

# Parker Series VMY Pilot Operated Proportional Reducing Valve Service Manual

**B**

## General Description

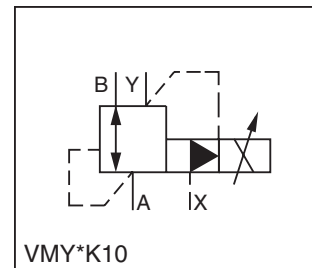
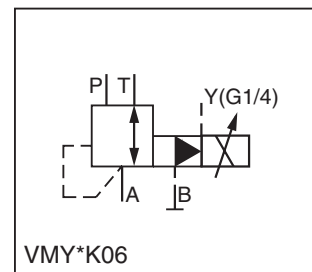
Series VMY\*K valves consist of the main stage with valve spools and the pilot stage with the proportional solenoids. The desired pressure can be variably set corresponding to the command signal specified on the amplifier. The proportional solenoid converts the current of the amplifier into force on the valve poppet of the pilot stage.

In the pilot stage, there is a flow limiter which supplies the pilot valve with pressure-independent pilot oil flow from the pressure port P.

The proportional pressure reducing/relieving valves of the series VMY\*06 allow the variable adjustment of the reduced pressure from 0 bar up to  $p_{max}$ . Typical applications are pressure systems, test equipment, or counterweight systems. The electrical control of the valve takes place using the digital amplifier module PCD00A-400. Used in closed loop pressure control circuits with the PWDXXA-400.

## Function

With the proportional solenoids de-energized the main spring forces the main spool into the neutral position. Port A is connected to port T. Thus the reduced pressure only depends on the back pressure in the external drain pipe and/or the tank pressure and can accordingly be reduced down to 0 bar. The pressure present in the P line delivers the pilot oil to the pilot stage via a flow control valve.

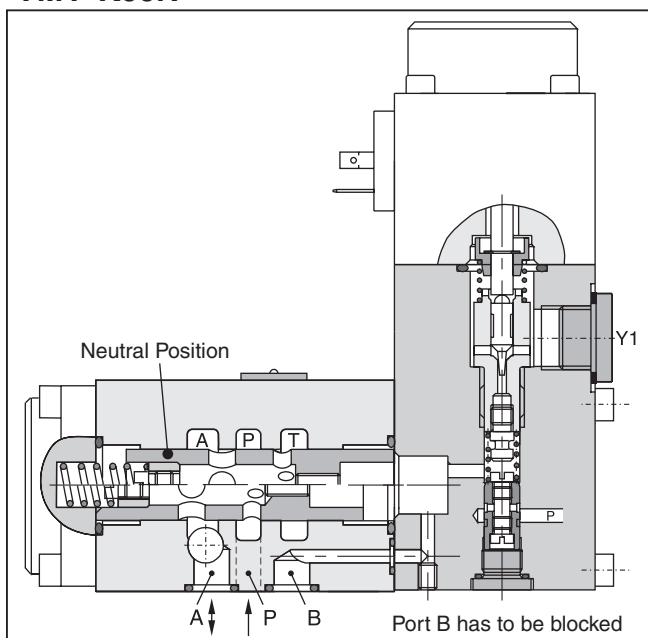


When the proportional solenoid is energized, the pilot pressure is increased in the pilot pressure area, and the main spool moves against the spring until the connection P - A opens. The regulation of the reduced pressure on connection A takes place by the constant comparison of the actual pressure and the reference pressure of the pilot stage.

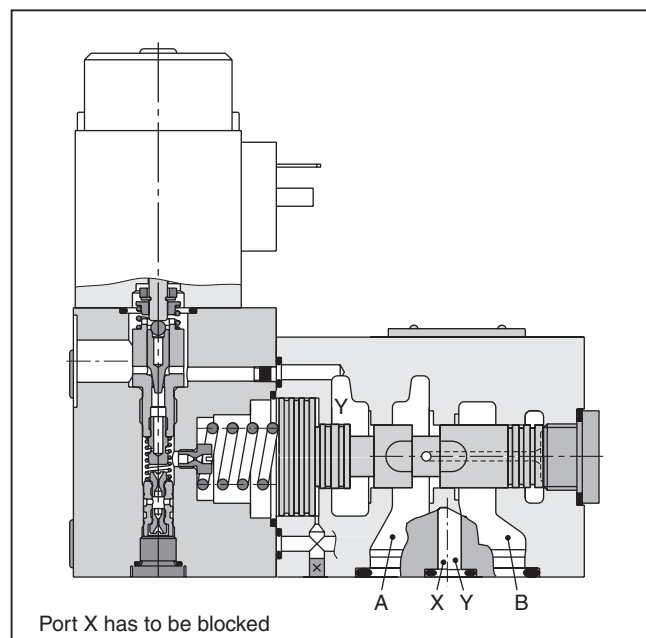
## Features

- Consistent performance
- Variable adjustment
- Pilot operated with proportional solenoid
- Subplate according to ISO 5781

## VMY\*K06N



## VMY\*K10



**WARNING:** This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

B01\_Cat2550.indd, ddp, 04/19



**Ordering Information**

**VMY**

Reducing/  
Relieving  
Valve

□

Pressure  
Range

**K**

Linear  
Solenoid  
9V / 2.5A

□

Size

□

Pilot Oil

□

Seal

**1**

Design  
Series

**P**

High Pressure  
Channel

| Code | Description        |
|------|--------------------|
| 064  | 64 Bar (928 PSI)   |
| 100  | 100 Bar (1450 PSI) |
| 160  | 160 Bar (2320 PSI) |
| 210  | 210 Bar (3000 PSI) |
| 315  | 315 Bar (4568 PSI) |

| Code | Description |
|------|-------------|
| 06   | NG6         |
| 10   | NG10        |

| Code | Description  |
|------|--------------|
| N*   | Nitrile      |
| V    | Fluorocarbon |

\* Size 10 only

| Pilot Oil       |      |          |                        |                           |
|-----------------|------|----------|------------------------|---------------------------|
| Code            | Size | Pilot    | Drain                  | p <sub>min</sub>          |
| Omit            | 10   | Internal | Internal               | 3 - 4 Bar (43.5 - 58 PSI) |
| N <sup>1)</sup> | 06   | Internal | External <sup>2)</sup> | 0.5-1 Bar (7 - 14.5 PSI)  |
| T               | 06   | Internal | Internal               | 1-2 Bar (14.5 - 29 PSI)   |

<sup>1)</sup> Connection on port Y

<sup>2)</sup> p<sub>min</sub> = 0 Bar (0 PSI) possible

**Weight:**

VMY\*06    2.8 kg (6.2 lbs.)  
 VMY\*10    5.0 kg (11.0 lbs.)

**Specifications**

| General                          |  |
|----------------------------------|--|
| <b>Design</b>                    | Proportional Reducing/Relieving Valve  |
| <b>Size</b>                      | <b>NFPA D03 / CETOP 3 / DIN NG6</b> <b>DIN NG10</b>  |
| <b>Mounting Pattern</b>          | ISO 5781   |
| <b>Actuation</b>                 | Proportional Solenoid  |
| <b>Mounting Position</b>         | Any  |
| <b>Ambient Temperature</b>       | -20°C to +80°C (-4°F to +176°F)  |
| Hydraulics                       |  |
| <b>Operating Pressure, Ports</b> | Ports P, A 315 Bar (4500 PSI) Ports T, Y depressurized; Port B has to be blocked                      Ports A, B 350 Bar (5075 PSI) Port Y depressurized; Port X has to be blocked |
| <b>Flow</b>                      | 40 LPM (10.6 GPM)                      160 LPM (42.2 GPM)  |
| <b>Pilot Flow</b>                | 0.3 - 0.4 LPM (.08 - .011 GPM), not dependent on pressure  |
| <b>Pressure Ranges</b>           | 64, 100, 160, 210, 315 Bar (928, 1450, 2320, 3045, 4568 PSI)   |
| <b>Fluid</b>                     | Hydraulic oil as per DIN 51524...51535, other on request   |
| <b>Fluid Temperature</b>         | <b>Recommended Permitted</b><br>+30°C to +50°C (+86°F to +122°F)<br>-20°C to +70°C (-4°F to +158°F)  |
| <b>Viscosity</b>                 | <b>Recommended Permitted</b><br>30 to 50 cSt / mm <sup>2</sup> /s (139 to 232 SSU)<br>20 to 380 cSt / mm <sup>2</sup> /s (93 to 1761 SSU)  |
| <b>Filtration</b>                | ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)  |
| <b>Linearity</b>                 | See Performance Curves                      ±3.5 at >15% p <sub>nom</sub>  |
| <b>Repeatability</b>             | <±2%   |
| <b>Hysteresis</b>                | <3%  |
| <b>Response Time</b>             | <150 ms                      <200 ms   |
| Electrical                       |  |
| <b>Duty Cycle</b>                | 100% ED; CAUTION: Coil temperature up to 150°C (302°F) possible  |
| <b>Protection Class</b>          | IP65 in accordance with EN 60529 (plugged and mounted)   |
| <b>Nominal Voltage</b>           | 9 VDC  |
| <b>Maximum Current</b>           | 2.5 A  |
| <b>Ambient Temperature</b>       | -20°C to +70°C (-4°F to +158°F)  |
| <b>Coil Resistance</b>           | 2.1 ohm at 20°C (68°F)   |
| <b>Plug Connectors</b>           | 2 pole + PE / connector EN 175301-803 / cable Ø 8 to 10mm  |
| <b>Power Amplifier</b>           | PCD00A-400   |

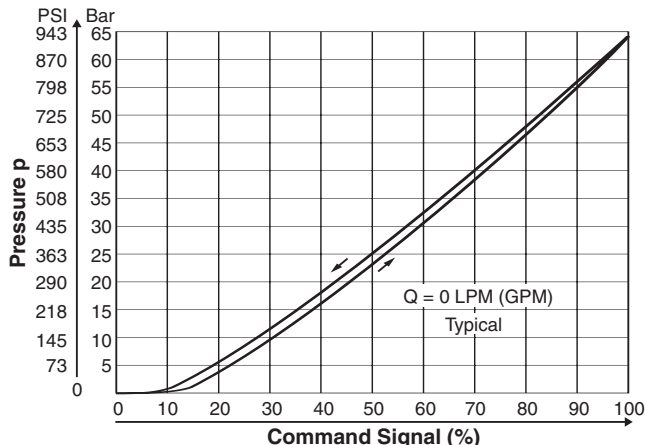
B01\_Cat2550.indd, ddp, 04/19



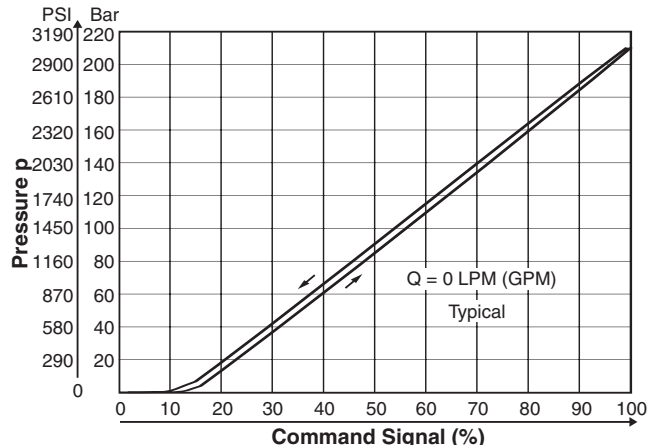
Performance Curves

Pressure Curves where  $p = f(U_{set})$

Setting Range max. 64 Bar (928 PSI)



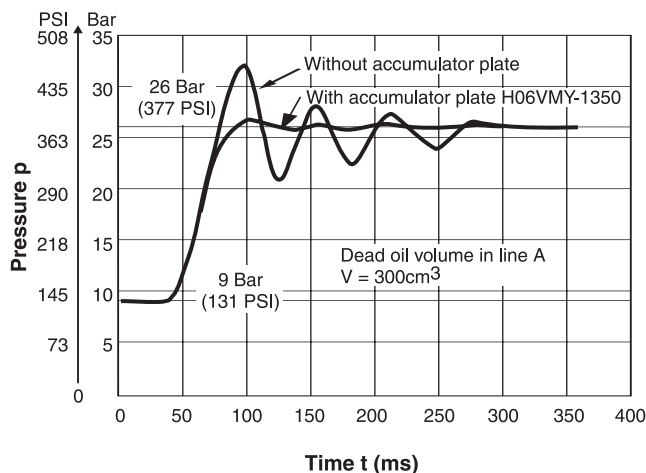
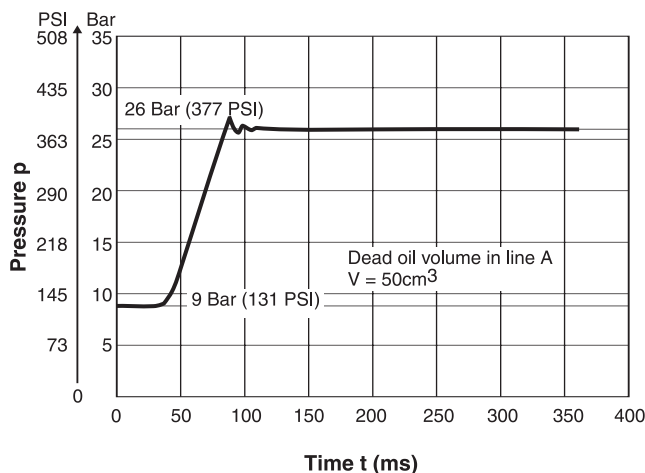
Setting Range max. 210 Bar (3045 PSI)



**B**

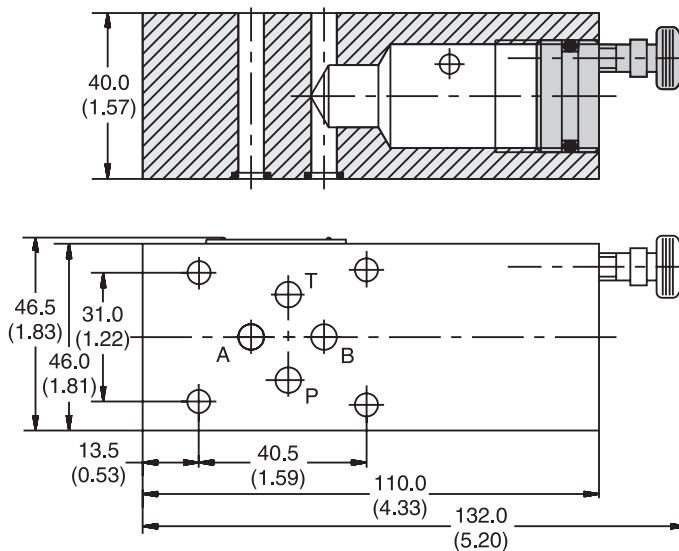
Step Response

Typical Curve



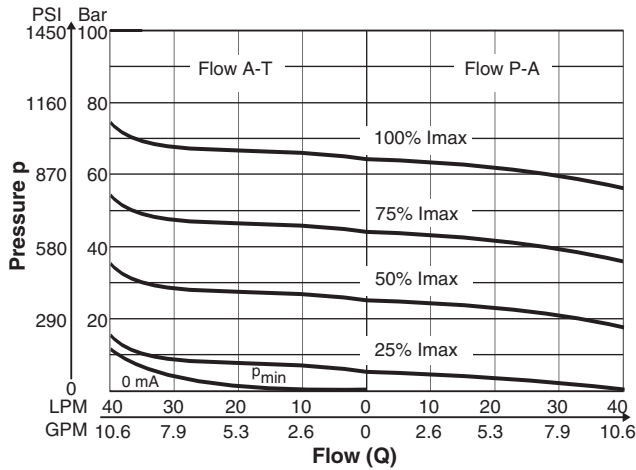
Accumulator Plate H06VMY-1350

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

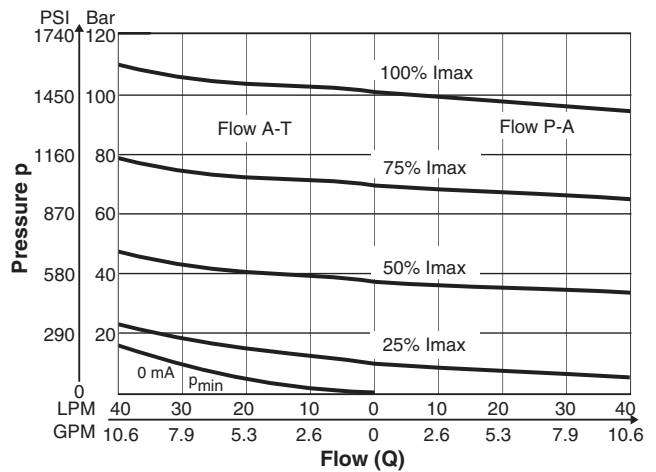


p/Q Performance Curves measured at  $t = 50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ ) and  $v = 35\text{mm}^2/\text{s}$ .

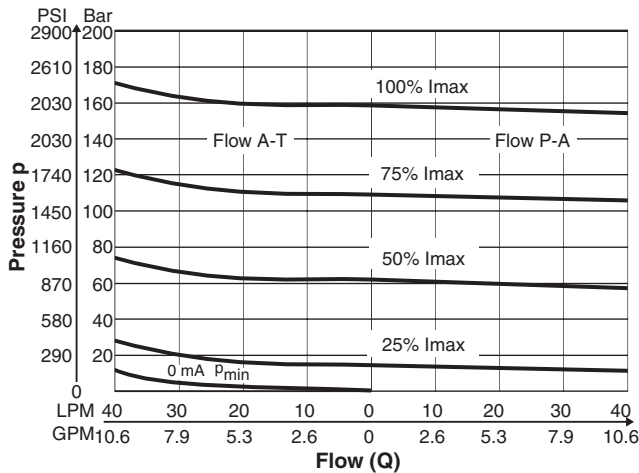
**Setting Range max. 64 Bar (928 PSI)**



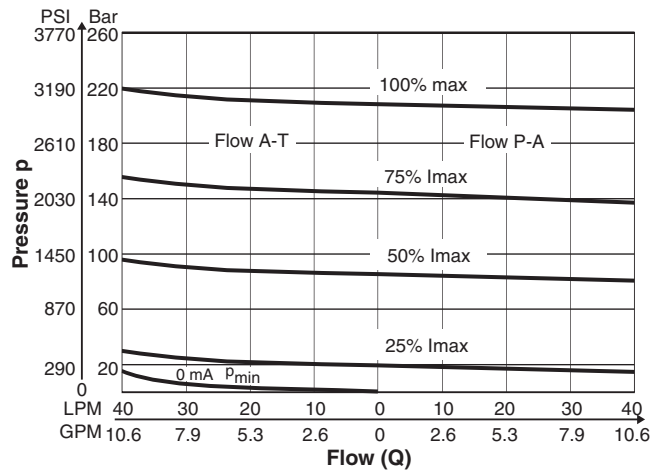
**Setting Range max. 100 Bar (1450 PSI)**



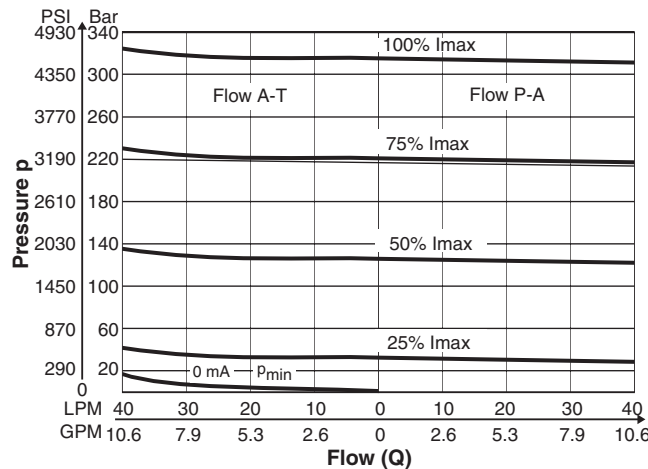
**Setting Range max. 160 Bar (2320 PSI)**



**Setting Range max. 210 Bar (3045 PSI)**



**Setting Range max. 315 Bar (4568 PSI)**

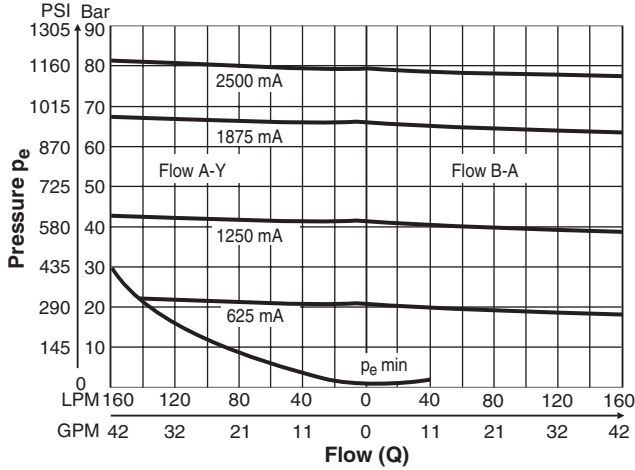


# Performance Curves

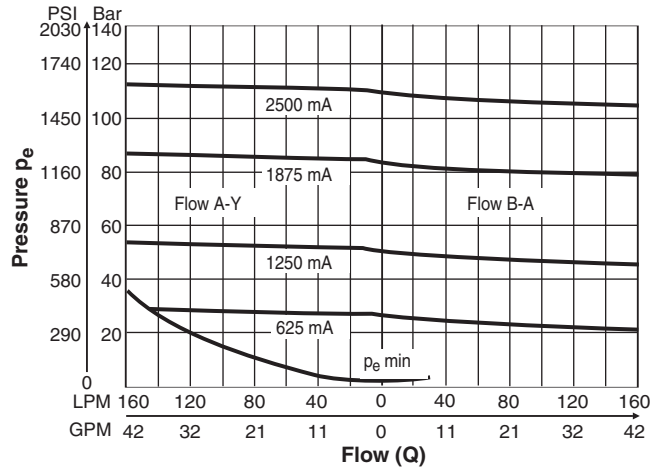
# Prop. Pressure Reducing/Relieving Valves Series VMY\*K10

p/Q Performance Curves for pilot oil supply from high pressure channel P, measured with HLP46 at 50°C (122°F).

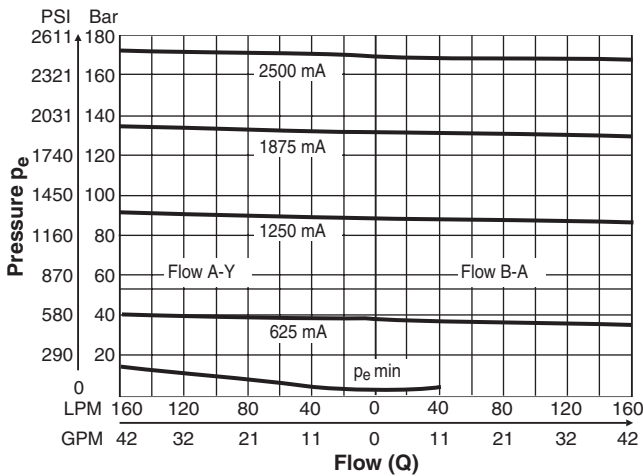
**Setting Range max. 64 Bar (928 PSI)**



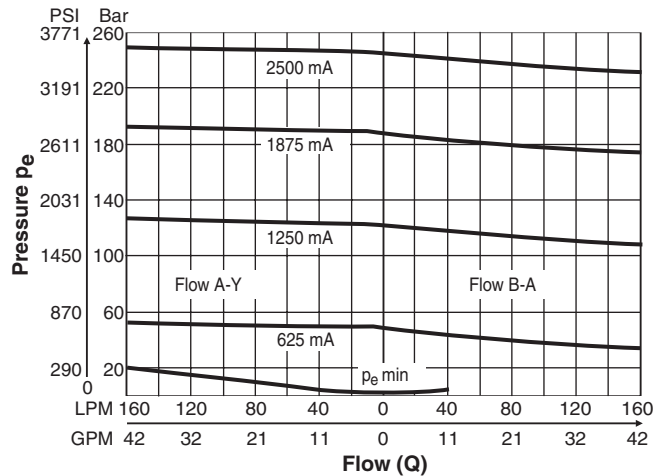
**Setting Range max. 100 Bar (1450 PSI)**



**Setting Range max. 160 Bar (2320 PSI)**



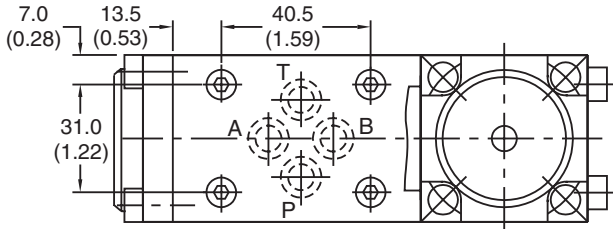
**Setting Range max. 210 Bar (3045 PSI)**



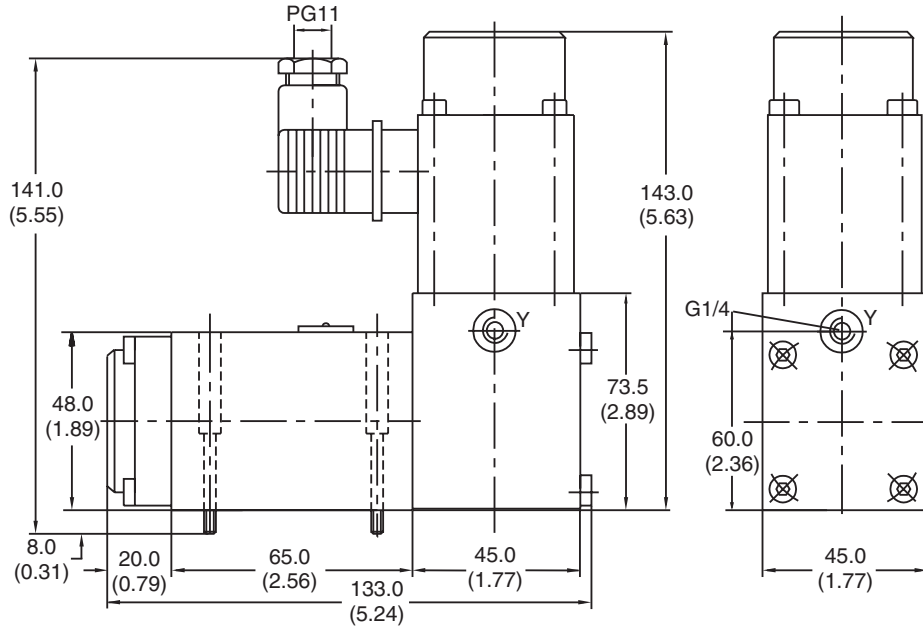
**B**

**Size NG6**

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






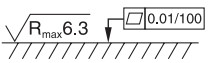
**B**



Port Y: G1/4

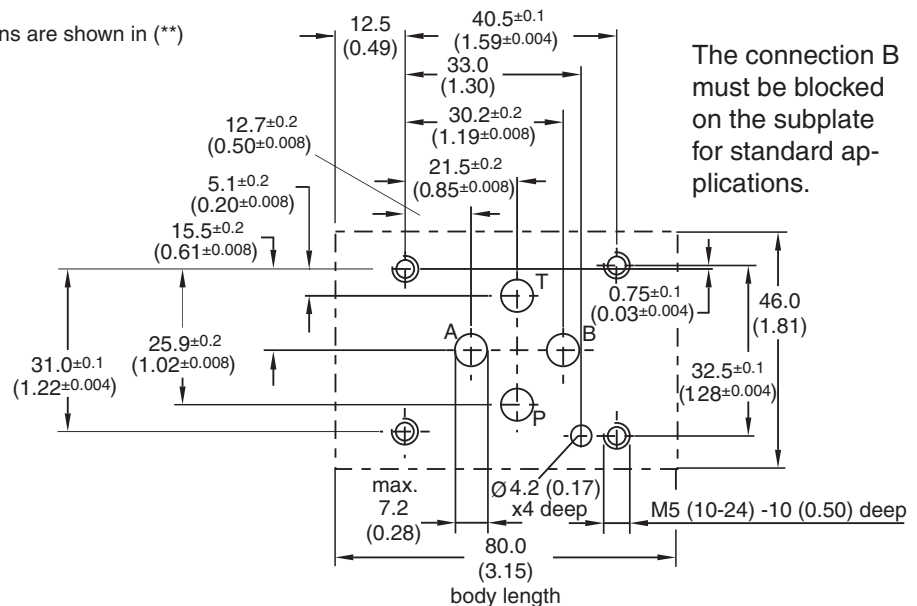
VMY\*K06T:  
Ports Y1 and Y2:  
closed

VMY\*K06N:  
Drain Ports Y1 or Y2:  
Port Y1 closed,  
Port Y2 open

| Surface Finish  | Bolt kit  DIN912 12.9  | Seal  Kit |
|---|---|--|
|  | BK209 (4) 10-24x1.25<br>BK375 (4) M5x30   | 7.5 Nm (5.5 lb.-ft.)   |
|   |   | Fluorocarbon: SK-VB/VM-A06V  |

**Mounting Pattern ISO**

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

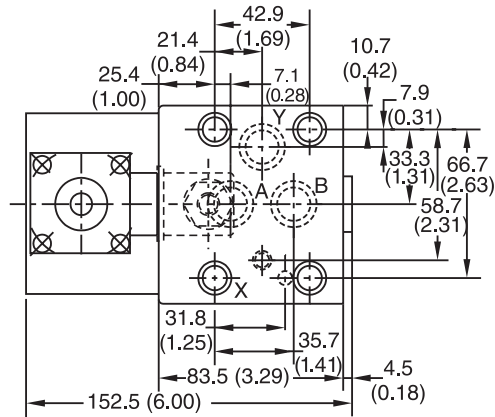


# Dimensions

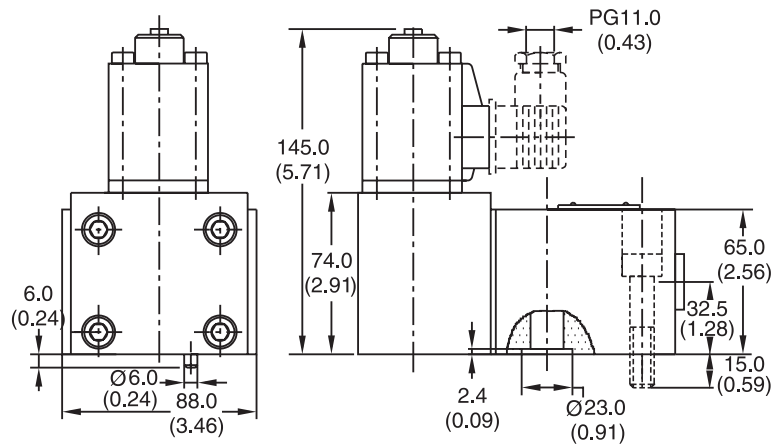
# Prop. Pressure Reducing/Relieving Valves Series VMY\*K10




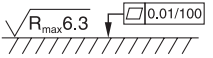
## Size NG10

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



**B**



| Surface Finish  | Bolt kit  DIN912 12.9 |  | Seal  Kit |
|---|--|--|--|
|  | BK153 (4) 3/8-16x2<br>BK242 (4) M10x50   | 63 Nm (5.5 lb.-ft.)  | Nitrile: SK-VB/VM-A10<br>Fluorocarbon: SK-VB/VM-A10V   |

## Mounting Pattern ISO

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

