

Hydraulically operated directional control valves are available in 5 sizes:

D1VP\*4L NG06 – operated via end caps

D1VP\*90 NG06 – operated via end caps and mounting interface (X, Y)

D3DP NG10 – operated via mounting interface (X, Y)

D4P NG16 – operated via mounting interface (X, Y)

D9P NG25 – operated via mounting interface (X, Y)

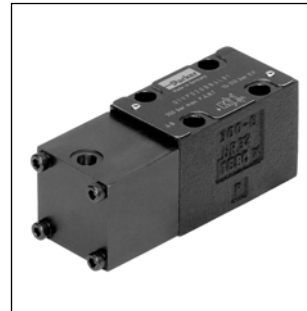
D11P NG32 – operated via mounting interface (X, Y)

Size NG06 (D1VP) is available in two different designs:

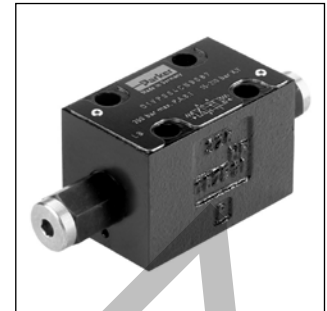
- D1VP\*4L for operating pressure >10 bar (over tank pressure) with control ports in the end caps.
- D1VP\*90 for operating pressure >15 bar with control ports in the end caps and mounting interface (X, Y).

All other series are operated only via mounting interface (X, Y).

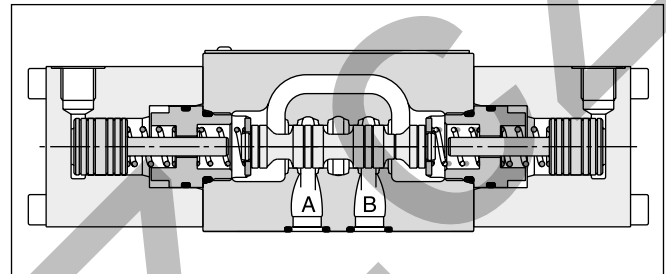
The shifting time is depending on the pilot pressure. For safe operation the minimum pilot pressure has to be ensured in all operating conditions. The maximum pilot pressure varies from the maximum operating pressure in some sizes.



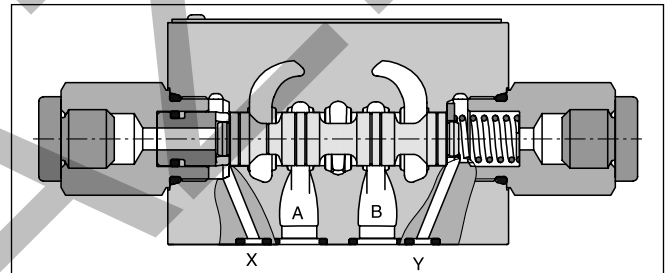
D1VP\*B\*4L



D1VP\*90



D1VP\*C\*4L



D1VP\*90

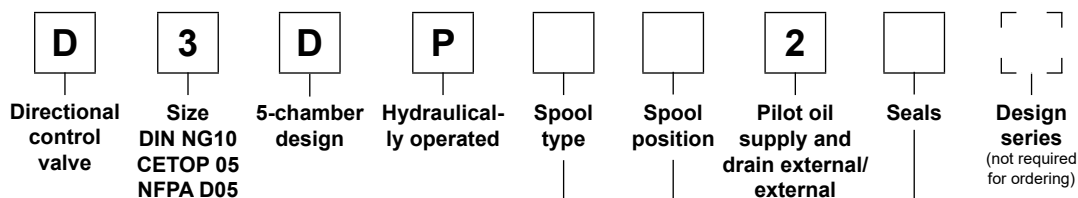
**Technical data**

General							
Design	Directional spool valve						
Actuation	Hydraulic						
Series	D1VP*4L	D1VP*90	D3DP	D4P	D9P	D11P	
Size	NG06	NG06	NG10	NG16	NG25	NG32	
Weight	[kg]	1.3	1.3	3.7	9.0	17.0	66.0
Mounting interface	DIN 24340 A06	DIN 24340 A06	DIN 24340 A10	DIN 24340 A16	DIN 24340 A25	DIN 24340 A32	
	ISO 4401	ISO 4401	ISO 4401	ISO 4401	ISO 4401	ISO 4401	
	NFPA D03	NFPA D03	NFPA D05	NFPA D07	NFPA D08	NFPA D10	
	CETOP RP 121-H						
Mounting position	unrestricted, preferably horizontal						
Ambient temperature	[°C]	-25...+60					
MTTF <sub>p</sub> value	[years]	150					
Hydraulic							
Max. operating pressure	[bar]	P, A B: 350; T: 140	P, A B; T: 350; X, Y: 210	P, A B, T: 350; X, Y: 210	P, A B, T: 350; X, Y: 350	P, A B, T: 350; X, Y: 350	P, A B, T: 350; X, Y: 350
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]	60 <sup>1)</sup>	60 <sup>1)</sup>	130	300	700	2000
Leakage at 350 bar (per flow path)	[ml/min]	up to 60 <sup>2)</sup>	up to 60 <sup>2)</sup>	up to 100 <sup>2)</sup>	up to 200 <sup>2)</sup>	up to 800 <sup>2)</sup>	up to 5000 <sup>2)</sup>
Operating pressure (min/max)	[bar]	10 <sup>3)</sup> / 210	15 / 210	15 / 210	5 / 350	5 / 350	5 / 350
Pilot volume (start position to end position)	[cm³]	0.59	0.34	1.1	4.2	12.3	59.7
Static / Dynamic							
Step response	The response times depend on the pilot oil pressure and on the speed of the increase / decrease of the pilot pressure						

<sup>1)</sup> Depending on spool, see shift limits.

<sup>2)</sup> Depending on spool.

<sup>3)</sup> > tank pressure.



3 position spools	
Code	Spool type
	a 0 b
001	
002	
003	
004	
005	
006	
007	
008 1)	
009 1)	
010	
011	
014	
015	
016	
021	
022	
031	
032	
081	
082	
102	

2 position spools	
Code	Spool type
	a b
020	
026	
030	
101	

Code	Seals
N	NBR
V	FPM

3 position spools		
Code	Spool position	
C		3 positions. Spring offset in position "0". Operated in position "a" or "b".
	Standard	Spool type 008 and 009
E		2 positions. Spring offset in position "0". Operated in position "a".
		Operated in position "b".
F		2 positions. Spring offset in position "0". Operated in position "a".
		Operated in position "b".
K		2 positions. Spring offset in position "0". Operated in position "a".
		Operated in position "b".
M		2 positions. Spring offset in position "0". Operated in position "a".
		Operated in position "b".

2 position spools		
Code	Spool position	
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".

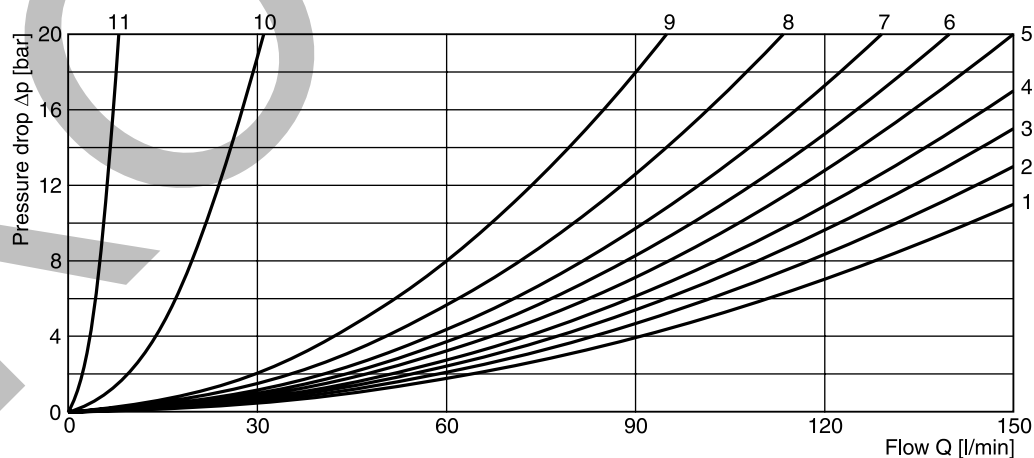
1) Consider specific spool position.

Further spool types and styles on request.

The flow curve diagram shows 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 table below.

Spool	Position „b“		Position „a“		Position „0“					
	P-A	B-T	P-B	A-T	P-A	P-B	A-T	B-T	P-T	A-B
001	4	3	4	3	—	—	—	—	—	—
002	2	4	3	3	2	2	1	2	3	4
003	2	2	4	1	—	—	5	—	—	—
004	4	3	3	2	—	—	5	5	—	6
005	1	3	4	2	4	—	—	—	—	—
006	2	4	3	3	5	5	—	—	—	6
007	4	2	2	2	—	2	—	2	5	—
010	2	—	2	—	—	—	—	—	—	—
011	3	3	2	3	—	—	10	10	—	11
014	2	3	4	2	2	—	2	—	5	—
015	4	2	2	2	—	—	—	4	—	—
016	4	2	1	1	—	4	—	—	—	—
020	4	4	4	4	—	—	—	—	—	—
026	3	—	3	—	—	—	—	—	—	—
030	4	3	3	3	—	—	—	—	—	—
081	6	7	6	7	—	—	—	—	—	—
082	7	7	6	5	—	—	11	11	—	11
101	9	9	9	9	—	—	—	—	—	—
102	2	2	2	1	6	6	3	5	6	6
	P-B	A-T	P-A	B-T	P-A	P-B	A-T	B-T	P-T	A-B
008	4	2	5	6	—	—	—	—	8	—
009	2	5	2	6	—	—	—	—	8	—
Position „b“		Position „a“		Position „0“						
	P-A	B-T	A-B	P-B	A-T	A-T	B-T			
021	3	5	6	4	2	—	—			
031	3	5	6	4	1	—	9			
	P-A	B-T		P-A	P-B	A-B		B-T		
022	5	4	—	5	2	6	—	—		
032	5	2	—	5	2	6	—	9		

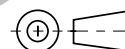
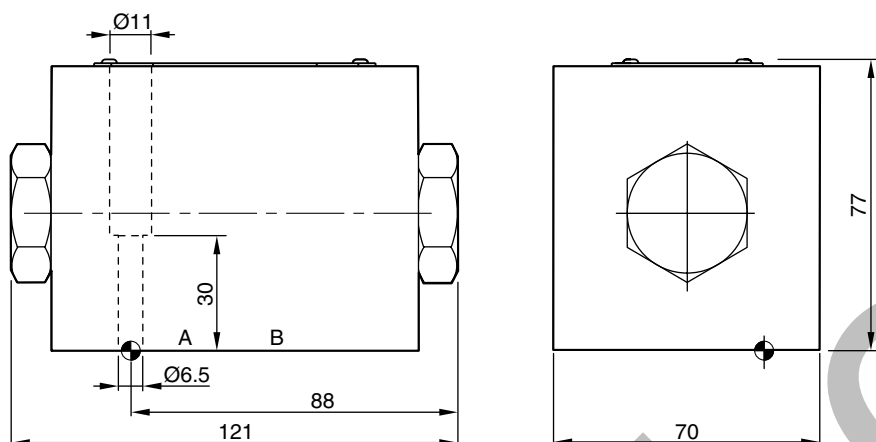
## Flow curves








All characteristic curves measured with HLP46 at 50°C.

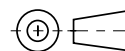
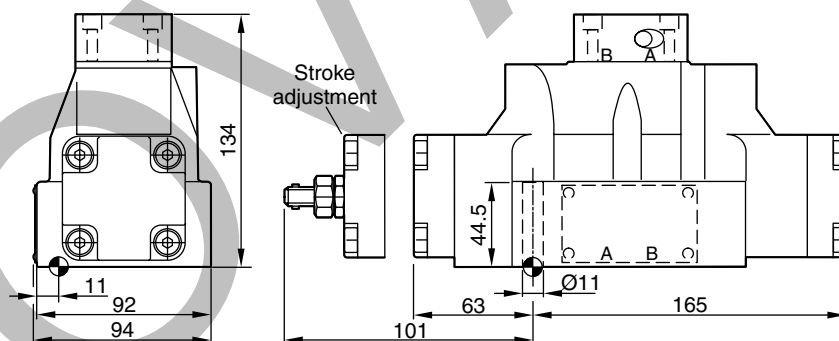
**D3DP**






# 2



Surface finish	 Kit			 Kit
	BK385	4x M6x40 ISO 4762-12.9	13.2 Nm ±15 %	<b>NBR: SK-D3DP-N-42</b> FPM: SK-D3DP-V-42

**D4P**



Surface finish	 Kit	 Kit	 Kit	 Kit
	BK320	4x M10x60 2 x M6x55 ISO 4762-12.9	63 Nm ±15 % 13.2 Nm ±15 %	<b>NBR: SK-D41VW-N-91</b> FPM: SK-D41VW-V-91