

## LSVHG-EH Series OBE type Linear Servo Valves

LSVHG-03EH/04EH/06EH (3/8, 1/2, 3/4) Sub-plate Mounting

**LSVHG** series high-speed linear servo valves have outstanding features of high response and exceptional contamination resistance. These features are achieved by the compact and powerful linear motor which directly drives the spool and gives electric feedback of the spool position. This high-speed linear servo valve has already garnered a great reputation in the hydraulic market since the product's launch.

**LSVHG-EH** series on-board electronics type linear servo valves have been developed, based on the high-speed linear servo valves while aiming at downsizing the pilot valve and improving user-friendliness by integrating the exclusive amplifier and the linear servo valve compactly.



LSVHG- \* EH

**Features** — *High-performance User-friendly valves* —

### High Accuracy

Closed loop control by the combination of the position sensors for the pilot valve and the main valve in the compact amplifier ensures excellent linearity, hysteresis and stability on control.

LSVHG-03EH : 170 Hz/-3dB, 90 Hz/-90°(±25% Amplitude), step response 6 ms (0-100%)

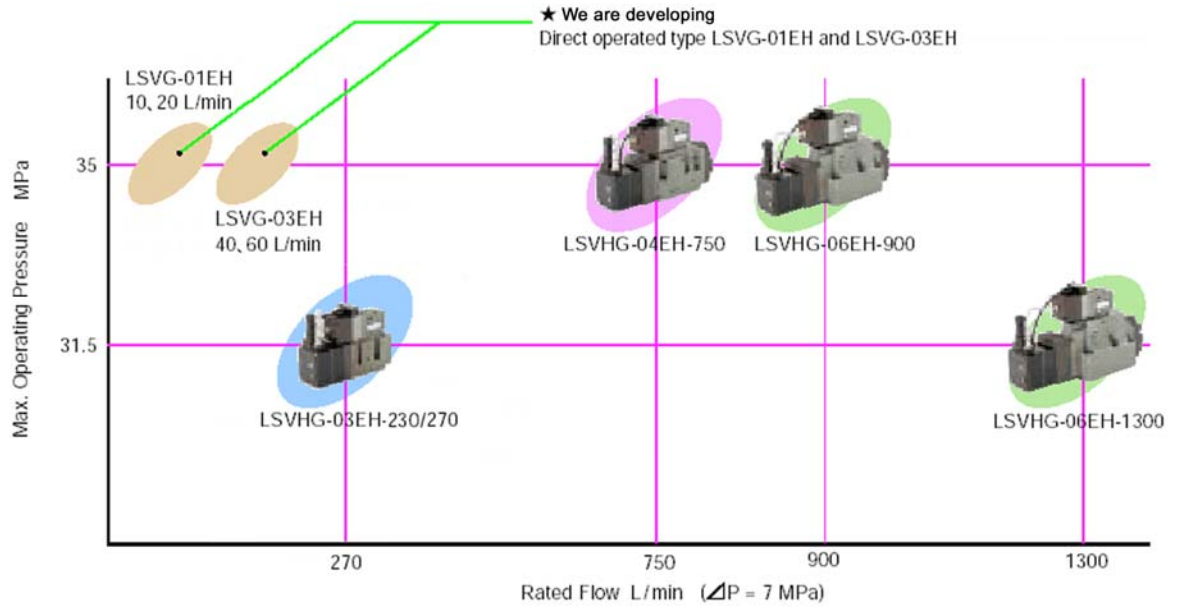
### Convenient

Fault diagnosis is easy to conduct with the alarm indication when the command signal and the spool position differ due to occurrence of abnormality in system.




### Simple

Highly accurate hydraulic control can be obtained only by supplying 24 V DC power and inputting a command signal of ±10 V, ±10 mA or 4-20 mA.

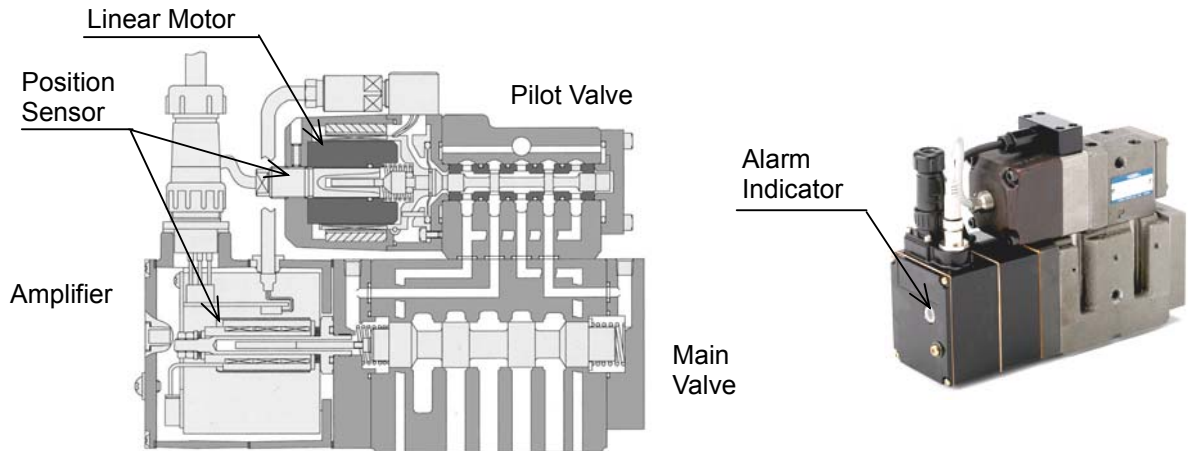
**Product Lineup of LSVHG-EH series**



**Model Number Designation**

LSVHG	- 06	EH	- 900	- 2P	- E	T	- A1-	- 20
Series Number	Valve Size	Amplifier Type	Rated Flow at diff.P=7 MPa (1015psi)	Spool Type at Neutral Position	Pilot Type	Drain Type	Input Signal and Spool Position Monitor	Design Number
<b>LSVHG:</b> <b>Pilot Operated Linear Servo Valves</b>	<b>03</b>	<b>EH :</b> On-Board Electronics Type	<b>230:</b> 230 L/min (61 gpm)	<b>2L:2%Over-lap</b>  Linear flow gain	<b>None:</b> Internal Pilot  <b>E:</b> External Pilot	<b>None:</b> External Drain  <b>T:</b> Internal Drain	<b>A1:</b> Voltage Signal ±10 V  <b>B1:</b> Current Signal 4 to 20 mA  <b>C1:</b> Current Signal ±10 mA	<b>20:</b> Standard  <b>2090:</b> North American Design Standard
			<b>270:</b> 270 L/min (71 gpm)	<b>2:10%Over-lap</b> 				
	<b>04</b>		<b>750:</b> 750 L/min (198 gpm)	<b>40:A,B,T Connection</b> 				
			<b>06</b>	<b>900:</b> 900 L/min (238 gpm) <b>1300:</b> 1300 L/min (344 gpm)				

**LSVHG-03EH OBE type Linear Servo Valve**



**Applications**

- Nibbling Machine
- Injection Molding Machine
- Horizontal Crash Simulator
- Die Casting Machine
- Steel Mill Equipment
- Vibration Testing Machine



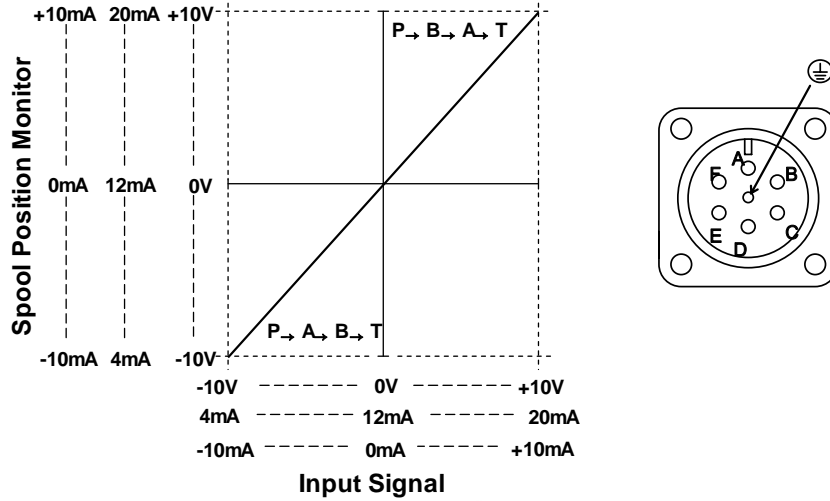
**Specifications**

Model Number			LSVHG-03EH				LSVHG-04EH-750			LSVHG-06EH-900			LSVHG-06EH-1300			
Spool Type			2L	2	40	2P	2	40	2P	2	40	2P	2	40	2P	
Rated Flow at diff. P=7MPa (diff. P=1015psi) 4way, valve pressure drop	L/min		230	270			750			900			1300			
	gpm		61	71			198			238			343			
Rated Flow at diff. P=0.5MPa (diff. P=72.5psi) per land	L/min		87	102			283			340			490			
	gpm		23	27			75			90			129			
Max. Operating Pressure		MPa	31.5				35			35			31.5			
		psi	4568				5075			5075			4568			
Proof Press.	External Drain	Port T	MPa	21				21			21			21		
			psi	3045				4568			5075			4568		
Return Port	Internal Drain(1)	Port T&Y	MPa	21				21			21			21		
			psi	3045				3045			3045			3045		
DR Port Permissible Back Pressure (2)		MPa	0.05				0.05			0.05			0.05			
		psi	7.3				7.3			7.3			7.3			
Pilot Pressure (3)		MPa	1.5-21				1.5-21			1.5-21			1.5-21			
		psi	218-3045				218-3045			218-3045			218-3045			
Pilot Flow Rate (4)		L/min	more than 11				more than 20			more than 22			more than 23			
		gpm	more than 2.9				more than 5.3			more than 5.8			more than 6.1			
Leakage of Pilot Valve (Max.)	at 14 MPa (2030psi) and fluid viscosity of 32mm <sup>2</sup> /s (150SSU) (5)		L/min	0.8												
			gpm	0.2												
Leakage of Main Valve (Max.)			L/min	1.6	0.5	1	5.6	0.8	1.6	6.8	0.9	1.8	7	1	2	8
			gpm	0.4	0.1	0.3	1.5	0.2	0.4	1.8	0.2	0.5	1.8	0.3	0.5	2.1
Hysteresis		%	less than 0.1													
Step Response (Typical)		(0-100%)	ms	7	6			11			11			15		
Frequency Response (Typical)	Gain -3dB (±25% Amp.)		Hz	170				100			90			75		
	Phase -90° (±25% Amp.)		Hz	90				70			65			60		
Vibration Proof			100 m/s <sup>2</sup>													
Degree of Protection			Equivalent to IP65													
Ambient Temperature			from 0 to +50 °C (from 32 to +122 °F)													
Rated Spool Stroke		mm	±4	±3.5			±5			±5			±7			
		inch	0.16	±0.14			±0.20			±0.20			±0.28			
Spool End Area		cm <sup>2</sup>	3				7			8			8			
		inch <sup>2</sup>	0.47				1.09			1.24			1.24			
Linear Motor Specification	Current		A	MAX. 2.1												
	Coil Resistance at 20°C (68°F)		Ω	9.6												
Approx. Mass		kg	8.5				14			20			20			
		lbs.	18.7				30.9			44.1			44.1			
Mounting Pattern			ISO4401-05-05-0-94				ISO4401-07-06-0-94			ISO4401-08-07-0-94						
Electric Connection			6 + PE Pole Connector (EN175201 Part 804)													

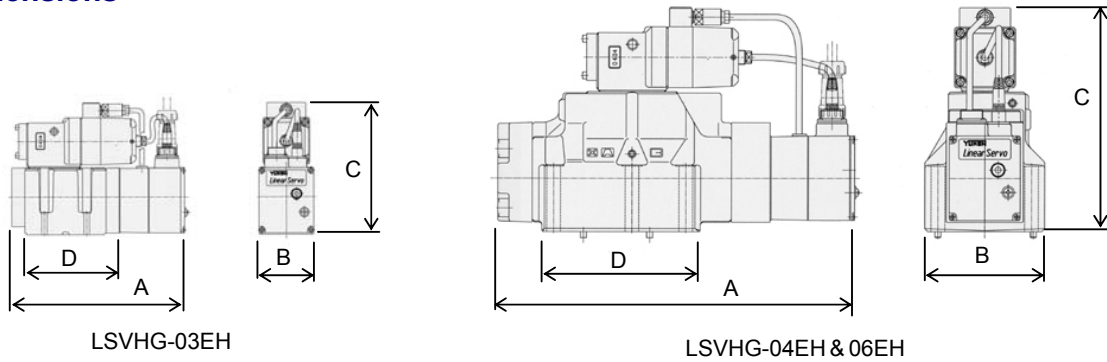
- Note. (1) Max. T-Line Back Pressure should be less than actual supply pressure.  
(2) Back Pressure for drain port should be less than 0.05MPa (7.3psi) and also not to be vacuum pressure.  
(3) Supply Pressure of Pilot Valve should be 1.5-21MPa (218-3045psi) and should also be more than 60% of actual supply pressure when valve is used.  
(4) Pilot Flow Rate is calculated based on 14MPa (2030psi) of Pilot Pressure and the above Step response.  
(5) Volume of Internal Drain is total volume from main and pilot spools.

**Electrical Specifications**

Valves model type		LSVHG- * -A1	LSVHG- * -B1	LSVHG- * -C1
Pin A	Power supply	24V DC (21.6V DC ~ 26.4V DC include Ripple)		50VA <sub>max</sub>
Pin B	Power supply ground	0V		
Pin C	Signal ground	0V (COM)		
Pin D	Input (+) (differential)	U <sub>D-E</sub> 0 ~ ±10V R <sub>i</sub> =100kΩ	I <sub>D-E</sub> 4 ~ 20mA R <sub>i</sub> =200Ω	I <sub>D-E</sub> 0 ~ ±10mA R <sub>i</sub> =200Ω
Pin E	Input (-) (differential)			
Pin F	Spool position monitor	U <sub>F-C</sub> 0 ~ ±10V R <sub>L</sub> ≥10kΩ	I <sub>F-C</sub> 4 ~ 20mA R <sub>L</sub> =100 ~ 500Ω	I <sub>F-C</sub> 0 ~ ±10mA R <sub>L</sub> =100 ~ 500Ω
Pin ⊕	Protective earth	-		



**Dimensions**



Design Number	Dimensions mm (inch)			
	A	B	C	D
LSVHG-03EH- 230-2L	237 ( 9.33)	70 (2.76)	168 (6.61)	104 (4.09)
LSVHG-03EH- 270	220.5 ( 8.68)	70 (2.76)	168 (6.61)	104 (4.09)
LSVHG-04EH- 750	298.5 (11.75)	91 (3.58)	194 (7.64)	128.4 (5.06)
LSVHG-06EH- 900	348.5 (13.72)	118 (4.65)	220 (8.66)	156 (6.14)
LSVHG-06EH-1300	351.5 (13.84)	118 (4.65)	220 (8.66)	156 (6.14)

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