

Parker D31DA, D31VA Series Air Operated Directional Control Valve Service Manual

A

General Description

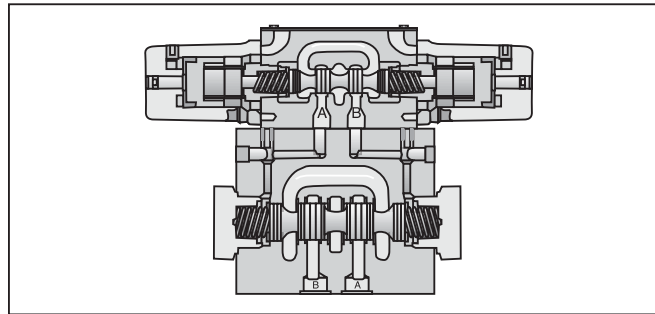
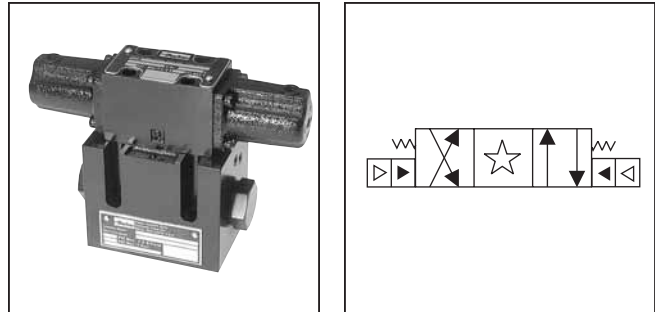
Series D31*A directional control valves are 5-chamber, air pilot operated valves. The valves are suitable for manifold or subplate mounting.

Features

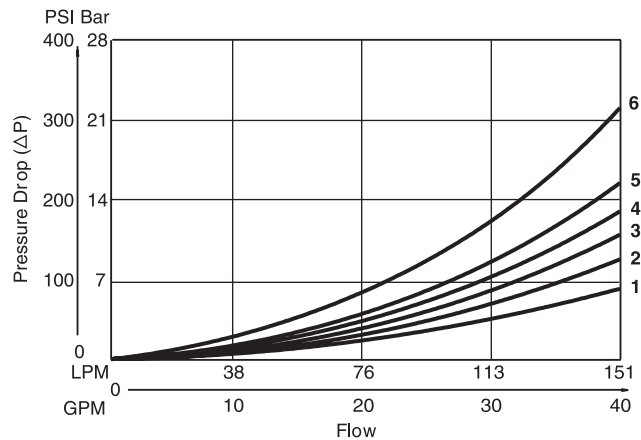
- **World design** – Available worldwide.
- **Mounting bolts below center line of spool** – Minimizes spool binding.
- **Five chamber style** – Eliminates pressure spikes in tubes, increasing valve life.
 - **High pressure and flow ratings** – Increased performance options in a compact valve.

Specifications

Mounting Pattern	NFPA D05H, CETOP 5 NFPA D05HE, CETOP 5H
Max. Operating Pressure	345 Bar (5000 PSI)
Max. Tank Line Pressure	Internal Drain Model: 34 Bar (500 PSI) External Drain Model: 207 Bar (3000 PSI)
Max. Drain Pressure	34 Bar (500 PSI)
Maximum Flow	See Switching Limit Charts
Pilot Pressure	Air Min: 3.4 Bar (50 PSI) Air Max: 10.2 Bar (150 PSI)
Response Time	Varies with pilot line size and length, pilot pressure, pilot valve shift time & flow capacity (GPM)



Pressure Drop Chart



VISCOSITY CORRECTION FACTOR

Viscosity (SSU)	75	150	200	250	300	350	400
% of ΔP (Approx.)	93	111	119	126	132	137	141

Curves were generated using 100 SSU hydraulic oil. For any other viscosity, pressure drop will change as per chart.

D31VA Pressure Drop Reference Chart -- Curve Number

Spool No.	Shifted				Center Condition							
	P-A	P-B	B-T	A-T	(P-T)	(B-A)	(A-B)	(P-A)	(P-B)	(A-T)	(B-T)	
001	3	3	2	1	-	-	-	-	-	-	-	
002	3	3	1	1	3	3	3	4	4	1	1	
004	3	3	1	1	-	-	-	-	-	1	1	
009	3	3	1	1	6	-	-	-	-	-	-	
020	5	4	2	2	-	-	-	-	-	-	-	
030	4	3	1	1	-	-	-	-	-	-	-	

D31VA Pressure Drop vs. Flow

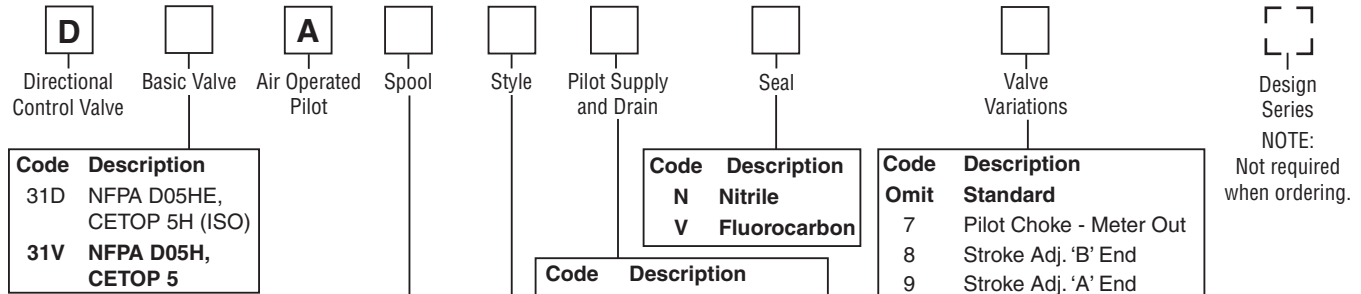
The chart to the left provides the flow vs. pressure drop curve reference for the D31VA Series valves by spool type.

Example:

Find the pressure drop at 76 LPM (20 GPM) for a D31VA with a number 001 spool. To the right of spool number 001, locate the number 3 in the P-A column, and 2 in the B-T column.

Using the top graph, locate curves 2 and 3 and read the pressure drop values. Total pressure drop through the valve is the sum of the two values.

Ordering Information



Code	Description
31D	NFPA D05HE, CETOP 5H (ISO)
31V	NFPA D05H, CETOP 5

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description
Omit	Standard
7	Pilot Choke - Meter Out
8	Stroke Adj. 'B' End
9	Stroke Adj. 'A' End
60	Pilot choke - Meter In
89	Stroke Adj. 'A' & 'B' Ends
90	1/4 BSPP Threads

Code	Description
1	Int. pilot/Ext. drain
2	Ext. pilot/Ext. drain
4#	Int. pilot/Int. drain
5	Ext. pilot/Int. drain

Not available with 002, 008 & 009 spools.

Valve schematic symbols are per NFPA/ANSI standards, providing flow P to A when energizing operator A. Note operators reverse sides for #008 and #009 spools. See installation information for details.

Code	Symbol
001	
002	
004	
008†	
009*	
020†	
030*	

† 008 and 020 spools have closed crossover.
 * 009 and 030 spools have open crossover.

Code	Description	Symbol
B†	Single operator, 2 position, spring offset. P to A and B to T in offset position.	
C	Double operator, 3 position, spring centered.	
D†	Double operator, 2 position, detent.	
E	Single operator, 2 position, spring centered. P to B and A to T when energized.	
H†	Single operator, 2 position, spring offset. P to B and A to T in offset position.	
K	Single operator, 2 position, spring centered. P to A and B to T when energized.	

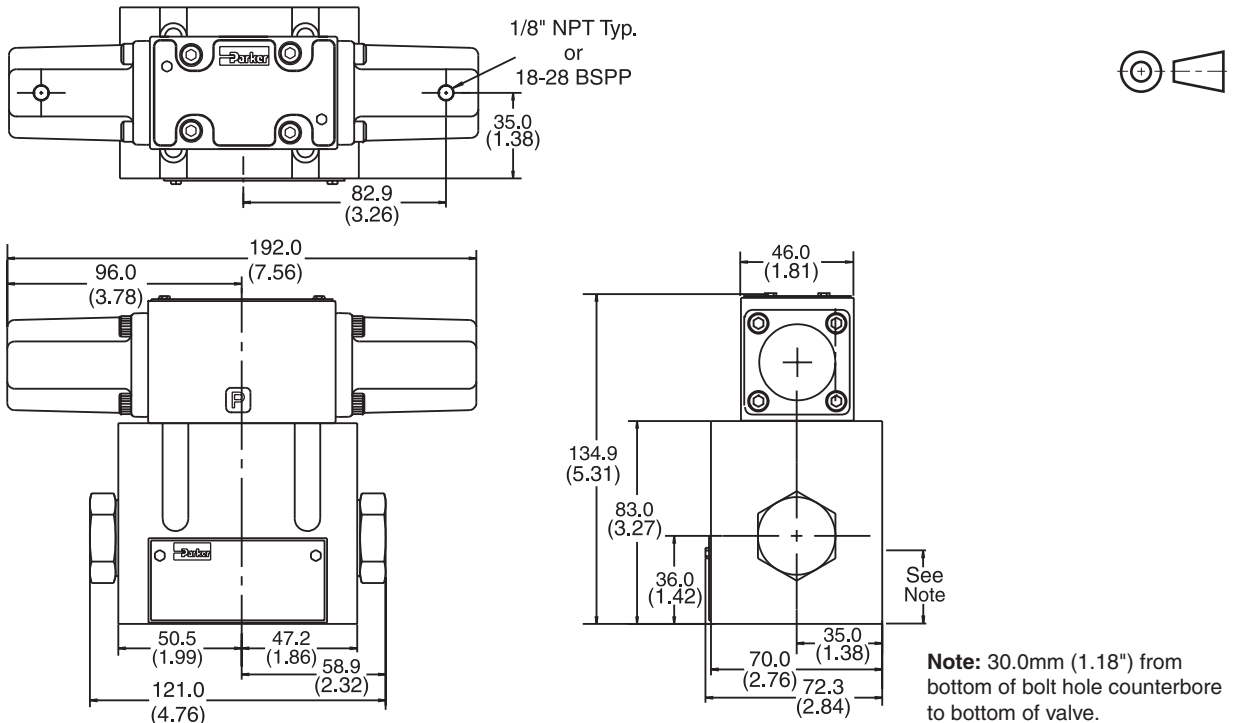
† Only spools 020 and 030.
 This condition varies with spool code.

Valve Weight:
 Double Operator
 5.7 kg (12.7 lbs.)
Standard Bolt Kit:
 BK98
Metric Bolt Kit:
 BKM98

Bold: Designates Tier I products and options.

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

Dimensions – Air Operated Inch equivalents for millimeter dimensions are shown in (**)



Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.