

General Description

A

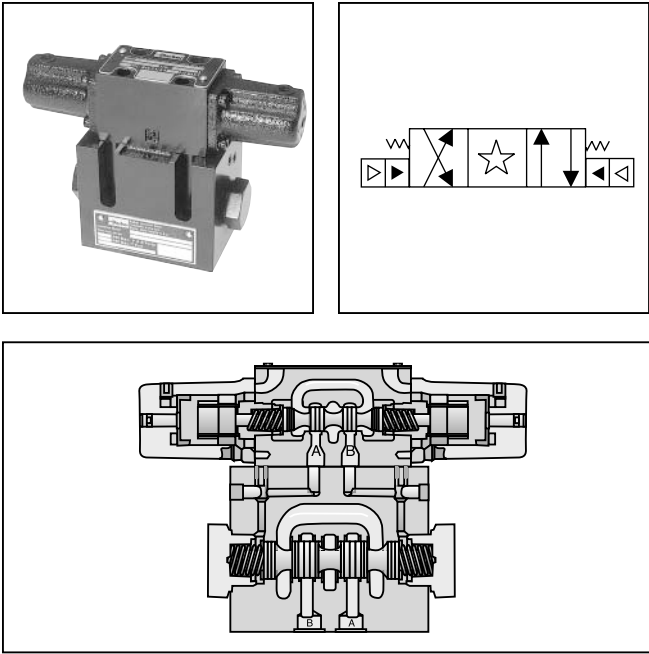
Series D31*A directional control valves are 5-chamber, air pilot operated valves. The valves are suitable for manifold or subplate mounting.

Features

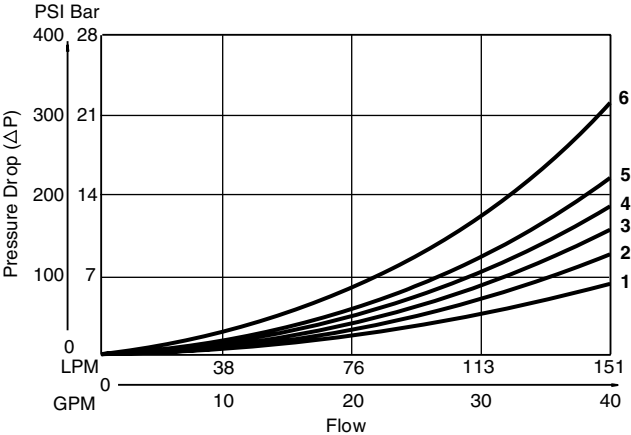
- **World design** – Available worldwide.
- **Mounting bolts below center line of spool** – Minimizes spool binding.
- **Five chamber style** – Eliminates pressure spikes in tubes, increasing valve life.
- **High pressure and flow ratings** – Increased performance options in a compact valve.

Specifications

Mounting Pattern	NFPA D05H , CETOP 5 NFPA D05HE, CETOP 5H
Maximum Operating Pressure	345 Bar (5000 PSI) “T” Port (tank): 34 Bar (500 PSI) With External Drain: 207 Bar (3000 PSI)
Maximum Flow	See Switching Limit Charts
Pilot Pressure	Air Min: 3.4 Bar (50 PSI) Air Max: 10.2 Bar (150 PSI)
Max. Drain Pressure	34 Bar (500 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	400
% of ΔP (Approx.)	93	111	119	126	132	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)	
1	3	3	2	1	-	-	-	-	-	-	-	
2	3	3	1	1	3	3	3	4	4	1	1	
4	3	3	1	1	-	-	-	-	-	1	1	
9	3	3	1	1	6	-	-	-	-	-	-	
20	5	4	2	2	-	-	-	-	-	-	-	
30	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 1 spool. To the right of spool number 1, 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 Compound
	Variations

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 2, 7, 8 & 9 spools.

Code	Description
7	Pilot choke - meter out
60	Pilot choke - meter in
8	Stroke adj. 'B'
9	Stroke adj. 'A'
89	Stroke Adj. 'A' & 'B'
90	BSPP Threads

NOTE: Not required when ordering.

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

Valve Weight:
Double Operator
5.7 kg (12.7 lbs.)

Standard Bolt Kit:
BK98

Metric Bolt Kit:
BKM98

Code	Symbol
1	
2	
4	
8†, 9*	
20†	
30*	

† 8 and 20 spools have closed crossover.
* 9 and 30 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.	

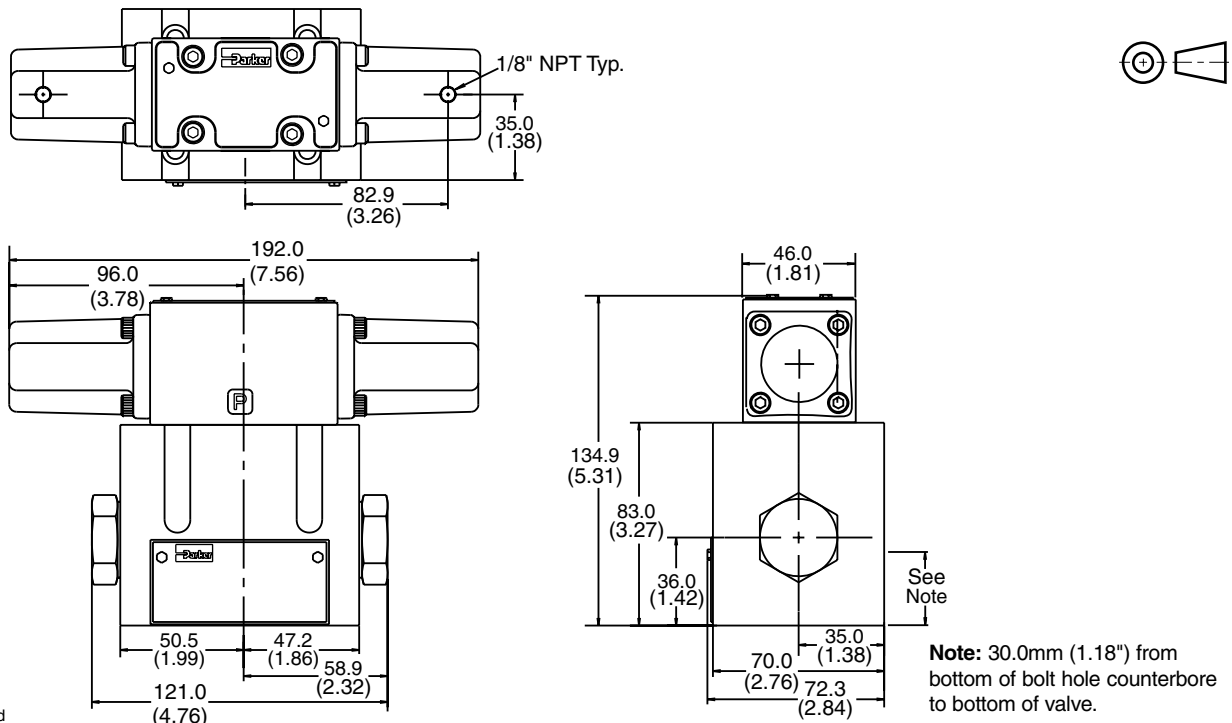
† Only spools 20 and 30.
This condition varies with spool code.

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 (**)



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