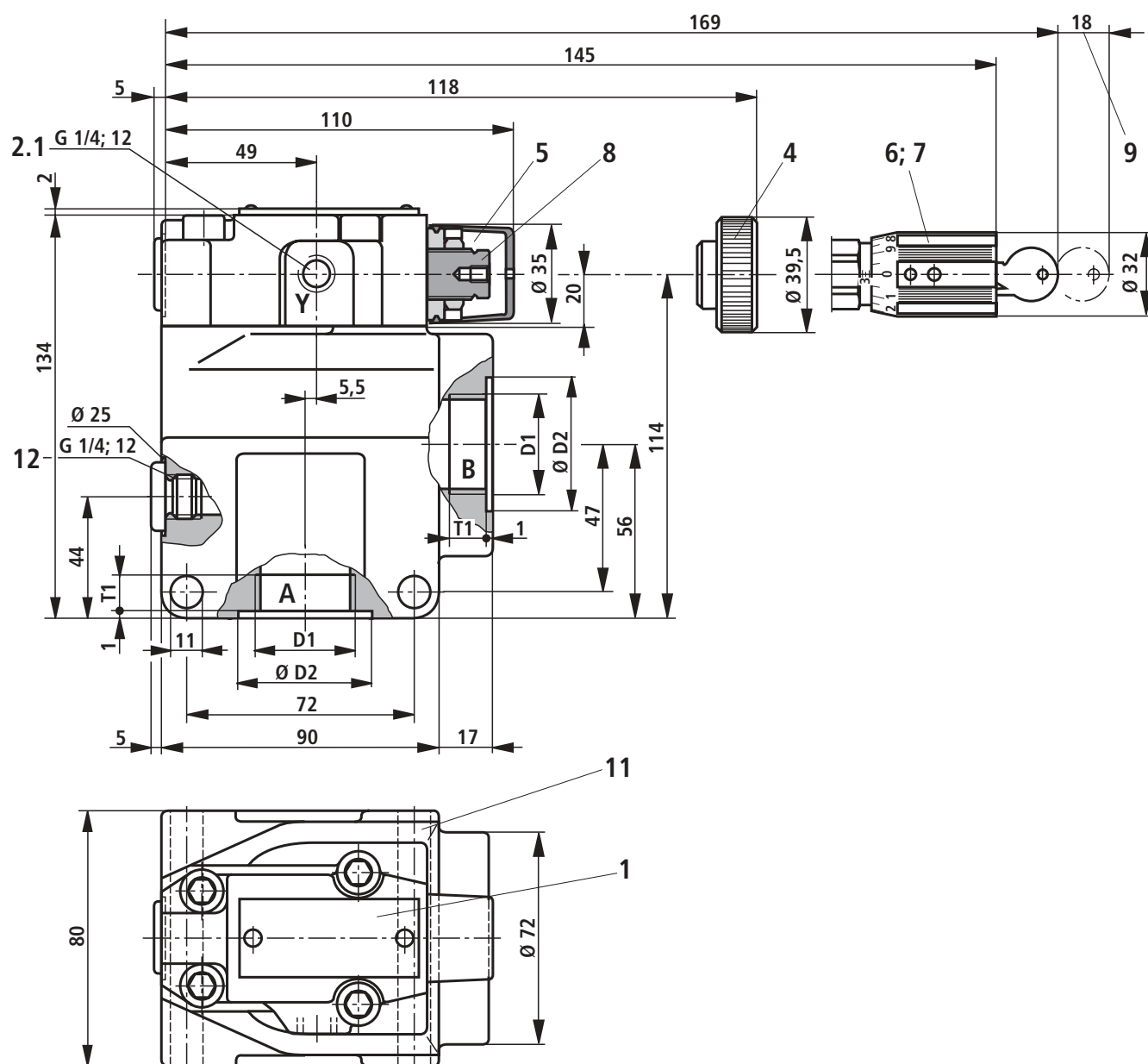
- Flow resistance via check valve, the main stage closed
- - - Flow resistance via check valve with the main stage fully open

Unit dimensions: subplate mounting

(Dimensions in mm)



Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	B1	B2	B3	B4	B5	H1	H2	H3
DR 10	96	35.5	33	42.9	21.5	-	7.2	21.5	31.8	35.8	85	50	66.7	58.8	7.9	112	92	28
DR 20	116	37.5	35.4	60.3	39.7	-	11.1	20.6	44.5	49.2	102	59.5	79.4	73	6.4	122	102	38
DR 30	145	33	29.8	84.2	59.5	42.1	16.7	24.6	62.7	67.5	120	76	96.8	92.8	3.8	130	110	46

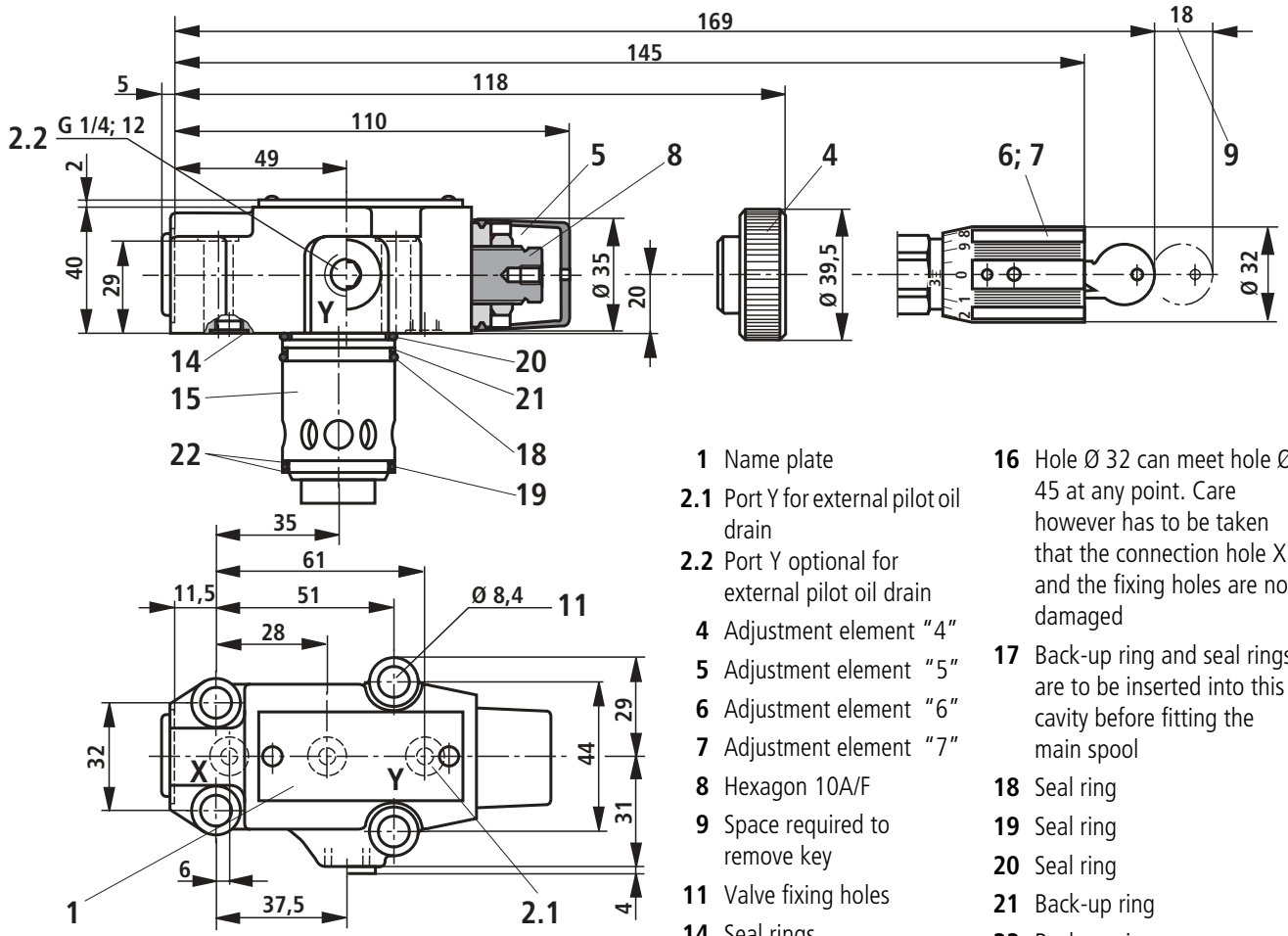
Unit dimensions: threaded connections (dimensions in mm)


- 1 Name plate
- 2.1 Port Y for external pilot oil drain
- 4 Adjustment element "4"
- 5 Adjustment element "5"
- 6 Adjustment element "6"
- 7 Adjustment element "7"
- 8 Hexagon 10A/F
- 9 Space required to remove key
- 11 Valve fixing hole
- 12 Pressure gauge connection

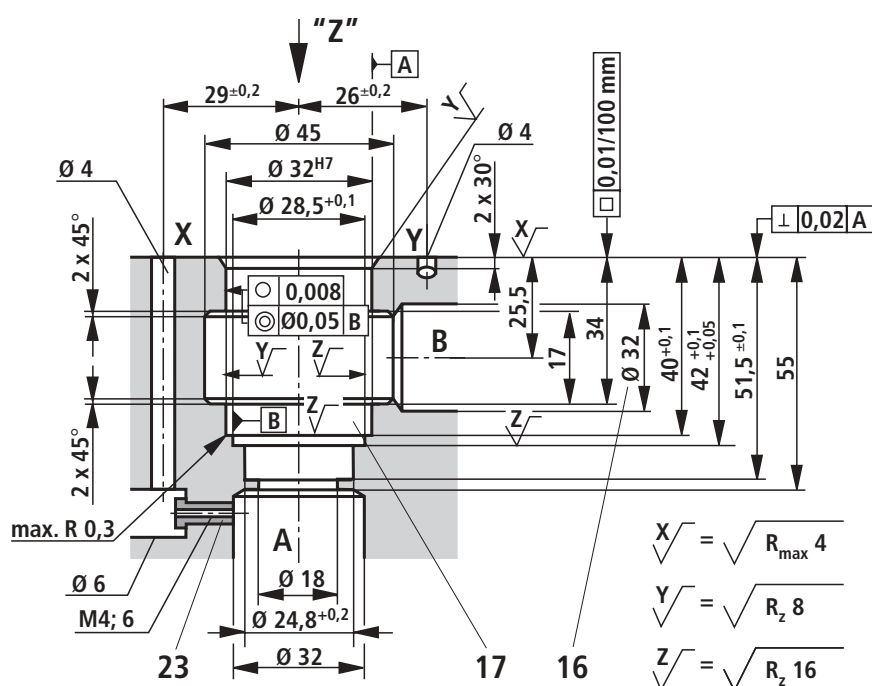
Type	D1	ØD2	T1
DR 10 G	G 1/2	34	14
DR 15 G	G 3/4	42	16
DR 20 G	G 1	47	18
DR 25 G	G 1 1/4	58	20
DR 30 G	G 1 1/2	65	22

Unit dimensions: pilot valve **with** (DRC 30) or **without** (DRC) main spool insert

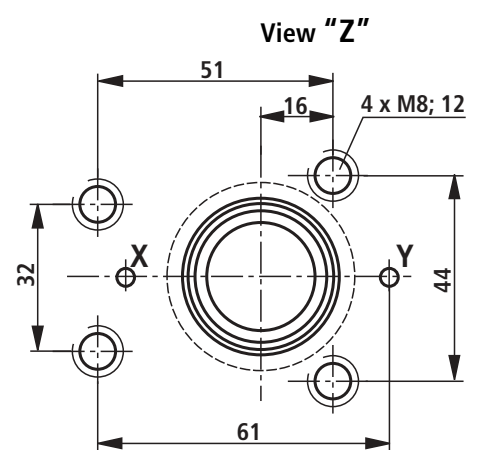
(Dimensions in mm)



- 1 Name plate
- 2.1 Port Y for external pilot oil drain
- 2.2 Port Y optional for external pilot oil drain
- 4 Adjustment element "4"
- 5 Adjustment element "5"
- 6 Adjustment element "6"
- 7 Adjustment element "7"
- 8 Hexagon 10A/F
- 9 Space required to remove key
- 11 Valve fixing holes
- 14 Seal rings
- 15 Main spool insert
- 16 Hole $\varnothing 32$ can meet hole $\varnothing 45$ at any point. Care however has to be taken that the connection hole X and the fixing holes are not damaged
- 17 Back-up ring and seal rings are to be inserted into this cavity before fitting the main spool
- 18 Seal ring
- 19 Seal ring
- 20 Seal ring
- 21 Back-up ring
- 22 Back-up ring
- 23 Orifice must be ordered separately



4 off **valve fixing screws** M8 x 40
DIN 912-10.9, $M_A = 37 \text{ Nm}$, must be ordered separately



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