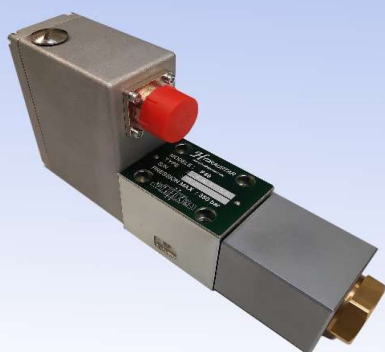


series
F40
Servo proportional valve
Rate flow up to 40 l/mn



Features

- Direct drive bi-directional linear motor
- 350 bar maximum operating pressure
- 3 or 4 ways application
- Linear flow control
- 4 overlap options
- Spool in bushing design
- 3 command signal options
- High temperature version



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Technical data

Hydraulic

Nominal flow ratings [±10%]	at 70 bar Δp	1, 2, 5, 10, 20, 40 l/m		
Operating pressure (max)	Ports	P, A, B	T without Y	T with Y
		350 bar	250 bar	350 bar
Fluid viscosity range (recommended)		10 to 360 mm ² /s (cSt)		
Fluid type		Mineral oil to ISO 11158, DIN 51524 or equivalent others on request		
Filter rating (recommended)	Pressure line	Beta 10 = 200 (10 μm abs), non by-pass & indicator		
	Off-line	Beta 2 = 1000 (2 μm abs)		
Fluid cleanliness	ISO 4406: 1999			
	minimum	18/ 15/ 12		
	recommended	17/ 14/ 11		

Operational parameters

Hysteresis		$\leq 0.2\%$
Threshold		$\leq 0.1\%$
Null shift	ΔT 40 °C	$\leq 1.5\%$
Internal leakage	140 bar supply (0.5% overlap) 5, 10, 20 l/m 40 l/m	≤ 0.6 l/min ≤ 1.0 l/min
Load pressure difference	1% input	$\geq 30\%$ of supply pressure can be as high as 100%
Response time	0-100% rated spool stroke	< 12 ms
Max. valve flow		75 l/m
Mounting pattern		ISO 4401-03-03-0-94
Mounting position		Any, fixed or movable
Weight	F40S F40T	2 kg 1.7 kg
Design protection	EN 60529	IP 67
Shipping protection		Sealed base plate
Seal material options		NBR, FPM
Temperature range	F40S F40T	-20 to 70 °C -20 to 160 °C

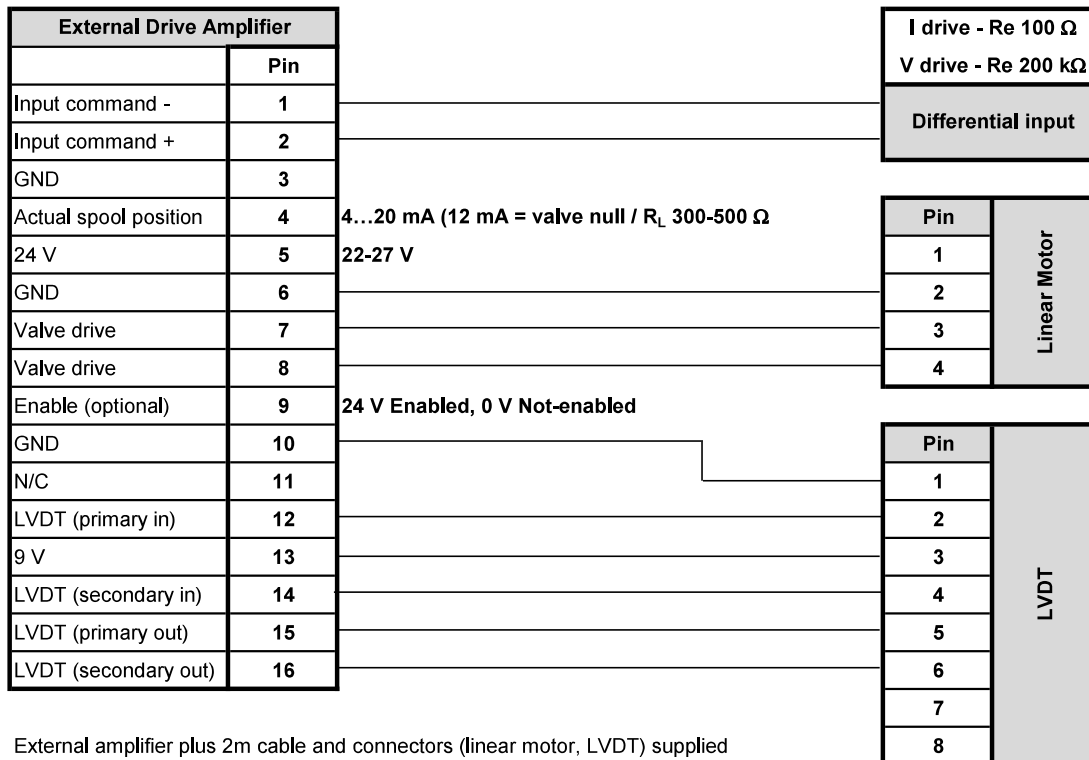
Model F40S

Factory set options are as follows

Pin	Function	Values
A	Supply	24 Vdc (22...27 Vdc)
B	GND	0 V
C	Not used	
D	Input rated command (differential)	±10 V, ±10 mA, 4...20 mA
E	<i>Inverse bi-polar command signals</i>	
F	Actual spool position	4...20 mA
PE	Protective earth	

Valve connector type MIL-C-5015 or DIN 43563 6+PE

Mating connector not supplied

Model F40T (version < 2021)


External amplifier plus 2m cable and connectors (linear motor, LVDT) supplied

Power supply

Current consumption (max.) 1.8 A

Model F40T (version >2020)

J108 connector : (optional use)

Rep. 1 : NC

Rep. 2 : NC

Rep. 3 : output monitoring (4-20 mA / 600 Ohms)

Rep. 4 : NC

J105 connector : (M12 coil connector)

Rep. 5 : coil command (blue)

Rep. 6 : coil command (black)

Rep. 7 : coil command ground (GND) (white)

Rep. 8 : NC

J106 connector : (supply)

Rep. 9 : NC

Rep. 10 : low currents ground (GND)

Rep. 11 : 24 Vcc supply (1,8 A maxi)

Rep. 12 : 0 Vcc supply

J107 connector : (input command signal)

Rep. 13 : +Input command signal (+/-10 Vcc, 4-20 mA or +/-10 mA)

Rep. 14 : -Input command signal

Rep. 15 : NC

Rep. 16 : NC

J102 connector : (M12 LVDT connector)

Rep. 17 : LVDT exitation signal (pink)

Rep. 18 : LVDT exitation signal (grey)

Rep. 19 : LVDT sensor signal (yellow)

Rep. 20 : LVDT sensor signal (brown)

J104 connector :

Rep. 21 : NC

Rep. 22 : NC

Rep. 23 : NC

Rep. 24 : signal ground (LVDT wire braiding & LVDT white lead / GND)

NC : no connection required,



F40 EXTERNAL AMPLIFIER

Fast connecting leads system

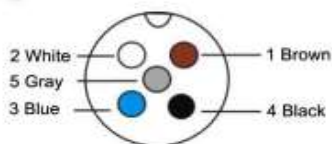
Differential input impedance :

- I input command version : 200 Ω

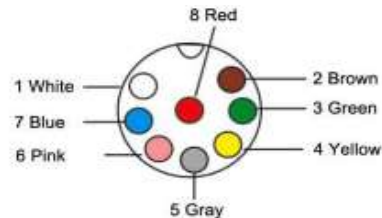
- V input command version : 10 K Ω

M12 connectors / LVDT & magnet flying leads wiring code :

External amplifier delivered with 2 m cable and connectors (linear motor and LVDT).



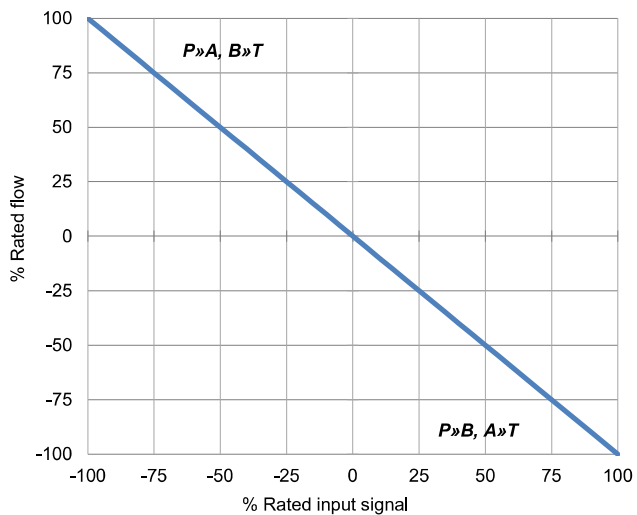
M12 Magnet connector



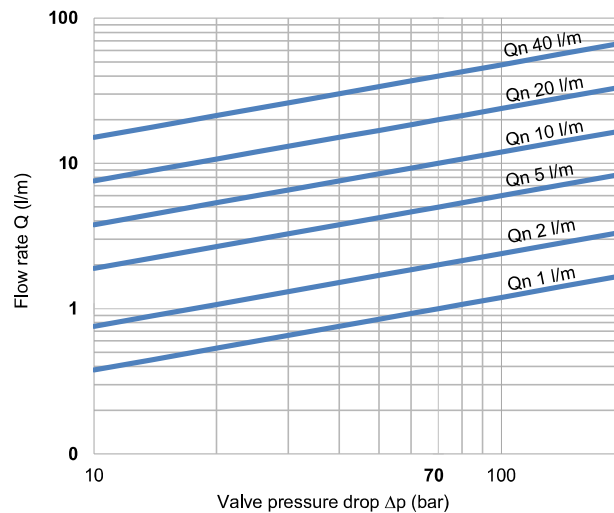
M12 LVDT connector

Technical data

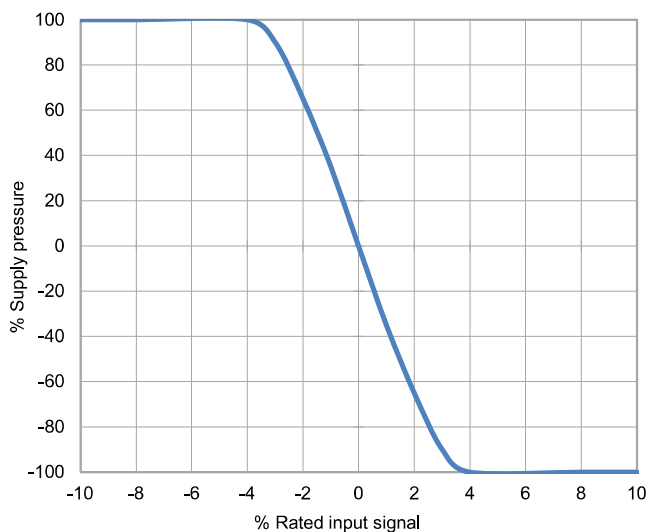
Output Polarity (per std wiring)



Flow for 100% input as a function of valve pressure drop



Typical Load Pressure Difference v Input Signal

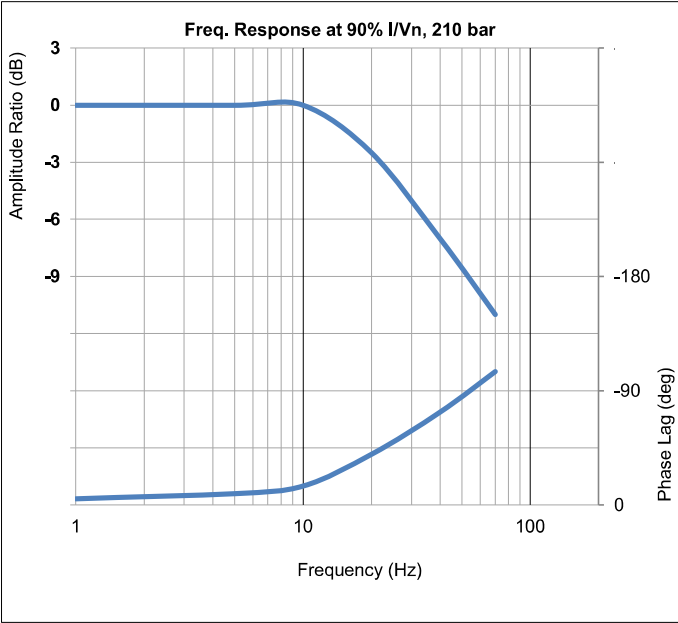
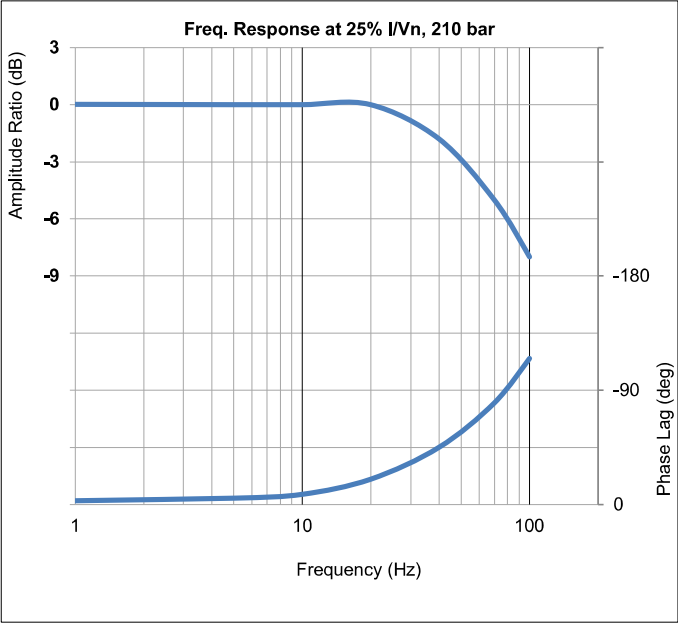


The flow tolerance for standard servovalves is $\pm 10\%$ of the rated flow at 100% rated input signal.

Rated Signal [In] is the specified input voltage or current of either polarity to produce rated flow. Rated input does not include null bias values.

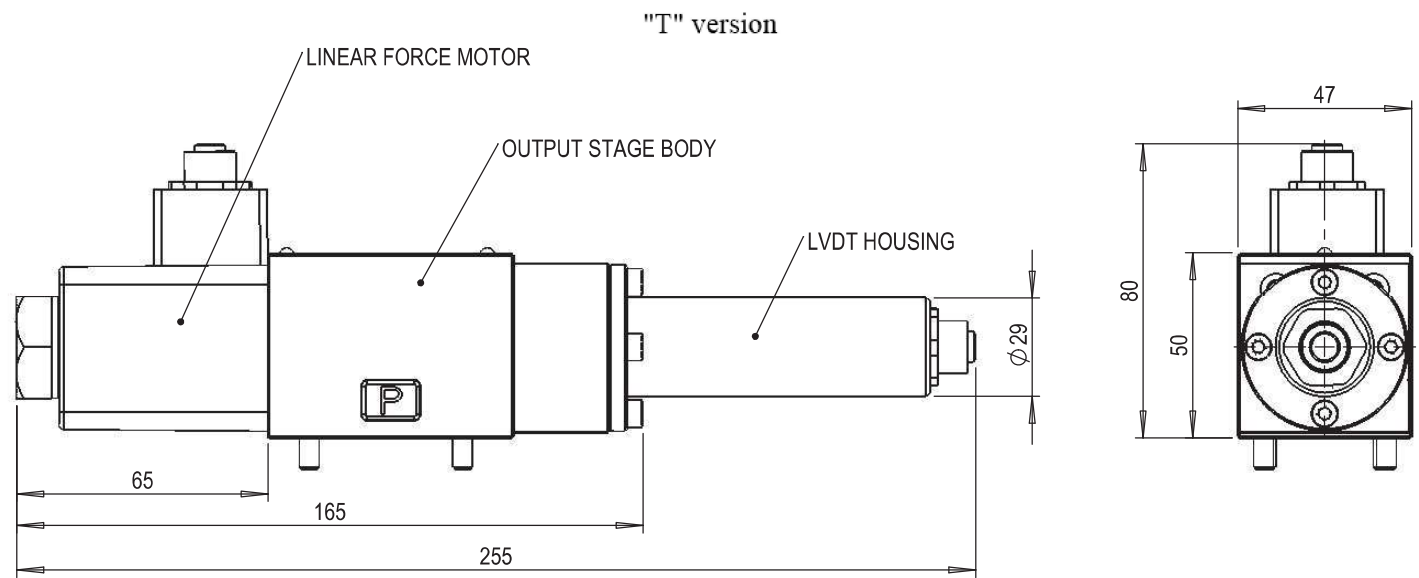
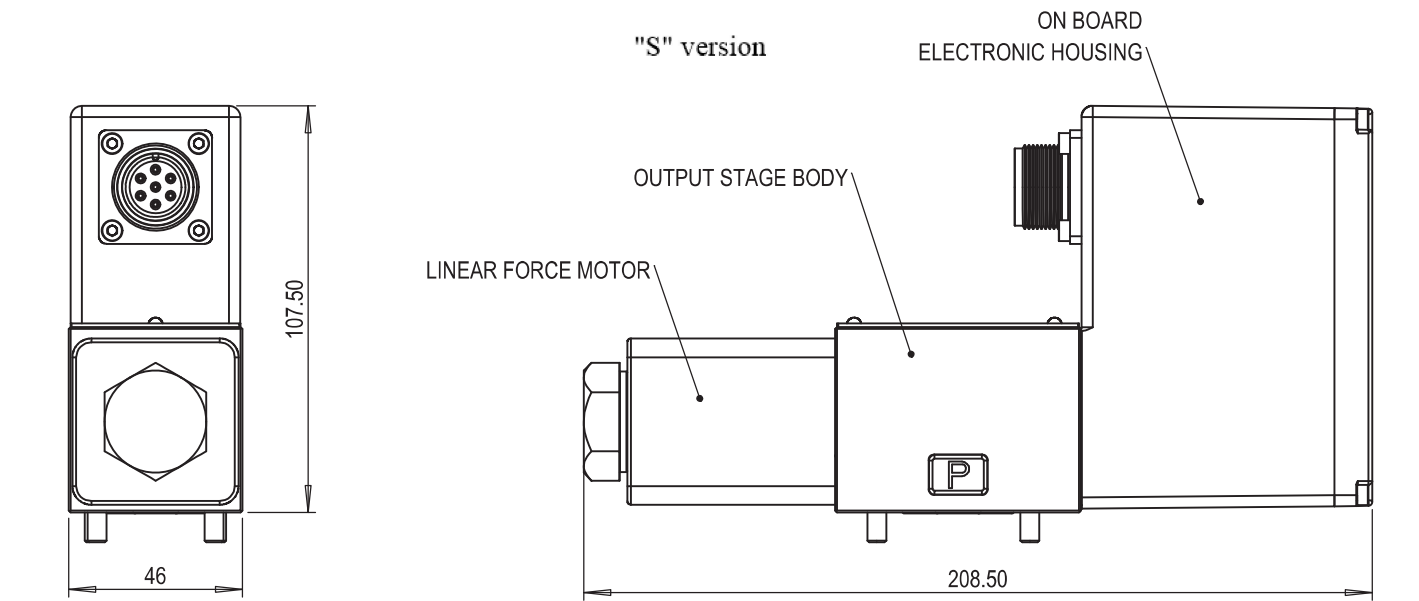
Rated flow corresponds to the flow at rated input at 10 bar or 70 bar, with no load, therefore in 4-way valves there will be a pressure drop of 5 bar or 35 bar respectively across each land.

Load pressure difference versus input signal indicates typical differential pressure gain between ports A and B for standard lap spools. Positive overlap changes this characteristic significantly.



INSTALLATION DETAILS

Mounting screws	Skt head cap screws M5 x 50 10.9 ISO 4762
Porting details	P, A, B, R ports $\varnothing 7.5$, \sqcap $\varnothing 11.10$ $\nabla 1.40$
Interface seals	Ports P, A, B, T - ID 8.0 x $\varnothing 1.5$ O-Ring
Linear force motor orientation	As shown below linear force motor positioned on port A side as standard, available on B port with special order code 'B'



Mounting interface conforms to ISO 4401-03-03-0-94 (G not required)								
	P	A	B	R	F1	F2	F3	F4
size	$\varnothing 7.5$	$\varnothing 7.5$	$\varnothing 7.5$	$\varnothing 7.5$	M5	M5	M5	M5
x	21.50	30.20	12.70	21.50	0	40.50	40.50	0
y	5.10	15.50	15.50	25.90	0	-0.75	31.75	31
Surface flat within 0.01 / 100 : finish better than 0.8 μm								

