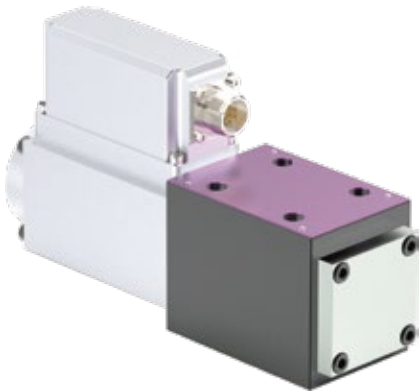


SH10LC Direct operated proportional servo valve

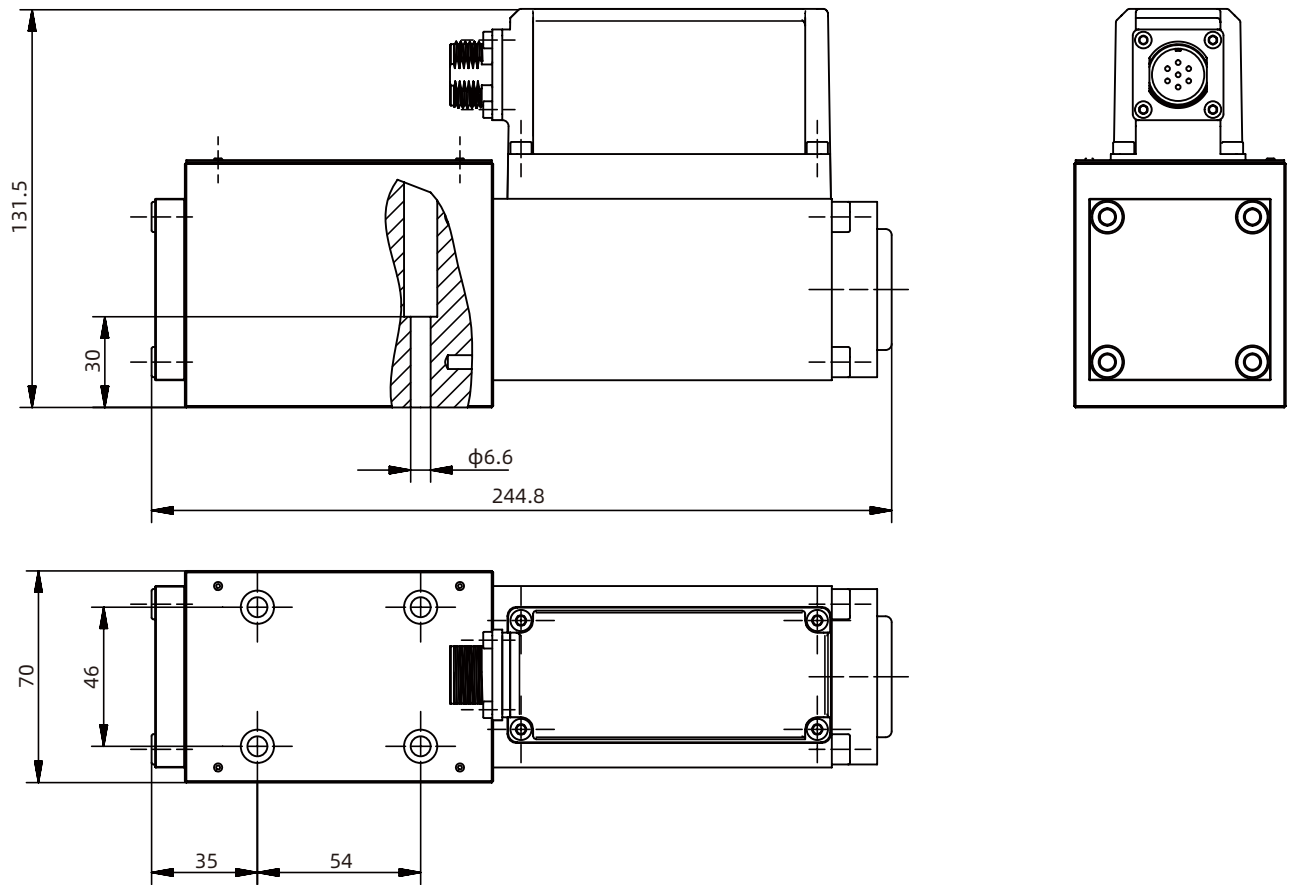
SH10LC proportional servo valve, directly operated, with electrical position feedback and on-board electronics (OBE)

Size 10
Maximum working pressure P, A, B 315 bar
Nominal flow 40 l/min (Δp 70 bar))



- Direct operated proportional servo valve, with control piston and sleeve in servo quality
- Actuated on one side, 4/4 fail-safe position when switched off
- Electrical position feedback and on-board electronics (OBE), calibrated at the factory
- Electrical connection 6P+PE
Signal input differential amplifier with interface A1 ± 10 V or interface S1 4...20 mA ($R_{sh} = 200 \Omega$)
- Used in electrohydraulic controllers in production and testing systems

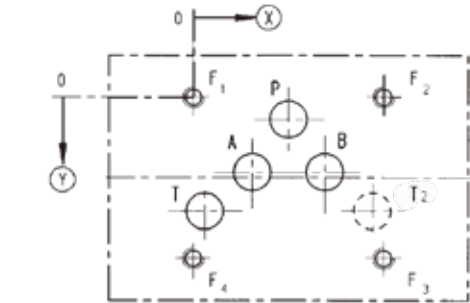
Unit dimensions(mm)



Symbols

	Linear	p: kink 40 %	
	Y		
	O		
	Y,O	Y,O	

Mechanical Installation Interface Drawing

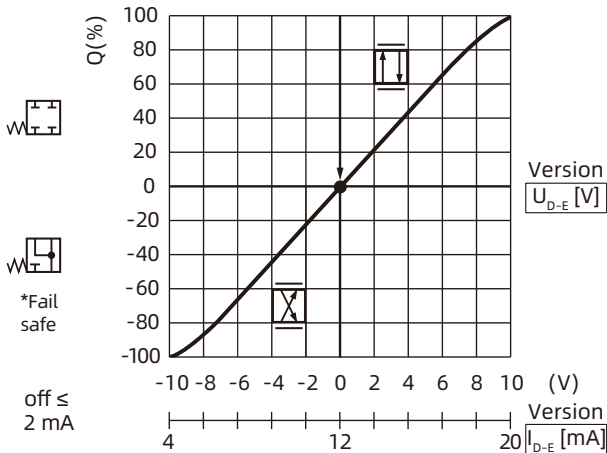


The mounting manifold must conform ISO 4401-05-04-0-94									
	P	A	T	T2	B	F1	F2	F3	F4
Diameter mm	10.5	10.5	10.5	10.5	10.5	M6	M6	M6	M6
X	27	16.7	3.2	50.8	37.3	0	54	54	0
Y	6.3	21.4	32.5	32.5	21.4	0	0	46	46

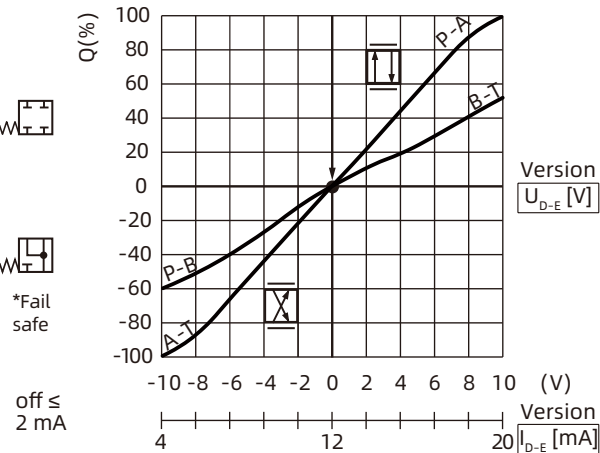
Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Flow rate - signal function
 $Q = f(U_{D-E})$
 $Q = f(I_{D-E})$

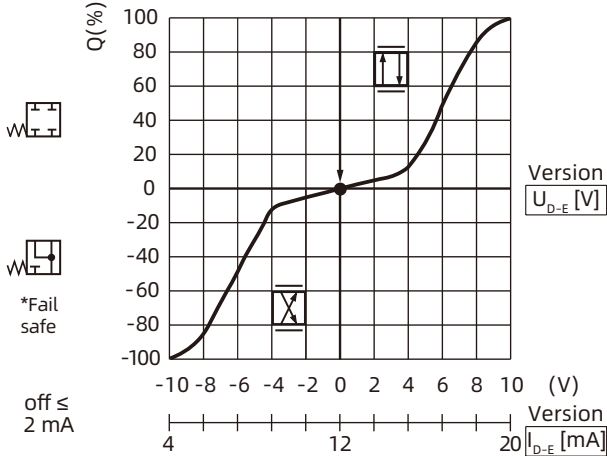
L: Linear 1:1



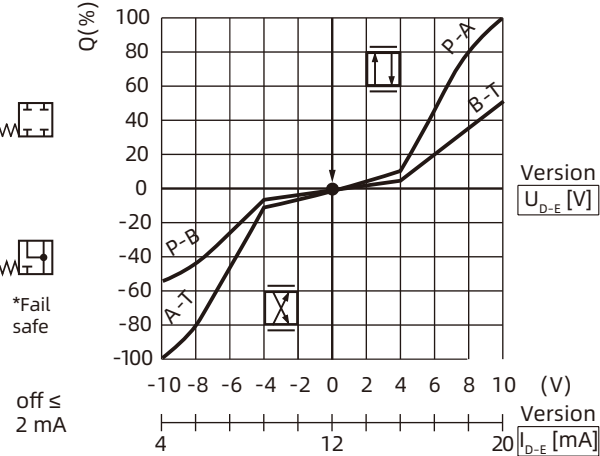
L: Linear 2:1



P: (kink 40 %) 1:1



P: (kink 40 %) 2:1

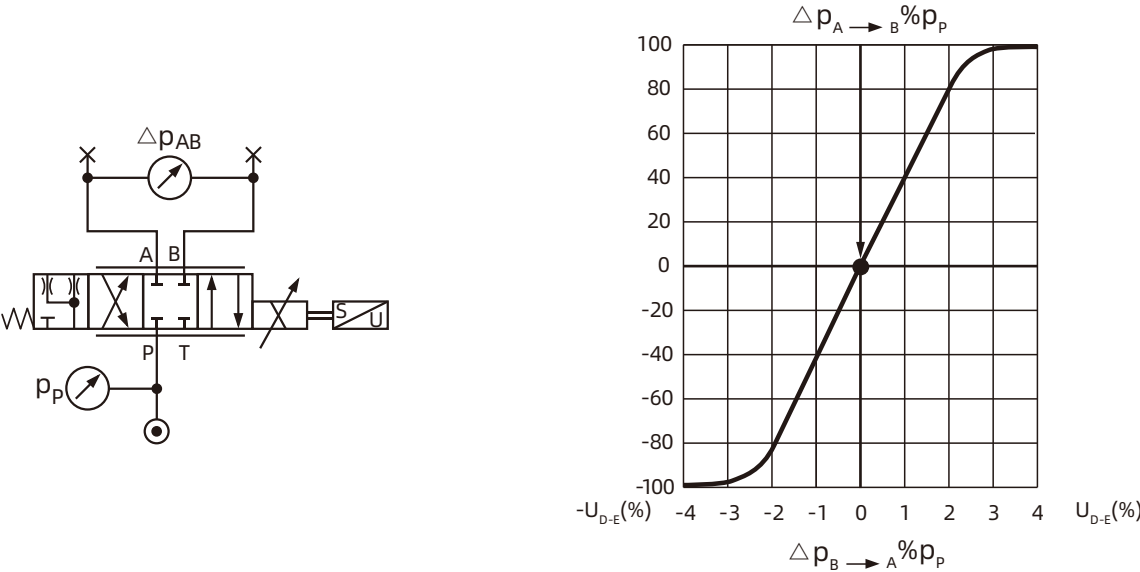


* Fail-safe: $U_B \leq 18\text{ V DC}$ (version U_{D-E})
* Fail-safe: $U_B \leq 18\text{ V DC} / I_{D-E} \leq 2\text{ mA}$ (version $I_{D-E} 4...20\text{ mA}$)

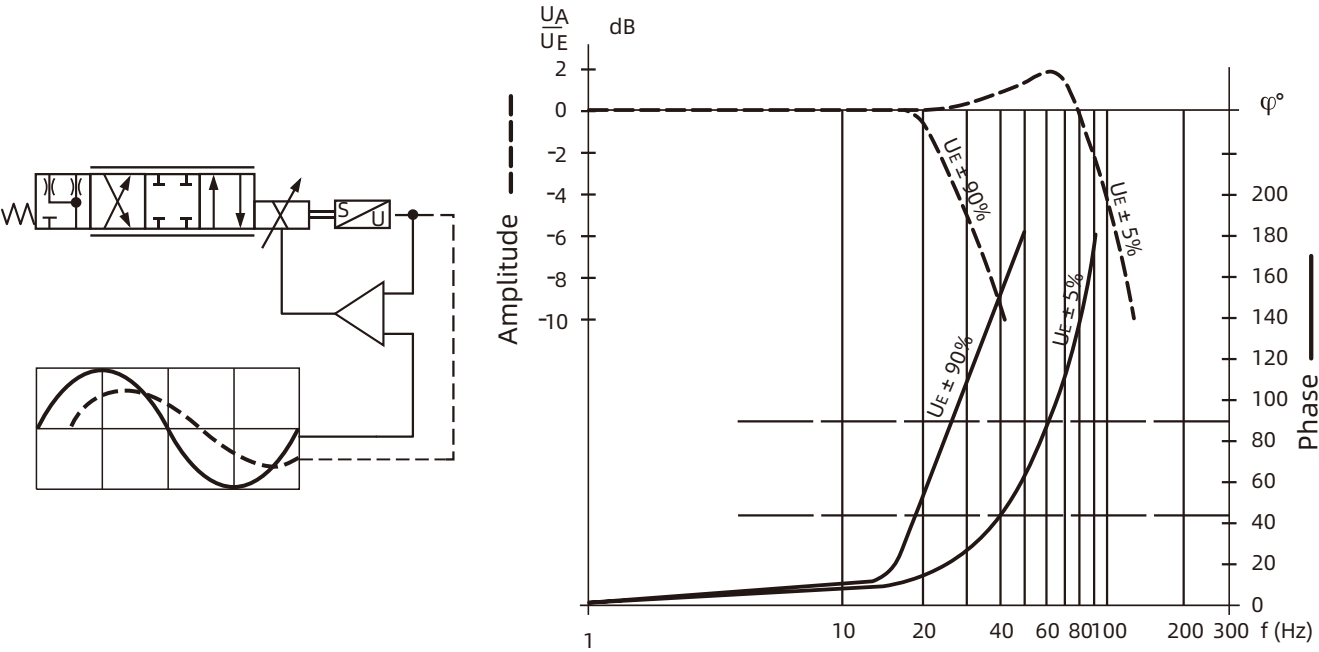
Fail-safe-position				

Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Pressure gain



Bode diagram





Technical notes on the cable

- Version:
- Multi-wire cable
 - Extra-finely stranded wire to VDE 0295, Class 6
 - Protective conductor, green/yellow
 - Cu braided screen
- No. of wires:
- Determined by type of valve, plug types and signal assignment
- Cable Ø:
- 8~12.5 mm

Note

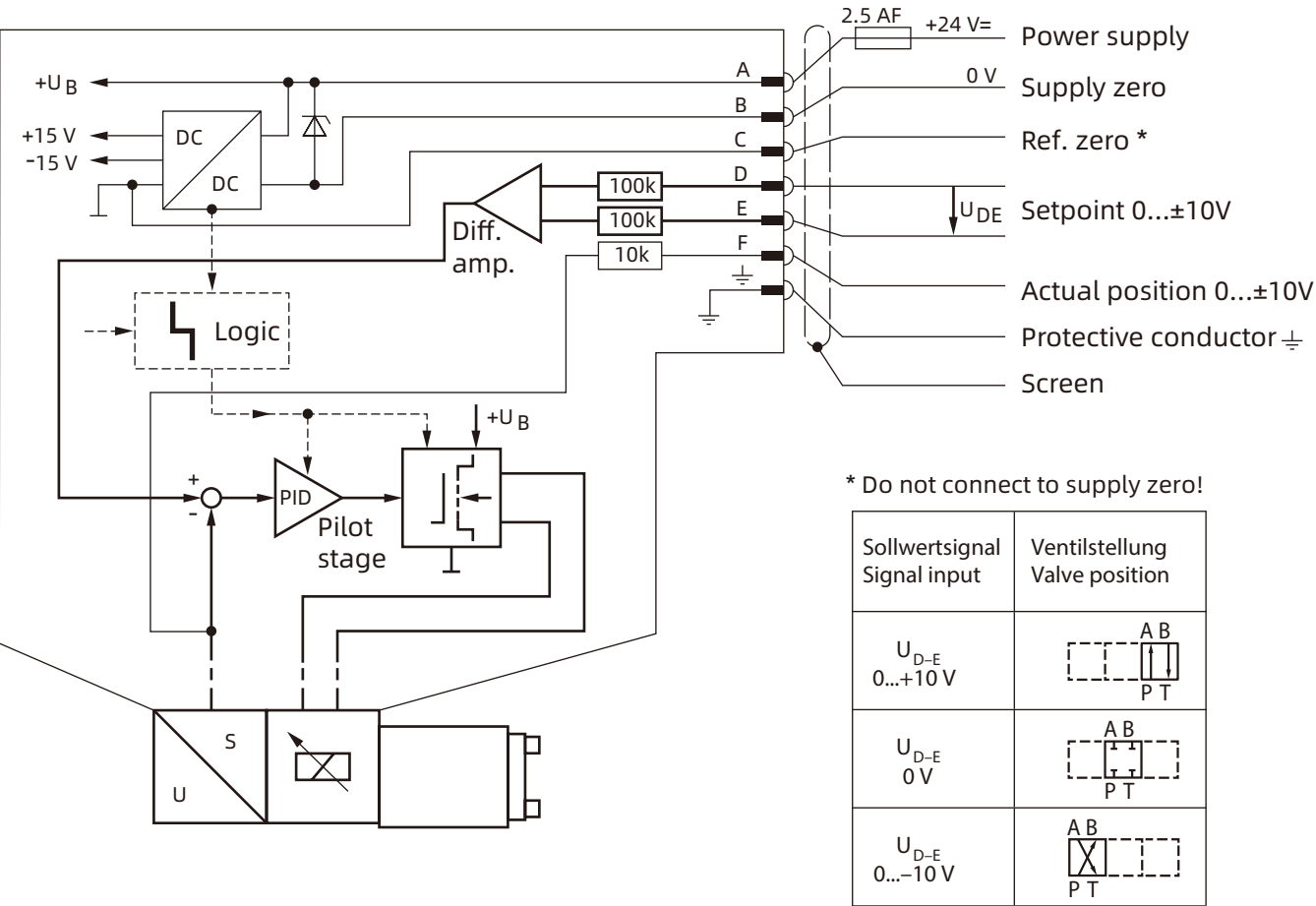
Voltage supply 24 V DC nom.,
if voltage drops below 18 V DC, rapid shutdown resembling "Enable OFF" takes place internally.

Electrical signals emitted via the trigger electronics (e.g. actual values) must not be used to shut down safety-relevant machine functions! (See European Standard, "Technical Safety Requirements for Fluid-Powered Systems and Components - Hydraulics", EN 982.)



Block diagram/pin assignment

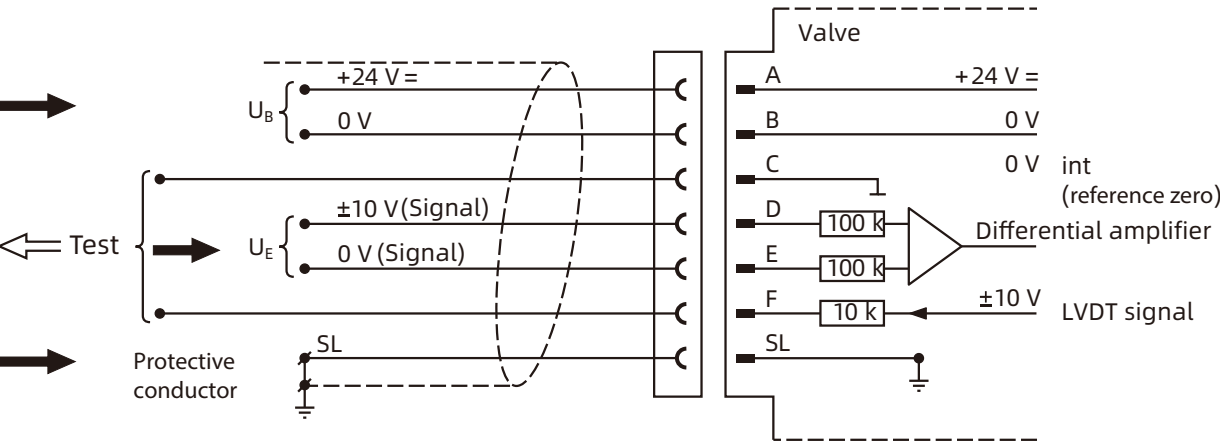
Version A1: $U_{D-E} \pm 10\text{ V}$



Pin assignment 6P+PE

Version A1: $U_{D-E} \pm 10\text{ V}$

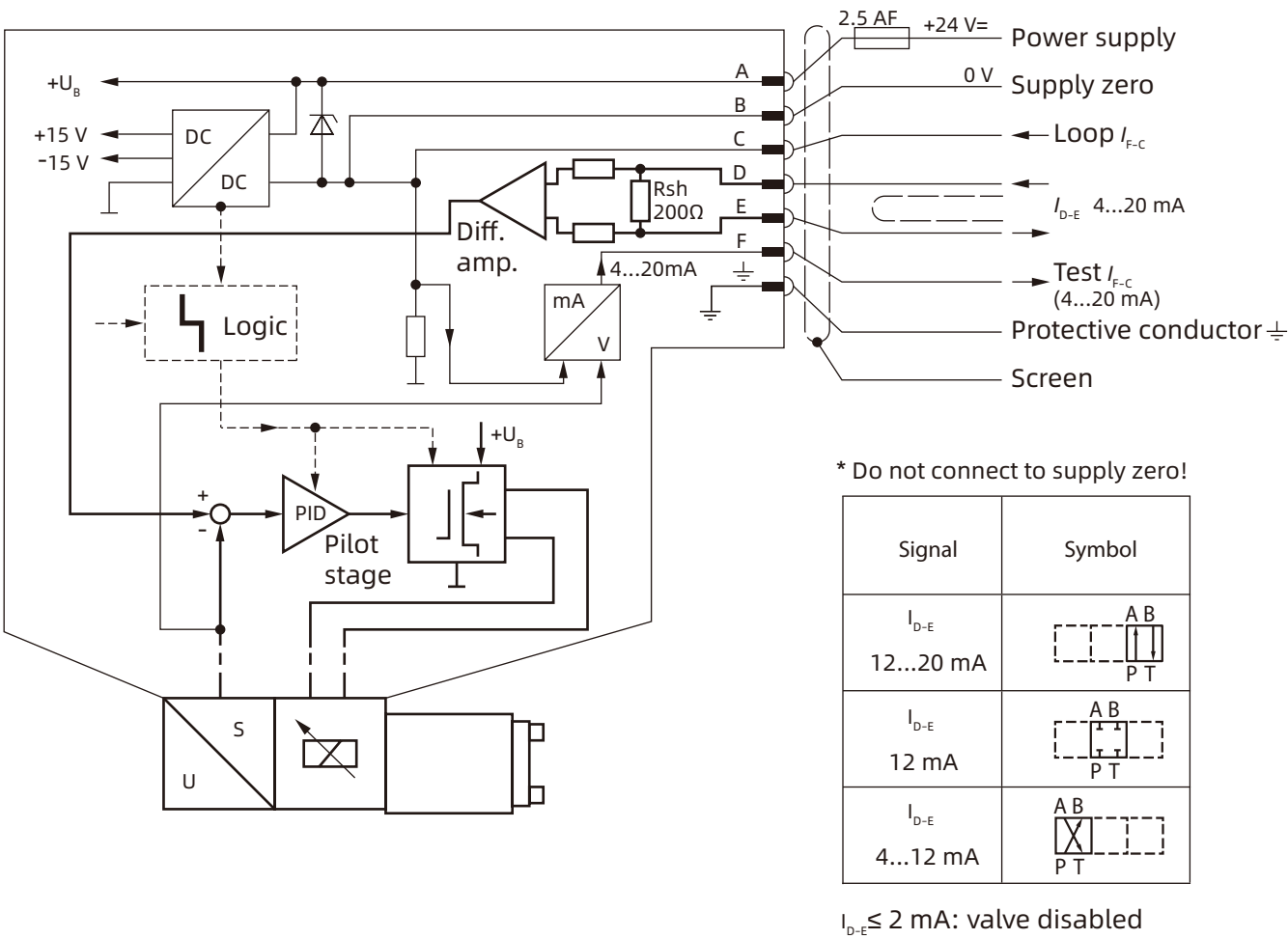
($R_i = 100\text{ k}\Omega$)





Block diagram/pin assignment

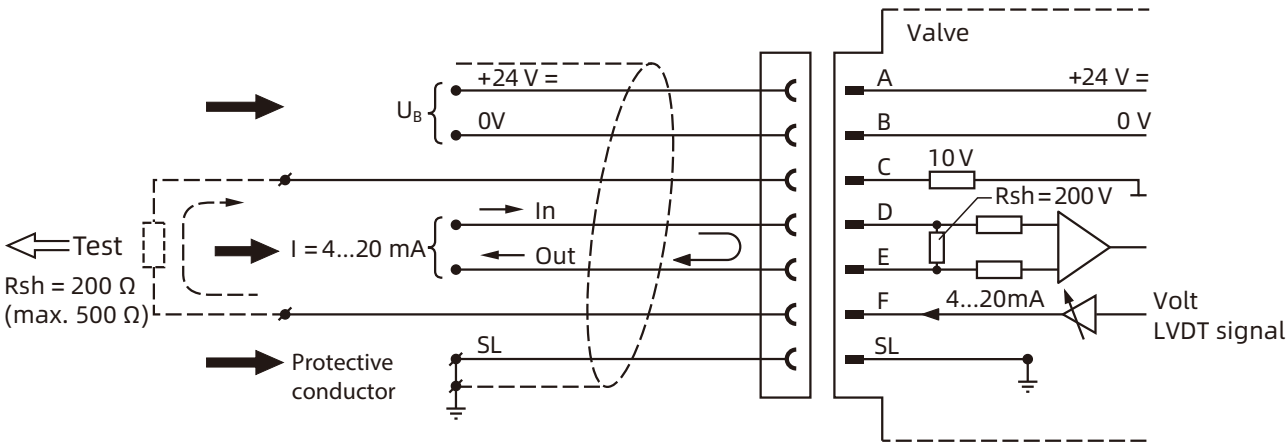
Version S1: I_{D-E} 4...12...20 mA



Pin assignment 6P+PE

Version S1: I_{D-E} 4...12...20 mA

(Rsh = 200 Ω)



General					
Construction		Spool type valve, operated directly, with steel sleeve			
Actuation		Proportional solenoid with position control, OBE			
Type of mounting		Subplate, mounting hole configuration NG10 (ISO 4401 and CETOP-RP 121 H)			
Installation position		Optional			
Ambient temperature range		-20 ... +50°			
Weight		7.1 Kg			
Dimensions		244.8 X 70 X 131.5mm			
Vibration resistance, test condition		max. 25 g, shaken in 3 dimensions (24 h)			
Hydraulic (measured with HLP 46, oil = 40 °C ±5 °C)					
Pressure fluid		Compliant with DIN51524 Parts 1 to 3			
Viscosity range	recommended max. permitted	20...100 mm²/s 10...800 mm²/s			
Pressure fluid temperature range		-20...+70°C			
Cleanliness grade, in accordance with ISO code		Maximum permissible degree of contamination of pressure fluid Purity class to ISO 4406 (c)18/16/13 ¹⁾			
Flow direction		See symbol			
Nominal flow [l/min] at Δp = 35 bar per notch*		50 (1:1)	50 (2:1)	100 (1:1) 100 (2:1)	
Max. working pressure		Port P, A, B: 315 bar			
Max. pressure		Port T: 250 bar			
Operating limits at Δp[bar] Pressure drop at valve q _{vnom} ∴ q _N valves		315	315	160	160
		250	250	100	100
Leakage [cm³/min] at 100 bar		<1200	<1200	<1500	<1000
		<600	<500	<600	<600
Static/Dynamic					
Hysteresis		≤ 0.2%			
Manufacturing tolerance for q _{max} *		< 10%			
Response time for signal change 0...100%		< 10ms			
Thermal drift		Zero point displacement <1%, at ΔT = 40°C			
Zero adjustment		Factory-set ±1%			

1) The purity classes stated for the components must be complied with in hydraulic systems. Effective filtration prevents problems and also extends the service life of components. For a selection of filters, see catalogue sections RE 50070, RE 50076 and RE 50081.

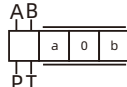
*Flow rate at a different: $q_x = q_{nom} \sqrt{\frac{\Delta p_x}{35}}$

Technical data

Electrical, trigger electronics integrated in the valve

Cyclic duration factor	100% ED
Degree of protection	IP 65 to DIN 40050 and IEC 14434/5
Connection	Line socket 6P+PE, DIN 43563
Power supply Terminal A: Terminal B: 0 V	24 V DC nom. min. 19 V DC/max. 36 V DC Ripple max. 2 V DC
Power consumption	Solenoid 45 mm - 40 VA max.
External fuse	2.5 A _F
Input, "Standard" version Terminal D: U _E Terminal E:	Difference amplifier, R _i > 100 KΩ 0...±10V 0V
Input, "mA-Signal" version Terminal D: I _{D-E} Terminal E: I _{D-E}	Burden,, R _{sh} = 200Ω 4...(12) ... 20 mA Current loop I _{D-E} feedback
Max. differential input voltage at 0 V	D → B } max. 18 V DC E → B }
Test signal, "Standard" version Terminal F: U _{Test} Terminal C:	LVDT -10 ... +10 V Reference 0V
Test signal, "mA-Signal" version Terminal F: I _{F-c} Terminal C: I _{F-c}	LVDT signal 4 ... 20 mA at external load 200...500 Ω max. 4...20 mA output Current loop I _{F-c} feedback
Protective conductor and screen	See pin assignment (installation conforms to CE)
Recommended cable	See pin assignment up to 20 m 7×0.75 mm ² up to 40 m 7×1 mm ²
Calibration	Calibrated at the factory, see valve performance curve

Ordering information

Model-Number	Type designation
SH10LC	
Factory code assigned at the factory	Seal material D NBR F Fluororubber X For other requirements, please consult
Control spool symbols 4/4-way version 	Input signal A +/- 10V S 4-20mA X For other requirements, please consult
Q _N /Rated flow at ΔP=35 bar per land(500 psi) 05 50 L/min 10 100 L/min X For other requirements, please consult	Flow characteristic L Linear X For other requirements, please consult

Regular Model

Model	Factory code	Type	Rate flow	Input signal
SH10LC	05A	Y05LAD	50 L/min	+/- 10V
SH10LC	10A	Y10LAD	100 L/min	+/- 10V
SH10LC	05B	O05LAD	50 L/min	+/- 10V
SH10LC	10B	O10LAD	100 L/min	+/- 10V

Customised services on request

We are able to provide bespoke solutions to meet the specfic needs of our customers, if you require non-standard configurations or custom modifications, we are confident that we can provide the best solution for you. Please contact us and our team will get back to you as soon as possible.

Version A1:
Standard

Version S1:
Standard

