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20 Bushes Lane  
Elmwood Park, NJ 07407

## Model BPH-05-Npt

### Stainless Steel Back Pressure Regulating Relief Valve



- Piston operated
- 1/4"-1/2" NPT THD (larger sizes can be made available)
- Orifice sizes 0.047-0.25 inch (1.2-6.4 mm)
- Control/Relief pressures up to 4500 PSI (320 Bar) with multiple spring ranges (see table below)
- Material: 316 & 303 Stainless Steel Valve. Other alloys available (See below)

## Features

- **Pressure-containing parts** made from solid bar stock materials — unlike castings which have wall thickness variations.
- **Body:** A stainless steel valve is our standard and is available in type 316SS and 303SS. (Special alloys are available to make a Monel valve, Titanium valve, and Hastelloy valve, [click here](#))
- **Piston Valve/Poppet:** Type 316 or 303 stainless steel is standard. For very high pressures, hardened stainless steel is available.
- **Piston Seal:** Standard elastomers are Viton, PTFE, EPDM, Kalrez & other elastomers are also available.
- **In-line porting** is the standard piping arrangement.

## Applications

This pressure control valve is used for very high back pressure control applications such as maintaining constant pump discharge pressures, bypassing excessive pressures from various types of process equipment, and wherever a constant pressure must be maintained in a process or piping system. Because of the needle nose piston, this valve is also used for relieving high pressures at very low flows. The 303 stainless steel valve can be used for non-corrosive or mildly corrosive fluids. Use only clean filtered or strained liquids or gases to remove debris or other solid matter that might cause internal clogging or improper operation of this precision machined valve. Install a filter or strainer with a fine wire mesh (at least #20 mesh) before the inlet of the back pressure valve. High-pressure in-line strainer fittings, basket strainers, and fine wire mesh filters can be purchased from Stra-Val.

When used with high pressure air or gases, the thermal effects of rapid expansion need to be considered, especially if moisture is present in the gas which could result in the valve freezing up and making it temporarily inoperable while in a frozen state. Several preventative measures may need to be considered, such as moisture removal, limiting pressure reduction in stages, or even heating the valve and related piping.

Standard metal seated valves meet ANSI/FCI Class IV seat leakage standards (0.01% of rated valve capacity, not bubble tight). For low pressure applications, a PTFE seat can be ordered to improve the shutoff class compared to a normal metal seat.

## Options

Select from the material options displayed below. Other options available, but not priced, are:

1. Panel Mounting,
2. Hand wheel or hand knob
3. Locking cap
4. Hardened Piston and seat

## Principle of Operation

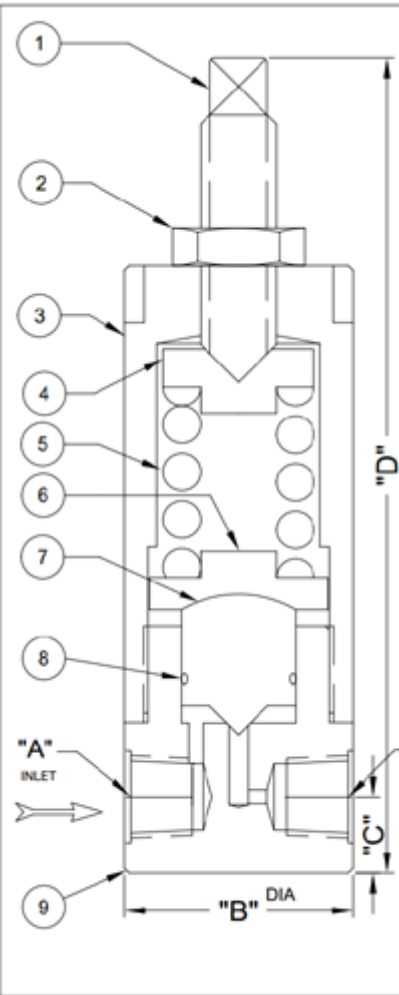
This is a direct-acting back pressure-relief valve with an adjustable spring operating against a piston subjected to the inlet pressure of the valve. Increasing the spring compression will increase the system or line pressure to be maintained. Reducing the spring compression will reduce this pressure. An increase in system pressure beyond the set point will cause the piston to open and relieve the excess pressure through the outlet port of the back pressure relief valve. The needle nose piston results in very smooth pressure control not possible with large orifice, flat nose pistons designed for quick pressure release

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Typical illustration

**TYP MATERIAL LIST & SPECIFICATION**

|   |                  |
|---|------------------|
| 1 | ADJUSTING SCREW  |
| 2 | LOCK NUT         |
| 3 | SPRING CHAMBER   |
| 4 | SPRING PUSHER    |
| 5 | ADJUSTING SPRING |
| 6 | SPRING CARRIER   |
| 7 | PISTON VALVE     |
| 8 | PISTON SEAL      |
| 9 | BODY             |



| DIMENSIONS (IN) |      |      |      |
|-----------------|------|------|------|
| "A"             | "B"  | "C"  | "D"  |
| 1/8             | 2.00 | .50  | 5.62 |
| 1/4             | 2.00 | .75  | 5.62 |
| 3/8             | 2.25 | .75  | 8.00 |
| 1/2             | 3.00 | .88  | 9.50 |
| 3/4             | 2.75 | .85  | 9.00 |
| 1               | 3.00 | 1.07 | 9.45 |

PH 973-340-9900  
 FX 973-340-9928  
 21 COLUMBUS AVE  
 GARFIELD, N.J. 07026

**STRAL VALVES**  
**STRAINERS VAL**

|       |           |        |                         |
|-------|-----------|--------|-------------------------|
| MATL  | SEE ABOVE | TITLE  | BACK PRESSURE REGULATOR |
| SCALE | NDNE      |        | 1/8-1" NPT              |
| DATE  | 9-3-2010  | DWG NO | BPH05T-SS               |
| DRWN  | EDS       | REV    |                         |

**BPH-05**

**Dimensions ( inches)**

| #  | Item             | Materials                           |
|----|------------------|-------------------------------------|
| 1. | Adjusting screw  | Steel & SS                          |
| 2. | Lock nut         | Steel & SS                          |
| 3. | Spring chamber   | Steel & SS                          |
| 4. | Spring pusher    | Steel & SS                          |
| 5. | Adjusting spring | Steel & SS                          |
| 6. | Spring Carrier   | Steel & SS                          |
| 7. | Piston           | Stainless steel                     |
| 8. | Seal             | Viton, EPDM, Teflon*, Kalrez*, etc. |
| 9. | Body             | Stainless steel                     |

\*Registered DuPont materials

Note: Dimensions are approximate and are subject to change without notice. Request certified dimensions before final product installation.

**1/4" BPH05-02T**

**Rated Pressure 3000 psi (207 barg)**

Multiple Spring Ranges from:10-1100 psig (0.69-75.9 barg) Select spring from pricing page

**Rated Pressure 5000 psi (345 barg)**

Multiple Spring Ranges from:200-4500 psig (13.8-310 barg) Select spring from pricing page

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## **3/8" BPH05-03T**

**Rated Pressure 3000 psi (207 barg)**

Multiple Spring Ranges from:10-1100 psig (0.69-75.9 barg) Select spring from pricing page

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**Rated Pressure 5000 psi (345 barg)**

Multiple Spring Ranges from:200-4500 psig (13.8-310 barg) Select spring from pricing page

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## **1/2" BPH05-05T**

**Rated Pressure 3000 psi (207 barg)**

Multiple Spring Ranges from:10-1100 psig (0.69-75.9 barg) Select spring from pricing page

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**Rated Pressure 5000 psi (345 barg)**

Multiple Spring Ranges from:200-4500 psig (13.8-310 barg) Select spring from pricing page

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## **3/4" BPH05-07T**

**Rated Pressure 2000 psi (137 barg)**

Multiple Spring Ranges from:10-625 psig (0.69-43.1 barg) Select spring from pricing page

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**Rated Pressure 3000 psi (207 barg)**

Multiple Spring Ranges from:175-3000 psig (12.1-207 barg) Select spring from pricing page

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## **1" BPH05-10T**

**Rated Pressure 2000 psi (138 barg)**

Multiple Spring Ranges from:25-625 psig (1.72-43.1 barg) Select spring from pricing page

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**Rated Pressure 3000 psi (207 barg)**

Multiple Spring Ranges from:175-3000 psig (12.1-207 barg) Select spring from pricing page

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The spring ranges listed above are not achievable with one spring, but are compressed to show overall product capability. Select a specific spring range in the pricing pages or specify a set pressure when ordering.