

The D1VL is a 3 chamber, D3DL, D4L and D9L are 5 chamber 4/3- or 4/2-way directional control valves.

The hand lever is directly connected to the spool and can be located either on the A or B side. Spring offset and detent designs are available.

Directional control valves with hand lever are available in 4 sizes:

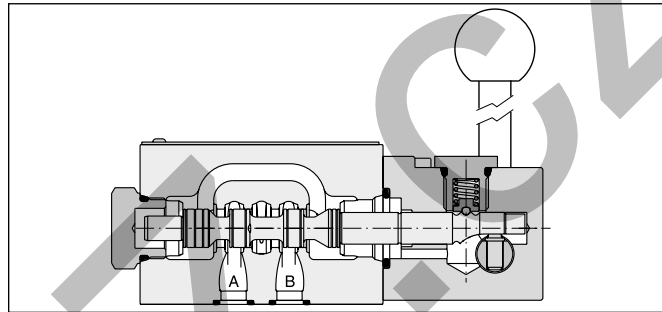
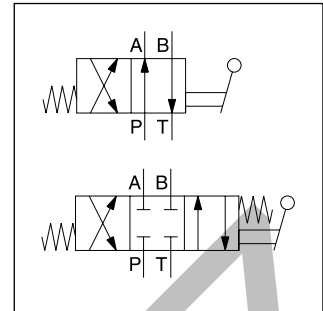
- D1VL NG06
- D3DL NG10
- D4L NG16
- D9L NG25

Features

- All hand lever parts stainless steel



D1VL



D1VL

Technical data

General				
Design	Directional spool valve			
Actuation	Lever			
Series	D1VL	D3DL	D4L	D9L
Size	NG06	NG10	NG16	NG25
Weight [kg]	1.4	3.7	9.0	17.0
Mounting interface	DIN 24340 A06	DIN 24340 A10	DIN 24340 A16	DIN 24340 A25
	ISO 4401	ISO 4401	ISO 4401	ISO 4401
	NFPA D03	NFPA D05	NFPA D07	NFPA D08
CETOP RP 121-H				
Mounting position	unrestricted, preferably horizontal			
Ambient temperature [°C]	-25...+60			
MTTF _p value [years]	150			
Hydraulic				
Max. operating pressure [bar]	P, A B: 350; T: 140	P, A B: 350; T: 140	external drain P, A B, T: 350; X, Y: 140 internal drain P, A B: 350; T, X, Y: 140	external drain P, A B, T: 350; X, Y: 140 internal drain P, A B: 350; T, X, Y: 140
Fluid	Hydraulic oil according to DIN 51524			
Fluid temperature [°C]	-20 ... +70 (NBR: -25...+70)			
Viscosity permitted [cSt] / [mm²/s]	2.8...400			
Viscosity recommended [cSt] / [mm²/s]	30...80			
Filtration	ISO 4406 (1999); 18/16/13			
Flow max. [l/min]	80	130	300	700
Leakage at 350 bar (per flow path) [ml/min]	—	up to 100 ¹⁾	up to 200 ¹⁾	up to 800 ¹⁾
Leakage at 50 bar (per flow path) [ml/min]	up to 10 ¹⁾	—	—	—

¹⁾ Depending on spool.

Ordering Code

Directional Control Valves

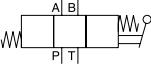
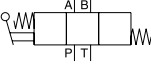
Series D4L, D9L




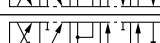
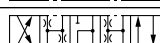
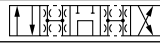

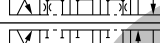

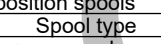
D							
Directional control valve	Size	Actuation	Spool type	Spool position	Pilot oil drain	Seals	Design series (not required for ordering)



Code	Bore	Size
4	Ø20 mm	NG16
9	Ø32 mm	NG25

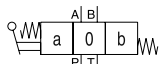

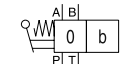
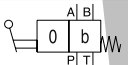
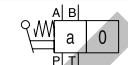
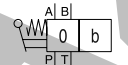
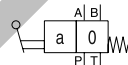
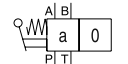
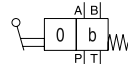
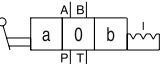

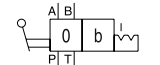
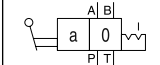
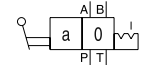
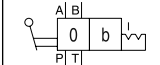
Code	Outlet
2 ²⁾	External
5 ³⁾	Internal

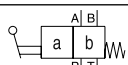
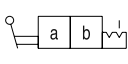
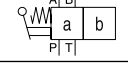
Code	Seals
N	NBR
V	FPM

Code	Actuation
L	Hand lever side B 
LB	Hand lever side A 

3 position spools			
Code	Spool type	⌀	⌀
	a 0 b		
001		•	•
002		•	•
003		•	•
004		•	•
006		•	
007		•	•
009 ¹⁾		•	•
011		•	•
014		•	•
015		•	•

2 position spools			
Code	Spool type		
	a b		
020		•	•
030		•	•

Code	3 position spools	
C		3 positions. Spring offset in position "0". Operated in position "a" or "b".
	Standard	Spool type 009
E	 Operated in position "a".	 Operated in position "b". 2 positions. Spring offset in position "0".
F	 Operated in position "0".	 Operated in position "0". 2 positions. Spring offset in position "b".
K	 Operated in position "b".	 Operated in position "a". 2 positions. Spring offset in position "0".
M	 Operated in position "0".	 Operated in position "0". 2 positions. Spring offset in position "a".
N	 No centre in offset position.	 No centre in offset position. 3 positions, detent. Operated in position "a", "0" or "b".
R	 No centre in offset position.	 No centre in offset position. 2 positions, detent. Operated in position "0" or "b".
S	 No centre in offset position.	 No centre in offset position. 2 positions, detent. Operated in position "0" or "a". No center in offset position.

Code	2 position spools	
B		Spring offset in position "b". Operated in position "a".
D		Detent, operated in position "a" or "b". No center or offset position.
H		Spring offset in position "a". Operated in position "b".

Further spool types on request.

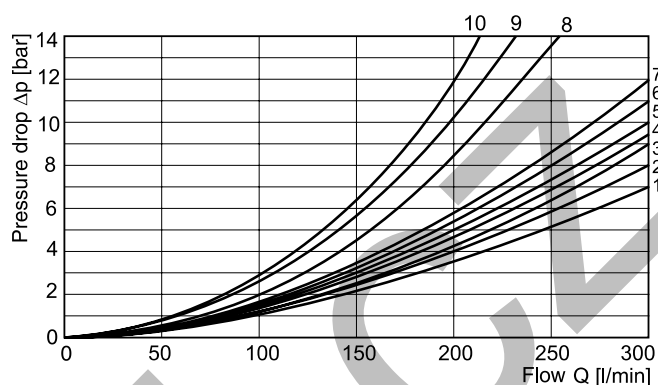
¹⁾ Consider specific spool position.²⁾ Pressure T-port > 140 bar.³⁾ Pressure T-port < 140 bar.

The flow curve diagrams show the flow versus pressure drop curves for all spool types. The relevant curve number

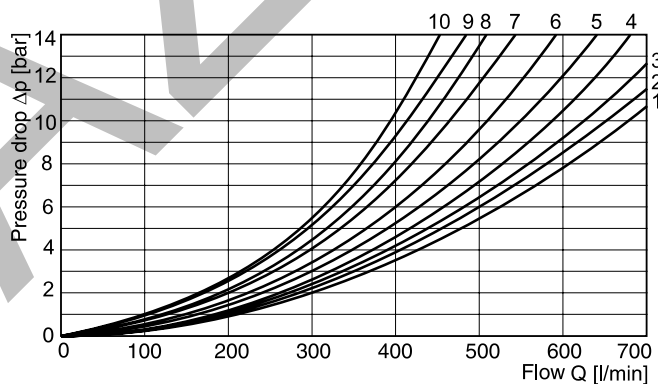
for each spool type, operating position and flow direction is given in the tables below.

D4L

Spool	Curve number				
	P-A	P-B	P-T	A-T	B-T
001	1	1	—	4	5
002	1	2	6	4	6
003	1	2	—	5	6
004	1	1	—	5	5
006	1	2	—	3	6
007	1	1	6	4	5
009	2	9	8	7	10
011	1	1	—	4	5
014	1	1	6	5	4
015	2	1	—	6	5
020	3	5	—	3	5
030	2	3	—	6	7

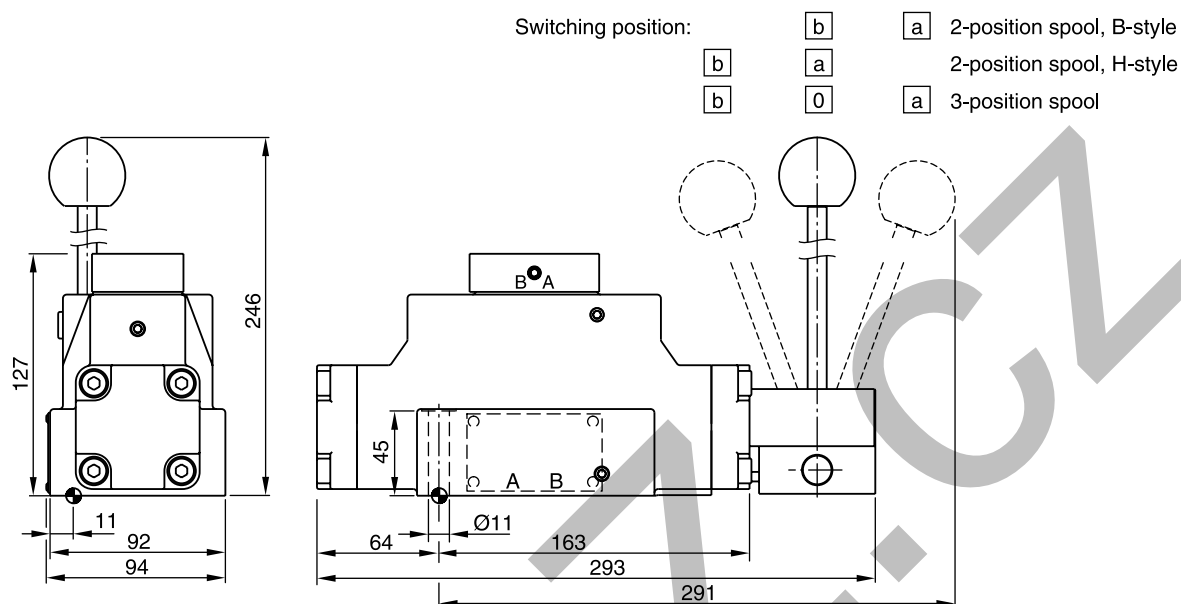
**D9L**

Spool	Curve number				
	P-A	P-B	P-T	A-T	B-T
001	3	2	-	3	5
002	2	1	1	3	5
003	4	2	-	3	6
004	4	3	-	3	5
007	3	1	7	3	5
009	4	8	9	4	10
014	1	3	7	5	3
015	2	4	-	5	3
020	6	5	-	6	8
030	3	2	-	3	5



All characteristic curves measured with HLP46 at 50 °C.

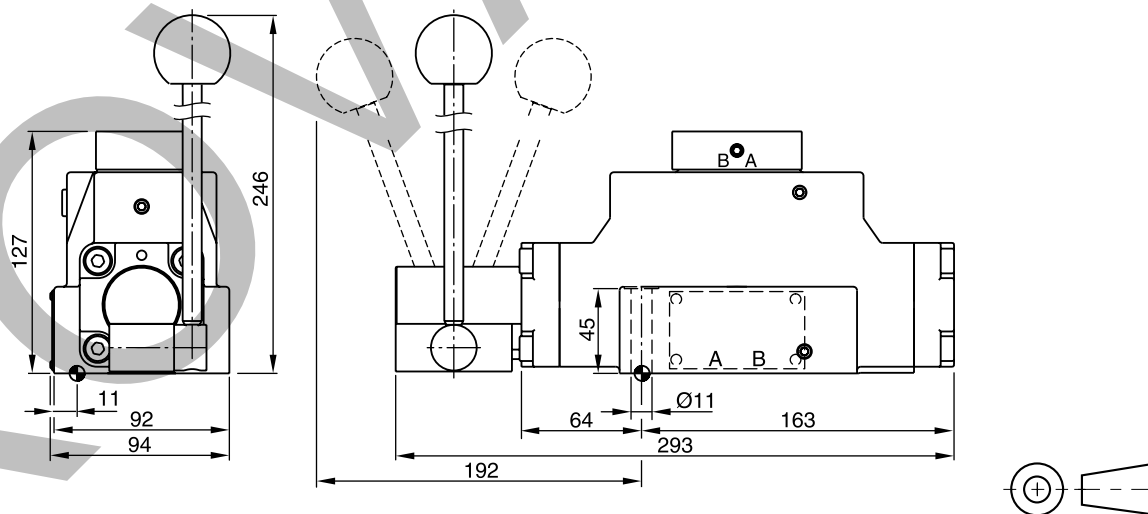
D4L



D4LB

Switching point:

<input type="checkbox"/> b	<input type="checkbox"/> a	<input type="checkbox"/> a 2-position spool, B-style
<input type="checkbox"/> b	<input type="checkbox"/> a	2-position spool, H-style
<input type="checkbox"/> b	<input type="checkbox"/> 0	<input type="checkbox"/> a 3-position spool

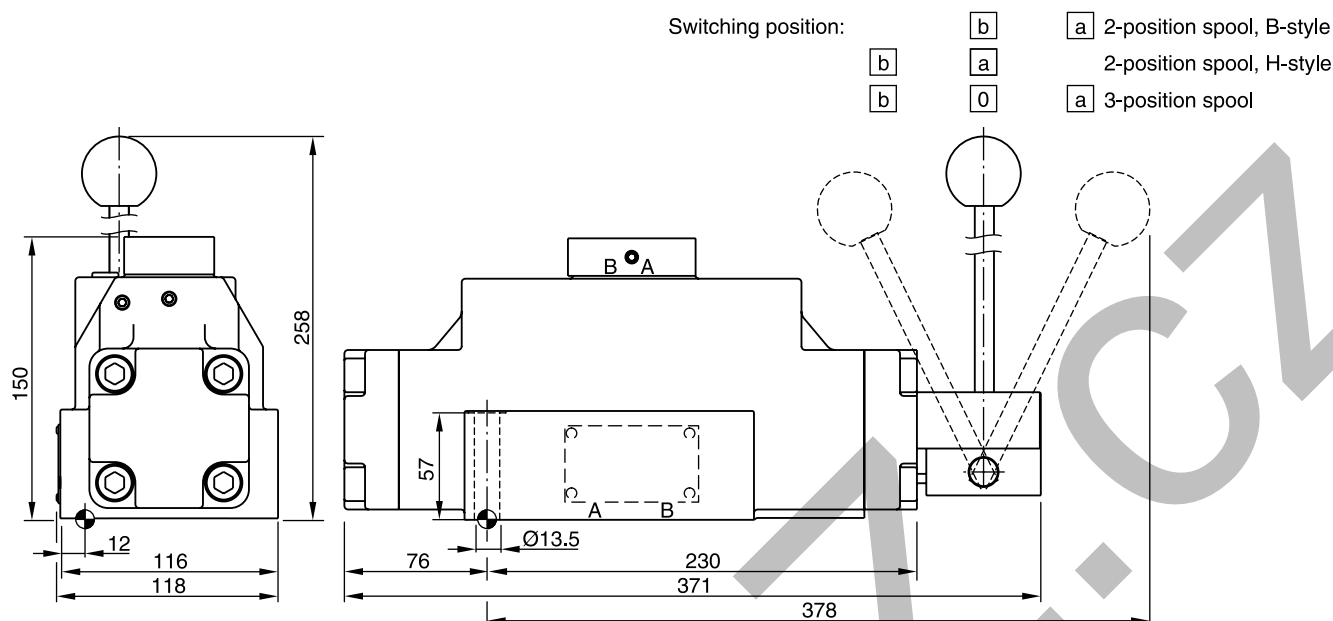


Surface finish	Kit	Kit	Kit	Kit
$\sqrt{R_{max} 6.3}$ [0.01/100]	BK320	4x M10x60 2x M6x55 ISO 4762-12.9	63 Nm 13.2 Nm ±15 %	NBR: SK-D4L-N-91 FPM: SK-D4L-V-91

Valid for all styles. Switching position see ordering code.

D9L

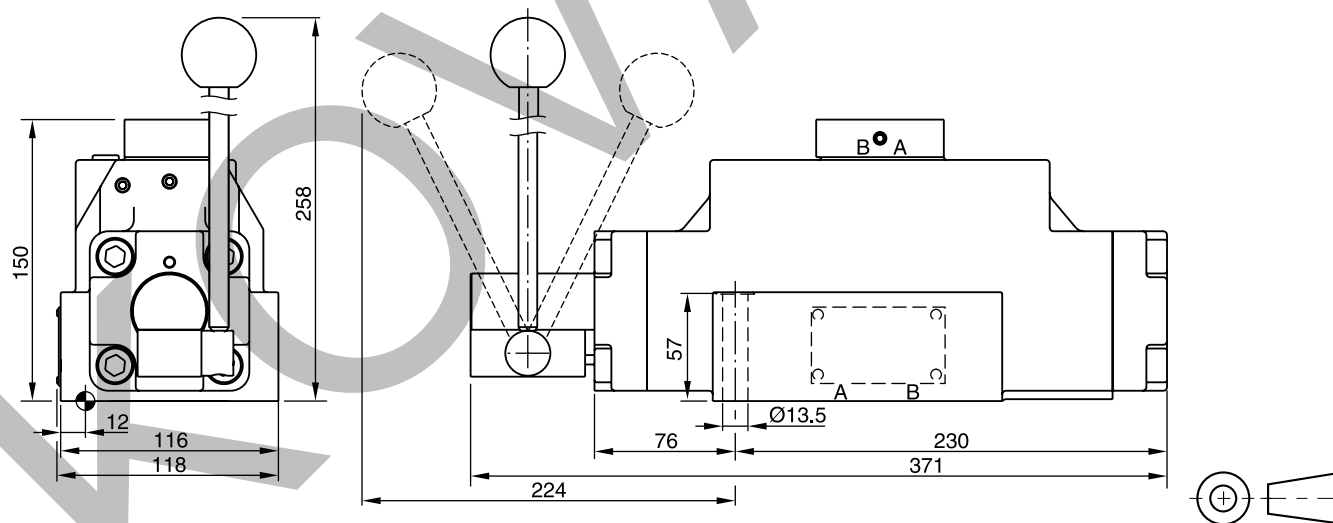
2



D9LB

Switching position:

- | | | |
|---|---|-----------------------------|
| b | a | a 2-position spool, B-style |
| b | a | 2-position spool, H-style |
| b | 0 | a 3-position spool |



Surface finish	Kit	Kit	Kit	Kit
$\sqrt{R_{max} 6.3}$ $\square 0.01/100$	BK360	6x M12x75 ISO 4762-12.9	108 Nm ±15 %	NBR: SK-D9L-N-91 FPM: SK-D9L-V-91

Valid for all styles. Switching position see ordering code.