Cooler-Bypass Thermostat Valve, Size 10

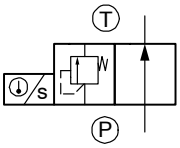
Q_{max} = 120 l/min, p_{max} = 50 bar
Temperature-controlled, integral relief function
Series WDTUVA…

- Temperature-dependent bypass control
- Integral pressure-relief function
- Oil warms up rapidly (cold-start phase)
- Direct-mounted in coolers or manifold blocks
- Low headloss
- Choice of various pressure settings
- Very good reproducibility
- Extremely reliable
- Very stable operation
- All exposed parts with zinc-nickel plating
- Can be fitted in a line-mounting body

1 Description

These direct acting bypass thermostat valves are size 10, temperature controlled, high performance screw-in cartridges with an M27x2 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 (< 45 °C resp. < 60 °C), the connection P → 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 (>45 °C resp. > 60 °C), the integral thermostat element closes the connection P → T. The valve now directs the oil flow through the cooler. With the integral pressure-relief function, the bypass thermostat cartridge 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 cartridges are predominantly used in coolers in mobile as well as industrial applications. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments.

2 Symbol



3 Technical data

General characteristics	Description, value, unit
Designation	cooler-bypass thermostat valve
Design	temperature-controlled, integral relief function, choice of maximum pressure setting
Mounting method	screw-in cartridge M27x2
Tightening torque	60 Nm ± 10 %
Size	size 10, cavity type DU
Weight	0.2 kg
Mounting attitude	unrestricted
Ambient temperature range	-30 °C … +100 °C

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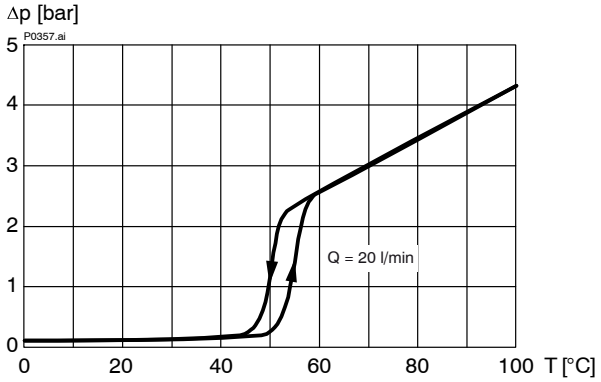
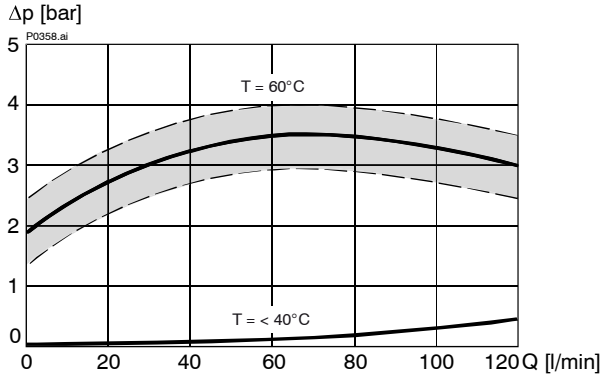
Hydraulic characteristics	Description, value, unit
Maximum operating pressure	50 bar
Maximum flow rate	120 l/min
Nominal pressure ranges	2 bar 3 bar (only 60 °C) 4 bar (only 45 °C) 5 bar (only 45 °C) 8 bar (only 45 °C) 10 bar (only 60 °C) (other pressures - consult BUCHER)
Temperature for start of control action	Optional 45 °C or 60 °C
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-30 °C … +100 °C
Viscosity range	10…650 mm^2/s (cSt), recommended 15...250 mm^2/s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15

4 Performance graphs measured with oil viscosity 33 mm^2/s (cSt)

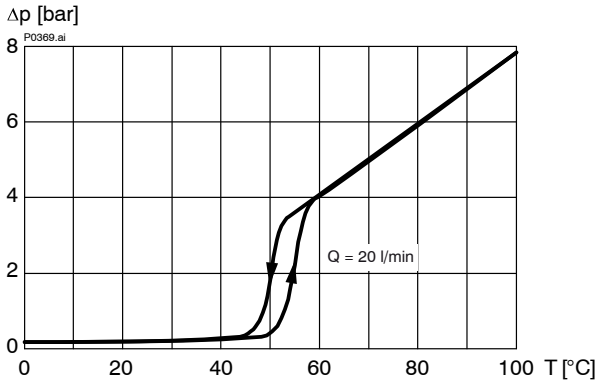
Δp = f (T) Pressure drop v. temperature [45 °C / 2 bar]



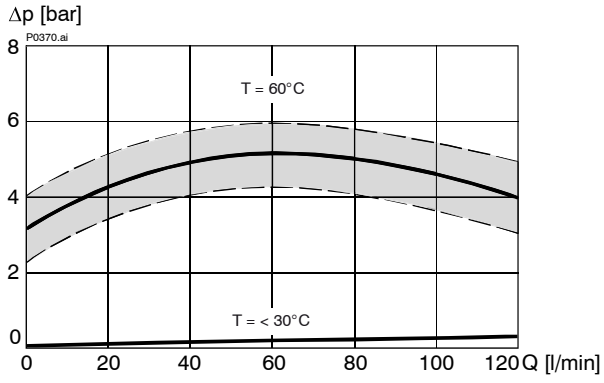
Δp = f (Q) Pressure drop v. flow rate [45 °C / 2 bar]



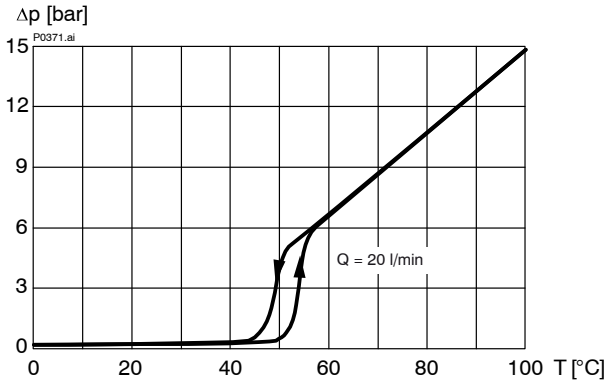
Δp = f (T) Pressure drop v. temperature [45 °C / 4 bar]



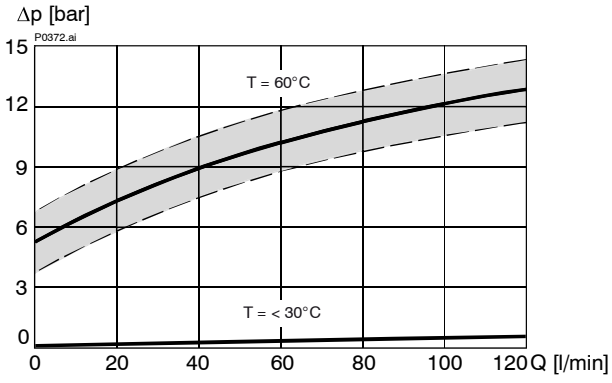
Δp = f (Q) Pressure drop v. flow rate [45 °C / 4 bar]



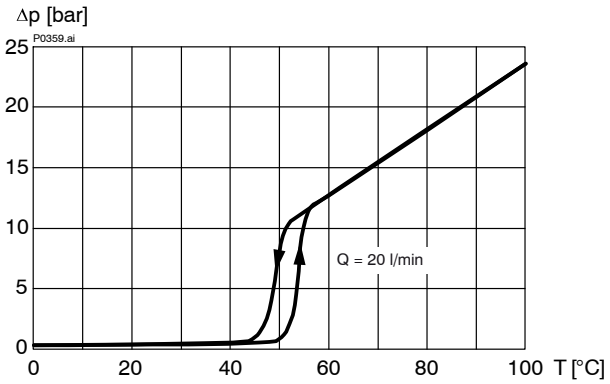
Δp = f (T) Pressure drop v. temperature [45 °C / 5 bar]



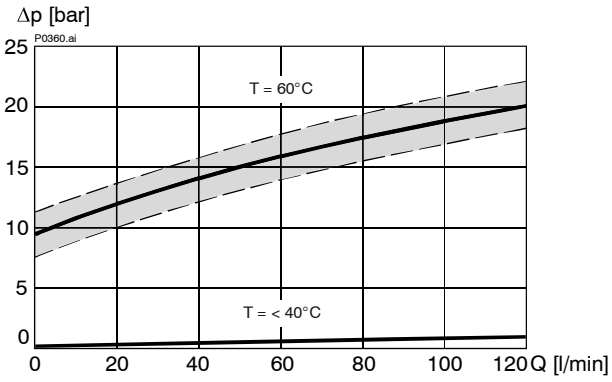
Δp = f (Q) Pressure drop v. flow rate [45 °C / 5 bar]



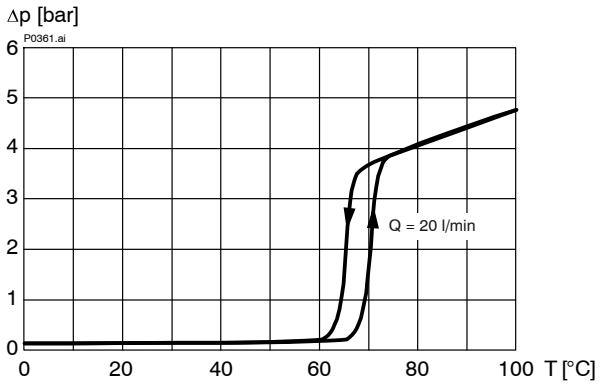
Δp = f (T) Pressure drop v. temperature [45 °C / 8 bar]



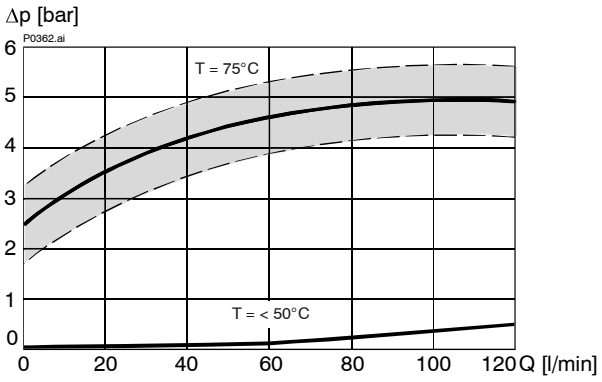
Δp = f (Q) Pressure drop v. flow rate [45 °C / 8 bar]



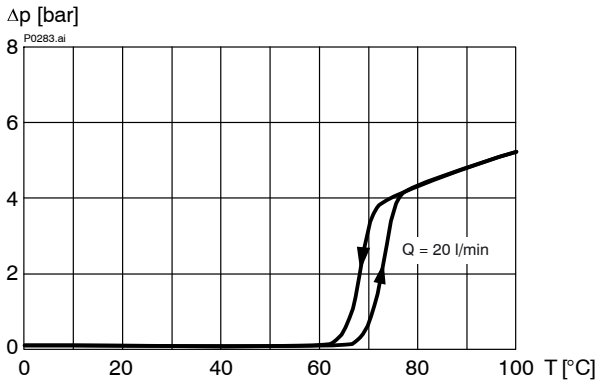
Δp = f (T) Pressure drop v. temperature [60 °C / 2 bar]



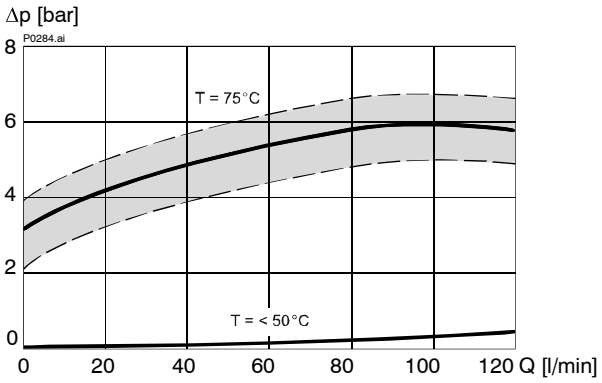
Δp = f (Q) Pressure drop v. flow rate [60 °C / 2 bar]



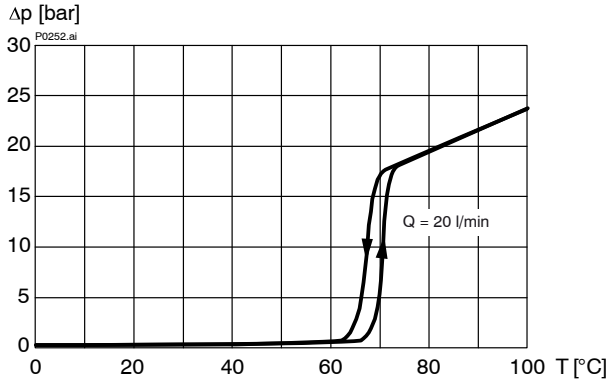
Δp = f (T) Pressure drop v. temperature [60 °C / 3 bar]



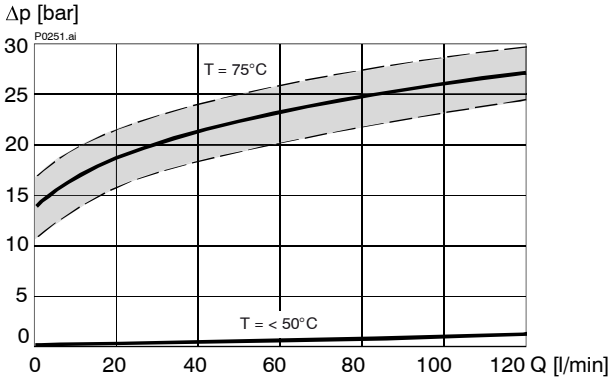
Δp = f (Q) Pressure drop v. flow rate [60 °C / 3 bar]



Δp = f (T) Pressure drop v. temperature [60 °C / 10 bar]

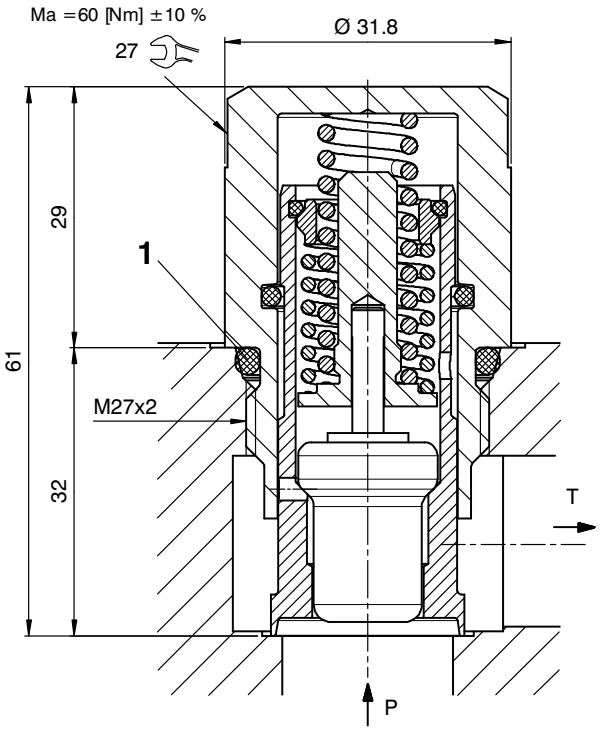


Δp = f (Q) Pressure drop v. flow rate [60 °C / 10 bar]



IMPORTANT!
Further pressure settings on request!

5 Dimensions & sectional view



Seals

Item	Description		
1	O-ring	∅ 23,60 x 2,90	HNBR70

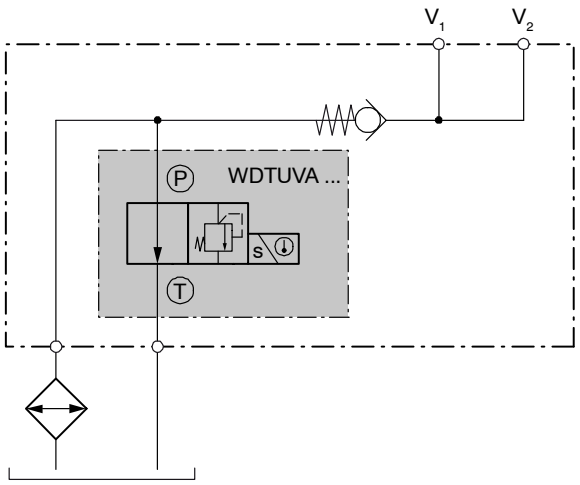
6 Installation information

IMPORTANT!
When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.

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.

7 Application examples

Manifold block with integral cooler-bypass thermostat valve



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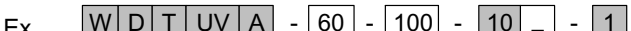
8 Ordering code



W	=	directional valve, cartridge construction
D	=	direct acting
T	=	temperature-actuated (thermostat element)
UV	=	pressure-relief function is incorporated
A ... Q	=	standard model - see relevant data sheets
Z ... R	=	special features - please consult BUCHER
45	=	response temperature of thermostat ~ 45 °C
60	=	response temperature of thermostat ~ 60 °C
20	=	pressure setting = p_N = 2 bar (45 °C and 60 °C)
30	=	pressure setting = p_N = 3 bar (only 60 °C)
40	=	pressure setting = p_N = 4 bar (only 45 °C)
50	=	pressure setting = p_N = 5 bar (only 45 °C)
80	=	pressure setting = p_N = 8 bar (only 45 °C)
100	=	pressure setting = p_N = 10 bar (only 60 °C)
…	=	for other pressure settings, please consult BUCHER
10	=	size 10
J	=	HNBR seals (**standard**) (special seals - please consult BUCHER)
1 ... 9	=	design stage (omit when ordering new units)

9 Related data sheets

Reference (Old no.)	Description
400-P-060241	Cavity type DU
400-P-740251	Line-mounting body, type GCUA (G 3/4")

info.ch@bucherhydraulics.com www.bucherhydraulics.com

Classification: 430.300.-.305.320.380