

General Description

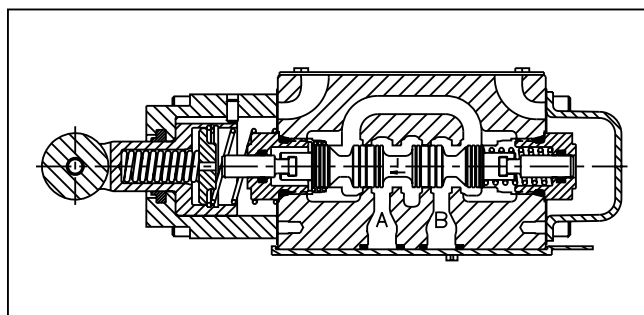
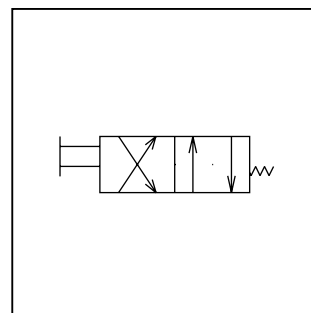
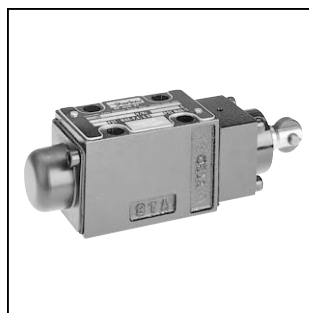
Series D1VC, D1VD and D1VG directional control valves are high performance, 4-chamber, direct operated, cam controlled, 3 or 4-way valves. They are available in 2-position and conform to NFPA's D03, CETOP 3 mounting patterns.

Features

- Choice of 2 cam roller positions (D1VC and D1VD)
- Two styles available (D1VC and D1VG)
- Short stroke option

Specifications

Mounting Pattern	NFPA D03, CETOP 3, NG 6	
Maximum Pressure	Operating:	345 Bar (5000 PSI)
	Tank Line:	34 Bar (500 PSI)
Nominal Flow	32 LPM (8.5 GPM)	
Maximum Flow	See Reference Data	
Force Required to Shift	D1VC, D1VD:	107 N (24 lbs.)
	D1VG:	36 N (8 lbs.)
Maximum Cam Angle	30°	



Ordering Information

<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;">D</div> <p>Directional Control Valve</p>	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;">1V</div> <p>Basic Valve</p> <div style="border: 1px solid black; padding: 2px; text-align: center; margin-top: 10px;"> NFPA D03 CETOP 3 </div>	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"></div> <p>Actuator</p>	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"></div> <p>Spool</p>	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"></div> <p>Style</p>	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"></div> <p>Seal Compound</p> <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th>Code</th><th>Description</th></tr> </thead> <tbody> <tr> <td>N</td><td>Nitrile</td></tr> <tr> <td>V</td><td>Fluorocarbon</td></tr> </tbody> </table>	Code	Description	N	Nitrile	V	Fluorocarbon	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"></div> <p>Variations</p> <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th>Code</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Omit</td><td>Standard</td></tr> <tr> <td>P05</td><td>Short Stroke</td></tr> <tr> <td>P10*</td><td>Monitor Switch</td></tr> </tbody> </table> <p><small>* Not CE or CSA approved.</small></p>	Code	Description	Omit	Standard	P05	Short Stroke	P10*	Monitor Switch	<div style="border: 1px solid black; padding: 2px; text-align: center; width: 40px; margin: 0 auto;"> <div style="display: flex; justify-content: space-between;"> Design Series NOTE: Not required when ordering. </div> </div>
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<p>Valve Weight:</p> <p>Type C & D 1.44 kg (3.2 lbs.) Type G 1.6 kg (3.7 lbs.)</p> <p>Standard Bolt Kit: BK209 1-24x1.25</p> <p>Metric Bolt Kit: BKM209 M5-0.8x30mm</p>	<table border="1" style="width: 100%;"> <thead> <tr> <th>Code</th><th>Description</th><th>Symbol</th></tr> </thead> <tbody> <tr> <td>B</td><td>Two position, spring offset operator at "A" port end.</td><td></td></tr> <tr> <td>H</td><td>Two position, spring offset operator at "B" port end.</td><td></td></tr> </tbody> </table> <p>Valve schematic symbols are per NFPA/ANSI standards, providing flow P to A when energized. Note flow paths reverse sides for #8 and #9 spools.</p>	Code	Description	Symbol	B	Two position, spring offset operator at "A" port end.		H	Two position, spring offset operator at "B" port end.	
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H	Two position, spring offset operator at "B" port end.									

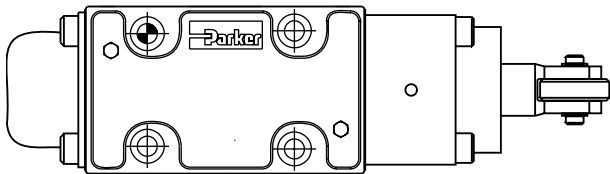
Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.

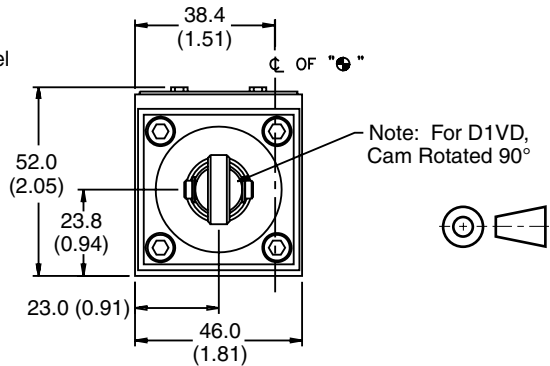
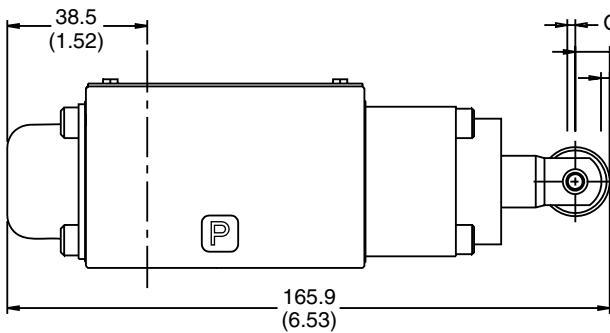
Inch equivalents for millimeter dimensions are shown in (**)

Cam Operated D1VC and D1VD

A



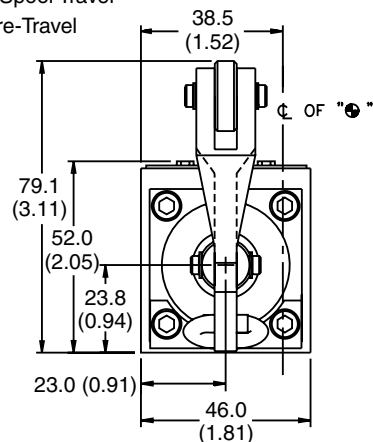
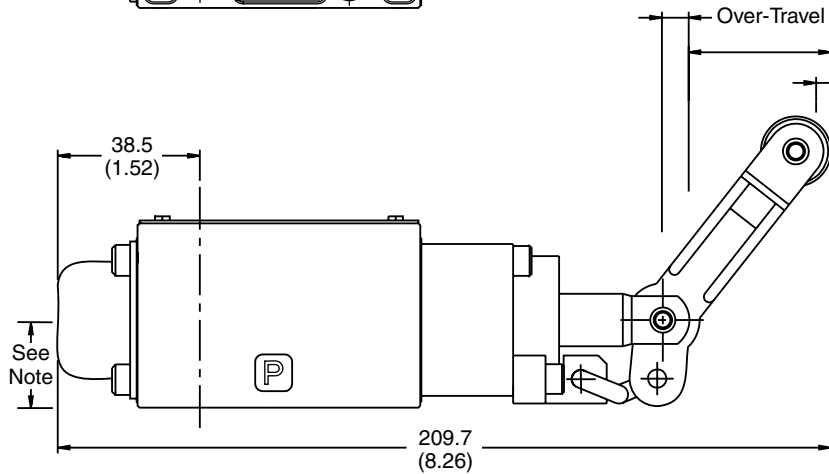
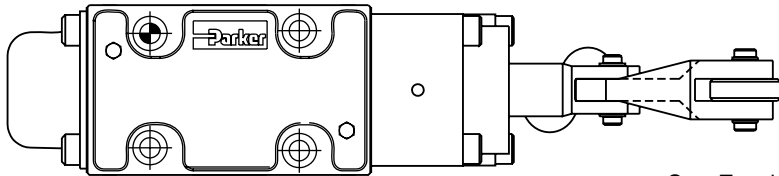
Valve Type	Pre-Travel	Full Spool Travel	Over-Travel
Standard Valve	2.00 (0.079)	9.06 (0.357)	2.03 (0.080)
P05 Short Stroke	0 (0)	7.06 (0.278)	4.03 (0.159)



Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

Cam Lever Operated D1VG

Valve Type	Pre-Travel	Full Spool Travel	Over-Travel
Standard Valve	6.95 (0.27)	39.63 (1.56)	10.00 (0.39)
P05 Short Stroke	0 (0)	30.12 (1.19)	18.40 (0.72)



Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

Mounting Bolt Kits

A**Bolt Kits for use with D1V Directional Control Valves & Manapaks****(D1V*-82 & 70/75 Design, Solenoid Operated & D1V*-72 Design, Non-Solenoid Operated)**

		Number of Manapaks/Cartpaks @ 40mm (1.58") thickness									
		0		1		2		3		4	
Number of Manapaks at 44.5mm (1.75") Thickness	0	BK209	1.25 in.	BK243	2.88 in.	BK225	4.38 in.	BK244	6.00 in.	BK245	7.50 in.
		BKM209	30 mm	BKM243	70 mm	BKM225	110 mm	BKM244	150 mm	BKM245	190 mm
	1	BK246	3.00 in.	BK247	4.62 in.	BK248	6.12 in.	BK249	7.75 in.		
		BKM246	75 mm	BKM247	115 mm	BKM248	155 mm	BKM249	195 mm		
	2	BK250	4.75 in.	BK251	6.38 in.	BK252	7.88 in.				
		BKM250	120 mm	BKM251	160 mm	BKM252	200 mm				
	3	BK253	6.50 in.	BK254	8.12 in.						
		BKM102	170 mm	BKM254	205 mm						
	4	BK103	8.25 in.								
		BKM103	210 mm								

Note: All bolts are SAE Grade 8, 10-24 UNC 2A thread (Metric-M5-0.8)
Torque to 5.6 Nm (50 in-Lb).

Bolt Kits for use with D1V Directional Control Valves with Explosion Proof Coils & Manapaks**(D1V*-82 & 70/75 Design)**

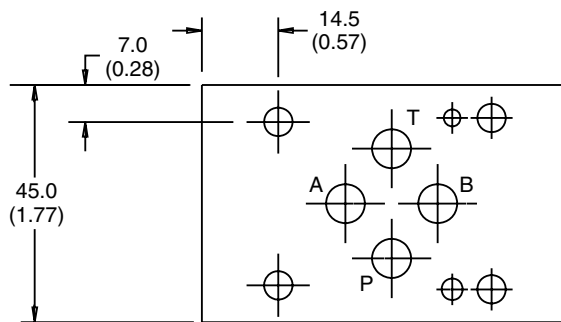
		Number of Manapaks/Cartpaks @ 40mm (1.58") thickness									
		0		1		2		3		4	
Number of Manapaks at 44.5mm (1.75") Thickness	0	BK50	2.00 in.	BK211	3.63 in.	BK101	5.12 in.	BK102	6.75 in.	BK103	8.25 in.
		BKM50	50 mm			BKM101	130 mm	BKM102	170 mm	BKM103	210 mm
	1	BK51	3.75 in.	BK212	5.37 in.	BK105	6.87 in.	BK106	7.75 in.		
		BKM51	95 mm			BKM107	180 mm	BKM106	195 mm		
	2	BK52	5.50 in.	BK213	7.13 in.	BK108	8.62 in.				
		BKM52	140 mm			BKM108	220 mm				
	3	BK53	7.25 in.	BK214	8.87 in.						
		BKM53	185 mm								
	4	BK54	9.00 in.								
		BKM54	230 mm								

Note: All bolts are SAE Grade 8, 10-24 UNC 2A thread (Metric-M5-0.8)
Torque to 5.6 Nm (50 in-Lb).


Sandwich Valve Dimensional Data

All D03 Manapak valves (starting with 31 Series) including CM2, CPOM2, FM2, PRDM2 and RM2 measure 40mm (1.58") thickness.

For additional technical information about Manapak valves, refer to the Manapak Sandwich Valve Section of this Catalog.




HVD = Hydraulic Valve Division HCD = Hydraulic Controls Division

					Spool Symbol					Spool: D1V*	Spool: D1V*	Spool: D3*W	Spool: D31DW	Spool: D41	Spool: D41*W	Spool: D61VW	Spool: D81/D91	Spool: D101VW	Spool: D111
Spool Number	Closed Crossover	Open Crossover	Symmetrical	Standard	A		0		B	D1VW: D1VHW	D1V*: A/C/P/ D/G/L	D31*DW/ D31DW	Double Monitor Switch	HCD	Double Monitor Switch	HVD	HCD	HVD	HCD
001	x		x	x															
002		x	x	x															
003	x			x															
004	x		x	x															
005	x			x															
006	x		x	x															
007		x		x															
008	x		x	x															
009		x		x															
010	x			x															
011		x		x															
012		x	x	x															
014		x		x															
015	x			x															
016	x			x															
020B	x			x															
020D	x			x															
020H	x			x															
021	x			x															
022	x			x															
023		x																	
026B	x			x															
026H	x			x															
030B		x		x															
030D		x		x															
030H		x		x															
031	x																		
032	x																		
033																			
034	x																		
035	x																		
038																			
039																			
042	x		x																
043B																			
043H																			
044		x																	
047																			

Gray = available
 White = not available

Spools shown may be nonstandard. Please contact HVD for availability.

HVD = Hydraulic Valve Division HCD = Hydraulic Controls Division

		Closed Crossover	Open Crossover	Symmetrical	Standard	Spool Symbol				Spool: D1V*	Spool: D1V*	Spool: D3*W	Spool: D31DW	Spool: D41	Spool: D41*W	Spool: D61VW	Spool: D81/D91	Spool: D101VW	Spool: D111
Spool Number						A		0	B	D1VW: D1VHW	D1V*: A/C/P/ D/G/L	D31*DW/ D31DW	Double Monitor Switch	HCD	Double Monitor Switch	HVD	HCD	HVD	HCD
049B	x				x														
049H	x																		
051	x																		
054			x																
055																			
056	x																		
058			x																
059			x																
061			x																
062			x																
066																			
067	x																		
068B	x																		
068H	x																		
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069H	x																		
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076	x				x														
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081	x			x	x														
081B																			
081H																			
082	x			x	x														
083B	x																		
083H	x																		
084																			
085																			
098																			
099																			
100																			
101B	x																		

Gray = available
 White = not available

Spools shown may be nonstandard. Please contact HVD for availability.

Fluid Recommendations

Premium quality hydraulic oil with a viscosity range between 32-54 cst. (150-250 SSU) at 38°C (100°F) is recommended. The absolute operation viscosity range is from 16-220 cst. (80-1000 SSU). Oil should have maximum anti-wear properties and rust and oxidation treatments.

Fluids and Seals

Valves using synthetic, fire-resistant fluids require special seals. When phosphate ester or its blends are used, FLUOROCARBON seals are required. Water-glycol, (95/5) water-in-oil emulsions, and petroleum oil may be used with NITRILE seals.

Temperature Recommendation

Recommended oil temperature:
-29°C to +71°C (-20°F to +160°F)

Filtration

For maximum valve and system component life, the system should be protected at a contamination level not to exceed 125 particles greater than 10 microns per milliliter of fluid. (SAE Class 4 or better, ISO Code 16/13).

Tank Line Surges

If several valves are piped with a common tank line, flow surges in the line may cause unexpected spool shift. Detent style valves are most susceptible to this. Separate tank lines should be used when line surges are expected in an application.

Recommended Mounting Position

Valve Type	Recommended Mounting Position
Detent (Solenoid)	Horizontal
Spring Centered	Unrestricted
Spring Offset	Unrestricted

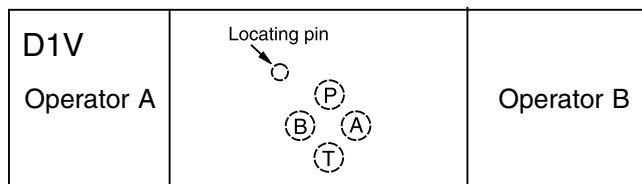
Silting

Silting can cause any sliding spool valve to stick and not spring return, if held shifted under pressure for long periods of time. The valve should be cycled periodically to prevent sticking.

Single Pass Operation

Valve flow ratings are for double pass operation (with equal flow in both paths). When using these components in single pass applications, flow capabilities may be reduced. Consult your local Parker representative for details.

Flow Path Data



*Note: On valves with 008 or 009 spool, A and/or B operators reverse sides. Flow paths remain the same as viewed from top of valve.

Double Solenoid. With solenoid “A” energized, flow path is P→A and B→T. When solenoid “B” is energized, flow path is P→B and A→T. The center condition on a spring-centered valve exists when both coils are de-energized, or during a complete shift, as the spool passes through center.

Detent and Spring Offset. The center condition exists on detent and spring offset valves only during spool crossover. To shift and hold a detented spool, only a momentary energizing of the solenoid is necessary. The minimum duration of the signal is approximately 0.1 seconds for DC voltages. This position will be held provided the spool center line is in a horizontal plane, and no shock or vibration is present to displace the spool.

Single Solenoid. Spring offset valves can be ordered in styles B, E, F, H, K and M. Flow path data for the various styles are described in the order chart.

Electrical Failure

Should electric power fail, spring offset and spring centered valves will shift to the spring held position. Detented valves will stay in the last position held before power failure. If main flow does not fail or stop simultaneously, machine actuators may continue to function in an undesirable manner or sequence.

Torque Specifications

Torque values recommended for the bolts which mount the valve to the manifold or subplate are as follows:

#10-24 thread (M5-0.8) torque 5.6 Nm (50 in-lbs).