SFL316 Electric feedback three-stage servo valve

❒ Features

- Spool position closed-loop control feedback through differential linear displacement transducer (LVDT)
- Integrated amplifier with polarity protection
- High resolution, low hysteresis, good zero stability
- Parameters are pre-set at the factory

❒ Main Parameter

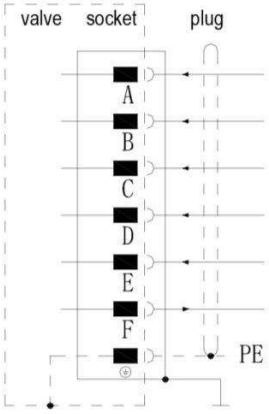
General parameters				
Operating medium		Mineral oil or other fluids according to DIN 51524		
Viscosity range	mm^2/s	15 to 380 (30 to 45 recommended)		
Oil temperature range	℃	-20 to +80 (recommended +40 to +50)		
Storage temperature	℃	-20 to +80		
Operating ambient temperature	℃	-30 to +70		
Oil cleanliness		Maximum permissible degree of contamination of the oil, Class 6 per NAS 1638		
Filtration accuracy		Recommended filter minimum filtration ratio ß5≥75		
Seal material		Nitrile rubber, fluorine rubber, or other sealing ma terials according to user needs		
Installation Requirements		ISO compliant, but X and Y ports are not ISO compliant		
Weight	k g	6.3		
Technical Parameters				
Work Pressure				
Ports P, A, B (inside X port)	MPa	≤ 31.5		
Ports P, A, B (X port drains)	MPa	≤ 35		
Port T (Y-port inner row)	MPa	≤ 21		
Port T (Y port drains)	MPa	≤ 35		
Rated flow (differential pressure ΔP=7MPa)	L/min	100	160	250
Zero bias	%	≤ 2		
Hysteresis loop	%	≤ 0.5		
Resolution	%	≤ 0.2		
Non-linearity	%	≤ 10		
Asymmetry	%	≤ 10		
Endoleak	L/min	≤6	≤8	≤10
Amplitude bandwidth (- 3dB)	Hz	≥100		
Phase bandwidth (- 90°)	Hz	≥100		
Body structure		Three-Stage Servo Valve with Spool and Sleeve		
Pilot stage		Secondary nozzle flapper servo valve		
Pilot stage control oil form		Optional internal or external control		

Electrical Parameters	
Valve protection class	Conforms to standards EN60 529, IP65
Instruction signal	0～±10mA； or 0～±10V； or 4～20mA
Supply power	24VDC（22～28VDC），Imax=300mA，or ±15VDC，Imax=250mA
Socket	6+PE
Command signal and spool displacement	The stroke of the spool is proportional to (UD - UE). When UD - UE=+10V, the spool is at the fully open position of P→A and B→T. When the command signal is 0V, the spool is in the neutral position; the stroke of the spool is proportional to At (ID= - IE), when ID=+10mA, the spool is in the fully open position of P→A, B→T, and the spool is in the neutral position when the command signal is 0mA
Main spool actual displacement output	IF - C=4～20mA, when the spool is in the neutral position, IF - C=12mA, when the valve port is fully open and P B, A T, IF - C=4mA, when the valve port is fully open and P A , IF - C=20-mA when B T; or UF - C=2～10V, 6V when the spool is in the middle position; or 0～±10mA

Note: All signal lines must use shielded cables.

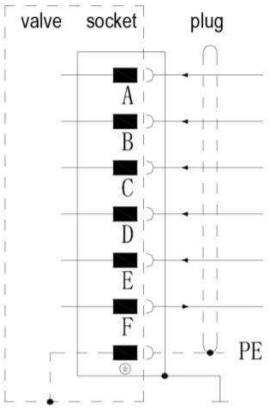
❒Electrical Wiring

24VDC



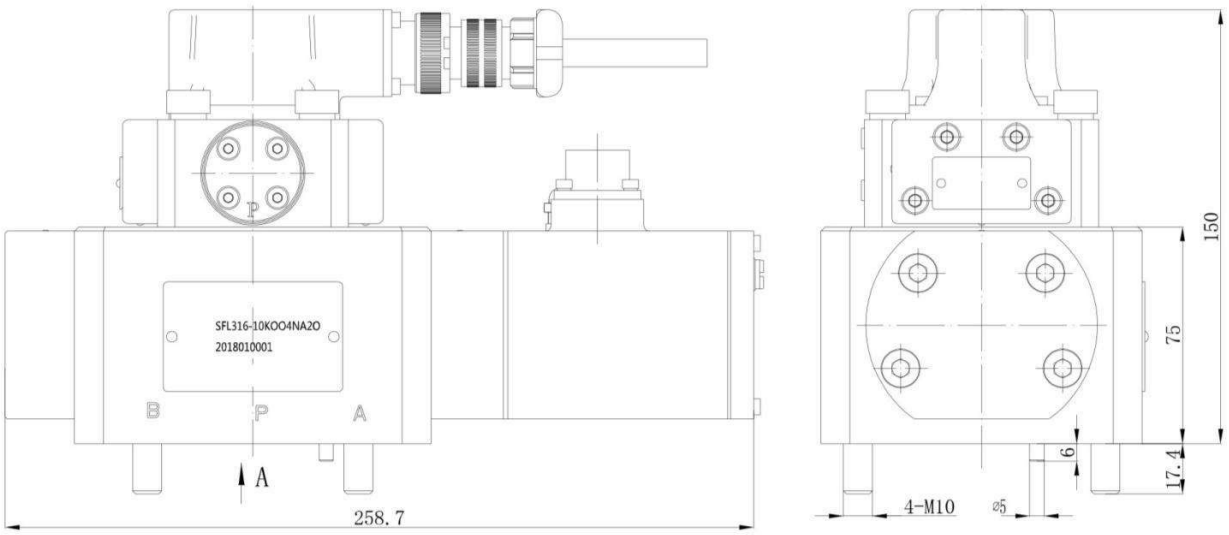
Function	Current instruction(0-±10mA)	Voltage command(0-±10VDC)
Power supply	24VDC(18～32VDC)，Imax=300mA	
Power/signal ground	（0V）	
enable signal Non-enable signal	U_{C-B}>8.5VDC 24VDC ，Ie=2.0mA U_{C-B}<6.5VDC	
Instruction signal input (differential)	I_D=-I_E：0～±10mA（Re=200Ω）	U_{D-E}=0～+10V
	I_E=-I_D：0～±10mA（Re=200Ω）	Re=10kΩ
Spool actual displacement output signal	I_{F-B}=4～20mA，At 12mA, the main spool is in the middle position, and the load impedance is 100-500Ω	
Protective grounding		

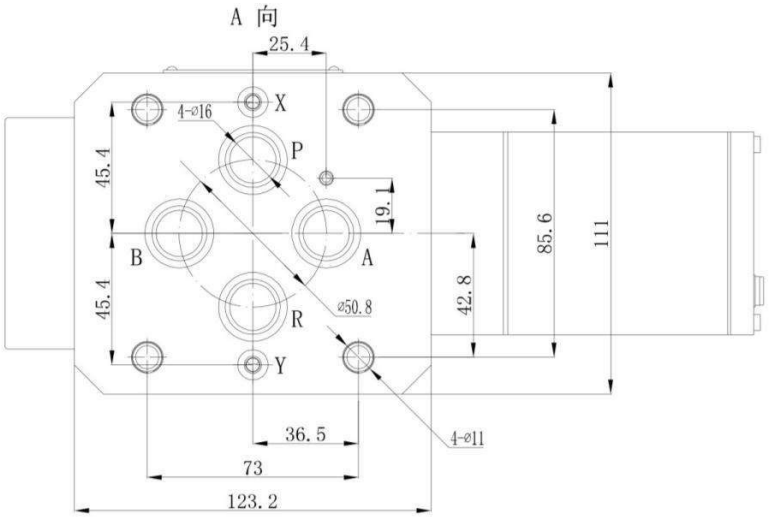
±15VDC



Function	Current instruction(0-±10mA)	Voltage command(0-±10VDC)
Power supply	+15VDC±3	
Power supply	-15VDC±3	
Power/signal ground	（0V）	
enable signal Non-enable signal	0～±10mA Load Resistance 1kΩ	0～±10V input resistance 10kΩ
Instruction signal input (differential)	I_D=-I_E：0～±10mA（Re=200Ω） I_E=-I_D：0～±10mA（Re=200Ω）	U_{D-E}=0～±10V ，Re=10kΩ
Spool actual displacement output signal	0～±10mA，Load resistance max 500Ω	0～±10VDC,input resistance 50KΩ
Protective grounding		

❒ Dimensions and Interface





— The installation surface of the valve complies with ISO10372-06-05-0-92, the roughness of the installation surface of the valve is not less than $\overset{1.6}{\nabla}$, and the flatness is less than 0.01mm.

— In order to ensure that the servo valve can work normally, the system must be flushed before trial operation.

❒ Spare Parts & Accessories

Parts or accessories	Size or Specifications	Quantity
NBR O-rings		
For P, T, A and B ports	20×1.8	4
For X,Y port	6.9×1.8	2
Configuration plug (degree of protection IP65)	6+PE plug	1
Mounting screws	M10×60	4
Protective base	PP or 2A12	1

❒ Ordering Information

SFL316 — ● ● ● ● ● ● ● ● ● ●

Rated flow	
When Pn=3.5MPa per section Qn[L/min]	
10	100
16	160
25	250

Maximum Working Pressure and Body Material		
K	35	MPa

Valve Spool Type	
0	Four-way, zero opening, linear flow gain
X	Customized on demand

The position of the spool when there is no control electric signal		
	Location	Pilot pressure (MPa)
0	uncertain	≥1.5
A	P→B, A→T	≥1.5
B	P→A, B→T	≥1.5

Pilot stage control oil connection		
	Oil supply port X	Oil return port Y
4	internal control	inner row
5	External control	inner row
6	External control	out row
7	internal control	out row

Function Code		
0	24V	No enable signal input
P	15V	No enable signal input
A	24V	When there is no enable signal, the spool moves to the neutral position
B	24V	When there is no enable signal, the spool moves to A→T or B→T

Power supply	
0	±15VDC±3%, pulsation < 50mVpp
2	24VDC(18~32VDC)

Signal corresponding to 100% rated displacement of the main spool		
	input	output
A	±10 V	±10 V
X	±10 mA	±10 mA, ±15V 4~20 mA, DC24V
B	±10 mA	±10 mA
S	4~20 mA	4~20 mA
M	±10 V	4~20 mA

Valve socket	
S	6+PE, socket

Seal material	
N	Nitrile Rubber (NBR) Standard Type
V	Viton (FPM)