2/2 Logic Cartridge Valve, Size 16

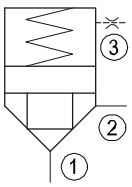
Q_{max} = 350 l/min, p_{max} = 420 bar
Active Control, Seated Design
Series WL22SD…

- Active control
- Area ratio 2 : 1
- High flow rates with low Δp
- Seat-valve shut-off from 1 → 2 and 2 → 1
- No pilot oil consumption at 3
- With or without seal on the seated valve spool
- Various opening pressures
- With integral orifice for pilot port
- All exposed parts with zinc-nickel plating
- Can be fitted in a line-mounting body

1 Description

Series WL22SD... actively controlled 2/2 logic valves are size 16, high performance screw-in cartridges with an M42 x 2 mounting thread. The conical-seat design ensures that the cartridges are leak-tight from 1 → 2 and from 2 → 1. When the same pressure exists at ports 1, 2 and 3, the valve spool is held in its closed position by the ≥ 2 bar compression spring. The 1 → 2 and 2 → 1 connection is opened or closed by relieving or pressurising the pilot port 3, bearing in mind the corresponding area- and pressure-ratios. 2/2 logic cartridge valves can be used in both mobile and industrial applications. All external parts of the cartridge are zinc-nickel plated according to DIN EN ISO 19 598 and are thus suitable for use in the harshest operating environments. For self-assembly, please refer to the section related data sheets.

2 Symbol



WL22SD …

3 Technical data

General characteristics	Description, value, unit
Designation	2/2 logic cartridge valve
Design	actively controlled, conical-seat type
Mounting method	screw-in cartridge M42 x 2
Tightening torque	200 Nm ± 10 %
Size	nominal 16 mm, cavity type EB
Weight	1.10 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C … +80 °C

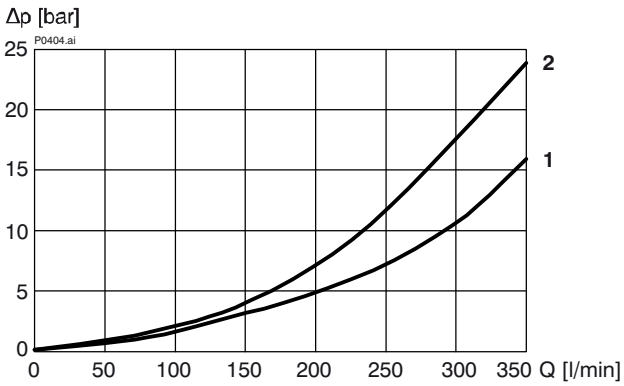
General characteristics	Description, value, unit
Flow direction	1 → 2 / 2 → 1, see symbol
$MTTF_D$ values	150 years, see data sheet 400-P-010101-en

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	420 bar
Maximum flow rate	350 l/min
Pressure drop	Δp < 5 bar at 100 l/min
Opening pressure: - standard - optional	2.0 bar 0.4 [1] / 6 / 10 / 13 bar
Hydraulic fluid	HL and HLP hydraulic oils to DIN 51 524; for other fluids, please consult Bucher
Hydraulic fluid temperature range	-25 °C … +80 °C
Viscosity range	10 … 650 mm^2/s (cSt), recommended 15...250 mm^2/s (cSt)
Minimum fluid cleanliness level Cleanliness class to ISO 4406: 1999	class 20/18/15

[1] only recommended for use when the seated valve spool is not fitted with a seal.

4 Performance graphs

measured with oil viscosity 33 mm^2/s (cSt)

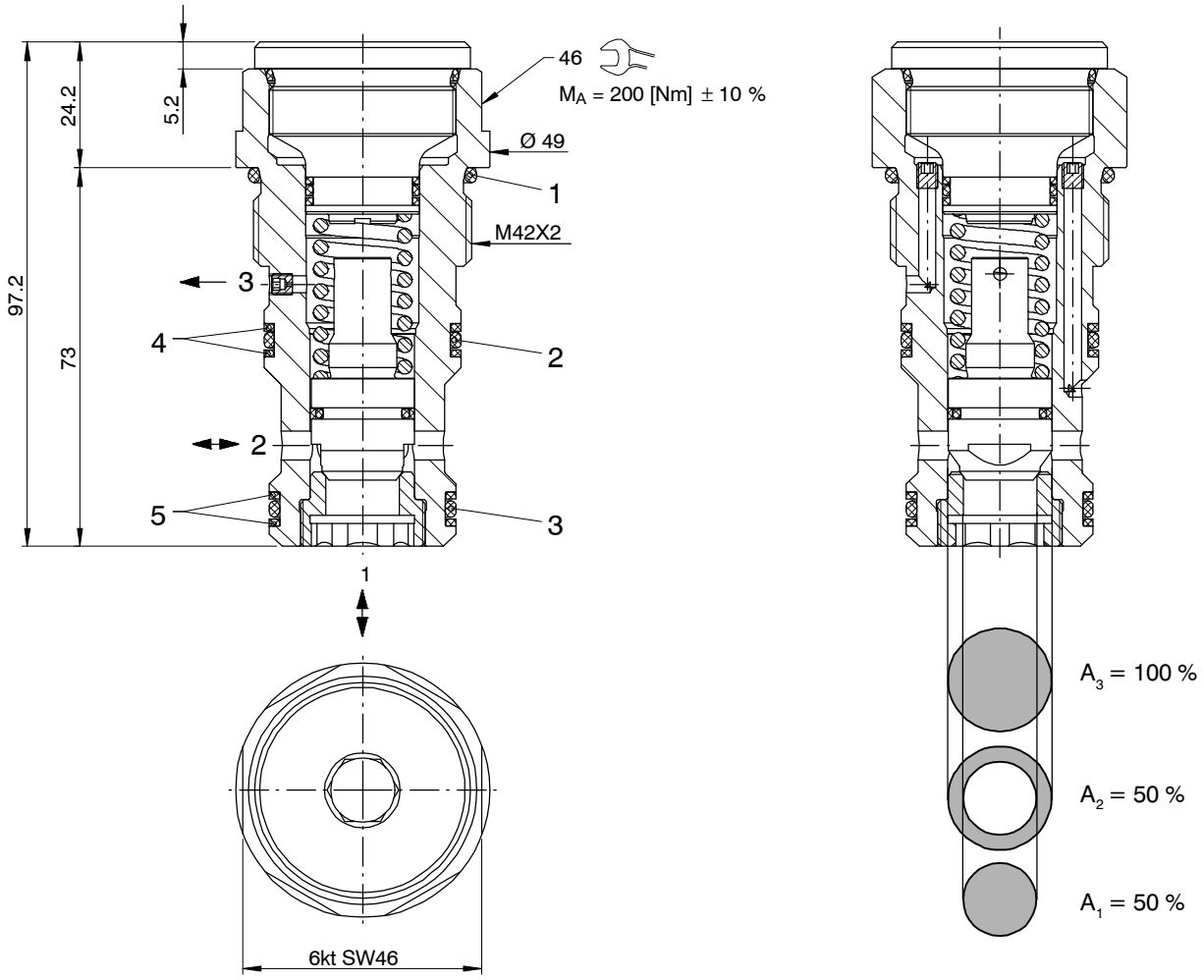


Δp = f (Q) Pressure drop - Flow rate characteristic

1 = cavity type DJ **with annular groove**
2 = cavity type DJ **without annular groove**

Attention:
The Δp characteristic is valid when the load pressure in the 1 → 2 / 2 → 1 connection is higher than the opening pressure. If the load pressure is lower than the opening pressure, the load pressure must first rise to overcome the opening pressure before flow can occur.

5 Dimensions, sectional view



6 Installation information

Important:
No adjustments are necessary, since the cartridges are set in the factory.

Attention:
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be needed is to check and possibly replace the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

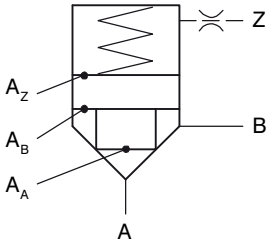
NBR seal kit no. DS-359-N [1)]

Item	Qty.	Description
1	1	O-ring No. 129 ∅ 39.34 x 2.62 N90
2	1	O-ring No. 125 ∅ 32.99 x 2.62 N90
3	1	O-ring No. 124 ∅ 31.42 x 2.62 N90
5	2	Backup ring ∅ 32.0 x 2.0 x 1.4 FI0751
6	2	Backup ring ∅ 30.0 x 2.0 x 1.4 FI0751

IMPORTANT!

1) Seal kit with FKM (Viton) seals, no. DS-359-V

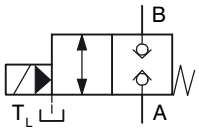
7 Area- and pressure-ratios



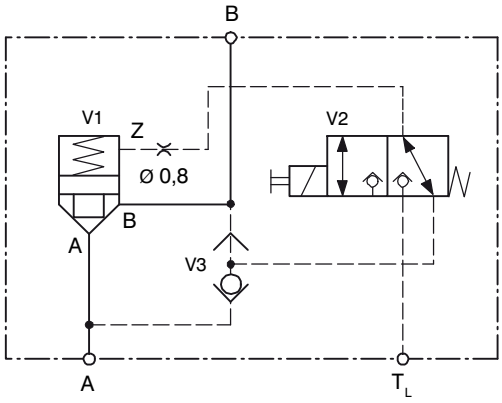
Area A_3 : Area A_1 = 2 : 1
Area A_3 : Area A_2 = 2 : 1
Area A_1 : Area A_2 = 1 : 1

8 Application examples (active control)

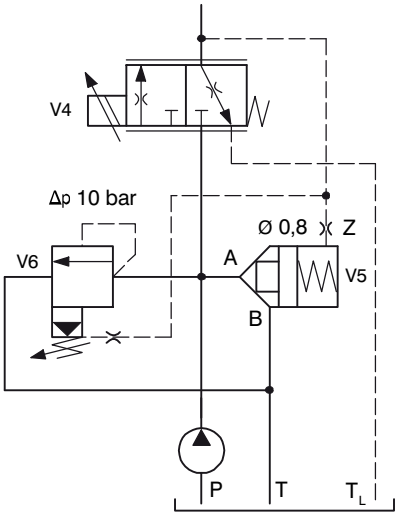
Simplified symbol



Application with seat valve



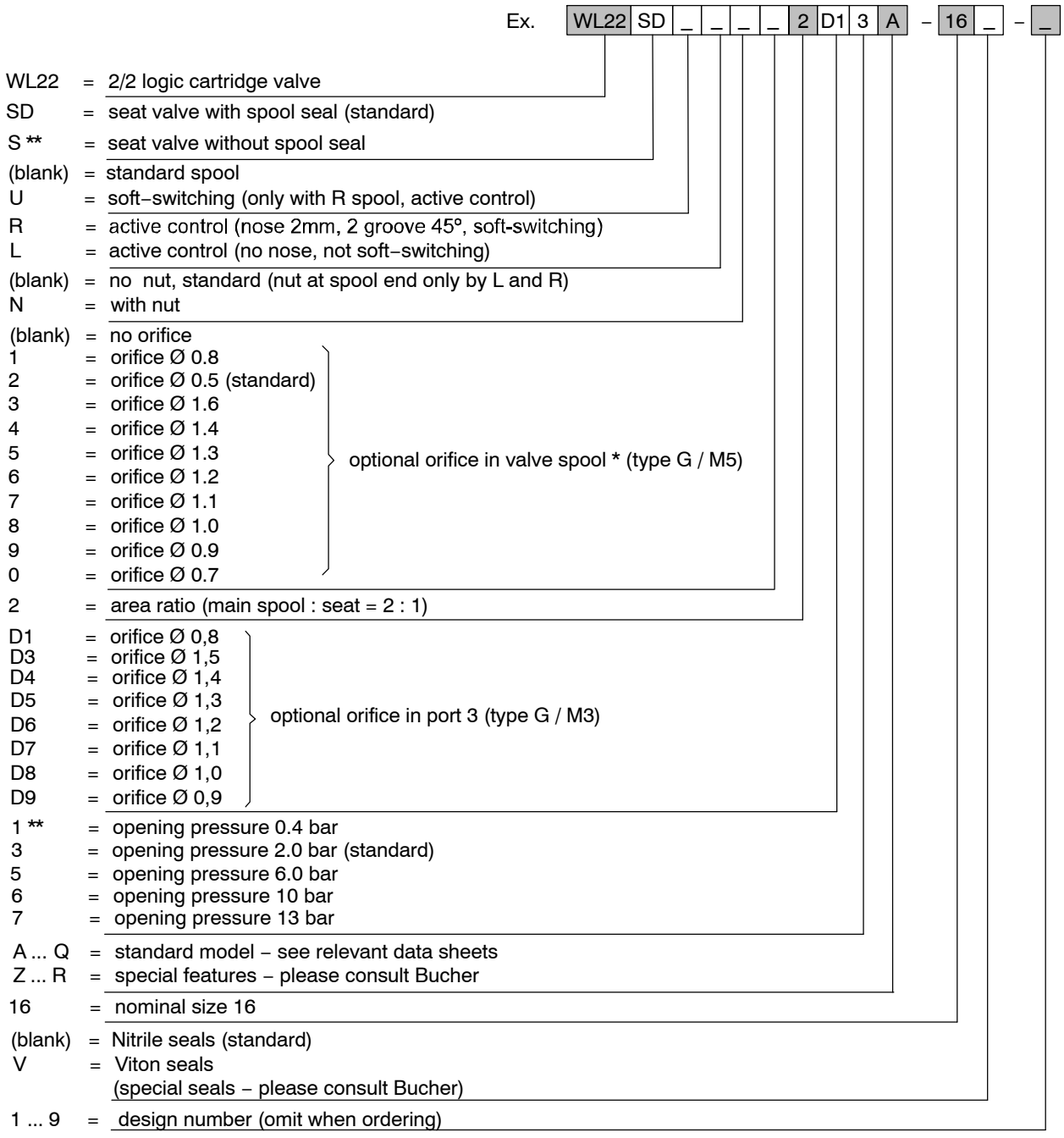
Logic valve application for lowest possible vented pressure with a proportional throttle and bypass compensator



Advantage
When the logic cartridge valve is open (flow A → B / B → A), there is no continuous flow of pilot oil to Z.

V1 = logic cartridge valve
V2 = 3/2 seat valve
V3 = shuttle valve
V4 = proportional throttle cartridge
V5 = logic cartridge valve
V6 = bypass pressure compensator cartridge

9 Ordering code



* Orifice in valve spool has to be at least 30% smaller than orifice in port "3".

** In applications with an opening pressure of less than 2 bar, valve type WL22S2 ... must be used. I.e. the seal on the spool is omitted, and the valve is not leak-tight from 1 to 2.

10 Related data sheets

Reference no.	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-080111	(i-55.2)	Cavity type EB
400-P-750115		Line-mounting body, type GEBAA (G 1”)
400-P-010101		$MTTF_D$ values for hydraulic valves

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Classification: 430.300.-.305.330.335