

Pressure sequence valve, pilot operated

RA 26391/02.03
Replaces: 06.98

1/8

Model DZ

Nominal sizes 10, 25, 32

Series 5X

Maximum operating pressure 315 bar (4600 PSI)

Maximum flow 600 L/min (160 GPM)



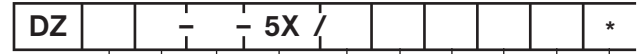
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Features

- Suitable for use as a pressurizing, sequence and bypass valve
- Mounts on standard ISO 5781-06, 08 or 10; NFPA/ANSI P 06, P 08 or P 10 interface
- For subplates see catalog sheet RE 45 062 (separate order)
- For manifold block mounting
- 4 adjustment elements:
 - Rotary knob
 - Sleeve with hexagon and protective cap
 - Lockable rotary knob with scale
 - Rotary knob with scale
- 4 pressure stages
- Check valve, optional
- Details regarding the sea water resistant version see catalogue sheet RE 26 391-M

Ordering details



| | |
|--|-------------------|
| Pilot operated valve Pilot operated valve without main spool insert (do not state nominal size) | = No code |
| Pilot operated valve with main spool insert (state valve size 30) | = C |
| Nominal size 10 | = 10 |
| Nominal size 25 | = 20 |
| Nominal size 32 | = 30 |
| Adjustment element | |
| Rotary knob | = 1 |
| Sleeve with hexagon and protective cap | = 2 |
| Lockable rotary knob with scale | = 3 ¹⁾ |
| Rotary knob with scale | = 7 |
| Series 50 to 59 (50 to 59: unchanged installation and connection dimensions) | = 5X |

1) H-key with Material No. **R900008158** is included within the scope of supply
 2) Not for versions DZC and DZC 30

Further details in clear text

Thread for "X" and "Y" port
 No code = BSP threaded port
 12 = SAE threaded port

NBR seals
 FKM seals
 (other seals on request)
Attention!
 The compatibility of the seals and pressure fluid has to be taken into account!

No code²⁾ = With check valve
 M = Without check valve

Pilot oil supply
 Ordering details to symbols, see below

No code =
 X =]²⁾
 Y =
 XY =

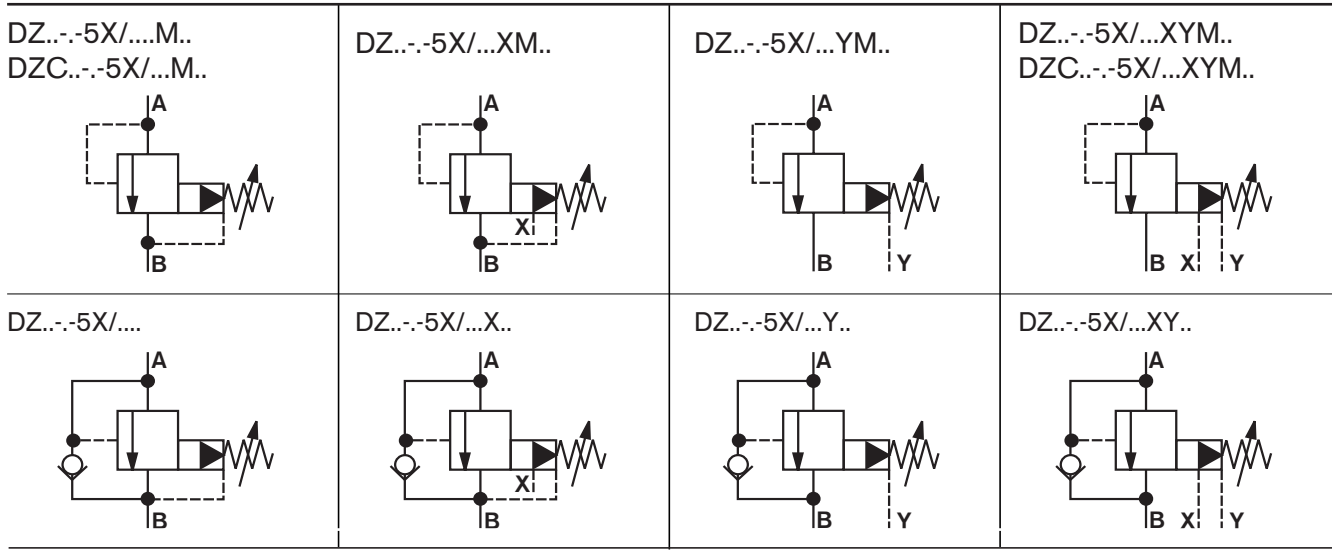
50 = Settable pressure up to 50 bar (725 PSI)
 100 = Settable pressure up to 100 bar (1450 PSI)
 200 = Settable pressure up to 200 bar (2900 PSI)
 315 = Settable pressure up to 315 bar (4600 PSI)

Standard types

| Type | Material No. |
|------------------|--------------|
| DZ 10 -2-5X/100Y | R900502839 |
| DZ 10 -2-5X/200Y | R900596661 |
| DZ 10 -2-5X/315Y | R900504251 |
| DZ 20 -2-5X/100Y | R900507430 |
| DZ 20 -2-5X/200Y | R900596863 |
| DZ 20 -2-5X/315Y | R900597138 |

| Type | Material No. |
|------------------|--------------|
| DZ 30 -2-5X/100Y | R900502158 |
| DZ 30 -2-5X/200Y | R900599230 |
| DZ 30 -2-5X/315Y | R900503456 |

Symbols



Functional description, cross-section

Pressure valves type DZ are pilot operated pressure sequence valves. They are used for pressure dependent sequence switching of a second circuit.

The pressure sequence valves basically consist of main valve (1) with main spool insert (7) and pilot valve (2) with pressure adjustment element and optional check valve (3).

The valve function varies according to pilot oil drain configuration:

Pressurizing valve type DZ...-5X/....

(Control lines 4.1, 12 and 13 open;
Control lines 4.2, 14 and 15 plugged)

The pressure in line A acts on the pilot spool (5) in the pilot valve (2) via the control line (4.1). At the same time it acts on the spring loaded side of the main spool (7) via orifice (6). When the pressure exceeds the value set at spring (8), the pilot piston (5) is moved against the spring (8). The signal is obtained internally from port A via control line (4.1). The fluid on the spring loaded side of the main spool (7) now flows to port B via orifice (9), control land (10) and control lines (11) and (12). There is now a pressure drop at main spool (7), the connection from port A to port B is open maintaining the pressure set at spring (8). The leakage oil at pilot piston (5) is led to port B internally via control line (13). An optional check valve (3) can be fitted for free return flow from port B to port A.

Pressurizing valve type DZ...-5X/...X..

(Control lines 4.2, 12 and 13 open;
control lines 4.1, 14 and 15 plugged)

The function of this valve is principally the same as for valve DZ...-5X/... .

However, with pressure sequence valve type DZ...-5X/...X.. the signal is given externally by means of control line (4.2).

Sequence valve type DZ...-5X/...Y..

(Control lines 4.1, 12 and 14 or 15 open;
Control lines 4.2, and 13 plugged)

The function of this valve is principally the same as for valve type DZ...-5X/....

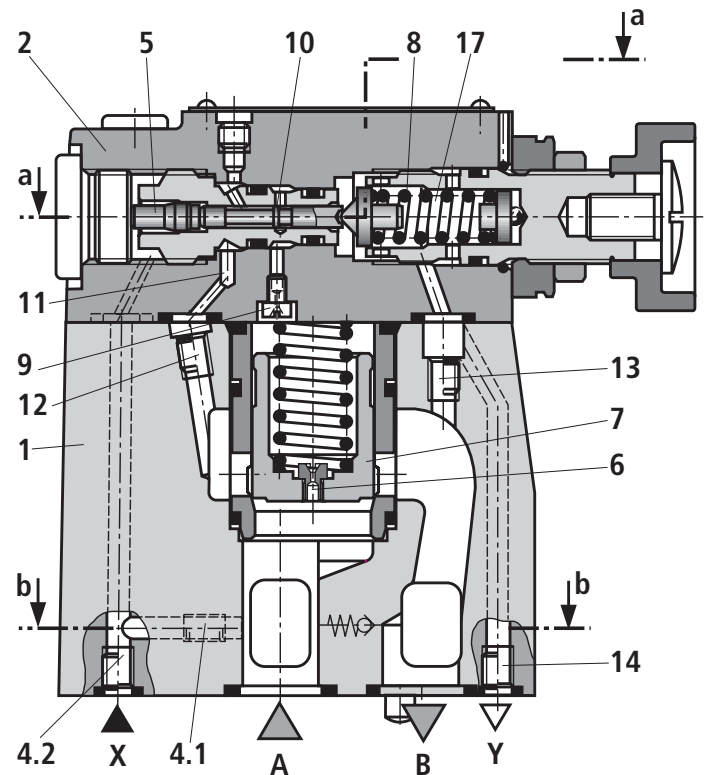
However, for type DZ...-5X/...Y.. leakage at pilot piston (5) **must** be drained to tank without pressure via lines (14) or (15). Pilot oil is fed to port B via line (12).

Bypass valve type DZ...-5X/...XY..

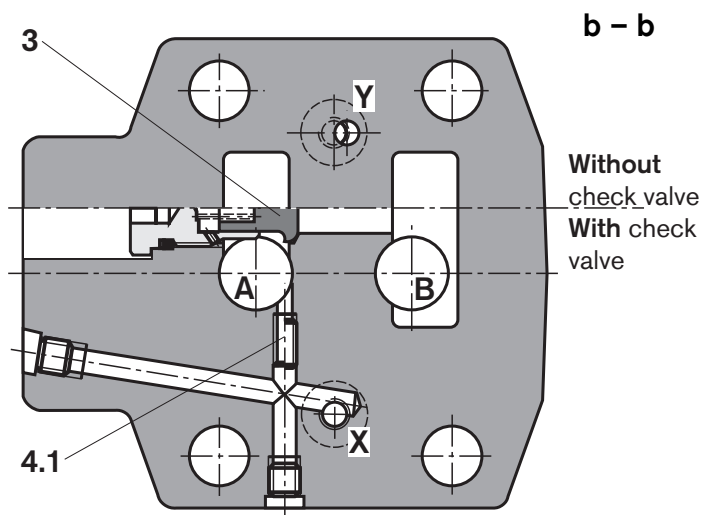
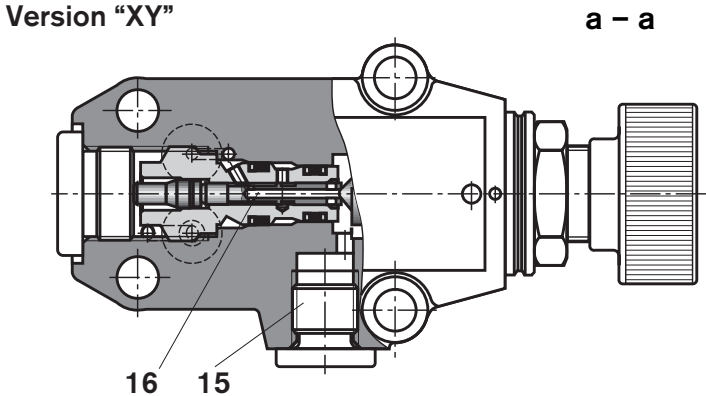
(Control lines 4.2, 14 or 15 open;
Control lines 4.1, 12 and 13 plugged)

Pressure in port X acts on the pilot piston (5) in the pilot valve (2) via control line (4.2). At the same time pressure in port A acts on the spring loaded side of the main spool (7) via orifice (6). When the pressure in port X exceeds the value set at the spring (8), the pilot piston (5) is moved against the spring (8). When the pilot piston (5) is moved against the spring (8), fluid can pass from the spring loaded side of the main spool (7) into the spring chamber (17) of the pilot valve (2) via orifice (9) and line (16) and pressure breaks down on the spring loaded side of the main spool (7). The fluid can, therefore, pass from port A to port B with minimum loss of pressure. The pilot oil in spring chamber (17) should be drained to tank without pressure via lines (14) or (15). An optional check valve (3) can be fitted for free return flow from port B to port A.

Versions "...", "X" and "Y"



Version "XY"



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

| | | | | |
|---------------------------|--------------------|------------------------------------|------------|------------|
| Installation | | Optional | | |
| Ambient temperature range | | °C (°F) | | |
| | | -30 to +80 (-22 to 176)(NBR seals) | | |
| | | -20 to +80 (-4 to 176)(FKM seals) | | |
| Weight | Nominal size | 10 | 25 | 32 |
| | DZ... kg (lbs) | 3.4 (7.5) | 5.3 (11.7) | 8.0 (17.7) |
| | DZC... kg (lbs) | 1.2 (2.7) | | |
| | DZC 30... kg (lbs) | 1.5 (3.3) | | |

Hydraulic

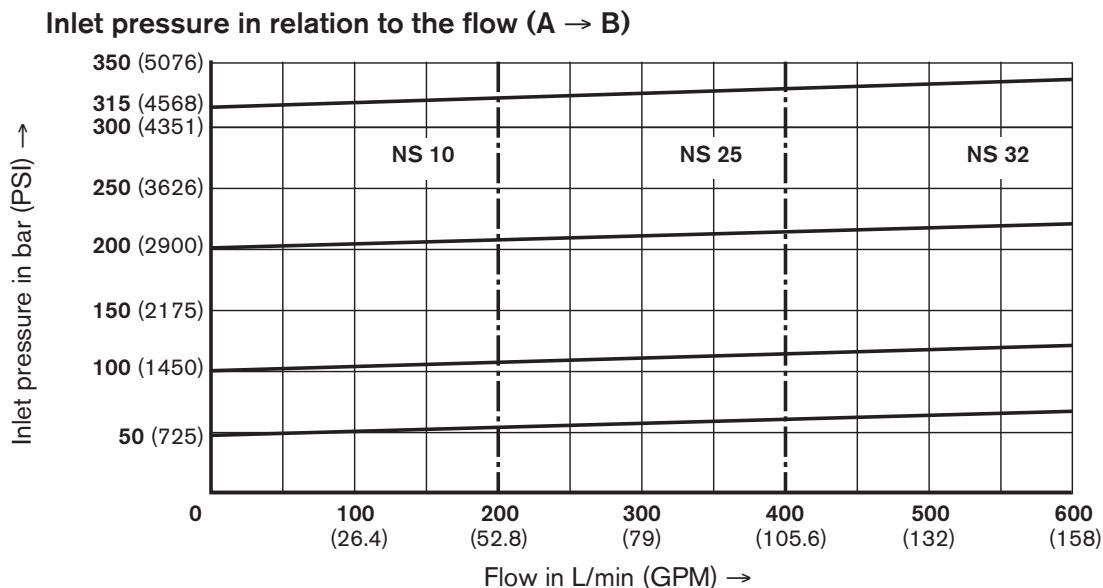
| | | | | | |
|----------------------------------|--|------------------------|--|-------------|-------------|
| Maximum operating pressure | Ports A, B, X | bar (PSI) | 315 (4600) | | |
| Maximum back pressure | Port Y | bar (PSI) | 315 (4600) | | |
| Settable pressure | Minimum | bar (PSI) | Flow dependent (see characteristic curves on page 5) | | |
| | Maximum | bar (PSI) | 50; 100; 200; 315 (725; 1450; 2800; 4600) | | |
| Maximum flow | Nominal size | | 10 | 25 | 32 |
| | | L/min (GPM) | 200 (52.8) | 400 (105.7) | 600 (158.6) |
| Pressure fluid | Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; 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 (°F) | | -30 to +80 (-22 to 176) (NBR seals) | | |
| | °C (°F) | | -20 to +80 (-4 to 176) (FKM seals) | | |
| Viscosity range | mm ² /s (SUS) | 10 to 800 (60 to 3710) | | | |
| 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

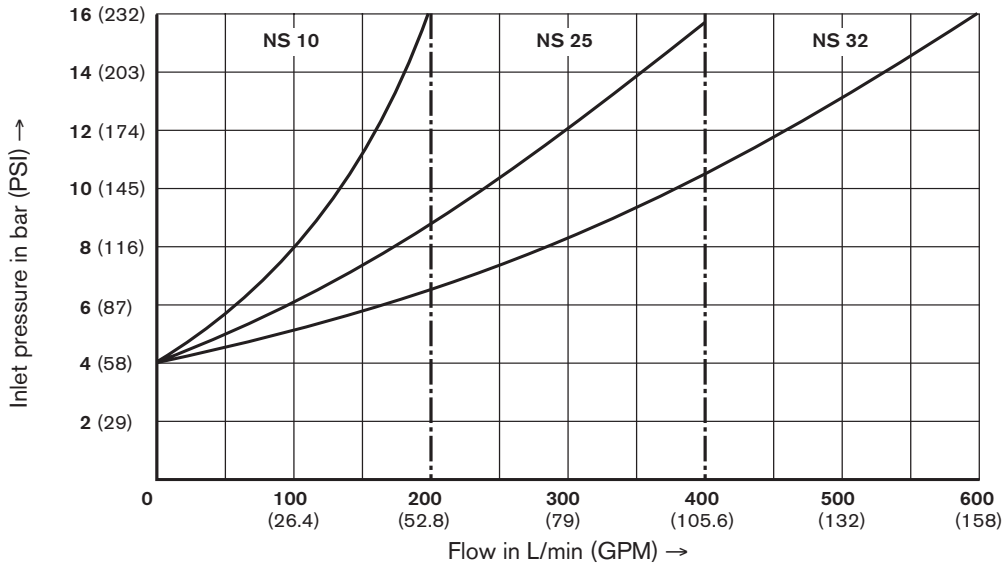
3) The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.

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

Characteristic curves – measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ (104 °F \pm 41 °F)

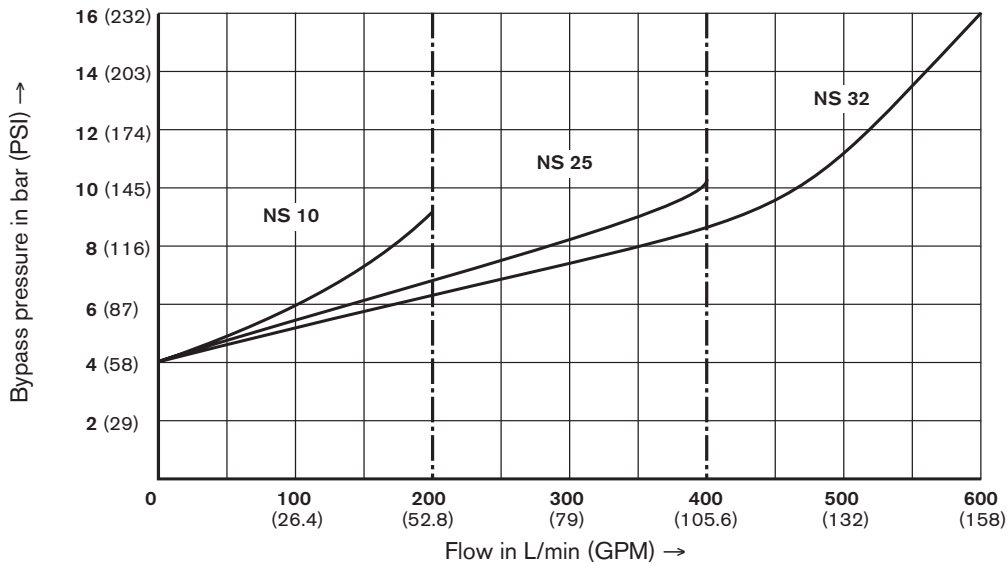
Characteristic curves – measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ (104 °F \pm 41 °F)

Minimum settable pressure in relation to the flow (A → B) (= bypass pressure version “..X..“)



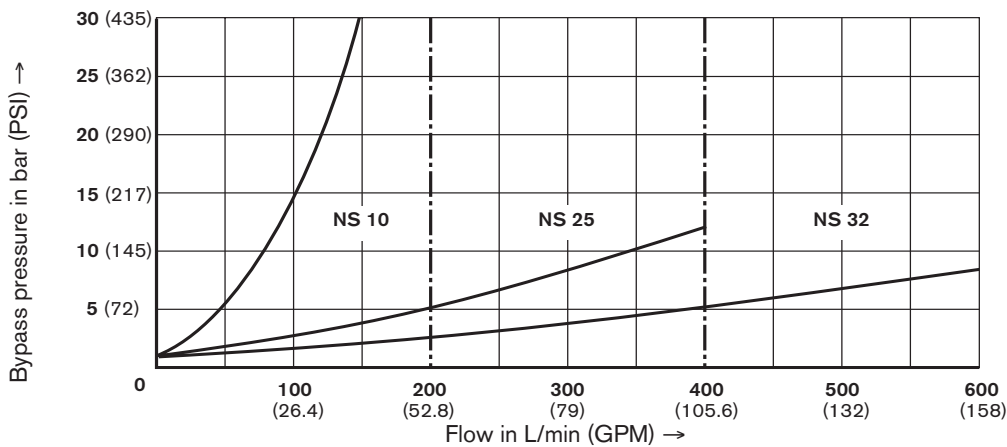
The characteristic curves are valid for outlet pressure $p_B = 0$ for the complete flow range

Bypass pressure in relation to the flow (A → B) (only version “..XY..“)

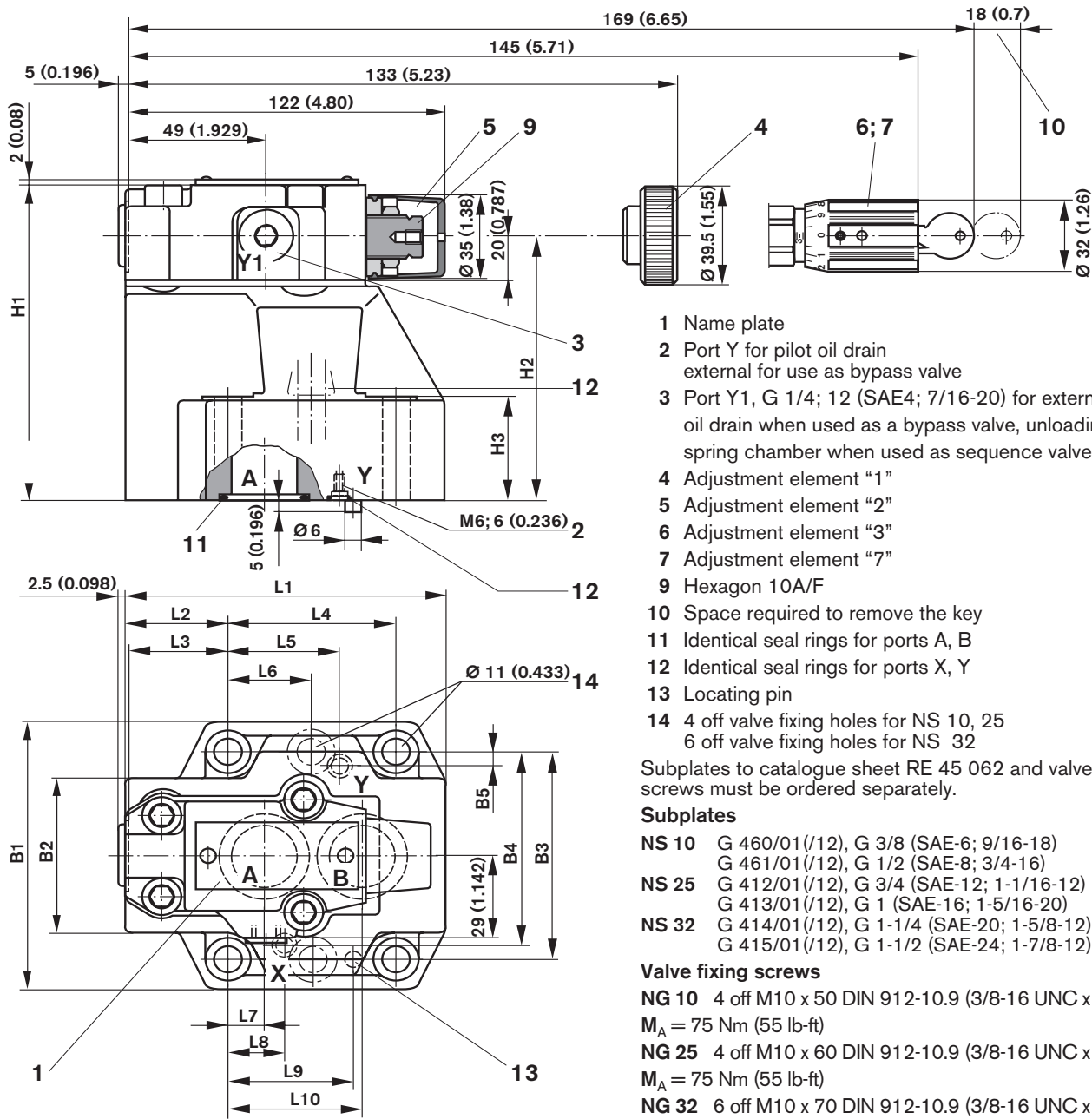


The characteristic curves are valid for outlet pressure $p_B = 0$ for the complete flow range

Δp - q_v -characteristic curves across the check valve (B → A)



Unit dimensions: pilot operated valve – dimensions in millimeters (inches)



- 1 Name plate
- 2 Port Y for pilot oil drain external for use as bypass valve
- 3 Port Y1, G 1/4; 12 (SAE4; 7/16-20) for external pilot oil drain when used as a bypass valve, unloading of spring chamber when used as sequence valve
- 4 Adjustment element "1"
- 5 Adjustment element "2"
- 6 Adjustment element "3"
- 7 Adjustment element "7"
- 9 Hexagon 10A/F
- 10 Space required to remove the key
- 11 Identical seal rings for ports A, B
- 12 Identical seal rings for ports X, Y
- 13 Locating pin
- 14 4 off valve fixing holes for NS 10, 25
6 off valve fixing holes for NS 32

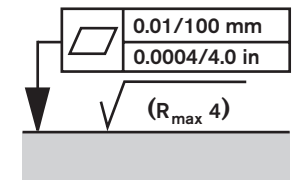
Subplates to catalogue sheet RE 45 062 and valve fixing screws must be ordered separately.

Subplates

- NS 10** G 460/01(/12), G 3/8 (SAE-6; 9/16-18)
G 461/01(/12), G 1/2 (SAE-8; 3/4-16)
- NS 25** G 412/01(/12), G 3/4 (SAE-12; 1-1/16-12)
G 413/01(/12), G 1 (SAE-16; 1-5/16-20)
- NS 32** G 414/01(/12), G 1-1/4 (SAE-20; 1-5/8-12)
G 415/01(/12), G 1-1/2 (SAE-24; 1-7/8-12)

Valve fixing screws

- NG 10** 4 off M10 x 50 DIN 912-10.9 (3/8-16 UNC x 2");
 $M_A = 75 \text{ Nm (55 lb-ft)}$
- NG 25** 4 off M10 x 60 DIN 912-10.9 (3/8-16 UNC x 2-1/4");
 $M_A = 75 \text{ Nm (55 lb-ft)}$
- NG 32** 6 off M10 x 70 DIN 912-10.9 (3/8-16 UNC x 2-3/4");
 $M_A = 75 \text{ Nm (55 lb-ft)}$

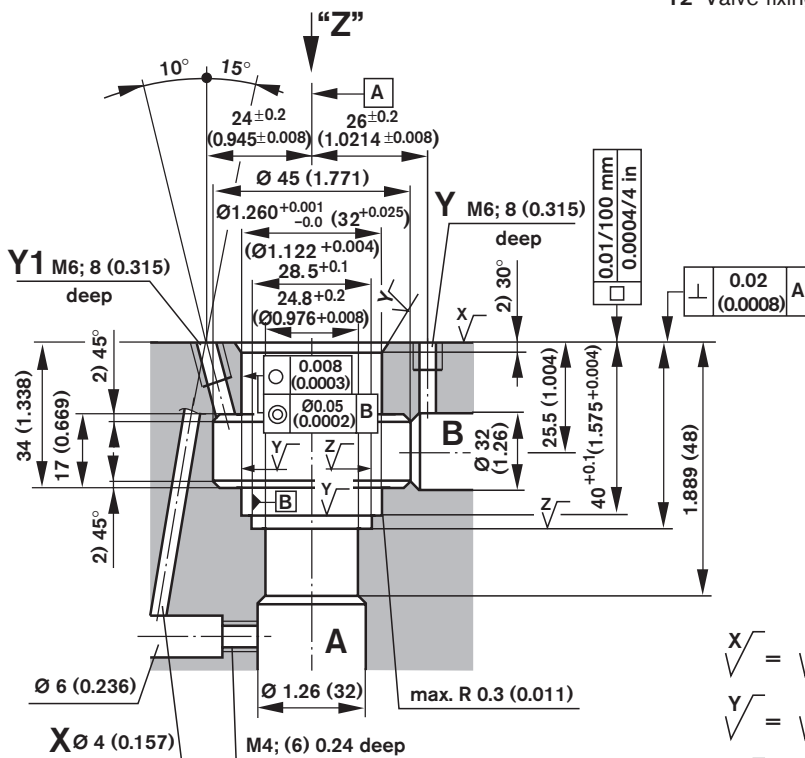
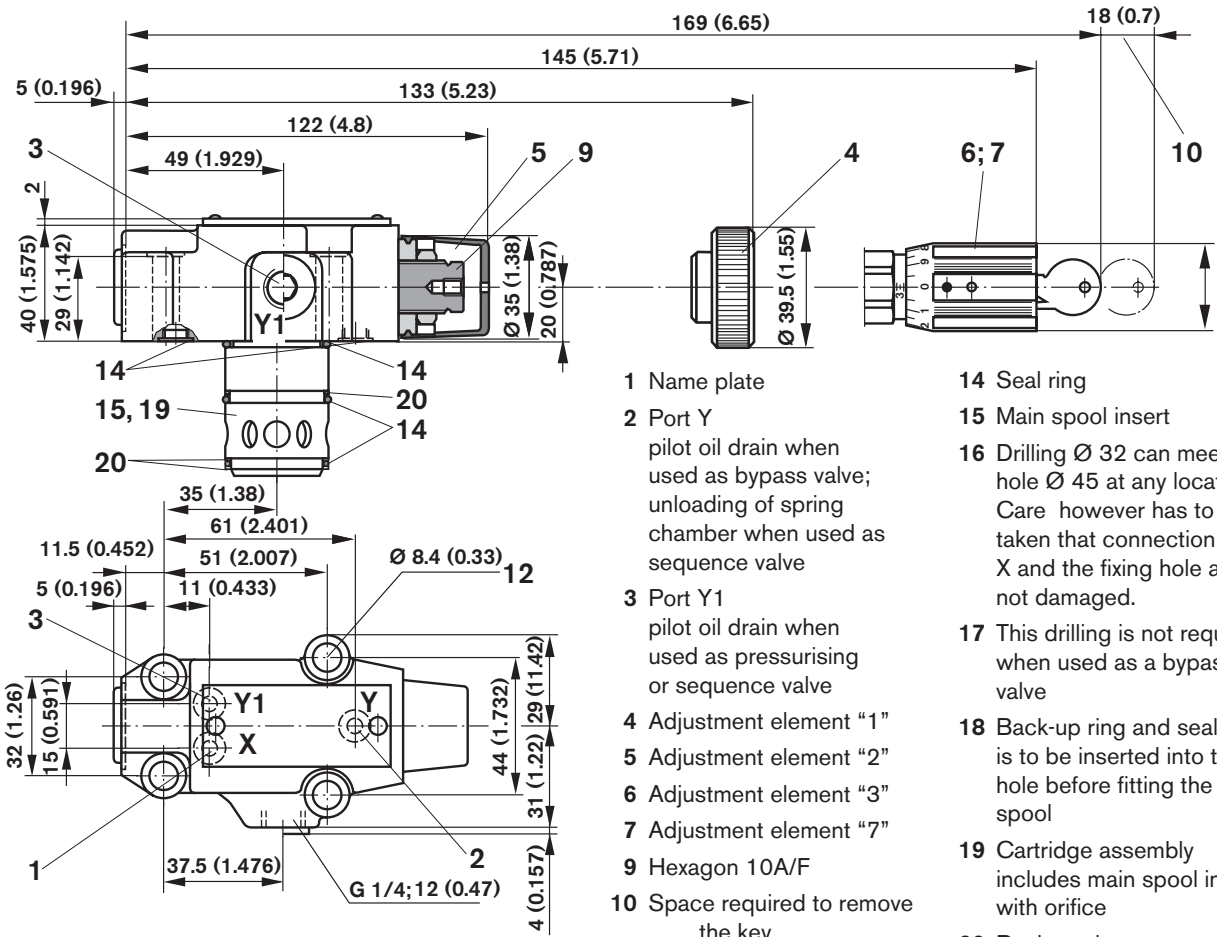


Requires surface finish of the mating piece

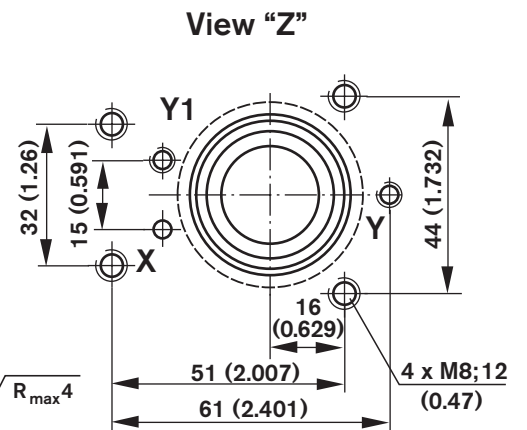
| NS | L1 | L2 | L3 | L4 | L5 | L6 |
|----|---------------|----------------|----------------|----------------|----------------|----------------|
| 10 | 96 (3.78) | 35.5 (1.40) | 33 (1.30) | 42.9 (1.69) | 21.5 (0.85) | - |
| 20 | 116 (4.57) | 37.5 (1.48) | 35.4 (1.40) | 60.3 (2.37) | 39.7 (1.56) | - |
| 32 | 145 (5.71) | 33 (1.30) | 29.8 (1.17) | 84.2 (3.31) | 59.5 (2.34) | 42.1 (1.66) |

| NS | L7 | L8 | L9 | L10 | B1 | B2 | B3 | B4 | B5 | H1 | H2 | H3 |
|----|----------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|--------------|
| 10 | 7.2 (0.28) | 21.5 (0.85) | 31.8 (1.25) | 35.8 (1.41) | 85 (3.35) | 50 (1.97) | 66.7 (2.63) | 58.8 (2.32) | 7.9 (0.31) | 112 (4.41) | 92 (3.62) | 28 (1.10) |
| 20 | 11.1 (0.44) | 20.6 (0.81) | 44.5 (1.75) | 49.2 (1.94) | 102 (4.02) | 59.5 (2.34) | 79.4 (3.13) | 73 (2.87) | 6.4 (0.25) | 122 (4.8) | 102 (4.02) | 38 (1.50) |
| 32 | 16.7 (0.66) | 24.6 (0.97) | 62.7 (2.47) | 67.5 (2.66) | 120 (4.72) | 76 (3.0) | 96.8 (3.81) | 92.8 (3.65) | 3.8 (0.15) | 130 (5.12) | 110 (4.33) | 46 (1.81) |

Unit dimensions: pilot valve with (DZC 30 or without (DZC) main spool insert – dimensions in mm (inches)



| Valve fixing screws | M _A |
|--|---------------------|
| 4 off M8 x 40 DIN 912-10.9 (5/16-18 UNC x 1-1/2") Must be ordered separately | 37 Nm (27 lb-ft) |



$X \sqrt{\quad} = \sqrt{R_{max}4}$
 $Y \sqrt{\quad} = \sqrt{R_z8}$
 $Z \sqrt{\quad} = \sqrt{R_z16}$

Notes

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