

General Description

The D1VA and D1VP Series directional control valves are high-performance, 4 and 5-chamber, direct operated, air and oil pilot controlled, 3 or 4-way valves. They are available in 2 or 3-position and conform to NFPA's D03/CETOP 3 mounting patterns.

Features

- Low pilot pressure required – 3.4 Bar (50 PSI) minimum
- Manual overrides standard

Air Operated

Shift Volume. The air pilot chamber requires a volume of 1.8 cc (.106 in.³) for complete shift from center to end.

Pilot Piston. The pilot piston area is 506 mm² (.785 in.²). Pilot piston stroke is 3.4 mm (.135 in.).

Response Time. Response time will vary with pilot line size, pilot line length, pilot pressure, air control valve shift time and air valve flow capacity (Cv).

Oil Operated

Shift Volume. The hydraulic pilot chamber requires a volume of 0.7 cc (.042 in.³) for complete shift from center to end.

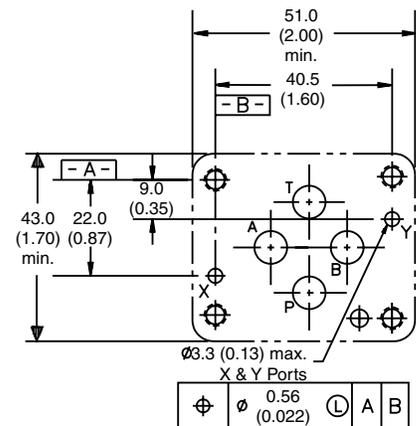
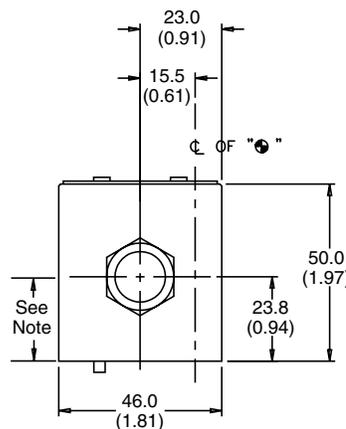
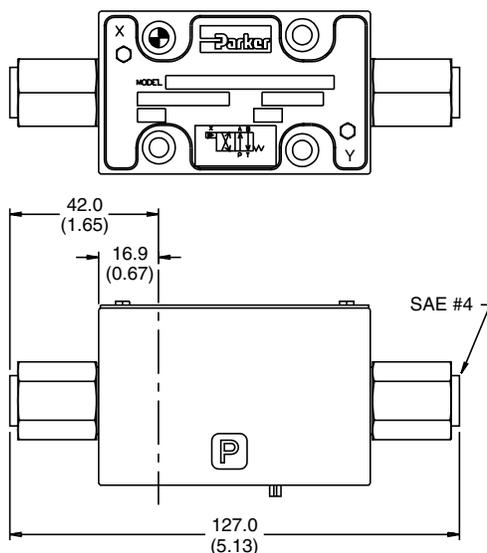
Pilot Piston. The hydraulic piston area is 198 mm² (.307 in.²). Pilot piston stroke is 3.4 mm (.135 in.).

Response Time. Response time will vary with pilot line size, pilot line length, pilot pressure, pilot valve shift time and air valve flow capacity (GPM).

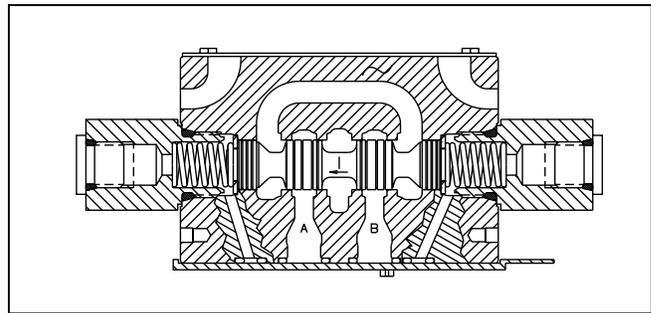
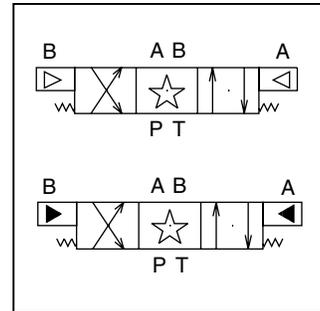
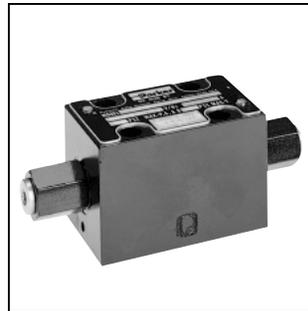
Dimensions

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

Oil Operated D1VP, Single and Double Pilot

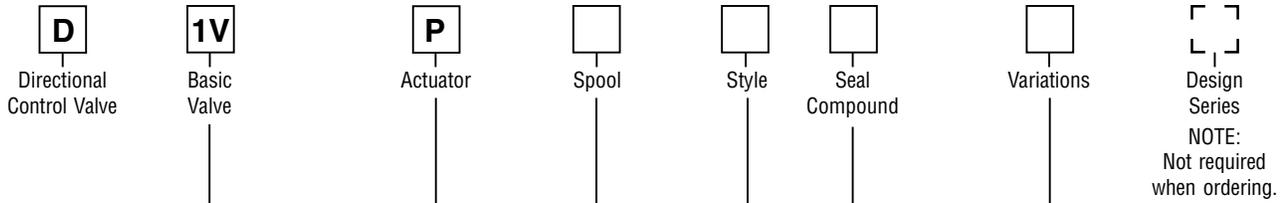


Note: 22.0 mm (0.87") from bottom of bolt counterbore.



Specifications

Mounting Pattern	NFPA D03, CETOP 3, NG 6
Maximum Pressure	Operating: 345 Bar (5000 PSI) Tank Line: D1VA 34 Bar (500 PSI) D1VP 207 Bar (3000 PSI)
Maximum Flow	See Quick Reference Chart
Pilot Pressure	D1VA: Air Minimum 3.4 Bar (50 PSI) Air Maximum 10.2 Bar (150 PSI) D1VP: Oil Minimum 15.2 Bar (220 PSI) Oil Maximum 207 Bar (3000 PSI)



NFPA D03
 CETOP 3

Code	Description
P	Oil Operator

Code	Description
Omit	Standard
P10*	Monitor Switch
90	BSPB Threads

* Available in B, E, H & K styles only. Not CE or CSA approved.

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Symbol
1	
2	
4	
8*	
9**	
20*	
26*	
30**	
81	
82	

* 8, 20 and 26 spools have closed crossover.
 ** 9 and 30 spools have open crossover.

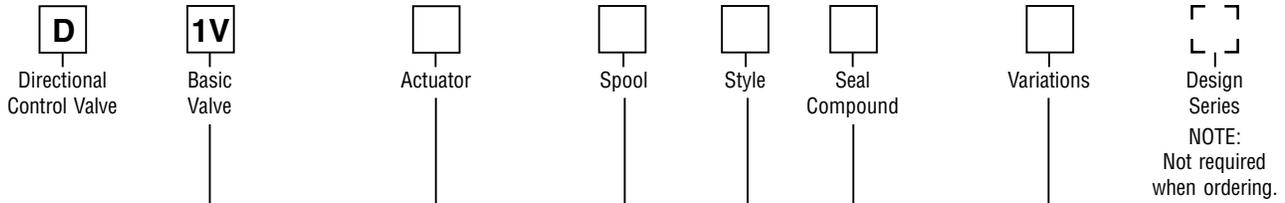
Code	Description	Symbol
B #	Single operator, two position spring offset. P to A and B to T in offset position.	
C	Double operator, three position, spring centered.	
D #	Double operator, two position, detent.	
E #	Two position, spring centered. P to B and A to T in shifted position.	
H #	Single operator, two position, spring offset. P to B and A to T in offset position.	
K #	Two position, spring centered. P to A and B to T in shifted position.	

D available with 20 and 30 spools only.
 B & H available with 20, 26 and 30 spools only.
 E & K not available with 20, 26 and 30 spools.

This condition varies with spool code.

Valve schematic symbols are per NFPA/ANSI standards, providing flow P to A when energizing operator X. Note operators reverse sides for #8 and #9 spools. See installation information for details.

Valve Weight:
 1.90 kg (4.2 lbs.)
Standard Bolt Kit:
 BK209 1-24x1.25
Metric Bolt Kit:
 BKM209 M5-0.8x30mm



Code	Description
A	Air Operator

Code	Description
Omit	Standard
P10*	Monitor Switch
90	BSPB Threads

* Available in B, E, H & K styles only. Not CE or CSA approved.

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Symbol
1	
2	
4	
8 *	
9 **	
81	
82	

* 8 spool has closed crossover.
 ** 9 spool has open crossover.

Code	Description	Symbol
B	Single operator, two position spring offset. P to A and B to T in offset position.	
C	Double operator, three position, spring centered.	
D	Double operator, two position, detent.	
E	Two position, spring centered. P to B and A to T in shifted position.	
H	Single operator, two position, spring offset. P to B and A to T in offset position.	
K	Two position, spring centered. P to A and B to T in shifted position.	

This condition varies with spool code.

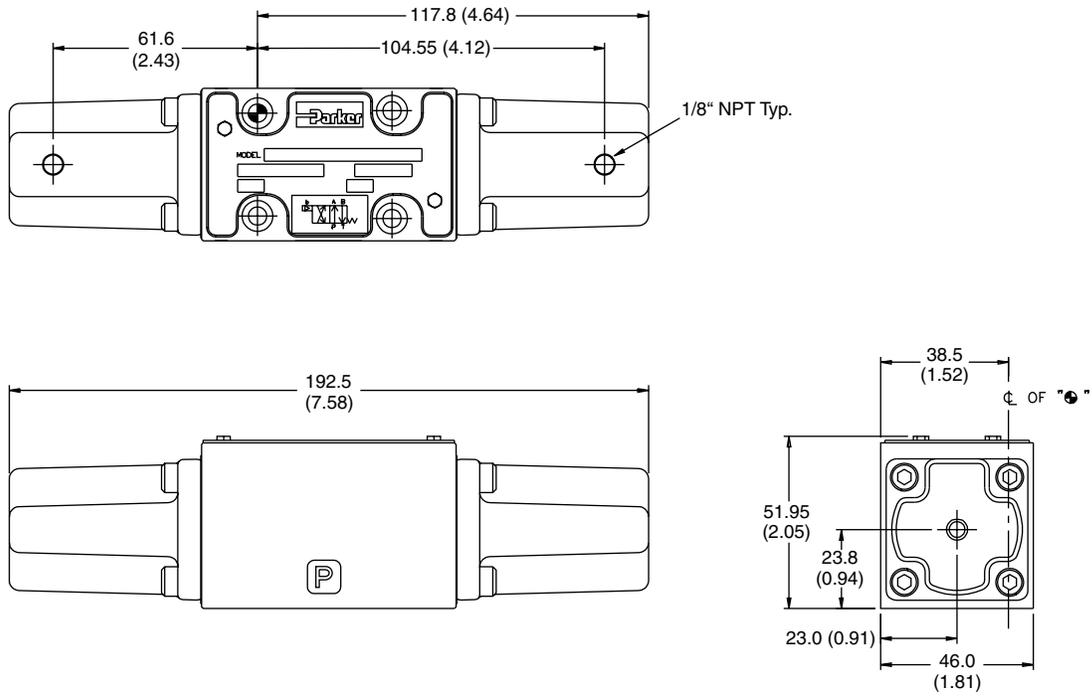
Valve schematic symbols are per NFPA/ANSI standards, providing flow P to A when energizing operator A. Note operators reverse sides for #8 and #9 spools. See installation information for details.

Valve Weight:
 1.60 kg (3.5 lbs.)
Standard Bolt Kit:
 BK209 1–24x1.25
Metric Bolt Kit:
 BKM209 M5–0.8x30mm
 Grade 8 bolts required

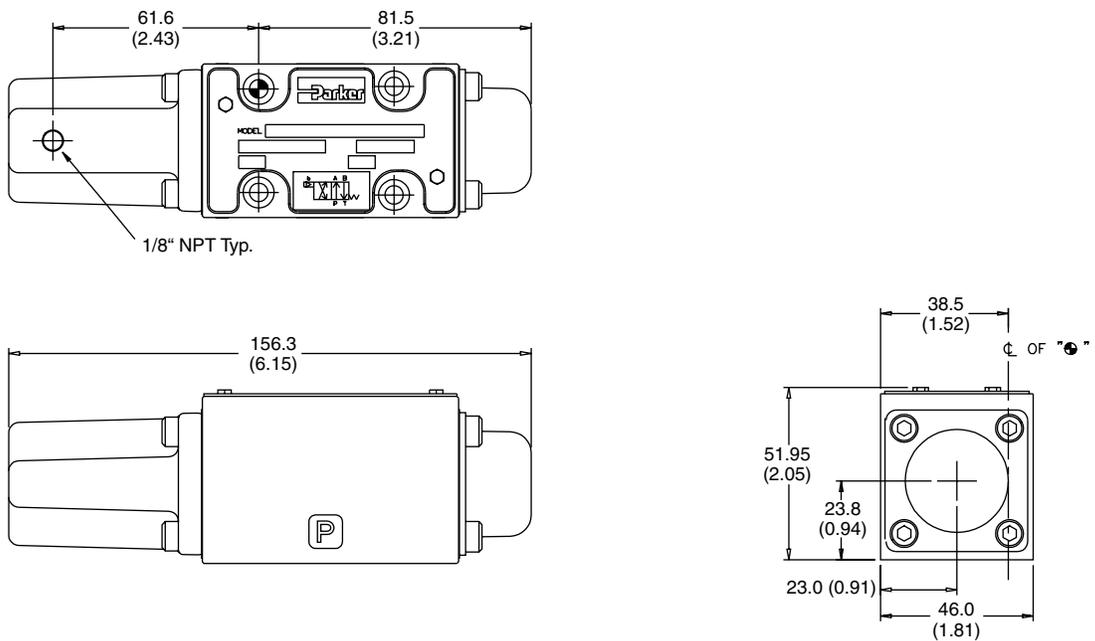
Inch equivalents for millimeter dimensions are shown in (**)



Air Operated D1VA, Double Pilot



Air Operated D1VA, Single Pilot



Mounting Bolt Kits

A

**Bolt Kits for use with D1V Directional Control Valves & Manapaks
(D1V*-82 & 70/75 Design, Solenoid Operated & D1V*-60 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.		
		BKM209	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.						
		BKM253	165 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.
		BKM51	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.		
		BKM209	95 mm			BKM105	175 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.

Fluid Recommendations

Premium quality hydraulic oil with a viscosity range between 150-250 SSU (32 -54 cst) at 38°C (100°F) is recommended. The absolute operation viscosity range is from 80-1000 SSU (16-220 cst). 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, water-in-oil emulsions, and petroleum oil may be used with NITRILE seals.

Temperature Recommendation

Recommended oil temperature:
-7° to +71°C (-20 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

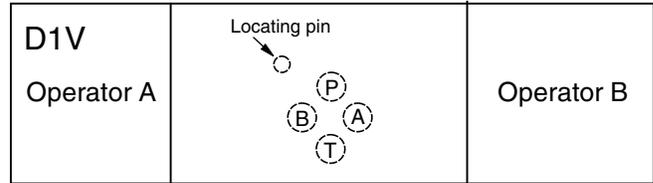
Silting

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).