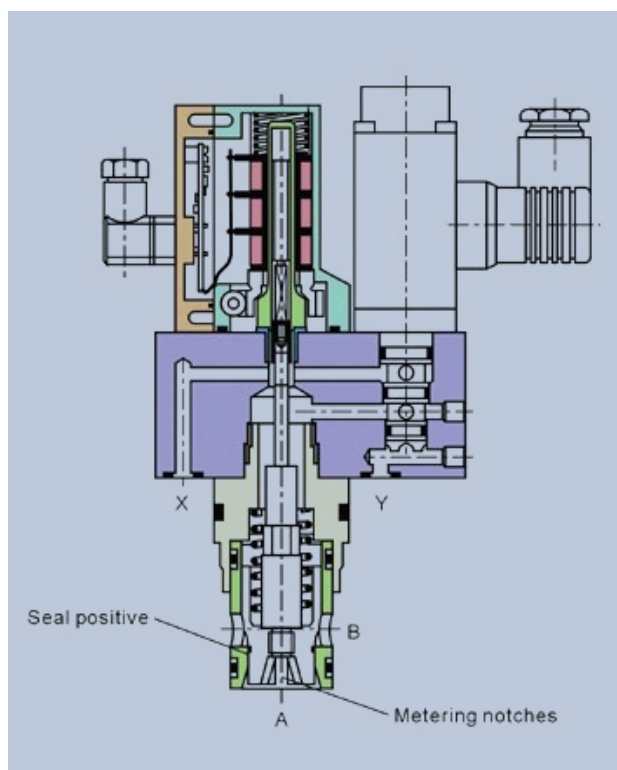


Proportional Flow Control Valves



Series QPG-16/50
 Cartridge Proportional Valves with external valve amplifier
 DIN 24 342, ISO/DIS 7368 Pilot operated 2/2 directional control cartridge valve.

Direction of flow:

A → B or B → A can be selected as desired, whilst the following must be taken into consideration:

- Always route "Y" externally
- Pressure at "X" must be the same or higher than "A" when A → B, and not below 12 bar
- Pressure at "X" must be the same or higher than "B" when B → A, and not below 20 bar.

If the valve is shut off electrically and "X" is supplied externally with sufficient pressure, the main stage A → B may be used as a poppet valve.

Models

Symbol	QPG	Qnom. p=5bar [l/min]	Pmax. [bar]	Control oil		V/VA max.	[Kg]	Models
				X	Y			
	16	125	A.B.X: 350 Y:100	ext	ext	24 V= 40 VA max UE 0 ... +10 V	2.8	QPG-16-125
	25	210		ext	ext		3.9	QPG-25-210
	32	320		ext	ext		5.1	QPG-32-320
	40	500		ext	ext		7.1	QPG-40-500
	50	980		ext	ext		9.7	QPG-50-980
	QPG-16/50 see Page 37&40						0.2	QPE-076
							0.25	QPE-074
A 			Plug connector of solenoid DIN 43 650 (see page 44)				0.03	QPE-A
B 			Plug connector of solenoid LVDT-DC/DC (see page 44)				0.01	QPE-B

Proportional Flow Control Valves

Characteristics

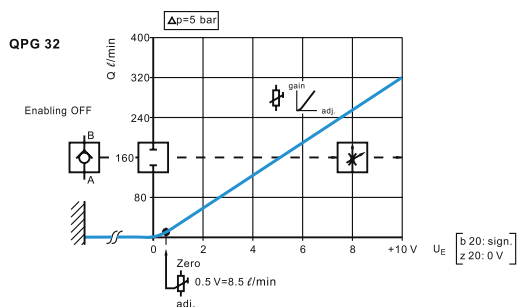
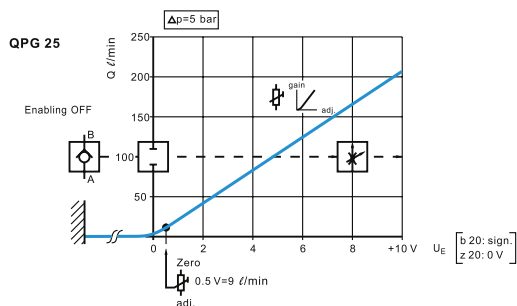
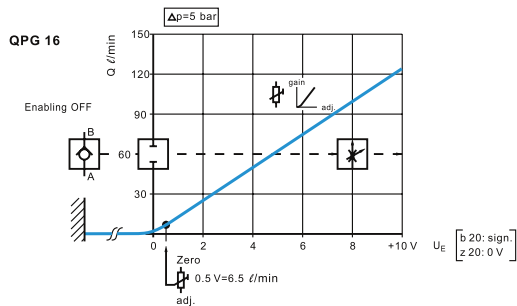
General	
Construction	Cartridge throttle valve, spool valve with position control via PCB
Actuation	Pilot operated, proportional 3/2 DCV in valve cover, without position control
Main stage	Position-controlled via OBE, position transducer LVDT DC/DC
Type of mounting	Cartridge installation, mounting hole configuration to DIN 24 342, ISO/DIS 7368
Installation position	Horizontal or position transducer facing downwards, as far as possible
Ambient temperature	-20°C ~ +50°C
Vibration resistance test conditions	max. 25 g, shaken in 3 dimensions (24h)
Hydraulic	
Pressure fluid	Hydraulic oil to DIN 51 524 ... 535, other fluids after prior consultation
Viscosity, recommended	20 ~ 100 mm ² /s
max. permitted	10 ~ 800 mm ² /s
Pressure fluid temp.	-20 ~ +80°C
Filtration	Permissible contamination class of pressure fluid to NAS 1638
In line with operational reliability and service life	Achieved with filter $\beta_x = 75$
	8 X = 10
	9 20
	10 25
Direction of flow	A → B or B → A (with X from supply port "internal" or "external" when pressure higher)
Nominal flow (l/min) at $\Delta p=5$ bar per notch *	QPG 16 125 QPG 25 210 QPG 32 320 QPG 40 500 QPG 50 980
Max. working pressure in A, B, X [bar]	315
Max. working pressure in Y [bar]	100
Q_{max} [l/min]	350 600 1000 1500 3000
Q_N pilot valve (supply pressure) $\Delta p=5$ bar	5 15 15 28 28
Leakage [cm ³ /min] X → Y	< 150 < 200 < 200 < 400 < 400
Pilot valve at 100 bar	
Min. flow rate at $U_e=0$ V, adjustable	2000 2000 3000 3000 4000
Valve active (at $\Delta p=5$ bar) [cm ³ /min]	
Leakage in main stage at $\Delta p=100$ bar (Valve electrically shut off)	A → B=sealed (poppet valve), B → A=sealed (poppet valve) Important: min. leakage X → B possible when X=external
Minimum supply pressure A → B [bar]	12
Minimum supply pressure B → A [bar]	20
Static/Dynamic	
Spool stroke/performance curve [+ mm]	4 5 7 10 12.5
Overlap when shut off [- mm]	3
Control oil volume of main stage 100% [cm ³]	1020 2650 3600 5000 7850
Control oil requirement 0 ~ 100%, [l/min] x=100 bar	3 5 7 9 9
Hysteresis	< 0.2%
Positioning accuracy	< 0.5%
Manufacturing tolerance	See flow curves, adjustable with valve amplifier 2/2V-RGC1
Response time [ms] (x=100 bar)	
Signal change 0 ~ 100% "open"	< 70 < 70 < 90 < 90 < 110
Signal change 100 ~ 0% "close"	< 70 < 70 < 90 < 130 < 300
Signal change 0 ~ 100% "open"	< 50 < 50 < 70 < 70 < 80
Signal change 10 ~ 0% "close"	< 40 < 40 < 50 < 70 < 100
Switch-off behaviour, enable "OFF"	After electrical shut-off (pilot valve opens "X" to main stage) Main stage moves to closed end position
Thermal drift	< 1% at $\Delta T=40^\circ\text{C}$
Electrical	
Cyclic duration factor	100%
Degree of protection	IP 65 at DIN 40 050
Solenoid connection	Connector to DIN 43 650/ISO 4400
Position transducer connection	Special connector
Solenoid current max.	2.7 A
Coil resistance R_{20}	2.5 Ω
Max. power consumption at 100% load and operational temperature	40 VA max
Position transducer DC/DC technology	Supply: +15 V/ 35 mA Signal: 0 ~ ± 10 V ($R_L \geq 10\text{k}\Omega$) -15 V/ 25 mA

*Flow for other values of Δp $Q_x = Q_{Nenn.} \cdot \sqrt{\frac{\Delta p_x}{5}}$

Proportional Flow Control Valves

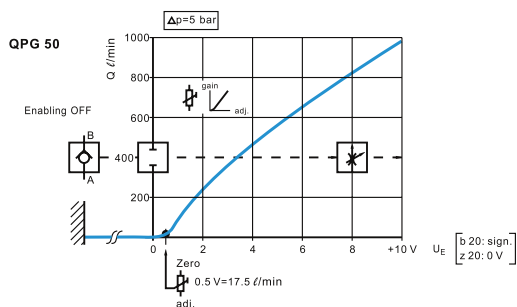
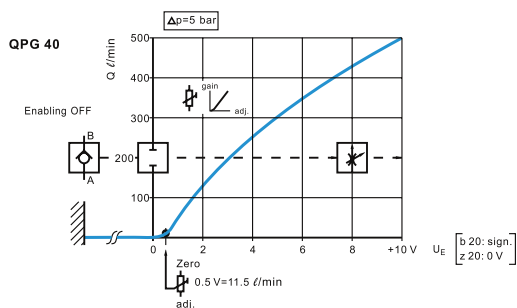
Performance curves

$\Delta p = 5 \text{ bar}$
 $v = 36 \text{ mm}^2/\text{s}$



Amplifier

$\Delta p = 5 \text{ bar}$
 $v = 36 \text{ mm}^2/\text{s}$

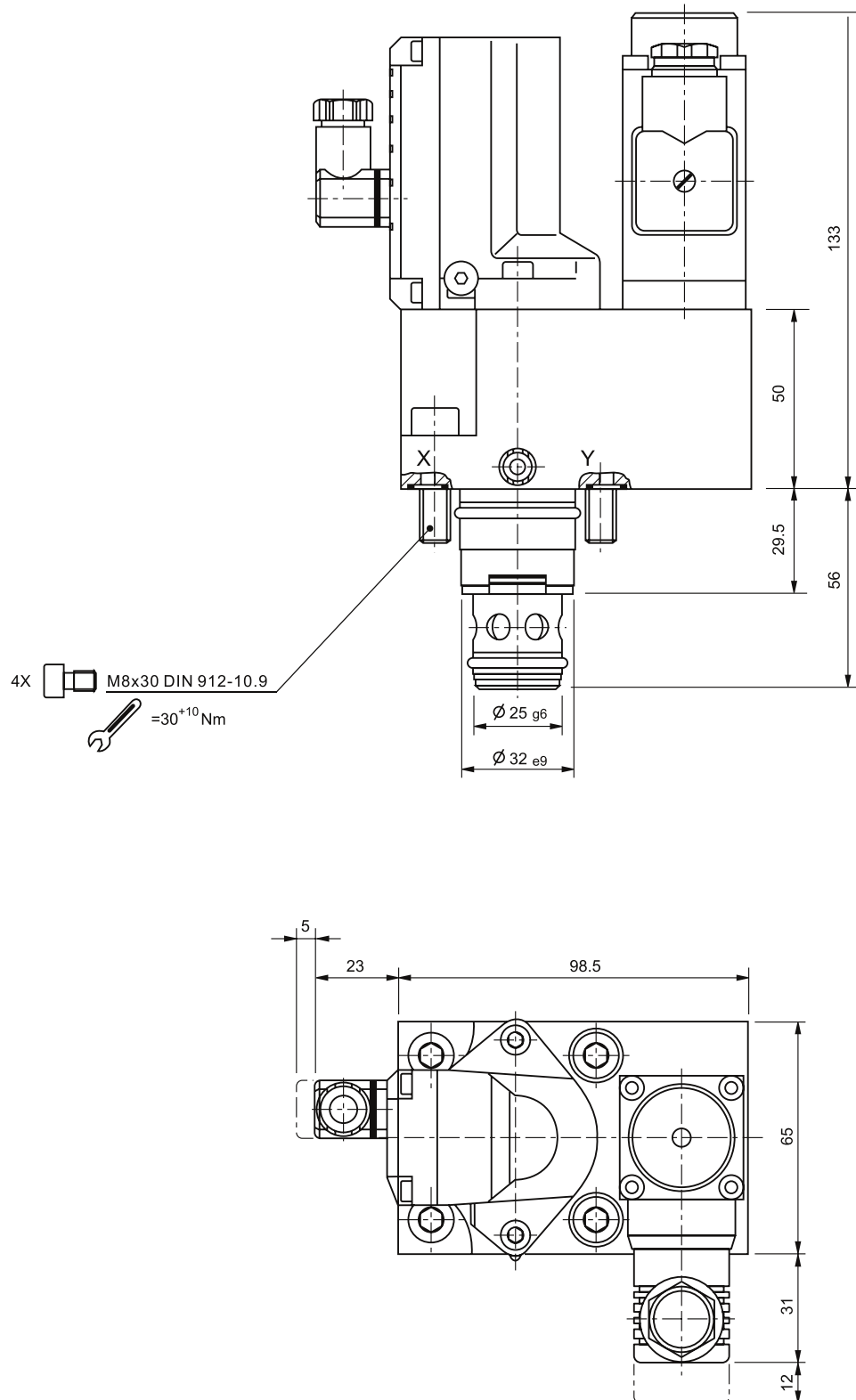


Amplifier

Proportional Flow Control Valves

Dimensions

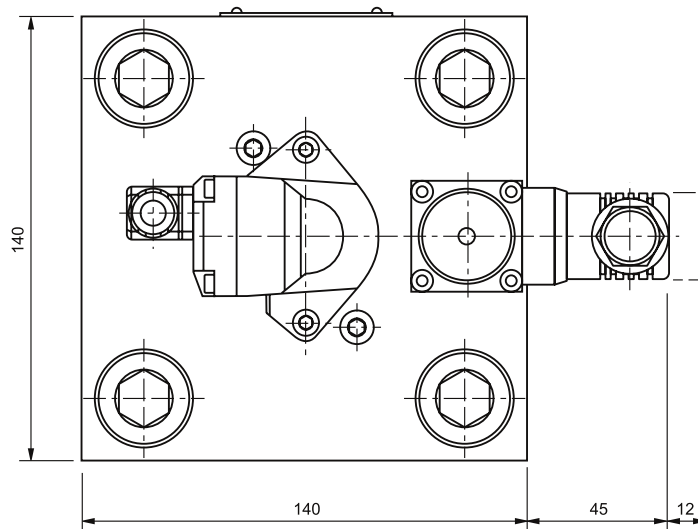
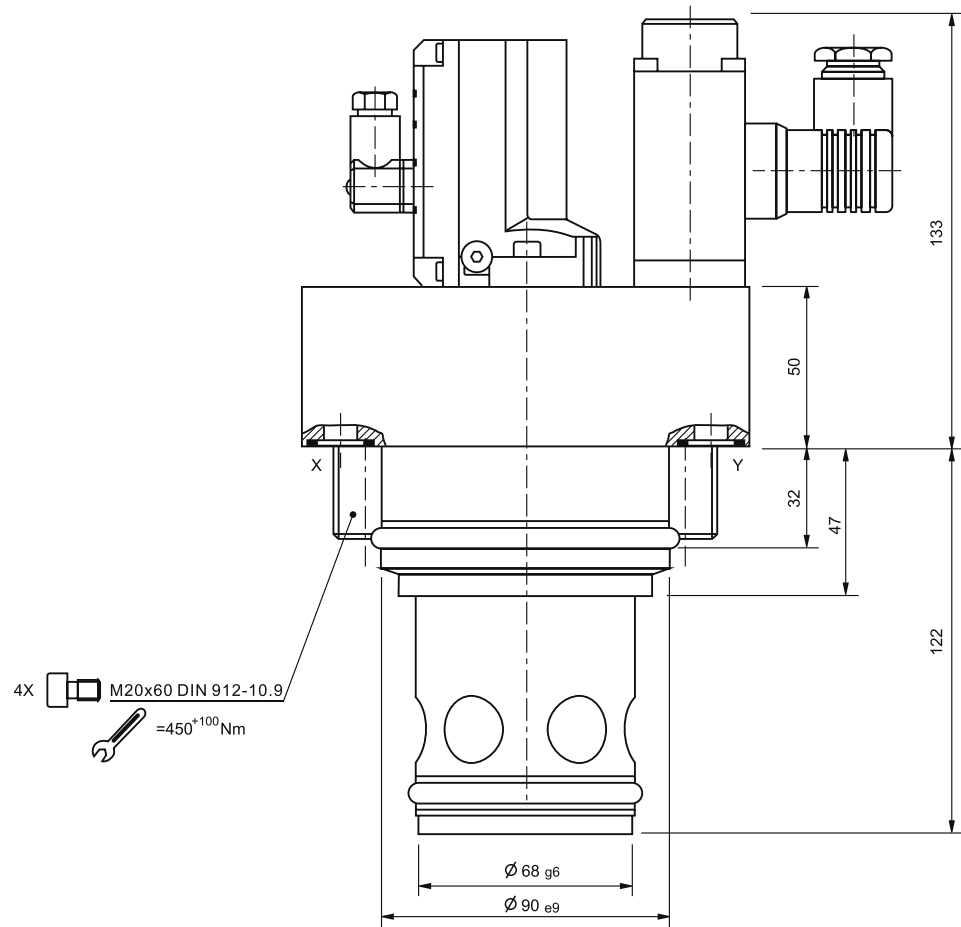
QPG-16 SERIES



Proportional Flow Control Valves

Dimensions

QPG-50 SERIES

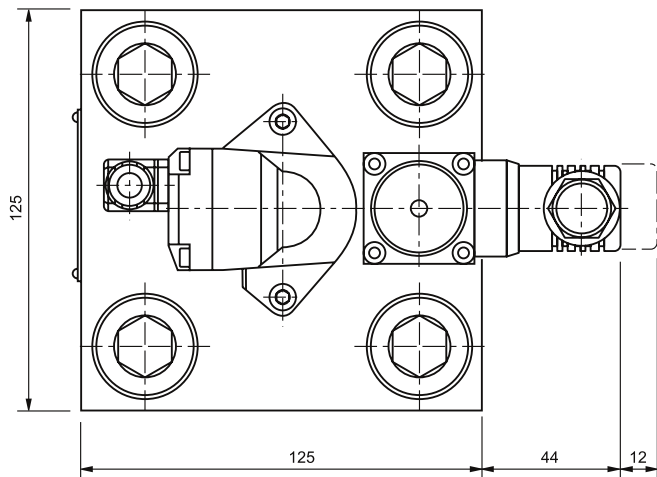
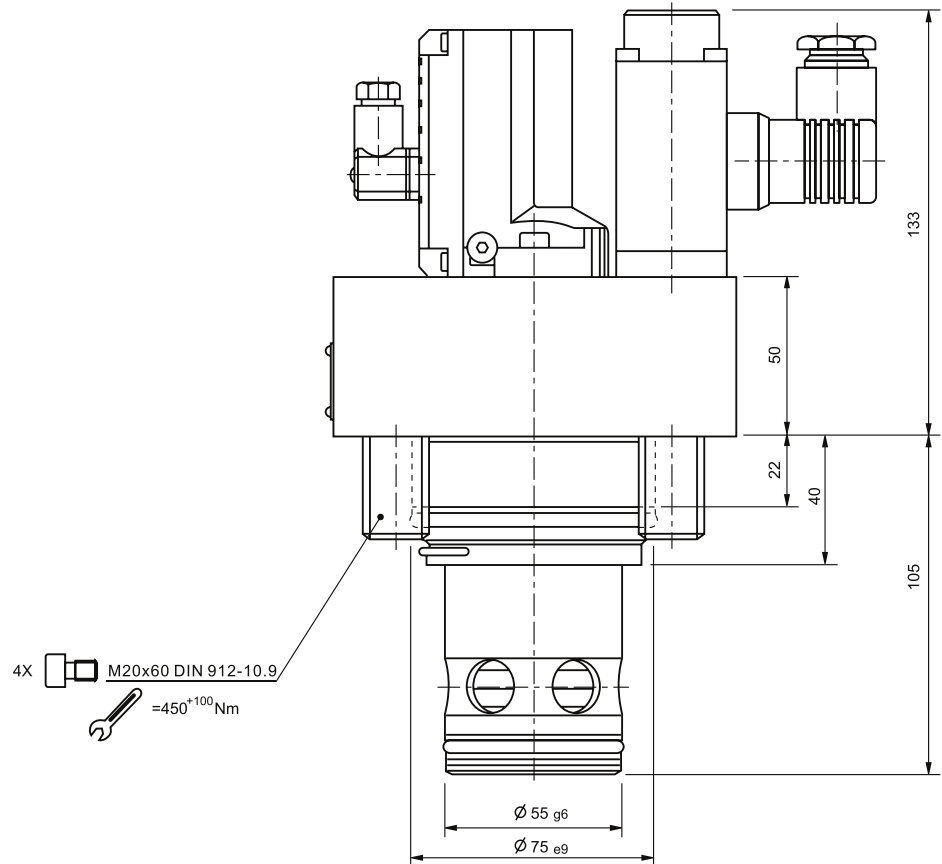


Proportional Flow Control Valves

Dimensions

QPG-40 SERIES

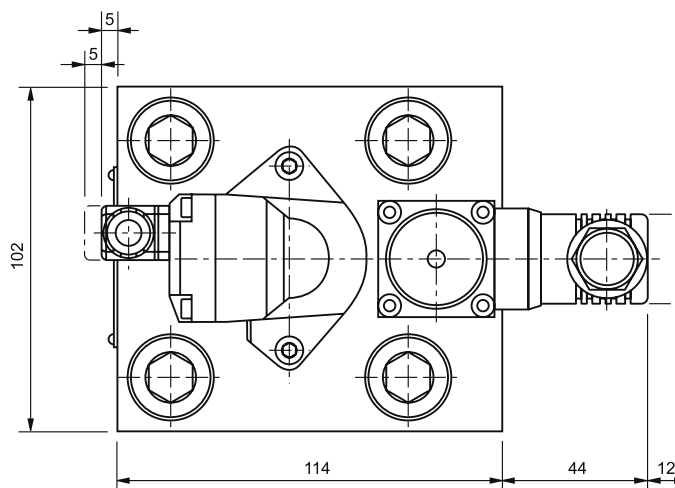
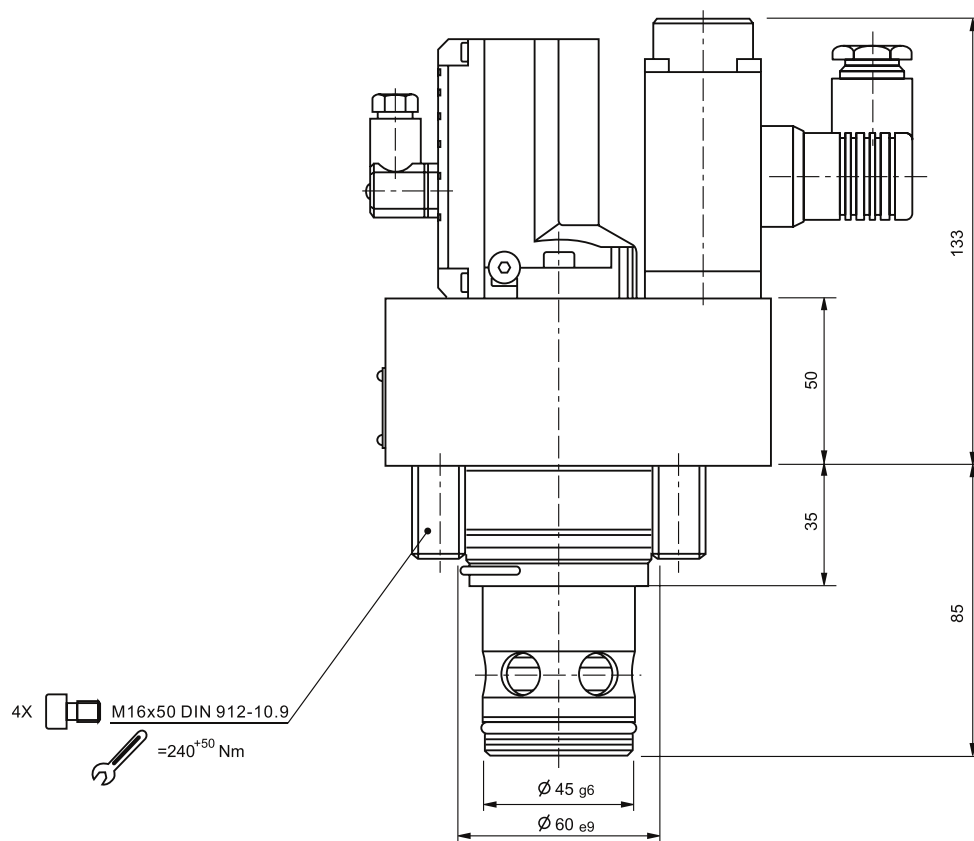
Dimensions



Proportional Flow Control Valves

Dimensions

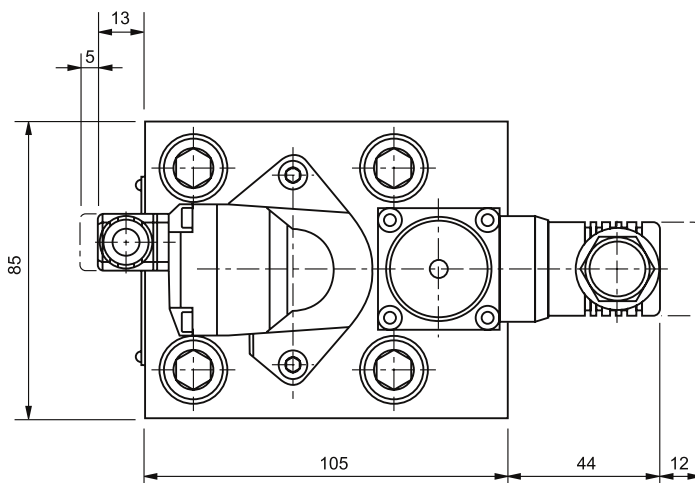
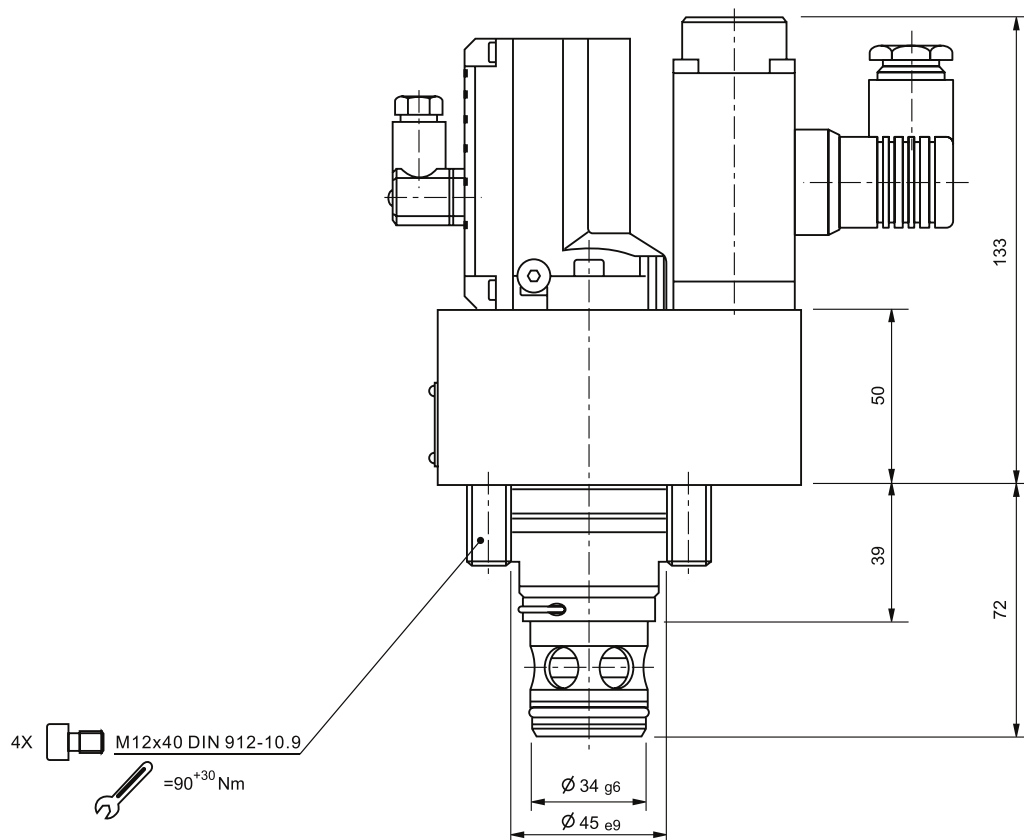
QPG-32 SERIES



Proportional Flow Control Valves

Dimensions

QPG-25 SERIES

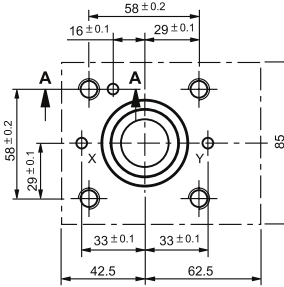
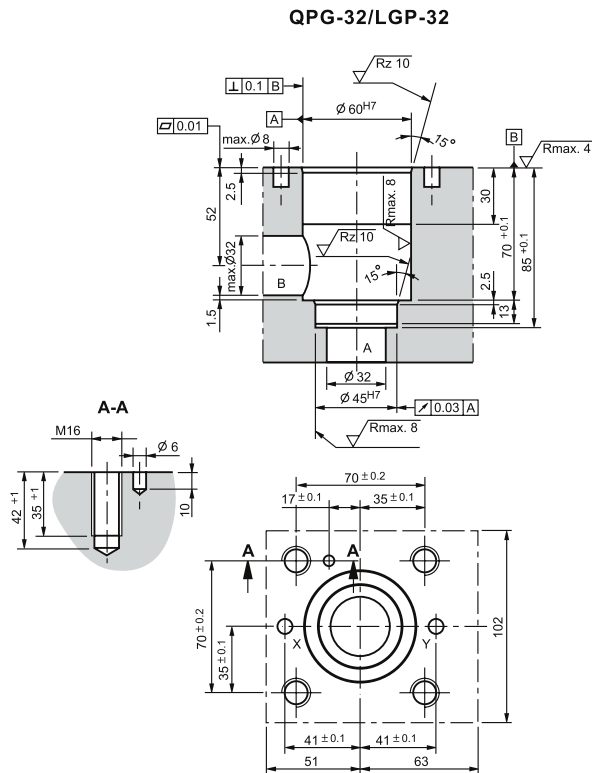
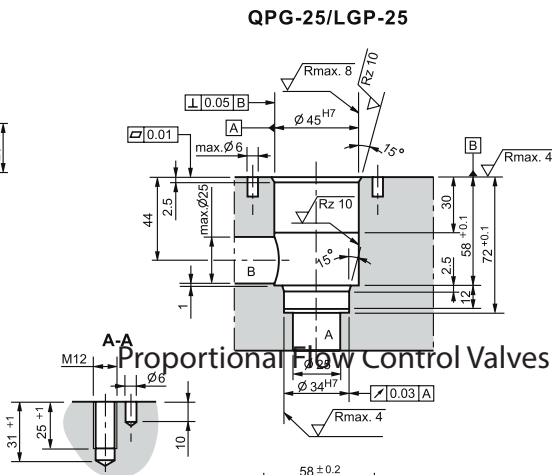
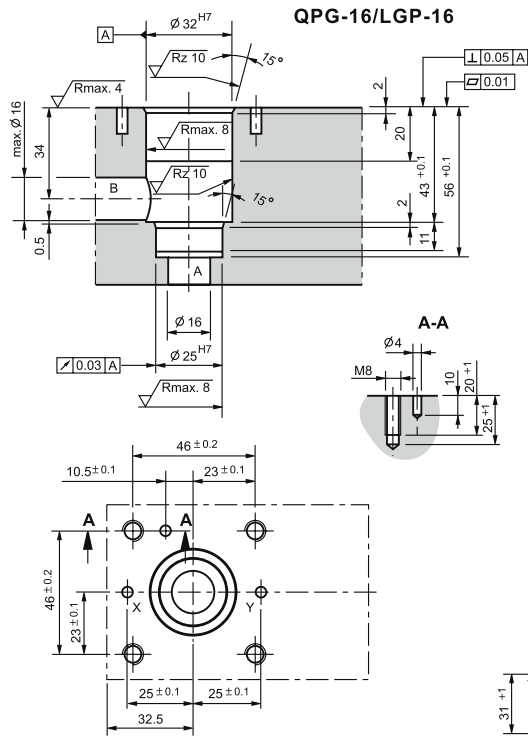


Proportional Flow Control Valves

Mounting dimensions

QPG-16/25/32 & LGP-16/25/32 SERIES

DIN 24 342, ISO/DIS 7368



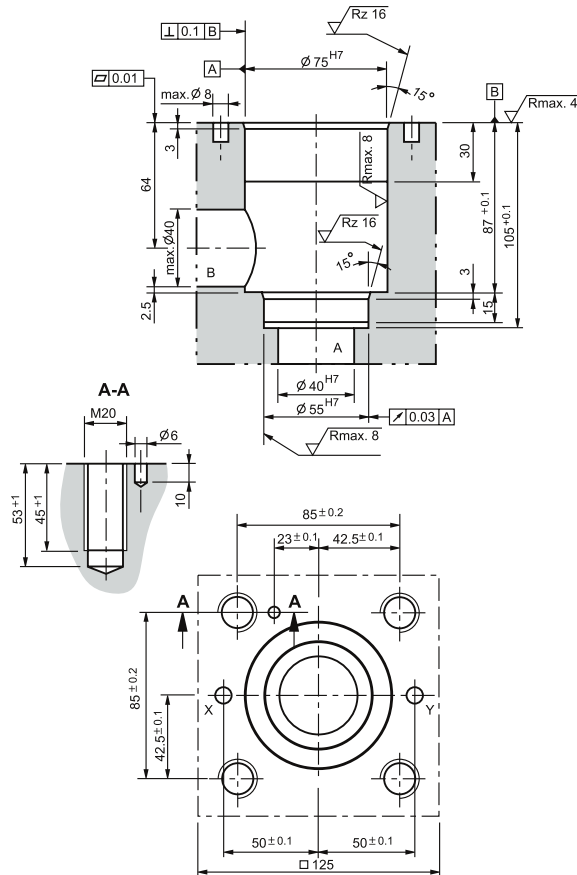
Proportional Flow Control Valves

Mounting dimensions

QPG-40/50 & LGP-40/50 SERIES

DIN 24 342, ISO/DIS 7368

QPG-40/LGP-40



QPG-50/LGP-50

