

## OBE (On-Board Electronics) Type Linear Servo Valves

On-board electronics type linear servo valves have been developed based on high-speed linear servo valves, but with a focus on downsizing the pilot valve. The integration of the exclusive amplifier and the linear servo valve create a high performance valve in a compact package which greatly improves user-friendliness.

● **High accurate, simple and convenient — Ideal on-board electronics type linear servo valves**

**Convenient**

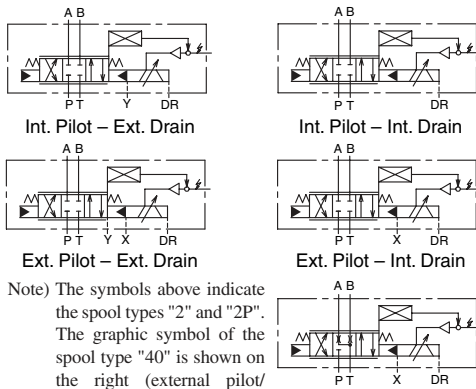
Fault diagnosis is easy to conduct with the alarm indication when the command signal and the spool position differ due to abnormality in the system.

Colour	Description of Alarm Indicator
Green	Indication of power supply (Normal operation)
Red	Deviation alarm for the pilot vlve
Yellow	Deviation alarm for the main vlve

**High Accuracy**

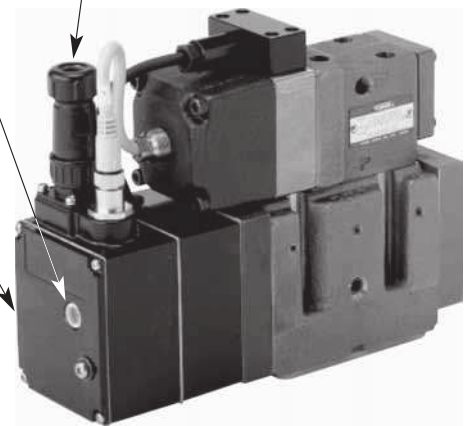
Closed loop control by the combination of the position sensors for the pilot valve and the main valve in the compact amplifiers ensures excellent linearity, hysteresis and stability on control.

**Graphic Symbols**



**Simple**

Highly accurate hydraulic control can be obtained only by supplying 24 V DC power and inputting a command signal.



■ **Model Number Deignation**

F-	LSVHG	-06	EH	-900	-2P	-E	T	-A	1	-20
Special Seals	Series Number	Valve Size	Amp. Type	Rated Flow @ $\Delta P = 7 \text{ MPa}$ (@ $\Delta P = 1020 \text{ PSI}$ )	Spool Type	Pilot Connection	Drain Connection	Input Signal/Spool Travel Monitoring	Connector Type	Design Number
<b>F:</b> Special Seals for Phosphate Ester Type Fluid (Omit if not required).	<b>LSVHG:</b> Two Stage Type Linear Servo Valves	<b>03</b>	<b>EH:</b> OBE Type	<b>230:</b> 230 L/min (60.8 U. S. GPM)	<b>2L:</b> 2 % Overlap  (Linear Flow Gain)	<b>None:</b> Internal Pilot  <b>E:</b> External Pilot	<b>None:</b> External Drain  <b>T:</b> Internal Drain	<b>A:</b> Voltage Signal $\pm 10 \text{ V}$  <b>B:</b> Current Signal 4 to 20 mA  <b>C:</b> Current Signal $\pm 10 \text{ mA}$	<b>1:</b> 6 + PE Pole  <b>2:</b> 11 + PE Pole	<b>20</b>
				<b>270:</b> 270 L/min (71.3 U. S. GPM)	<b>2:</b> 10 % Overlap 					<b>20</b>
		<b>04</b>		<b>750:</b> 750 L/min (198 U. S. GPM)	<b>40:</b> Open Centre A, B & T 					<b>20</b>
		<b>06</b>		<b>900:</b> 900 L/min (238 U. S. GPM) <b>1300:</b> 1300 L/min (343 U. S. GPM)	<b>2P:</b> Zero Lap  (Dual Flow Gain)					<b>20</b>

## Specifications

Description		Model Numbers						
		LSVHG-03EH -230-2L	LSVHG-03EH -270-*	LSVHG-04EH -750-*	LSVHG-06EH -900-*	LSVHG-06EH -1300-*		
Rated Flow	$\Delta P = 7 \text{ MPa (1020 PSI)}$ (4-Way Valve)	230 L/min {60.8 U. S. GPM}	270 L/min {71.3 U. S. GPM}	750 L/min {198 U. S. GPM}	900 L/min {238 U. S. GPM}	1300 L/min {343 U. S. GPM}		
	$\Delta P = 0.5 \text{ MPa (73 PSI)}$ (Per Land)	87 L/min {23 U. S. GPM}	102 L/min {26.9 U. S. GPM}	283 L/min {74.8 U. S. GPM}	340 L/min {89.8 U. S. GPM}	490 L/min {129 U. S. GPM}		
Max. Operating Pressure		31.5 MPa <sup>(5)</sup> (4570 PSI)		35 MPa (5080 PSI)	35 MPa (5080 PSI)	31.5 MPa (4570 PSI)		
Proof Pres. at Return Port <sup>(1)</sup>	External Drain	Port "T"	21 MPa <sup>(5)</sup> (3050 PSI)	31.5 MPa (4570 PSI)	35 MPa (5080 PSI)	25 MPa (3630 PSI)		
		Port "Y"	21 MPa <sup>(5)</sup> (3050 PSI)	21 MPa (3050 PSI)				
	Internal Drain	Port "T" & "Y"	21 MPa <sup>(5)</sup> (3050 PSI)	21 MPa (3050 PSI)				
Drain Port (DR Port) Permissible Back Pressure. <sup>(2)</sup>		0.05 MPa (7 PSI)						
Pilot Pressure <sup>(3)</sup>		1.5 - 21 MPa (220 - 3050 PSI)						
Pilot Flow Rate <sup>(4)</sup> L/min (U. S. GPM)		9 (2.4) or more		20 (5.3) or more	22 (5.8) or more	23 (6.1) or more		
Max. Leakage $P_s = P_p = 14 \text{ MPa}$ (2030 PSI) @ Viscosity: 32 mm <sup>2</sup> /s (150 SSU)	Pilot Valve		0.8 L/min (.21 U.S. GPM)		1.2 L/min (.32 U.S. GPM)			
	Main Valve	Spool Type	- 2L -	1.6 L/min (.42 U. S. GPM)	—	—	—	
			- 2 -	—	0.5 L/min (.13 U. S. GPM)	0.8 L/min (.21 U. S. GPM)	0.9 L/min (.24 U. S. GPM)	1 L/min (.26 U. S. GPM)
			- 40 -	—	1 L/min (.26 U. S. GPM)	1.6 L/min (.42 U. S. GPM)	1.8 L/min (.48 U. S. GPM)	2 L/min (.53 U. S. GPM)
			- 2P -	—	5.6 L/min (1.48 U. S. GPM)	6.8 L/min (1.8 U. S. GPM)	7 L/min (1.85 U. S. GPM)	8 L/min (2.11 U. S. GPM)
Hysteresis		0.1 % or less						
Step Response (0↔100 %, Typical) <sup>(6)</sup>		8 ms	7 ms	11 ms	11 ms	15 ms		
Frequency Response (± 25 % Amplitude, Typical) <sup>(6)</sup>	Gain: - 3 dB	120 Hz	125 Hz	100 Hz	100 Hz	75 Hz		
	Phase: - 90°	110 Hz	110 Hz	90 Hz	90 Hz	70 Hz		
Vibration Proof <sup>(7)</sup>		100 m/s <sup>2</sup>						
Protection		IP 65						
Ambient Temperature		0 to + 50 °C (32 to 122 °F)						
Spool Stroke to Stops		± 4 mm (± .157 in.)	± 3.5 mm (± .138 in.)	± 5 mm (± .197 in.)	± 5 mm (± .197 in.)	± 7 mm (± .276 in.)		
Spool End Area		3 cm <sup>2</sup> (.0047 Sq. in.)		7 cm <sup>2</sup> (.010 Sq. in.)	8 cm <sup>2</sup> (.012 Sq. in.)	8 cm <sup>2</sup> (.012 Sq. in.)		
Linear Motor Specification	Current	Max. 2.1 A						
	Coil Resistance	9.6 Ω [at 20 °C (68 °F)]						
Mass		8.5 kg (18.7 lbs.)		14 kg (30.9 lbs.)	20 kg (44.1 lbs.)	20 kg (44.1 lbs.)		
Electric Connection		6 + PE / 11 + PE Connector						

Note: (1) Pressure at the return port should be at actual supply pressure or less.

(2) Back pressure at the drain port should be 0.05 MPa (7 PSI) or less and not be a negative pressure.

(3) Supply pressure for the pilot valve should be 1.5 to 21 MPa (220 to 3050 PSI) and should also be 60 % of actual supply pressure or more.

(4) The pilot flow is calculated based on 14 MPa (2030 PSI) of pilot pressure and the above step response.

(5) To use the external pilot types with supply pressure of 21 MPa (3050 PSI) or more, pressure at the port T/Y should be 7 MPa (1020 PSI) or less.

(6) This value is measured for each valve based on 14 MPa (2030 PSI) of pilot pressure; it may differ depending on the actual circuit/operation conditions.

(7) There are restrictions on the mounting position; refer to the instructions for use.