

# Directional valve

## Bypass thermostat valve

$Q_{\max} = 79 \text{ gpm}$ ,  $p_{\max} = 700 \text{ psi}$

mechanically with thermostat element, integral relief function

Type series: WDTUVB-\_-16...



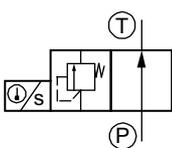
- Screw-in cartridge valve
- For cavity KTU
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Temperature-dependent bypass control
- Oil warms up rapidly (cold-start phase)
- Direct-mounted in coolers or manifold blocks
- Installation in threaded port body type GEUA
- Low head loss
- Choice of various pressure settings
- Extremely reliable
- Very stable operation

### Description

These direct acting bypass thermostat valves are size 16, temperature controlled, high performance screw-in valves with an M33×1.5 mounting thread. They are intended to be installed directly in coolers or line-mounting body. Depending on the temperature of the oil, they route the flow either straight to tank or through the cooler. When the oil is cold ( $< 50^\circ\text{C}$ ), the connection P to T is open (bypass), which means that the flow is directed to tank with minimal headloss and the oil warms up rapidly. After the changeover temperature is reached ( $> 65^\circ\text{C}$ ), the integral thermostat

element closes the connection P to T. The valve now directs the oil flow through the cooler. With an integral pressure-relief function, the bypass thermostat valve also safeguards the cooler by protecting it from any pressure peaks that may result from excessive flow rates. The maximum pressure is determined by the model that is selected. The valves are predominantly used in coolers in mobile as well as industrial applications. All external parts of the screw-in valves are zinc-nickel plated and are thus suitable for use in the harshest operating environments.

### Symbol



Technical data

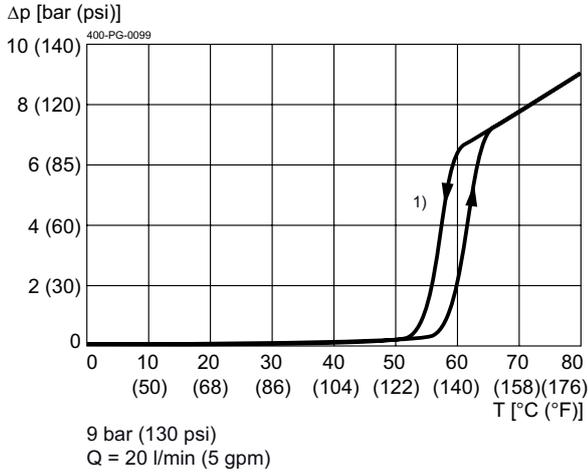
General characteristics	Description, value, unit
Sales category	minimum order quantity required (see order details)
Function group	Directional valve
Function	Bypass thermostat valve
Design	Screw-in cartridge valve
Controls	mechanically with thermostat element
Characteristic	integral relief function
Construction size	NG 16
Thread size	M33×1,5
Mounting attitude	horizontal
Weight	0.32 lbs
Cavity acc. factory standard	For cavity KTU
Tightening torque steel	44 ft-lbs
Tightening torque aluminium	44 ft-lbs
Tightening torque tolerance	± 10 %
Minimum ambient temperature	- 22 °F
Maximum ambient temperature	+ 194 °F
Surface protection	All external parts with zinc-nickel plating according to DIN EN ISO 19598
Sealing material	see ordering code

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	700 psi
Maximum flow rate	79 gpm
Temperature for start of control action	122 °F
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil according to DIN 51 524; other fluids on request!
Minimum fluid temperature	- 22 °F
Maximum fluid temperature	+ 194 °F
Viscosity range	10 ... 650 mm <sup>2</sup> /s (cSt)
Recommended viscosity range	15 ... 250 mm <sup>2</sup> /s (cSt)
Minimum fluid cleanliness (cleanliness class according to ISO 4406:1999)	class 20/18/15

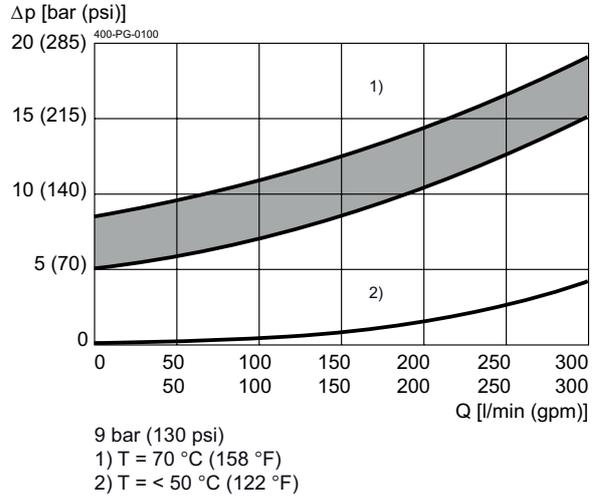
Performance graphs

measured with oil viscosity 33.0 mm<sup>2</sup>/s (cSt)

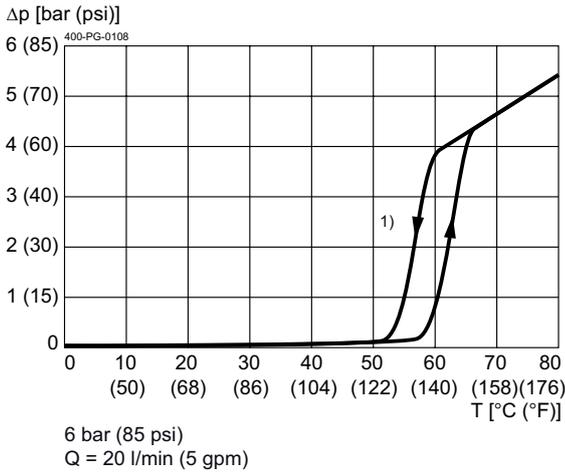
$\Delta p = f(T)$  Pressure drop-temperature



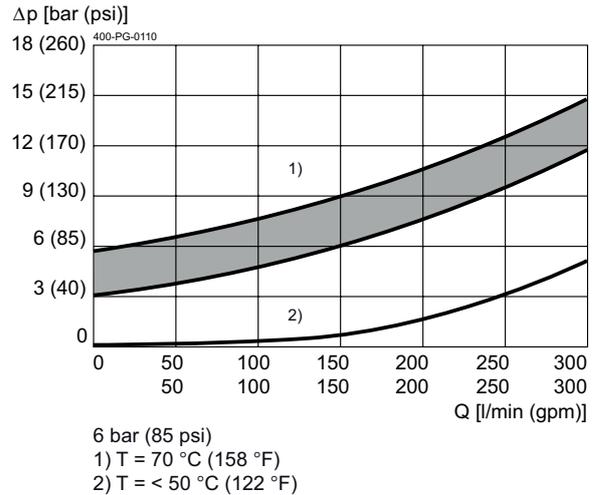
$\Delta p = f(Q)$  Pressure drop-flow rate characteristic



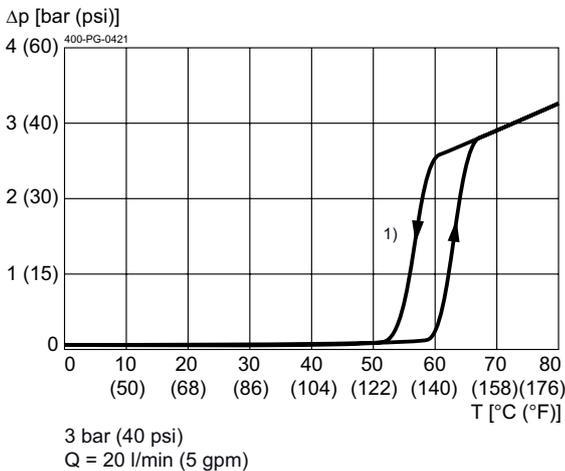
$\Delta p = f(T)$  Pressure drop-temperature



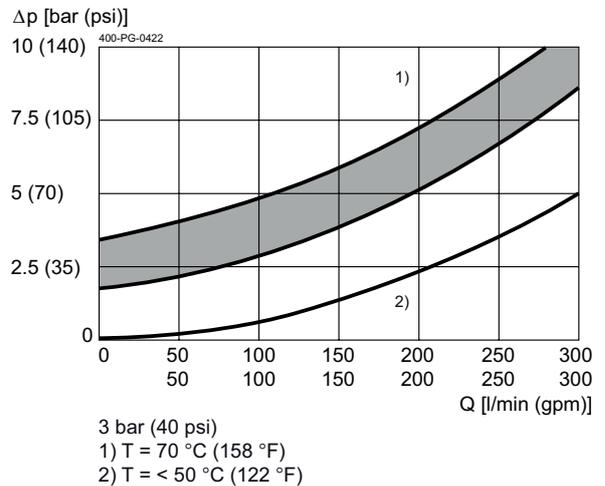
$\Delta p = f(Q)$  Pressure drop-flow rate characteristic



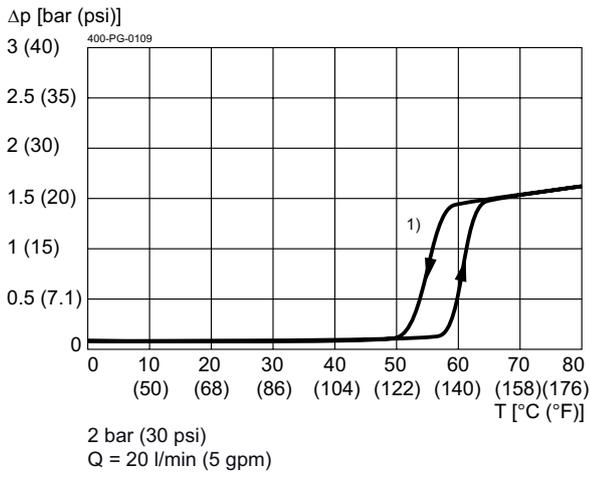
$\Delta p = f(T)$  Pressure drop-temperature



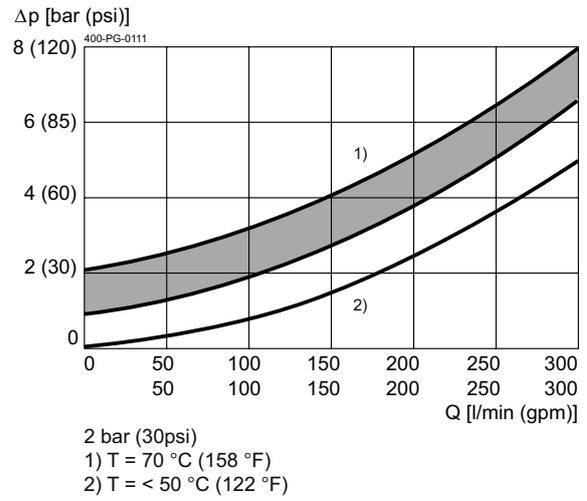
$\Delta p = f(Q)$  Pressure drop-flow rate characteristic



$\Delta p = f(T)$  Pressure drop-temperature



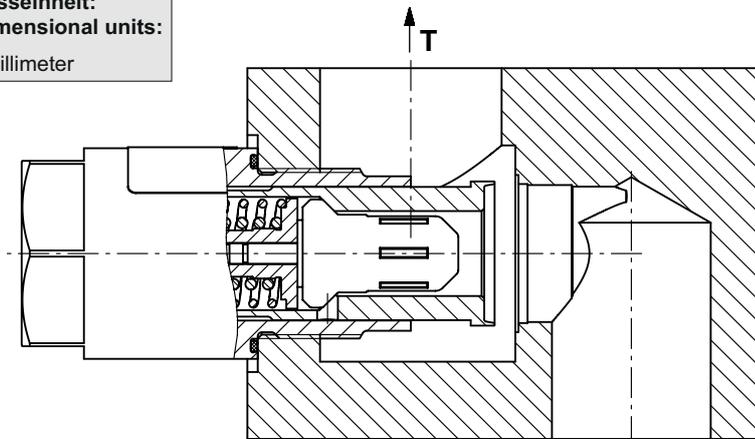
$\Delta p = f(Q)$  Pressure drop-flow rate characteristic



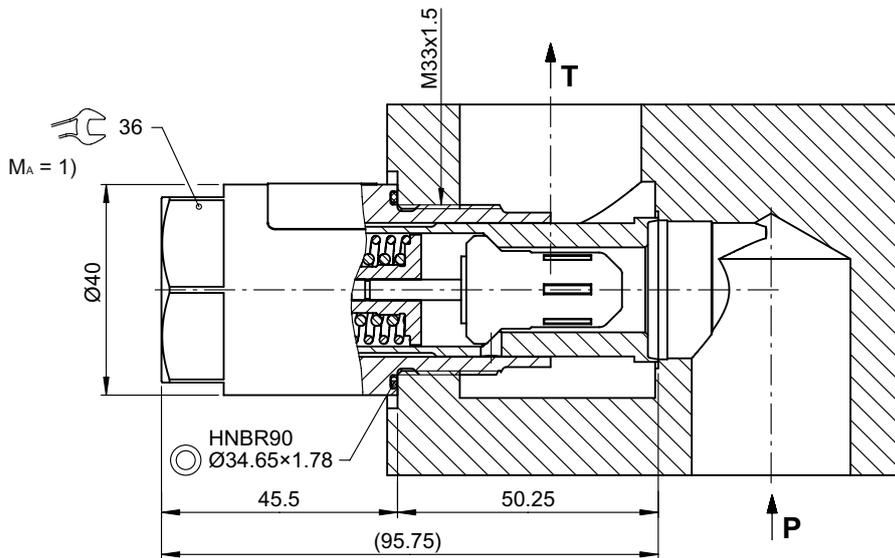
## Dimensions and sectional view

Beispiel für die Masseinheit:  
Example for the dimensional units:

0.79 = 0.79 mm millimeter



Thermoelement  $< 50\text{ }^{\circ}\text{C}$  – Verbindung P nach T offen/  
Thermostat element  $< 50\text{ }^{\circ}\text{C}$  – connection P to T open



Thermoelement  $> 65\text{ }^{\circ}\text{C}$  – Verbindung P nach T geschlossen/  
Thermostat element  $> 65\text{ }^{\circ}\text{C}$  – connection P to T closed

## Installation information



### IMPORTANT!

1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value can be found in the chapter "Technical data".



### IMPORTANT!

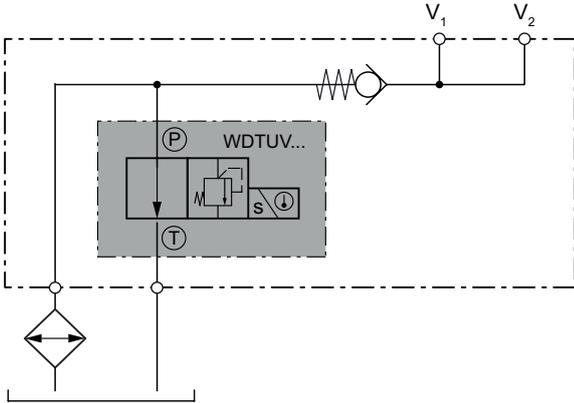
Other mounting position and the axial incident flow from port P to valve spool results in other  $D_p$ -values.



### ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Application examples



Manifold block with integral cooler-bypass thermostatic valve

Ordering code

Ex. W D T UV B - 50 - 90 - 16 J - 1

- W = directional valve, cartridge construction
- D = direct acting
- T = temperature-actuated (thermostat element)
- UV = pressure-relief function is incorporated
- B ... Q = standard model - see relevant data sheets
- Z ... R = special features - please consult BUCHER
- 50 = response temperature for thermostat ~ 50 °C
- ... = for other response temperatures, please consult BUCHER
- 90 = pressure setting  $p_{max} = 9$  bar
- 60 = pressure setting  $p_{max} = 6$  bar
- 30 = pressure setting  $p_{max} = 3$  bar
- 20 = pressure setting  $p_{max} = 2$  bar
- 16 = size 16
- J = HNBR seals (**standard**)  
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering)

**i** **IMPORTANT!**  
Minimum order quantity of 500 pcs./year

Related data sheets

Reference	Description
400-P-040011	Form tools
400-P-080141	CavityKTU
400-P-750151	Threaded port bodyGEUA

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