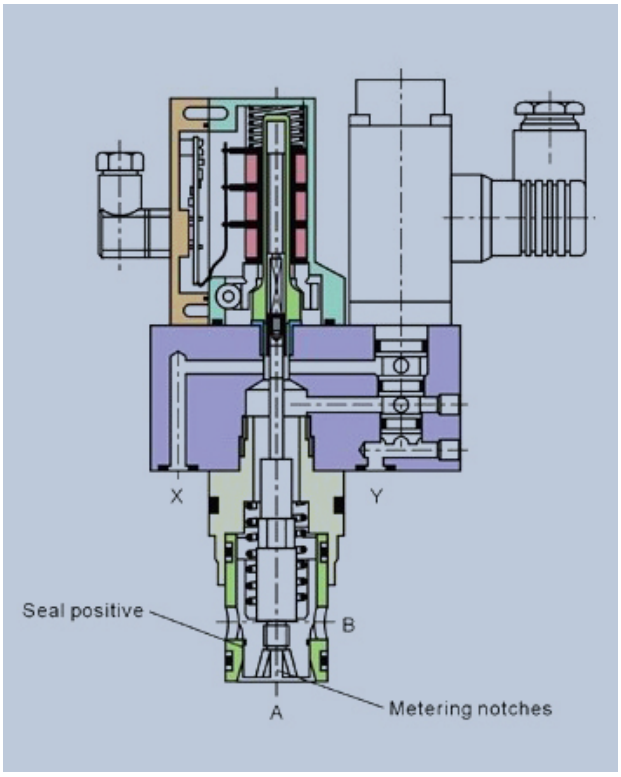
Proportional Flow Control Valves



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 suffi-cient 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 X	Control oil Y	V/VA max.	[Kg]	Models
	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 max, permitted	20 ~ 100 mm²/s 10 ~ 800 mm²/s					
Pressure fluid temp.	−20 ~ +80°C					
Filtration	Permissible contamination class of pressure fluid to NAS 1638			Achieved with filter β_X = 75		
In line with operational reliability and service life	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 Δp=5 bar per notch *	QPG 16	QPG 25	QPG 32	QPG 40	QPG 50	
	125	210	320	500	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) Δp=5 bar	5	15	15	28	28	
Leakage [cm³/min] X → Y	< 150	< 200	< 200	< 400	< 400	
Pilot valve at 100 bar						
Min. flow rate at U_E=0 V, adjustable Valve active (at Δp=5 bar) [cm³/min]	2000	2000	3000	3000	4000	
Leakage in main stage at Δp=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% [cm³]	1020	2650	3600	5000	7850	
Control oil requirement 0 ~ 100%, x=100 bar [ℓ/min]	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 ΔT=40°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 −15 V/ 25 mA		Signal:0 ~ ±10V ($R_L \geq 10k\Omega$)			

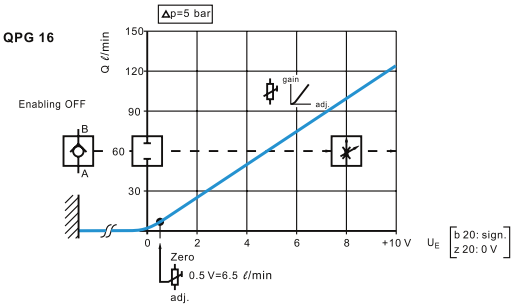
*Flow for other values of Δp $Q_X = Q_{Nenn.} \cdot \sqrt{\frac{\Delta p_X}{5}}$

Proportional Flow Control Valves

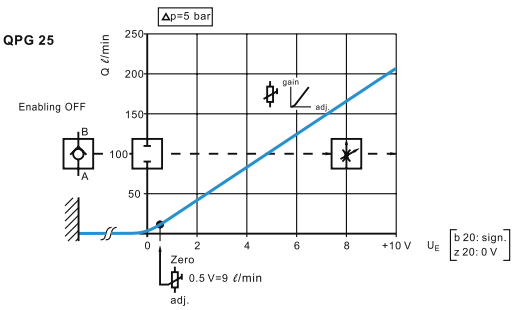
Performance curves

Δp = 5 bar
v = 36 mm²/s

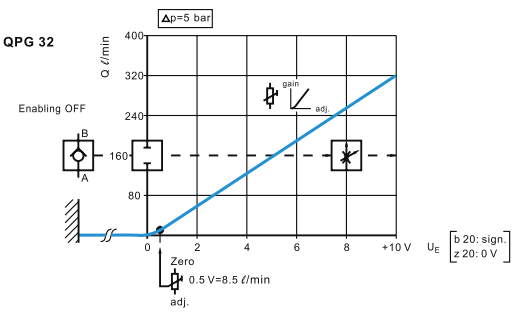
QPG 16



QPG 25



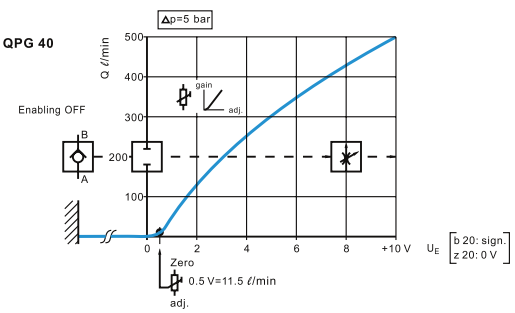
QPG 32



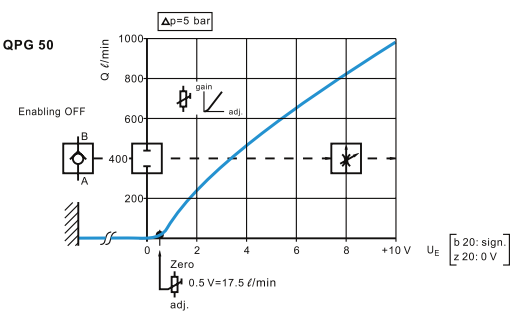
Amplifier

Δp = 5 bar
v = 36 mm²/s

QPG 40



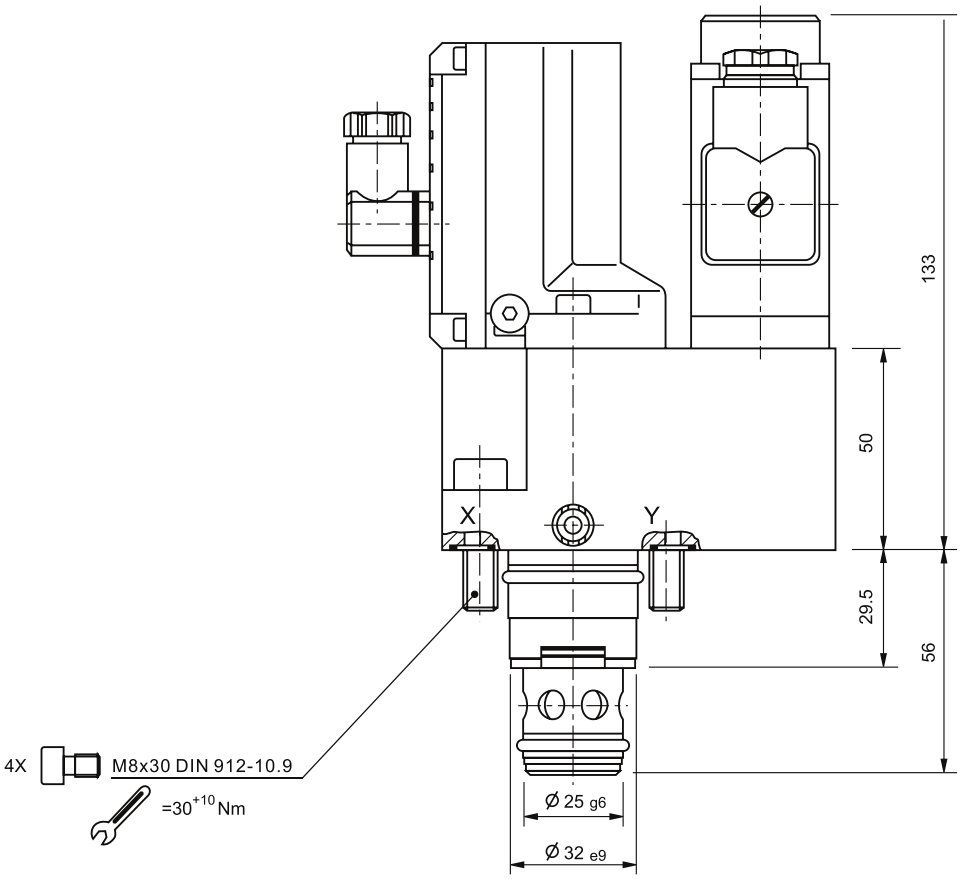
QPG 50

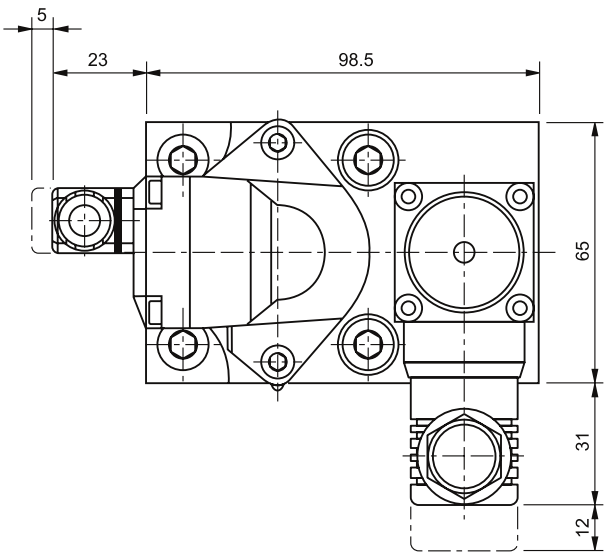


Amplifier

Dimensions

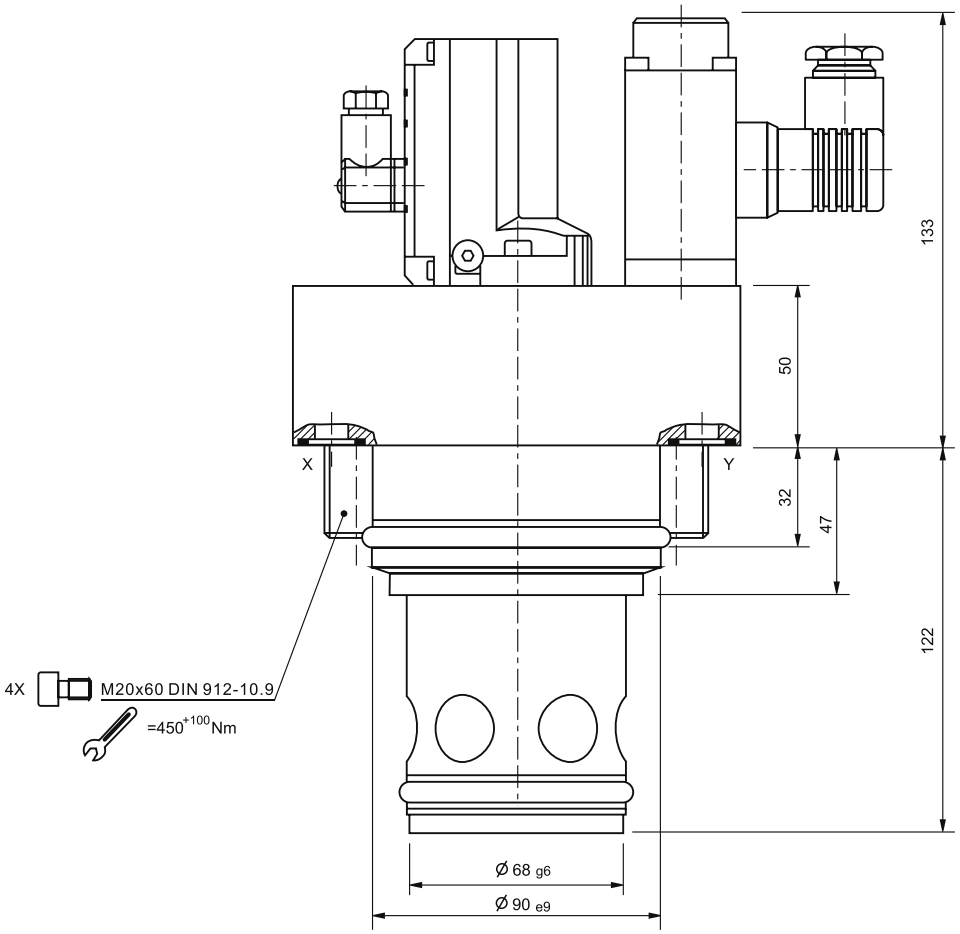
QPG-16 SERIES

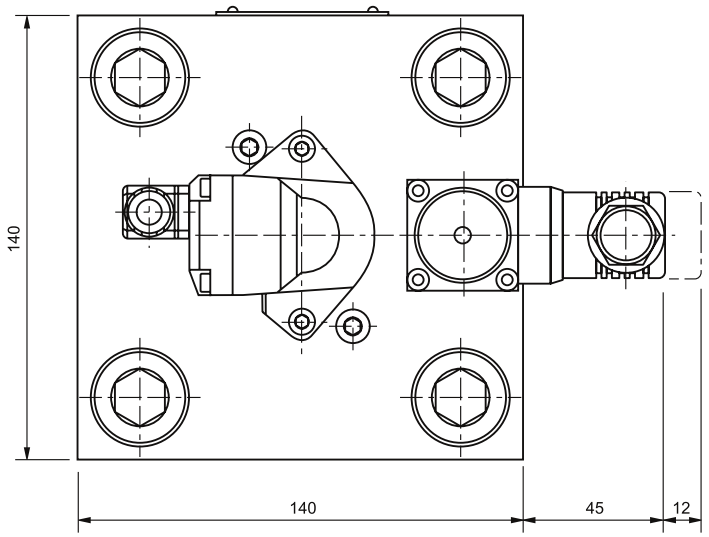




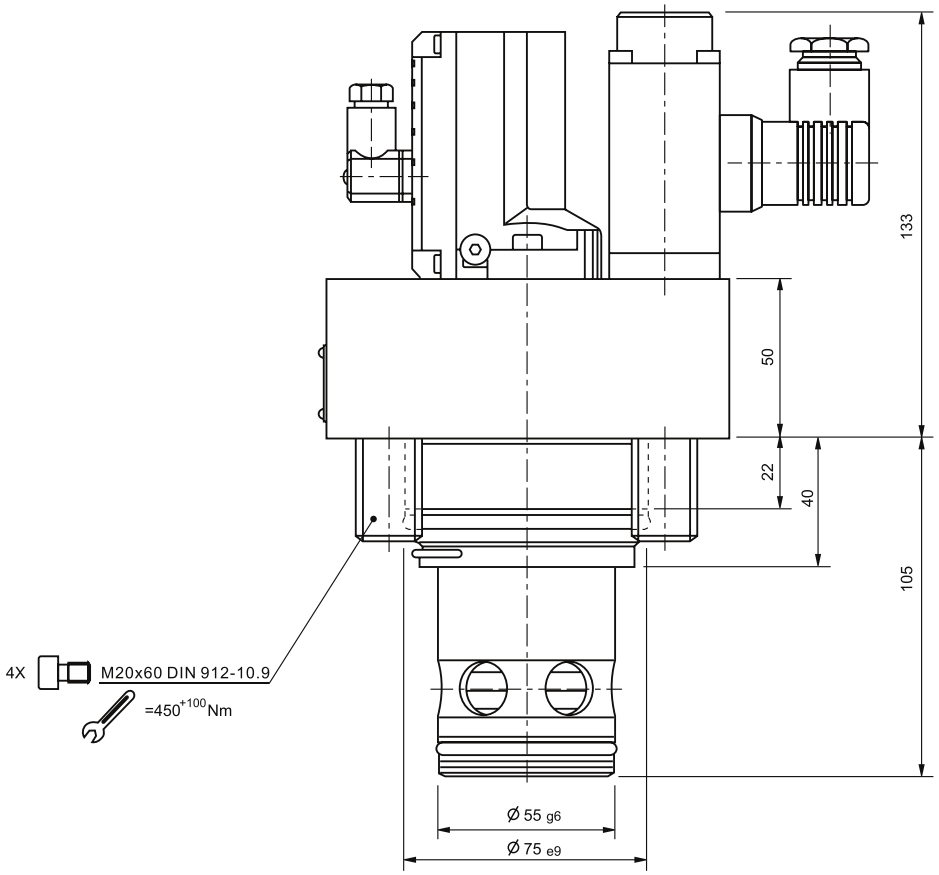
Dimensions

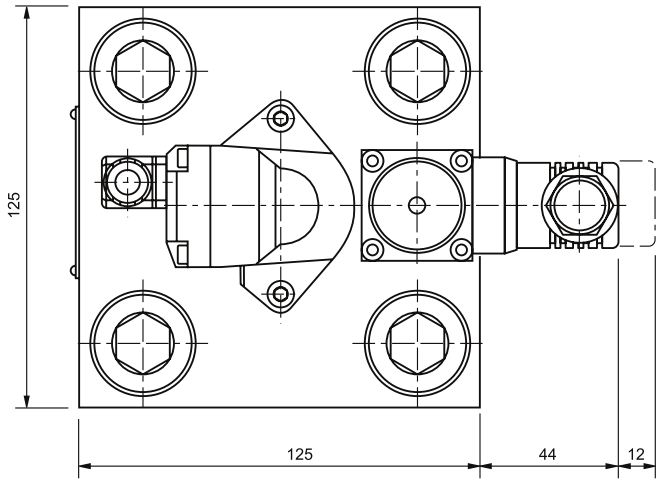
QPG-50 SERIES





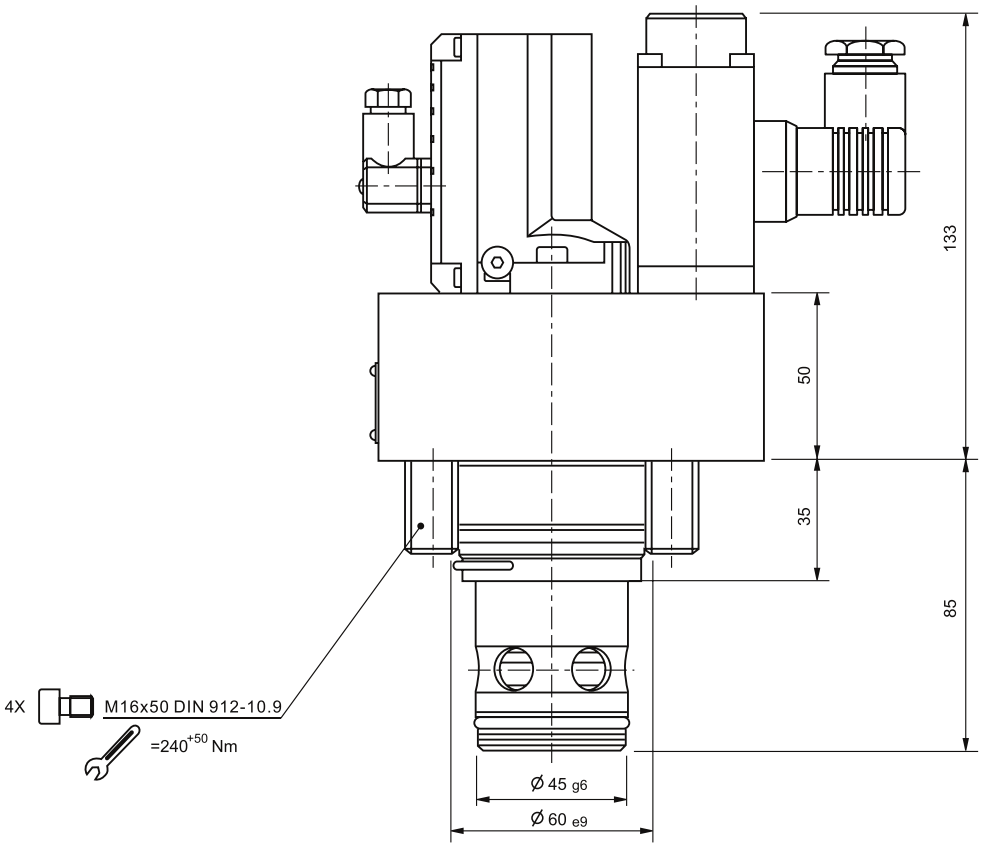
Dimensions

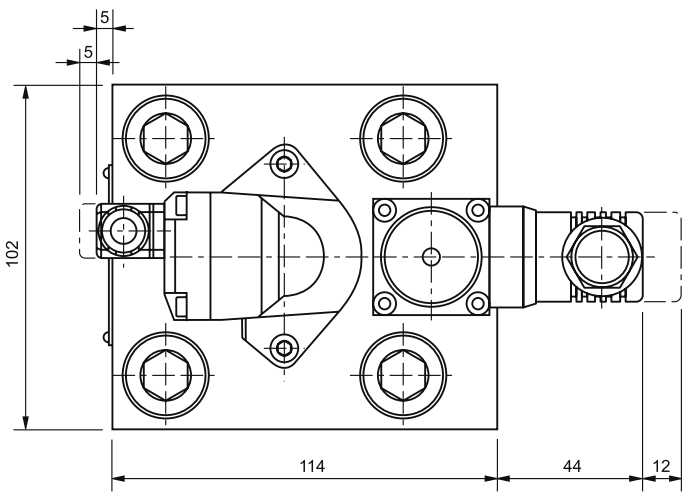

133
50
22
40
105
4X
M20x60 DIN 912-10.9
=450+100Nm
Ø 55 g6
Ø 75 e9


125
125
44
12

Dimensions

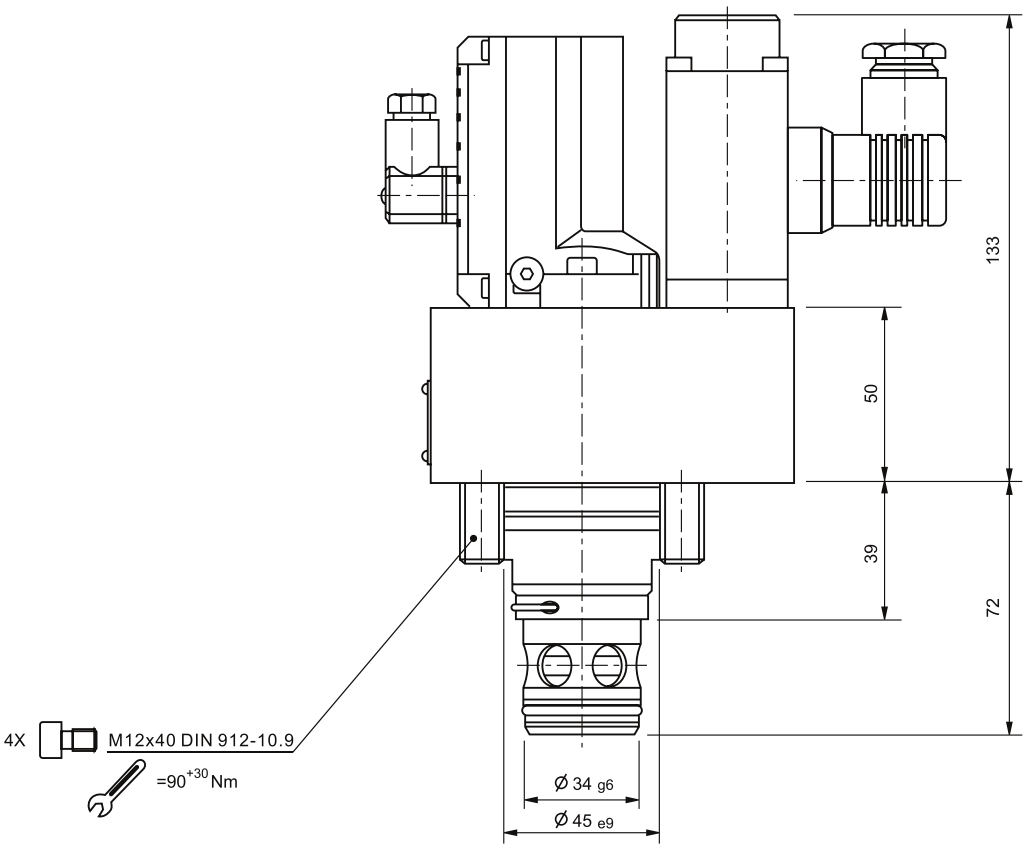
QPG-32 SERIES

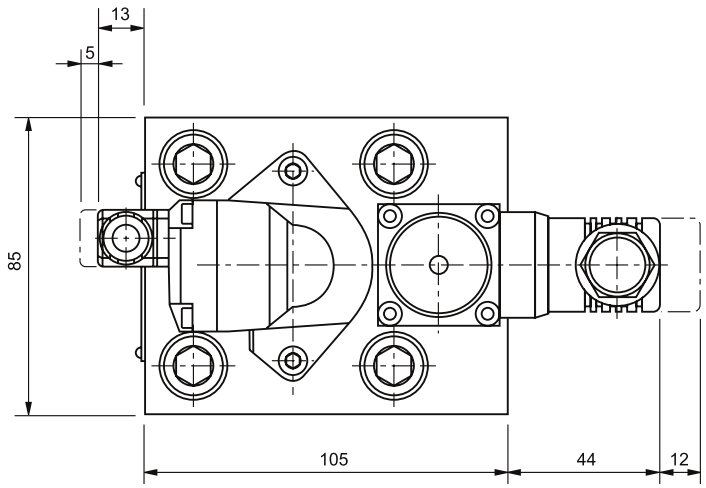




Dimensions

QPG-25 SERIES



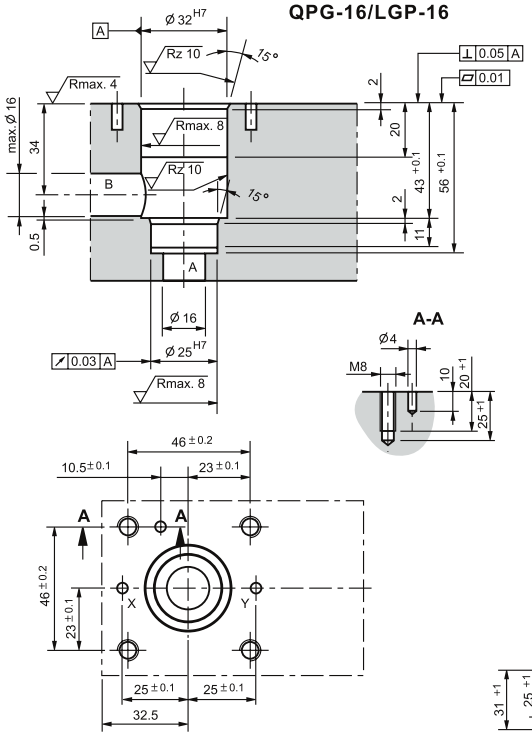


Mounting dimensions

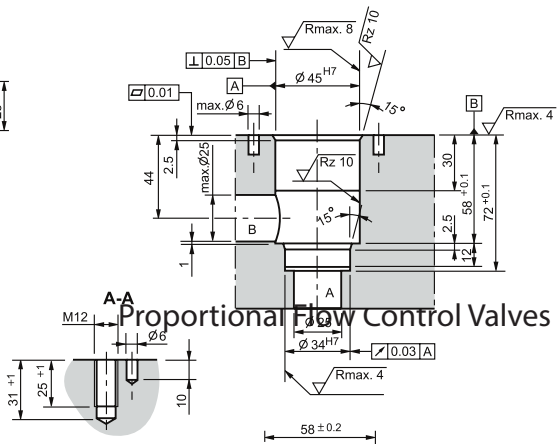
QPG-16/25/32 & LGP-16/25/32 SERIES

DIN 24 342, ISO/DIS 7368

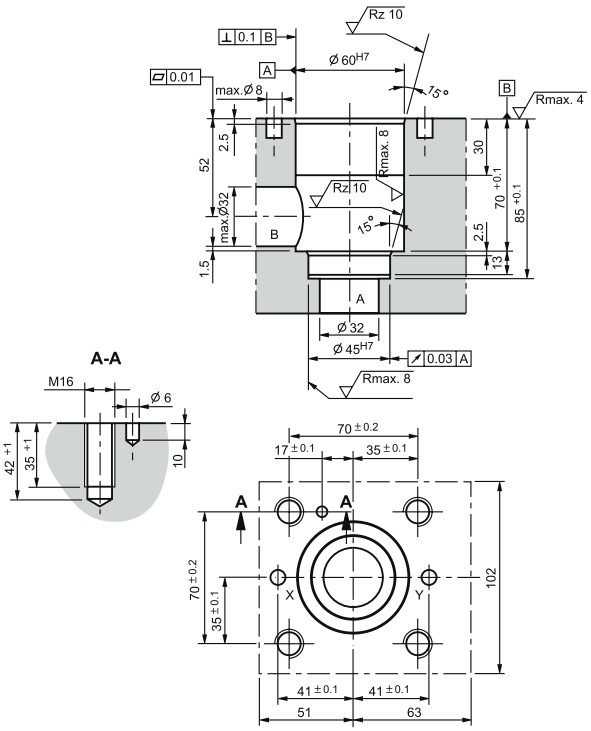
QPG-16/LGP-16



QPG-25/LGP-25



QPG-32/LGP-32

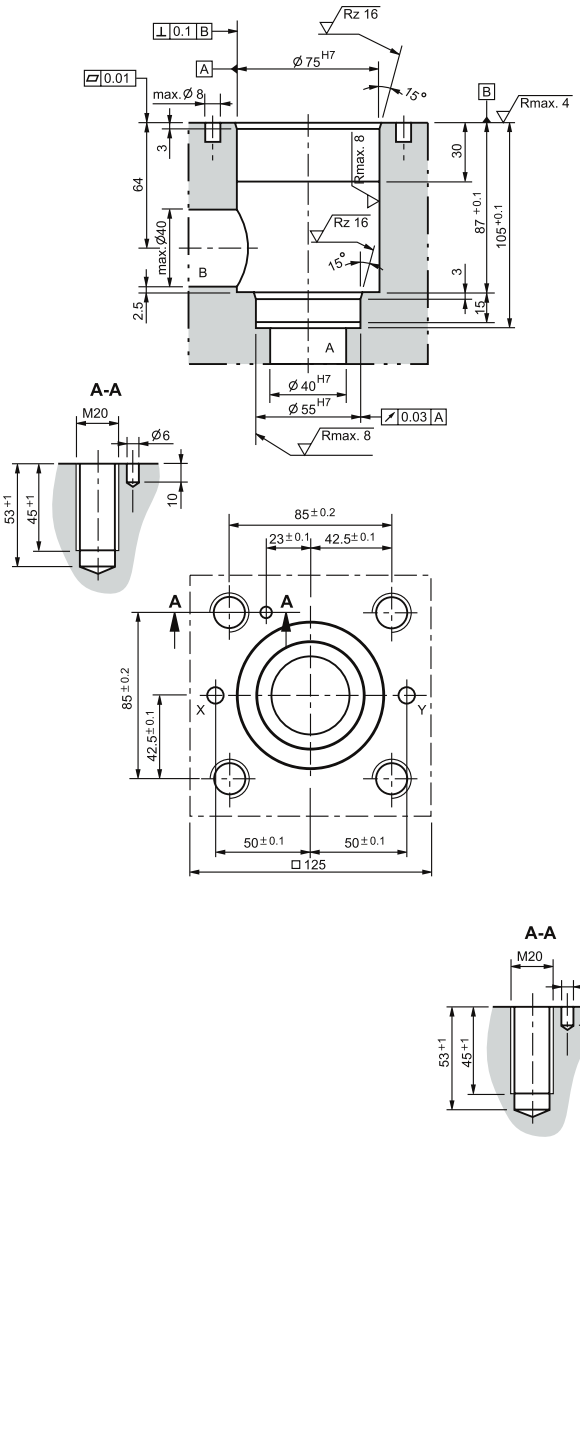


Mounting dimensions

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

DIN 24 342, ISO/DIS 7368

QPG-40/LGP-40



QPG-50/LGP-50