

General Description

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

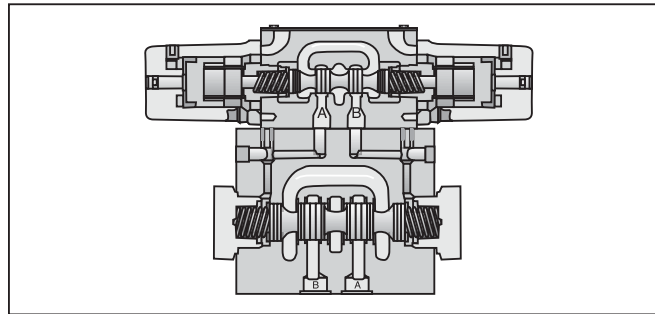
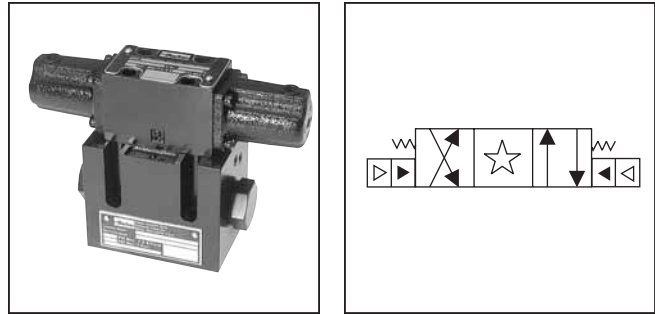
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Features

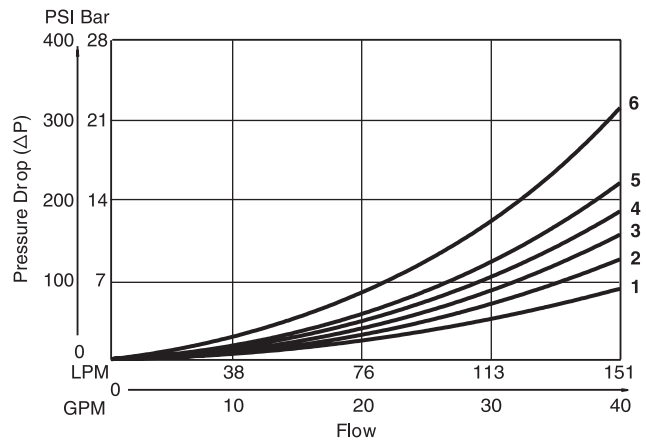
- **World design** – Available worldwide.
- **Mounting bolts below center line of spool** – Minimizes spool binding.
- **Five chamber style** – Eliminates pressure spikes in tubes, increasing valve life.
- **High pressure and flow ratings** – Increased performance options in a compact valve.

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

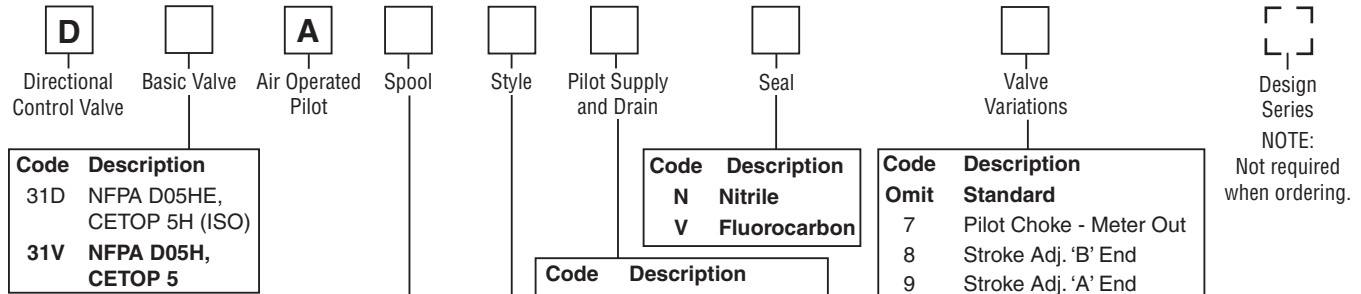
The chart to the left provides the flow vs. pressure drop curve reference for the D31VA Series valves by spool type.

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 |

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* | |

| 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 | 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. | |

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

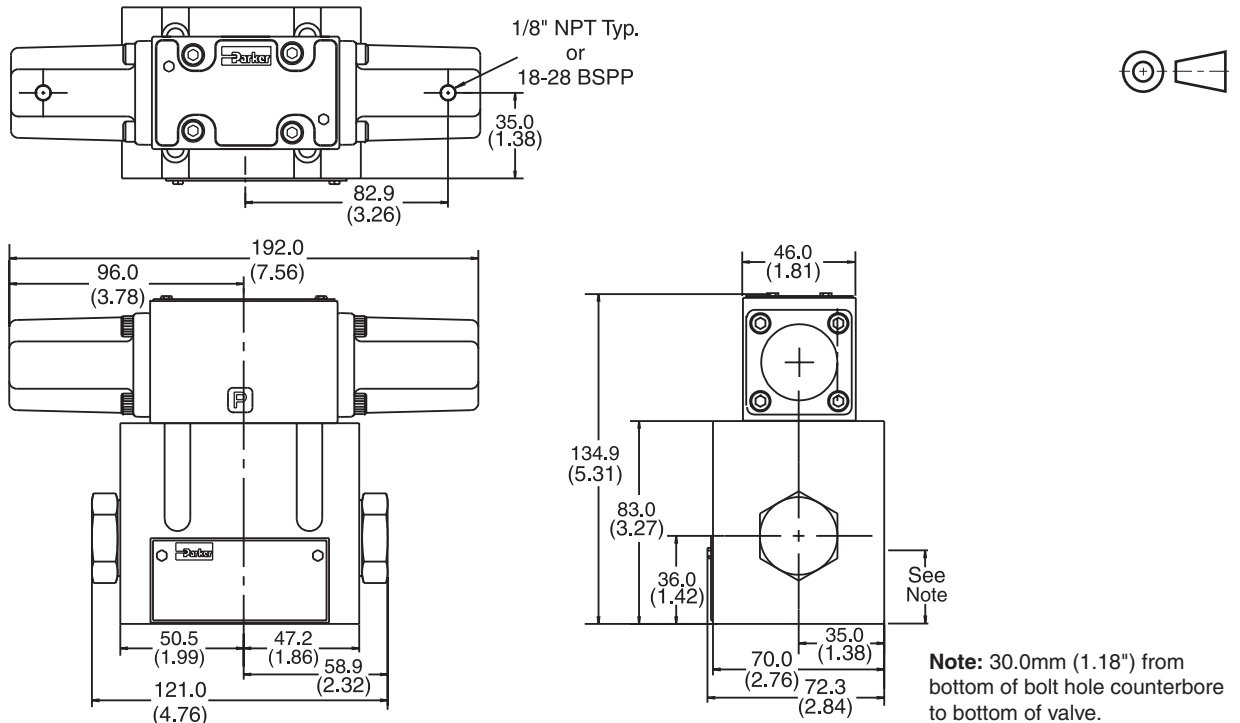
† 008 and 020 spools have closed crossover.
 * 009 and 030 spools have open crossover.

† Only spools 020 and 030.
 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 (**)



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