

General Description

A

Series D31\*L directional control valves are 5-chamber, pilot operated, lever controlled valves. The valves are suitable for manifold or subplate mounting.

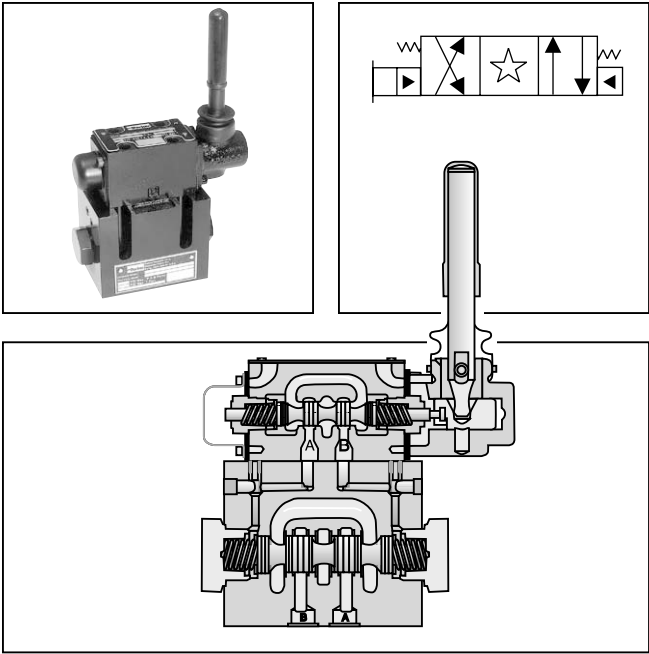
Features

- **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.

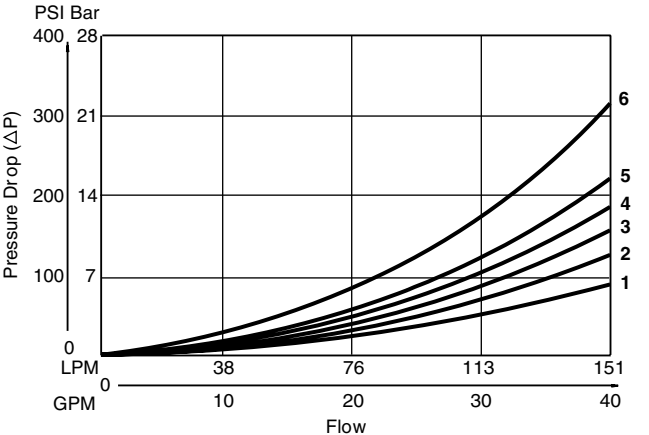
Specifications

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 Limits Charts
Pilot Pressure	Oil Min: 6.9 Bar (100 PSI) Oil Max: 345 Bar (5000 PSI)
Maximum Drain Pressure	34 Bar (500 PSI)
Response Time	Varies with pilot line size and length, pilot pressure, pilot valve shift time & flow capacity (GPM)

D31VL 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	-	-	-	-	-	-	-	



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.							

D31VL Pressure Drop vs. Flow

The chart to the left provides the flow vs. pressure drop curve reference for the D31VL Series valves by spool type.

Example:  
Find the pressure drop at 76 LPM (20 GPM) for a D31VL 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
<b>D</b>	Directional Control Valve
	Basic Valve
<b>L</b>	Lever Operated Pilot
	Spool
	Style
	Pilot Supply and Drain
	Seal Compound
	Variations
	Design Series

**NOTE:** Not required when ordering.

Code	Description
<b>31D</b>	NFPA D05HE, CETOP 5H (ISO)
<b>31V</b>	NFPA D05H, CETOP 5

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 spool. See installation information for details.

Code	Symbol
<b>1</b>	
<b>2</b>	
<b>4#</b>	
<b>5</b>	
<b>8** &amp; 9*</b>	
<b>20**</b>	
<b>30*</b>	

\* 9 and 30 spools have open crossover.  
 \*\* 8 and 20 spool has closed crossover.

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

# Not available with 2, 8 & 9 spools.

Code	Description
<b>N</b>	Nitrile
<b>V</b>	Fluorocarbon

Code	Description	Symbol
<b>B†</b>	Sgl. operator, 2 position, spring offset. P to A and B to T in offset position.	
<b>C</b>	Dbl. operator, 3 position, spring centered.	
<b>D†</b>	Dbl. operator, 2 position, detent.	
<b>E</b>	Sgl. operator, 2 position, spring centered. P to B and A to T in shifted position.	
<b>H†</b>	Sgl. operator, 2 position, spring offset. P to B and A to T in offset position.	
<b>K</b>	Sgl. operator, 2 position. Spring centered. P to A and B to T in shifted position.	

† Only spools 20 and 30.

This condition varies with spool code.

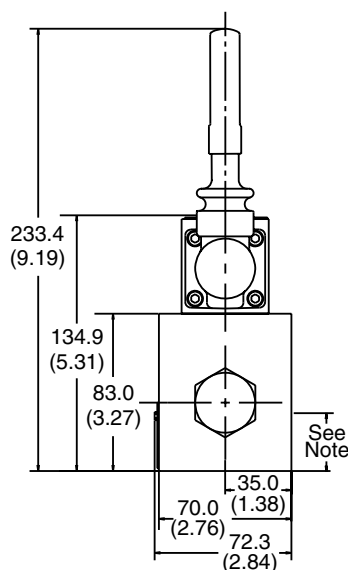
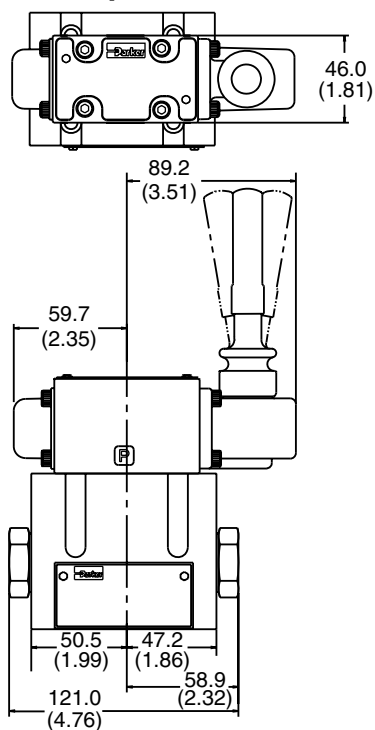
**Valve Weight:** 5.4 kg (12.0 lbs.)  
**Standard Bolt Kit:** BK98  
**Metric Bolt Kit:** BKM98

**Bold: Designates Tier I products and options.**

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

## Dimensions – Lever Operated

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



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