



LS CLASS

Binary Gradient Pumping System

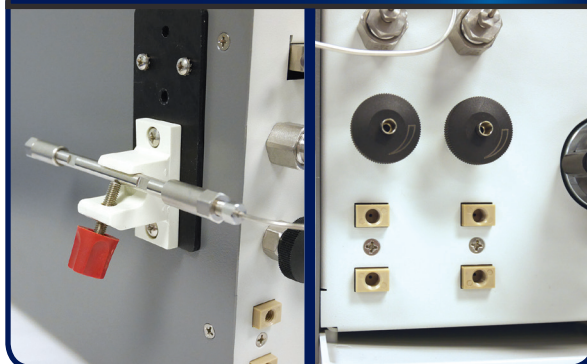
The customizable **Binary Gradient Pumping System**, part of the **LS Class**, is an advanced pumping system for two-solvent high-pressure gradient applications. The system is designed with two single-head positive displacement piston pumps integrated into a functional enclosure.

Equipped with belt drive pump mechanisms with shaped cam and electronic fast refill, the system produces very low pulsation. Fluid path materials are stainless steel and PEEK, with optional titanium. Available features include Prime-Purge Valves for each channel, Pulse Dampeners for reduced pulsation, pressure monitoring with integrated transducer, bulkhead outlet filters, an in-line, high-pressure, low-volume mixing chamber, and a drip tray with leak sensor.

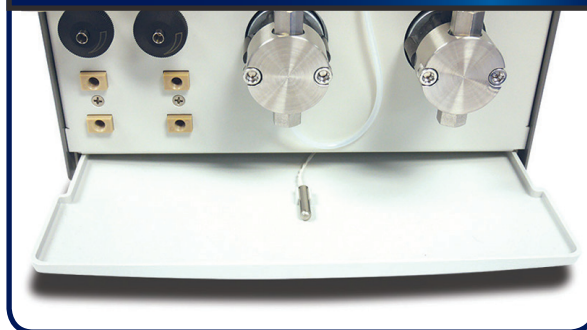
The system comes equipped with the SSI Gradient Control Board, which has an integrated Software GUI for customizable method development and input. This allows for autonomous binary gradient formation without the need for continuous computer monitoring and control after downloading the method onto the control board. Serial commands may be used to directly set pump flow rates, start/pause, or monitor status. Additional features of the Gradient Board include control of two solvent-selection valves, multiple timed events, and leak detection.

Components are also available in Kit Form for OEM Applications.

Integrated Degasser (optional) and In-Line Mixer



Drip Tray and Leak Sensor



Flow Rate

5 mL/MIN (EACH PUMP)
10 mL/MIN (EACH PUMP)
40 mL/MIN (EACH PUMP)

Pressure

Up To
6,000 psi
(5 mL/MIN OR 10 mL/MIN)

Fluid Path

STAINLESS STEEL,
PEEK, OR
TITANIUM

Control

RS-232, MICRO USB,
RUN/STOP,
ANALOG (0-10V, 4-20mA)

LS CLASS - MODEL SELECTION MATRIX

Binary Gradient Pumping System with Software GUI for Method Development

USE THE FOLLOWING LISTS OF OPTIONS AND OPTION CODES TO CONSTRUCT YOUR PUMP MODEL NUMBER.

PUMP CLASS		FLOW RATE	MATERIAL	SELF-FLUSH	PULSE DAMPENER	PISTON SEAL	INLET/OUTLET TUBING		SPECIAL OPTIONS
<u>B</u><u>L</u><u>S</u> = BLS Class	<u>0</u><u>0</u><u>5</u> = 5 mL/min (6,000 psi max.)	<u>S</u> = Stainless Steel Fluid Path <u>P</u> = PEEK Fluid Path <u>T</u> = Titanium Fluid Path <u>J</u> = Jacketed SS Pump Head Note: 5,000 psi max. for PEEK Fluid Path.	<u>F</u> = w/ Self-Flush Piston Wash <u>N</u> = No Self-Flush	<u>P</u> = Pulse Dampener Only No Pressure or Leak Sensors <u>T</u> = Pulse Dampener w/ Pressure & Leak Sensors <u>N</u> = No Pulse Dampener No Pressure or Leak Sensors <u>X</u> = No Pulse Dampener w/ Pressure & Leak Sensors	<u>1</u> = Standard Seal (SS Energizer) <u>2</u> = Organic Seal (SS Energizer) <u>3</u> = Standard Seal (FP Energizer) <u>4</u> = Organic Seal (FP Energizer) (SS : Stainless Steel) (FP : Fluoropolymer)	<u>A</u> = 1/8" OD (flexible) <u>B</u> = 1/8" OD (rigid) <u>C</u> = 1/8" OD (rigid) <u>D</u> = 1/8" OD (flexible) <u>G</u> = 1/8" OD (flexible) Note: Inlet and Outlet Fittings are included with the pump for the specified tubing. For options A and D, the inlet tubing and filter are included.	<u>Inlet</u> 1/8" OD (flexible) 1/8" OD (rigid) 1/8" OD (rigid) 1/8" OD (flexible) 1/8" OD (rigid)	<u>Outlet</u> 1/16" OD 1/16" OD 1/8" OD (rigid) 1/8" OD (flexible) 1/8" OD (rigid)	-- = Standard Product (leave blank for standard options & cabinet) <u>DG</u> = Includes Degasser <u>XX</u> = Customer Special (Consult Factory)
	<u>0</u><u>1</u><u>0</u> = 10 mL/min (6,000 psi max.)								
	<u>0</u><u>4</u><u>0</u> = 40 mL/min (1,600 psi max.)								

EXAMPLE MODEL NUMBER:

B L S 0 4 0 S F P 1 A

Please Note: Some features and options are not available with certain configurations. Please refer to the Part Number Configurator (Excel) to verify model number before ordering. Download at: www.ssihplc.com/configurator/

LS CLASS BINARY GRADIENT PUMPING SYSTEM - SPECIFICATIONS

Flow Rate Range and Max. Pressure Ratings* (each pump)	0.000 - 5,000 mL/min (6,000 psi) (5,000 psi PEEK) 0.00 - 10.00 mL/min (6,000 psi) (5,000 psi PEEK) 0.0 - 40.0 mL/min (1,600 psi)	Flow Precision 0.2% RSD
Pulsation**	≤2% @ 1 mL/min and 1,000 psi	Wetted Materials (See Above Options), Synthetic Ruby, Sapphire, UHMWPE, PTFE, PFA
Pressure Accuracy	±2% of full scale pressure	Dimensions 9" H x 10" W x 17" D
Flow Accuracy	Within 2% of set flow rate, 0.20 mL/min and above; 80:20 Water/IPA @ 1,000 psi (5 mL and 10 mL) Within 2% of set flow rate, 0.80 mL/min and above; 80:20 Water/IPA @ 1,000 psi (40 mL)	Weight 30 lbs. (13.6 kg) Power 100-240 Vac (± 10%), 50-60 Hz Control RS-232, Micro USB, Run/Stop, Analog (0-10V, 4-20mA), Gradient Method Development

* Flow Rate is dependent on solvent selection and operating pressure. ** Pulsation value with pulse dampener.