

General Description

A

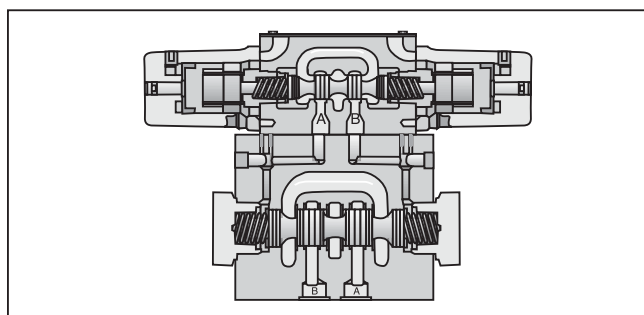
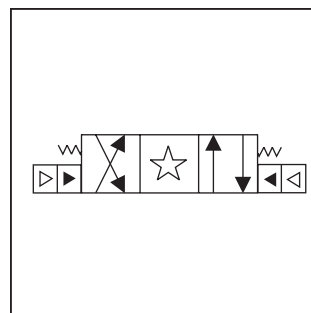
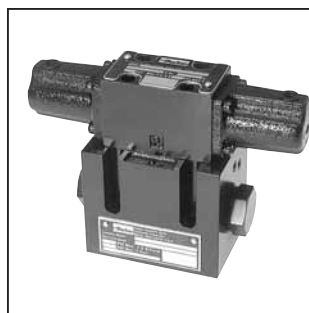
Series D31*A directional control valves are 5-chamber, air pilot operated valves. The valves are suitable for manifold or subplate mounting.

Features

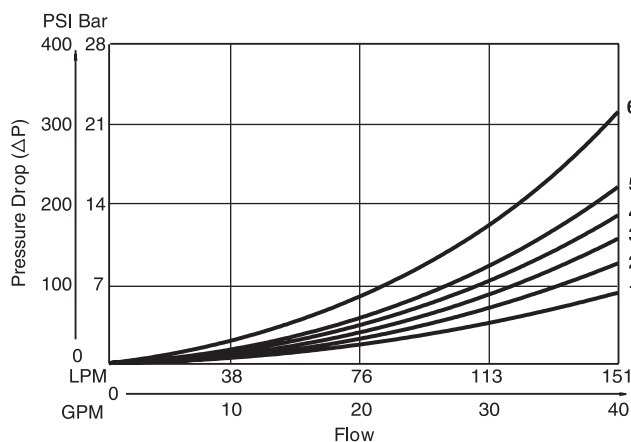
- **World design** – Available worldwide.
- **Mounting bolts below center line of spool** – Minimizes spool binding.
- **Five chamber style** – Eliminates pressure spikes in tubes, increasing valve life.
- **High pressure and flow ratings** – Increased performance options in a compact valve.

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
D	Directional Control Valve
	Basic Valve
A	Air Operated Pilot
	Spool
	Style
	Pilot Supply and Drain
	Seal
	Valve Variations
	Design Series

NOTE: Not required when ordering.

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

Code	Description
N	Nitrile
V	Fluorocarbon

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.

Code	Description
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

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

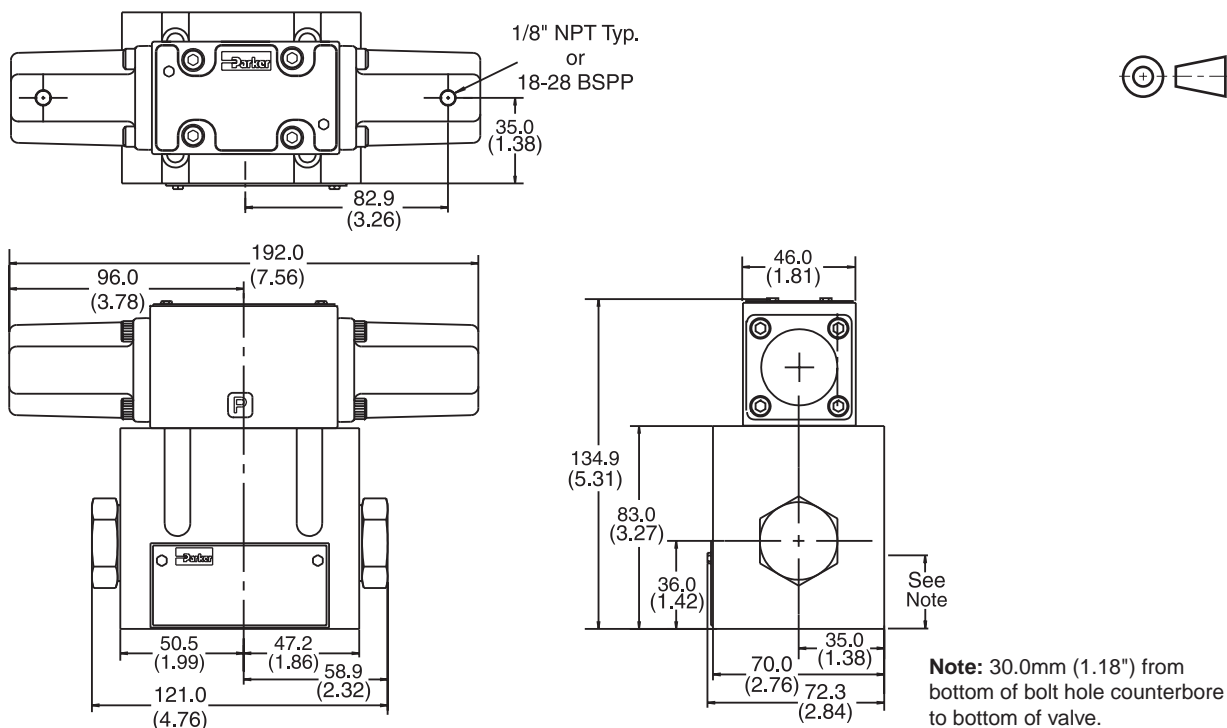
Metric Bolt Kit:
 BKM98

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 (**)



D31.indd, dd