



Proportional Pressure Relief Valve  
Type DBETR

RE 24750/06.2004

Size 6

up to 31.5 MPa

up to 10 L/min

Replaces:

**Features:**

- Low hysteresis
- Good repeatability
- Electrical closed loop position control of spring pre-tension,
- Proportional solenoid actuation with inductive position transducer (pressure balanced)
- Valve and electronic control from one source



Function, section, symbol

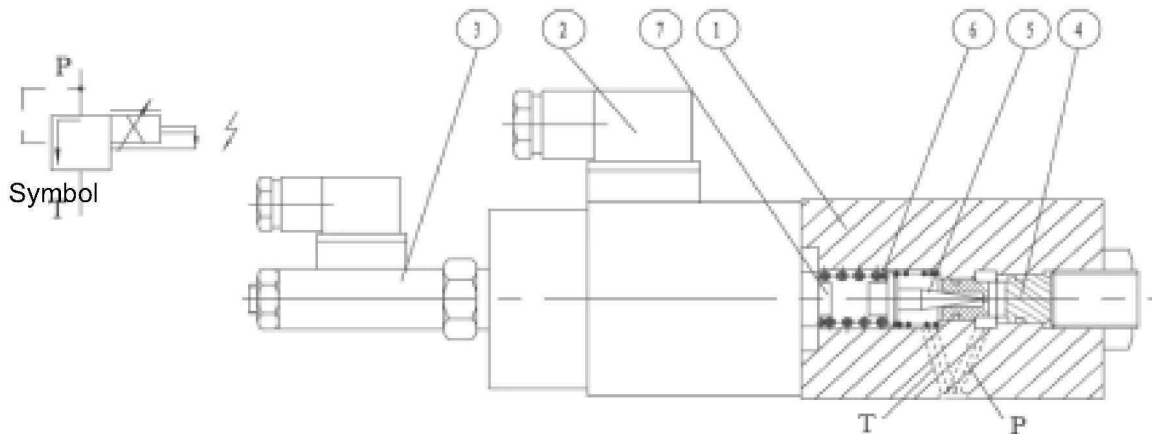
This valve regulates pressure in proportion to the electrical command value.

The valve consists basically of a housing (1), proportional solenoid (2) with inductive positional transducer (3), valve seat (4) and valve poppet (5).

Pressure is set by adjusting the command value potentiometer (0 to 9 V). Adjusting the command value causes tensioning of the compression spring via the electronic controls and the proportional solenoid (2). Tensioning of the compression spring (6), i.e. the position of the spring plate (7), is determined by the inductive positional transducer (3). Any deviations from the command value are corrected by the closed loop positional control.

The use of this principle eliminates the effect of solenoid friction.

- Advantages:
- Low hysteresis
  - Good repeatability



**Ordering details**

DBETR		+ 10	/		*
Series 10 to 19 = 10 (10 to 19: unchanged installation and connection dimensions)					Further details in clear text
Pressure stage:					M= mineral oils V = phosphate ester
up to 2.5MPa	=25				No code= let oil inside
up to 8MPa	=80				Y= let oil outside
up to 18MPa	=180				
up to 31.5MPa	=315				

## Technical data

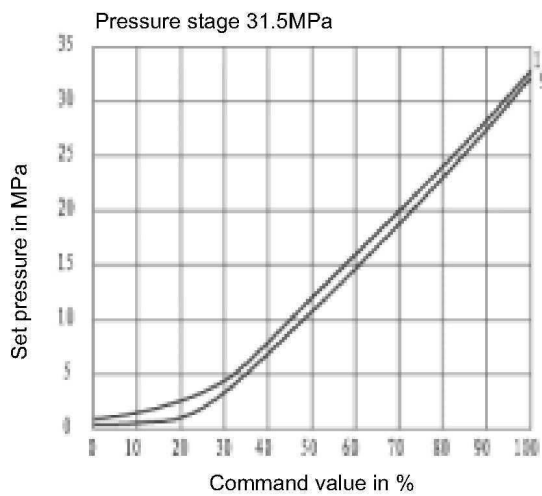
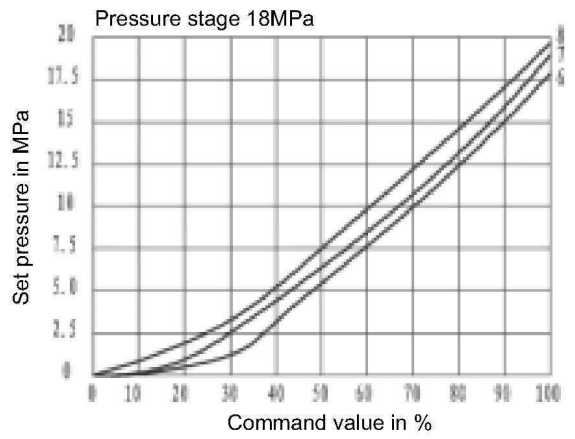
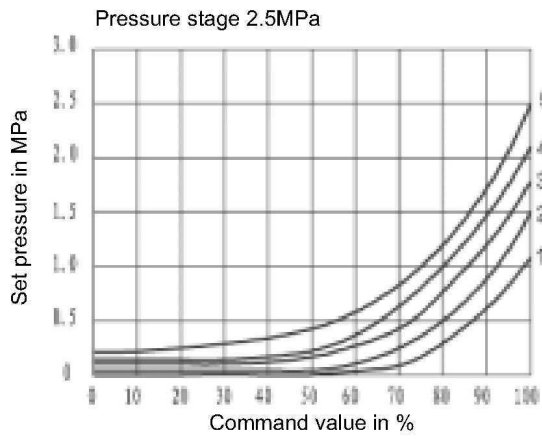
### Hydraulic data

Max. settable pressure (MPa)	Pressure stage 2.5 MPa	2.5			
	Pressure stage 8.0 MPa	8			
	Pressure stage 18.0 MPa	18			
	Pressure stage 31.5 MPa	31.5			
Min. settable pressure	(MPa)	(see $p_{min} - q_v$ characteristic curves)			
Max. Operating pressure (MPa)	port T (with pressure adjusting)	0.2			
	port T (without pressure adjusting)	10			
	port P	31.5			
Max. flow (L/min)	Pressure stage 25	10			
	Pressure stage 80	3			
	Pressure stage 180	3			
	Pressure stage 315	2			
Degree of contamination	( $\mu m$ )	$\leq 20$ (recommendation 10)			
Hysteresis	(%)	$< 1$ of max. settable pressure			
Repeatability	(%)	$< 0.5$ of max. settable pressure			
Linearity (%)	180; Pressure stage from 3 to 18 MPa	$\leq 1.5$ of max. settable pressure			
	315; Pressure stage from 6 to 31.5MPa				
Typical variation (%)	Valve	$\pm 3$ of max. settable pressure			
	Electrical control	$< 0.5$			
Stepped response 0 to 100%	(ms)	Response time (Pmin-Pmax)	Response time (Pmax-Pmin)		
		Pressure stage 2.5 and 18MPa	0 to100	100	50
		Pressure stage 31.5MPa	0 to100	150	100
Pressure fluid		Mineral oil(for NBR seal),Phosphate ester (for FPM seal)			
Viscosity range	( $mm^2/s$ )	2.8 to 380			
Pressure fluid temperature range	( $^{\circ}C$ )	-20 to +70			
Installation position		optional			
Weight	(kg)	4			

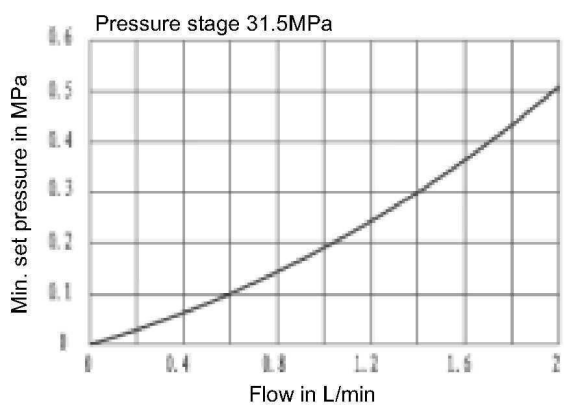
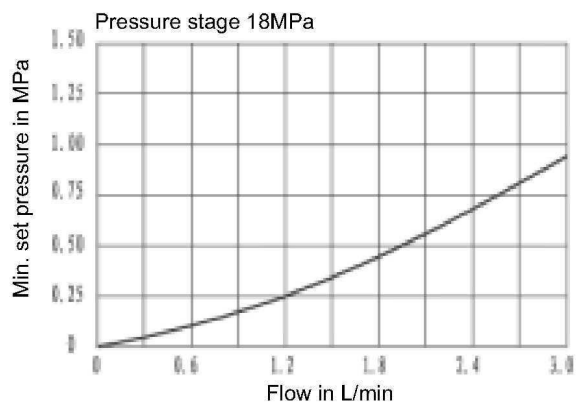
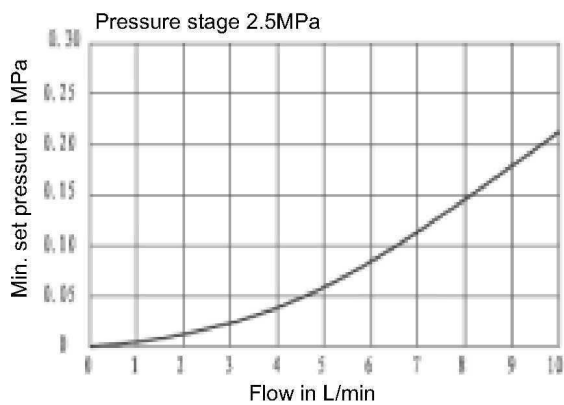
### Electrical

Amplifier associated	VT-5003S30			
Supply voltage	DC			
Coil resistance ( $\Omega$ )	Cold value at 20 $^{\circ}C$	10		
	Max. warm value	13.9		
(Working state) Duty	Continuous			
Pressure fluid temperature	( $^{\circ}C$ )	+50		
Amplifier voltage	commutate completely	24 $\pm$ 10%		
	commute three electrical source	24 to 35		
Max. power consumption	(VA)	50		
Coil resistance at 20 $^{\circ}C$	( $\Omega$ )	1	11	111
		56	56	112
Inductivity (transducer)	(mH)	6 to 8		
Oscillator frequency (transducer)	(KHz)	2.5		
Protection to DIN 40 050		IP65		

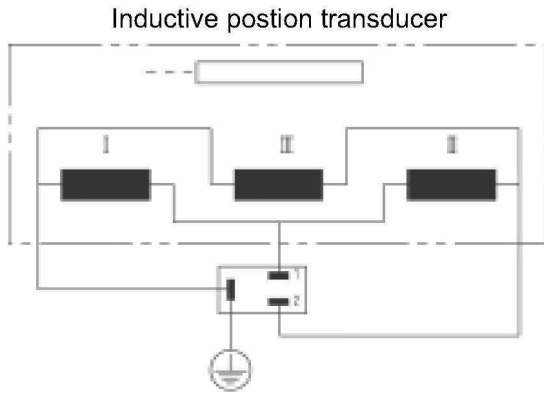
Characteristic curves:( measured at  $v=36 \times 10^{-6}m^2/S$   $t=50^{\circ}C$  )



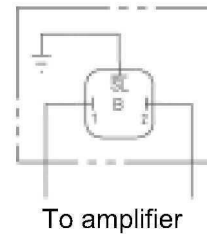
- Curve 1 - flow = 2 L/min
- Curve 2 - flow = 4 L/min
- Curve 3 - flow = 6 L/min
- Curve 4 - flow = 8 L/min
- Curve 5 - flow = 10 L/min
- Curve 6 - flow = 0.5 L/min
- Curve 7 - flow = 1.5 L/min
- Curve 8 - flow = 3L/min
- Curve 9 - flow = 1 L/min
- Curve 10 - flow = 2 L/min



**Electrical connections ( Inductive position transducer)**

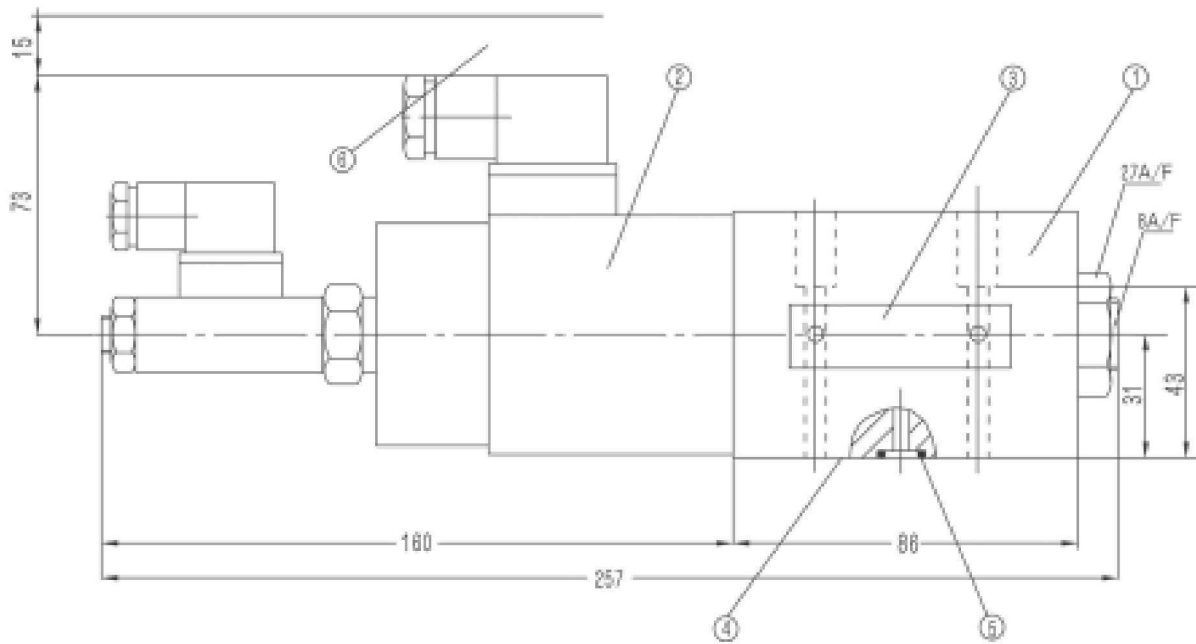


Type Connection of plug-in connector

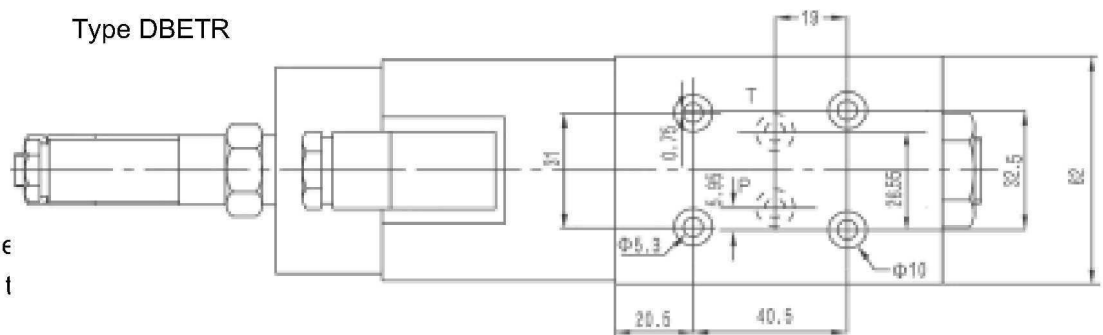


**Unit dimensions**

(Dimensions in mm)

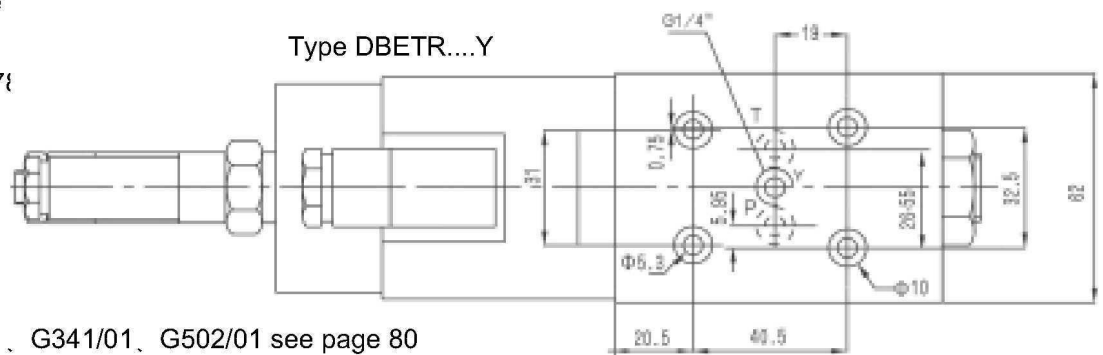


Type DBETR



- 1 Valve housing
- 2 Proportional solenoid inductive position transducer
- 3 Nameplate
- 4 Machined valve surface
- 5 O-ring 9.25 x 1.75
- 6 Space required to remove the plug-in connector

Type DBETR...Y



Subplates: G340/01, G341/01, G502/01 see page 80

## Notice

1. The fluid must be filtered. Minimum filter fineness is 20  $\mu\text{m}$ .
2. The tank must be sealing up and an air filter must be installed on air entrance.
3. Products without subplate when leaving factory, if need them, please ordering specially.
4. Valve fixing screws must be high intensity level (class 10.9). Please select and use them according to the parameter listed in the sample book.
5. Roughness of surface linked with the valve is required to  $\frac{0.8}{\sqrt{\text{mm}}}$ .
6. Surface finish of mating piece is required to 0.01/100mm.