



HPLC PUMPS

The New Generation has arrived!



YOUR GLOBAL SCIENCE PARTNER

6 Kelvin Park Birkenhead Merseyside CH41 1LT United Kingdom
Tel: +44 (0) 151 649 4000 • E: info@greyhoundchrom.com • www.greyhoundchrom.com



HPLC PUMPS

The New Generation has arrived!



YOUR GLOBAL SCIENCE PARTNER

6 Kelvin Park Birkenhead Merseyside CH41 1LT United Kingdom
Tel: +44 (0) 151 649 4000 • E: info@greyhoundchrom.com • www.greyhoundchrom.com

CONTENTS	PUMP CLASS	PAGE
HPLC Pump Product Finder		1
HPLC Pump Range		2
Low Profile Single Piston Isocratic Pumps	M1	3
Single Piston Isocratic Pumps	ML, MX & MXT	4
Single Piston High Performance Isocratic Pumps	LL, LS & LST	5
Dual Piston Isocratic Pumps	LD & PR	6
Ultra High Pressure Isocratic Pumps	LU	7
Constant Pressure Isocratic Pumps	CP	8
Constant Pressure Column Packing System	CP	9
High Performance Binary Gradient Pumps	LST	10
High Flow Dual Piston Pumps	HF 300	11
Super Critical Fluid Pumps	SFC24	11
HPLC Pump Replacement Parts		12
HPLC Pump Miscellaneous Supplies		13
Model LP-21 LO-Pulse Damper		13
Greyhound Chromatography Brand Range		14

ORDERING INFORMATION

Orders can be placed by -
Post, Phone, Email or Online

Greyhound Chromatography
And Allied Chemicals
6 Kelvin Park, Birkenhead
Merseyside, CH41 1LT
United Kingdom

Tel: (+44) 0 151 649 4000

Fax: (+44) 0 151 649 4001

E: info@greyhoundchrom.com

www.greyhoundchrom.com



YOUR GLOBAL SCIENCE PARTNER



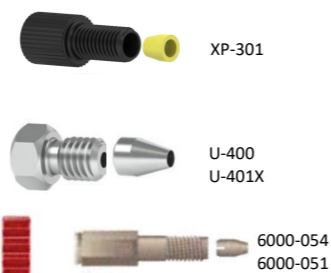
Greyhound Chromatography shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material. This information is subject to change without notice.

© Copyright Greyhound Chromatography & Allied Chemicals 2020. All rights reserved.

Tel: +44 (0) 151 649 4000 • E: info@greyhoundchrom.com • www.greyhoundchrom.com

HPLC Pump Miscellaneous Supplies

PART NO	DESCRIPTION
REPLACEMENT LOW PRESSURE INLET TUBING	
T-10201	1/8" OD FEP Fluoropolymer tubing, 1/16" ID, 10' length
REPLACEMENT LOW PRESSURE INLET FITTINGS FOR 1/8" OD TUBING	
XP-301	1/4-28 Flat-Bottom Delrin Nut & ETFE Ferrule (P-300), each
HIGH PRESSURE OUTLET FITTINGS FOR TUBING OD	
U-400	10-32, SS Nut 1/16"
U-401X	SS Ferrule 1/16"
6000-054	10-32 Coned, PEEK Nut, max. 7,000 PSI 1/16"
6000-051	PEEK Ferrule 1/16"
25-0155	SS Bulkhead, 2 µm outlet filter 1/8"
51018	Filter Closure 1/8"
01-0141	SS Gland Nut 1/8"
01-0143	SS Ferrule 1/8"
REPLACEMENT HIGH PRESSURE OUTLET TUBING	
1531	1/16" OD PEEK tubing, 0.010" ID, 5' length
U-106	1/16" OD SS tubing, 0.010" ID, 5' length



TECH TIP

Back Pressures

The recommended minimum back pressure is 50 PSI for optimum check valve performance. For pumps with a pulse dampener, we recommend a minimum of 500 PSI back pressure. If your application will not provide adequate back pressure, adding tubing for restriction to the outlet of the pump is recommended.

Model LP-21 LO-Pulse Damper

The Model LP-21 LO-Pulse pulse damper is a patented wide dynamic range pulse damper designed for use with single piston reciprocating HPLC pumps. It uses 1/4-28 SSI-type fittings and operates up to 6,000 PSI. The LO-Pulse pulse damper reduces pulsations by compressing a fluid held within the bottom cavity of the unit. This fluid is isolated from the LC mobile phase by a durable but flexible inert diaphragm. As the HPLC system pressure increases, fluid in the bottom chamber is compressed. When the LC pump piston is retracting, the compressed fluid expands maintaining system pressure and, more importantly, keeps the mobile phase flowing at a constant rate. When the system pressure is at its maximum allowable pressure (6,000 PSI), the volume of mobile phase in the LO-Pulse is only 0.9 mL.



The noise level in the detector resulting from pump pulsations can significantly affect precision in qualification and the detection limit of trace components. The LO-Pulse™ pulse damper smooths pump pulsations and maintains constant flow in flow sensitive detectors.

TECH TIP

Ideal to have at least 500 PSI minimum back pressure for optimum efficiency

MODEL LP-21 LO-PULSE DAMPER

PART NO	DESCRIPTION
20-0218	Model LP-21 LO-Pulse Damper
20-0220	PEEK Model LP-21 LO-Pulse Damper
12-0527	Low cost LO-Pulse (without case)
12-0537	Low cost PEEK LO-Pulse (without case)
P-1063	Spare parts kit (includes diaphragm, O-rings, tools)

TECH TIP

Pump accessory kit shipped with all pumps includes:
1/8" OD PTFE tubing (36" length) 20 µm inlet filter
Outlet tubing sold separately:
1/16" OD PEEK tubing
1/16" OD SS tubing

NEW GENERATION HPLC PUMPS



PUMP MODEL	M1 CLASS	ML CLASS	MXT CLASS	LL CLASS	LST CLASS
Max flow rate/pressure	10mL/2,000 PSI 40mL/500 PSI	10 mL/5,000 PSI 40 mL/900 PSI	10 mL/5,000 PSI 40 mL/900 PSI	5 mL/6,000 PSI 10 mL/6,000 PSI 40 mL/1,600 PSI	5 mL/6,000 PSI 10 mL/6,000 PSI 40 mL/1,600 PSI
Page	3	4	4	5	5
Inlet: 1/8" OD, 1/4-28 Flat bottom	•	•	•	•	•
Outlet: 1/16" OD, 10-32	•	•	•	•	•
FEATURES					
3 year warranty	•	•	•	•	•
Single piston isocratic pump	•	•	•	•	•
Simple keypad control, LED display	•	•	•	•	•
Self-flushing pump heads	•	•	•	•	•
Pulse dampener		•	•	•	•
Prime purge valve		•	•	•	•
Real-time pressure monitoring			•		•
Set upper and lower pressure limits			•		•
Drip tray and leak sensor		Drip tray only	•	Drip tray only	•

A wide range of models with alternative specifications are available. Please view the website or contact our sales team for further information.



PUMP MODEL	LD CLASS	PR CLASS	LU CLASS	CP CLASS	LST BINARY
Max flow rate/pressure	12 mL/6,000 PSI 36 mL/6,000 PSI 100 mL/1,000 PSI	100 mL/4,000 PSI 300 mL/1,000 PSI	5 mL/18,000 PSI	5 mL/25,000 PSI 12 mL/18,000 PSI 24 mL/10,000 PSI 100 mL/5,000 PSI 300 mL/1,000 PSI	5 mL/6,000 PSI 10 mL/6,000 PSI 40 mL/1,600 PSI
Page	6	6	7	8	9
Inlet: 1/8" OD, 1/4-28 Flat bottom	•	• 1/4" OD (300mL)	•	• 1/4" OD (300mL)	•
Outlet: 1/16" OD, 10-32	• 1/8" OD (100mL)	• 1/8" OD (100 & 300mL)	•	• 1/8" OD (100 & 300mL)	•
FEATURES					
3 year warranty	•	•	•	•	•
Dual piston isocratic pump	•	•	•	•	•
Simple keypad control, LED display	•	•	•	•	•
Self-flushing pump heads	•	•	•	•	•
Pulse dampener	•	•	•	•	•
Prime purge valve	•	•	•	•	•
Real-time pressure monitoring	•	•	•	•	•
Set upper and lower pressure limits	•	•	•	•	•
Drip tray and leak sensor	•	•	•	•	•

Low Profile Single Piston Isocratic Pumps - M1 Class

- Self-flushing pump head
- Stainless steel or PEEK fluid path
- Simple keypad controls, LED display
- Single piston
- Electronic rapid refill mechanism
- Motor stall detector
- 3 year warranty

The compact M1 Class consists of single-headed, positive displacement piston pumps that deliver high-performance and precision at an affordable price. Applications include precise chemical metering, dispensing, and specific HPLC separation. Having the smallest possible footprint for a high pressure pump, the M1 Class will easily integrate into any laboratory or industrial environment.



SPECIFICATIONS

Flow Accuracy	Within 2% of set flow rate* 10mL Within 5% of set flow rate* 40mL Within 5% of set flow rate* 100mL
Flow Precision	1.0% RSD
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE
Dimensions (h x w x d)	5.5" x 3" x 10.5" (14 x 8 x 27 cm)
Weight	3.5 lbs (1.6 kg)
Power	To Supply: 100-240 VAC, 50-60 Hz, 1A Supply to Pump: 24VDC, centre positive, 2.1 mm post, 1.6 AMP Supply to Pump: 24VDC, centre positive,
Control	Micro USB Port with RS-232 communication, Run/Stop

*Flow rate range for flow accuracy specification:
10 mL - 0.20 mL/min and above; 80:20 Water/IPA at 1,000 PSI
40 mL - 0.80 mL/min and above; 80:20 Water/IPA at 100 PSI
100 mL - 2 mL/min and above; 80:20 Water/IPA at 100 PSI

TECH TIP Standard vs Organic Seals

The standard seal is made of (UHMW-PE) Ultra High Molecular Weight Polyethylene for use with aqueous fluids. The organic seal is made of graphite-filled PTFE for use with harsh chemicals.

ORDERING INFORMATION

PART NO	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
P-M110S	standard (SS Energiser)	10	SS	2,000	A
P-M110B	standard (FP Energiser)	10	PEEK	2,000	A
P-M110S-O	organic (SS Energiser)	10	SS	2,000	A
P-M110B-O	organic (FP Energiser)	10	PEEK	2,000	A
P-M140S	standard (SS Energiser)	40	SS	500	A
P-M140B	standard (FP Energiser)	40	PEEK	500	A
P-M140S-O	organic (SS Energiser)	40	SS	500	A
P-M1FS-8 ¹	standard (SS Energiser)	100	SS	250	D

* A - 1/8"OD Flexible - 1/16"OD rigid; D - 1/8"OD Flexible - 1/18"OD Flexible
¹ - Not self-flushing
Flow Rate is dependent on solvent selection and operating pressure

TECH TIP Back pressure

The recommended minimum back pressure is 200 PSI for optimum pump performance. If your application will not provide adequate back pressure, adding restrictive tubing to the outlet of the pump is recommended.

REPLACEMENT PARTS

	P-M110S	P-M110B	P-M140S	P-M140B
Piston Seal Kit*, Aqueous	P-0103	P-0103B	P-1295	P-1295B
Piston Seal Kit*, Organic	P-0109	P-0109B	P-1299	---
Check Valve Kit, Inlet & Outlet	P-1085-2	P-1086	P-1085-2	P-1086
Replacement Check Valve Capsules, 10/pk	P-1075	P-1076	P-1075	P-1076
Self-Flush Assembly	P-1082	P-1088	P-1081	P-1089
Replacement Piston	P-0101	P-0101	P-1298	P-1298
Inlet Filter Assembly (Fitting & Element)	06-0110	06-0110	06-0110	06-0110
Replacement Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

NEW **Biocompatible Seals**
Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

GREYHOUND / SSI PUMP REPLACEMENT PARTS

PUMP HEAD MODEL	L HEAD	M HEAD	MM HEAD	H HEAD	MN HEAD
NEW GENERATION PUMPS	PBD-LST05(S/B) PB-LST05(S/B) P-LL05(S/B) P-LST05(S/B) P-LS05(S/B) P-CP12S	PBD-LST10(S/B) PB-LST10(S/B) P-LL10(S/B) P-LST10(S/B) P-LS10(S/B) P-LD12(S/B) P-LD36(S/B) P-CP24S	P-ML10(S/B) P-MX10(S/B) P-MXT10(S/B) P-MXT10B-MS P-M110(S/B)	PBD-LST40(S/B) PB-LST40(S/B) P-LL40(S/B) P-LST40(S/B) P-LS40(S/B) P-LD100(S/B) P-PR100(S/B) P-CP100S P-0100F(B)	P-ML40(S/B) P-MX40(S/B) P-MXT40(S/B) P-M140(S/B)
Piston assembly, ea	P-1597	P-1097	P-0101	P-1198	P-1298
Standard piston seal kit, ea	P-1595	P-1095	P-0103	P-1096	P-1295
Standard piston seals, 10/pk	P-1591	P-1090	—	P-3003	—
Biocompatible piston seal kit*, ea	P-1595B	P-1095B	P-0103B	P-1096B	P-1295B
Piston seal kit, Organic, ea	P-1599	P-1099	P-0109	P-3009	P-1299
Biocompatible Piston Seal Kit, Organic, ea	—	P-1099B	P-0109B	—	—
Check valve SS (inlet & outlet)	P-1085-2	P-1085	P-1085-2	P-1085	P-1085-2
Check valve PEEK kit (inlet & outlet)	P-1086	P-1086	P-1086	P-1086	P-1086
Replacement capsules, SS (10/pk)	P-1075	P-1075	P-1075	P-1075	P-1075
Replacement capsules, PEEK (10/pk)	P-1076	P-1076	P-1076	P-1076	P-1076
Self flush check valve kit	P-1084	P-1084	—	P-1084	—
Self flush assembly, SS	—	—	P-1082	—	P-1081
Self flush assembly PEEK	—	—	P-1088	—	P-1089
Inlet filter assy (fitting & element)	06-0110	06-0110	06-0110	06-0110	06-0110
Inlet filter element, 20 µm (2/pk)	P-1170	P-1170	P-1170	P-1170	P-1170
Outlet filter element, SS (2/pk)	P-1175	P-1175	P-1175	P-1172	P-1172
Outlet filter elements for PEEK Pumps, ea	P-1171	P-1171	P-1171	P-1171	P-1171
Prime purge valve rebuild kit, SS	P-1177	P-1177	P-1177	P-1177	P-1177
Prime purge valve rebuild kit, PEEK	P-1178	P-1178	P-1178	P-1178	P-1178
Prime purge valve assy, SS, ea	22-0292	22-0292	22-0292	22-0292	22-0292
Prime purge valve assy, PEEK, ea	06-0115	06-0115	06-0115	06-0115	06-0115
Pulse dampener w/transducer, SS— for models with real time pressure monitoring	P-1061	P-1061	P-1061	P-1061	P-1061
Pulse dampener w/transducer, PEEK— for models with real time pressure monitoring	P-1062	P-1062	P-1062	P-1062	P-1062
Pulse dampener (no transducer), SS	—	P-1065	P-1065	P-1065	—
Pulse dampener (no transducer), PEEK	—	P-1066	P-1066	P-1066	—
Pulse dampener rebuild kit	P-1063	P-1063	P-1063	P-1063	P-1063

*Seal kits include: Self flush seal, O-ring, primary seal, removal tool

NE **Biocompatible Seals**
Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

TECH TIP

Seal Options

Standard seals - Ultra High Molecular Weight Polyethylene
Organic seals - Graphite-filled PTFE for use with harsh chemicals

High Flow Dual Piston Pumps - HF 300

- Up to 300 mL/min and 10,000 PSI
- Dual piston design for precise flow rates and low pulsation
- 3 year warranty
- Ceramic pistons and ruby/sapphire check valves



HF 300 PUMP				
PART NO	MODEL	FLOW RATE	MAX PRESSURE*	SELF FLUSH
P-5300CFNF	Constant flow	0.1 – 300 mL/min	10,000 PSI	
P-5300CFSF	Constant flow	0.1 – 300 mL/min	10,000 PSI	•
P-5300CPNF	Constant pressure	0.1 – 300 mL/min	10,000 PSI	
P-5300CPSF	Constant pressure	0.1 – 300 mL/min	10,000 PSI	•

*At 220 V, entire power range available. At 110 V, maximum pressure decreases above 250 mL/min. Flow rate is dependent on solvent selection and operating pressure

REPLACEMENT PARTS	
Piston Seal Kit*, Aqueous	P-1795
Check Valve Capsules, 4/pk	P-1785
Self-Flush Check Valve Kit	P-1087
Replacement Piston	P-1697
Replacement Outlet Filter Element, ea	P-1172

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

Super Critical Fluid Pumps - SFC 24

- Self-flushing pump head
- 3 year warranty
- Outlet filter
- All aluminum pump heads (for heat transfer)
- Stainless Steel fluid path (other than pump heads)
- Integrated cooling system using Peltier thermoelectric modules
- In-line electronic pressure transducer



The SFC-24 features integrated cooling systems using Peltier thermoelectric modules. The cooling is fully self-contained within the pump cabinet, eliminating the need for external refrigeration units and the associated piping, coolants, and Freon. Peltier technology is 100% solid state.

SFC-24 PUMP			
PART NO	MODEL	FLOW RATE	MAX PRESSURE
P-2024SFC	Constant pressure	0.01 – 24 mL/min	10,000 PSI
P-2024SFC-CF	Constant flow	0.01 – 24 mL/min	10,000 PSI

REPLACEMENT PARTS	
Piston Seal Kit*, Aqueous	P-2495
Check Valve Kit, Inlet & Outlet	P-2485
Replacement Bulkhead Filter Assembly, ea (Inlet or Outlet)	50190
Replacement Filter Element for Bulkhead Filter, 2/pk	P-1172
Replacement Piston	P-1097

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

Single Piston Isocratic Pumps - ML, MX & MXT

- Pressure monitoring with automatic pressure compensation
- Integrated prime-purge valve
- Stainless steel or PEEK fluid path
- Simple keypad controls, LED display
- Leak sensor
- 3 year warranty
- MXT-MS Applications include :
 - Flow Injection Analysis
 - Infusion
 - Cone Wash



SPECIFICATIONS

Flow Accuracy	Within 2% of set flow rate* 10mL Within 5% of set flow rate* 40mL
Pressure Accuracy	± 2% of full scale pressure
Flow Precision	0.5% RSD
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE
Dimensions (h x w x d)	6.5" x 7" x 16" (17 x 18 x 41 cm)
Weight	15.3 lbs (6.9 kg)
Power	100-240 VAC, (± 10%), 50-60 Hz
Control	RS-232, Micro USB, Voltage Flow control, Run/Stop (ML Class: Micro USB & Run/Stop)

*Flow rate range for flow accuracy specification:
10 mL—0.20 mL/min and above; 80:20 Water/IPA at 1,000 PSI
40 mL—0.80 mL/min and above; 80:20 Water/IPA at 100 PSI

TECH TIP
The MXT-MS pump includes an internal backpressure coil assembly (max flow rate of 1 mL/min) for mass spectrometry applications, i.e. Flow Injection Analysis, Infusion, Cone Wash.

REPLACEMENT PARTS	P-ML10S P-MXT10S P-MXT10S-O	P-ML10B P-MXT10B P-MXT10B-MS	P-ML40S P-MXT40S	P-ML40B P-MXT40B
Piston Seal Kit*, Aqueous	P-0103	P-0103B	P-1295	P-1295B
Piston Seal Kit*, Organic	P-0109	P-0109B	P-1299	—
Check Valve Kit, Inlet & Outlet	P-1085-2	P-1086	P-1085-2	P-1086
Replacement Check Valve Capsules, 10/pk	P-1075	P-1076	P-1075	P-1076
Self-Flush Assembly	P-1082	P-1088	P-1081	P-1089
Replacement Piston	P-0101	P-0101	P-1298	P-1298
Inlet Filter Assembly (Fitting & Element)	06-0110	06-0110	06-0110	06-0110
Replacement Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170
Replacement Outlet Filter Elements, 2/pk	P-1175	P-1171 (ea)	P-1175	P-1171 (ea)
Pulse Dampener Rebuild Kit	P-1063	P-1063	P-1063	P-1063
MXT Backpressure Coil Assembly for MS applications	—	P-COIL	—	—

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

NEW Biocompatible Seals
Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

Single Piston High Performance Isocratic Pumps - LL, LS & LST Class

- Pulse dampener
- Self-flushing pump heads and prime purge valve
- Stainless steel or PEEK fluid path
- Simple front panel keypad controls with LED display
- 3 year warranty
- Three levels of specifications to suit your specific requirements

The reliable LL, LS and LST Classes are single-headed positive displacement piston pumps incorporating advanced cam designs for very low pulsation. The LL Class with its precise control, virtually pulse-free performance and rapid refill are ideally suited to basic applications. With micro-stepping motor technology and a proven single-piston pump mechanism, the LS/LST classes exceed the performance of more expensive units at a fraction of the cost. These versatile pumps are ideal for a wide variety of demanding HPLC applications (including biocompatible separations), semi-prep LC, metering & dispensing, and general lab use.



SPECIFICATIONS

Flow Accuracy	Within 2% of set flow rate* 5ml Within 2% of set flow rate* 10mL Within 5% of set flow rate* 40mL
Pulsation	≤ 2% at 1 mL/min and 1,000 PSI
Pressure Accuracy	± 2% of full scale pressure
Flow Precision	0.2% RSD
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE
Dimensions (h x w x d)	6.5" x 7" x 16" (16.5 x 18 x 41 cm)
Weight	15 lbs (7 kg)
Power	100-240 VAC, (± 10%), 50-60 Hz
Control	RS-232, Micro USB, Voltage Flow control, Run/Stop (LL Class: Micro USB & Run/Stop)

*Flow rate range for flow accuracy specification:
5mL and 10 mL - 0.20 mL/min and above; 80:20 Water/IPA at 1,000 PSI
40 mL - 0.80 mL/min and above; 80:20 Water/IPA at 100 PSI

ORDERING INFORMATION

PART NO LL MODEL	PART NO LS MODEL	PART NO LST MODEL	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
P-LL05S	P-LS05S	P-LST05S	standard (SS Energiser)	5	SS	6,000	G
		P-LST05S-O	organic (SS Energiser)	5	SS	6,000	A
P-LL05B	P-LS05B	P-LST05B	standard (FP Energiser)	5	PEEK	5,000	A
P-LL10S	P-LS10S	P-LST10S	standard (SS Energiser)	10	SS	6,000	A
		P-LST10S-NF ¹	standard (SS Energiser)	10	SS	6,000	A
		P-LST10S-O	standard (SS Energiser)	10	SS	6,000	A
P-LL10B	P-LS10B	P-LST10B	standard (FP Energiser)	10	PEEK	5,000	A
P-LL40S	P-LS40S	P-LST40S	standard (SS Energiser)	40	SS	1,600	A
		P-LST40S-O	organic (SS Energiser)	40	SS	1,600	A
P-LL40B	P-LS40B	P-LST40B	standard (FP Energiser)	40	PEEK	1,600	A
		P-LST40B-O	organic (FP Energiser)	40	PEEK	1,600	A

* A - 1/8"OD Flexible - 1/16"OD Rigid; G - 1/8"OD Flexible - 1/18"OD Rigid
¹ - Not self-flushing

LL MODEL	LS MODEL	LST MODEL	FEATURES
X	X	X	Pulse dampener
X	X	X	Self-flushing pump heads & prime purge Valve (except NF model)
		X	Real-time pressure monitoring
		X	Set upper and lower pressure limits
X	X	X	Drip tray
		X	Leak sensor on drip tray
X	X	X	Run/Stop
X	X	X	Micro USB with RS-232 communication
		X	RJ11 with RS-232 communication
		X	Voltage control

TECH TIP

The recommended minimum back pressure is 200 PSI for optimum pump performance. If your application will not provide adequate back pressure, adding restrictive tubing to the outlet of the pump is recommended.

NEW **Biocompatible Seals**
Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

REPLACEMENT PARTS	P-LL05S P-LS05S P-LST05S	P-LL05B P-LS05B P-LST05B	P-LL10S P-LS10S P-LST10S	P-LL10B P-LS10B P-LST10B	P-LL40S P-LS40S P-LST40S	P-LL40B P-LS40B P-LST40B
Piston Seal Kit*, Aqueous	P-1595	P-1595B	P-1095	P-1095B	P-1096	P-1096B
Piston Seal Kit*, Organic	P-1599	—	P-1099	P-1099B	P-3009	—
Check Valve Kit, Inlet & Outlet	P-1085-2	P-1086	P-1085	P-1086	P-1085	P-1086
Replacement Check Valve Capsules, 10/pk	P-1075	P-1076	P-1075	P-1076	P-1075	P-1076
Self-Flush Check Valve Kit	P-1084	P-1084	P-1084	P-1084	P-1084	P-1084
Replacement Piston	P-1597	P-1597	P-1097	P-1097	P-1198	P-1198
Inlet Filter Assembly (Fitting & Element)	06-0110	06-0110	06-0110	06-0110	06-0110	06-0110
Replacement Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170	P-1170	P-1170
Replacement Outlet Filter Elements, 2/pk	P-1175	P-1171 (ea)	P-1175	P-1171 (ea)	P-1175	P-1171 (ea)
Pulse Dampener Rebuild Kit	P-1063	P-1063	P-1063	P-1063	P-1063	P-1063

High Performance Binary Gradient Pumps - LST Class

- Pulse dampener
- Self-flushing pump heads and prime purge valve
- Stainless steel or PEEK fluid path
- Simple front panel keypad controls with LED display
- Real-time pressure monitoring with upper and lower pressure limits
- Drip tray and leak sensor
- Low volume mixing chamber
- 3 year warranty

The customisable Binary Gradient Pumping System 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.

The included Gradient Board allows for autonomous binary gradient formation without the need for continuous computer monitoring and control. Serial commands may be used to directly set pump flow rates, start/pause, or monitor status. Additional features include control of two solvent-selection valves, multiple timed events, and leak detection.



Pump shown with degasser



SPECIFICATIONS

Flow Accuracy	Within 2% of set flow rate*
Pulsation	≤ 2% at 1mL/min and 1,000 PSI
Pressure Accuracy	± 2% of full scale pressure
Flow Precision	0.2% RSD
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE, PFA
Dimensions (h x w x d)	9" x 10" x 17" (22.9 x 25 x 43.2 cm)
Weight	30 lbs (14 kg)
Power	100-240 VAC, (± 10%), 50-60 Hz
Control	RS-232, Micro USB, Voltage Flow Control, Run/Stop Gradient Method Development

*Flow rate range for flow accuracy specification:
5 mL—0.20 mL/min and above; 80:20 Water/IPA at 1,000 PSI
10 mL and 40 mL—0.80 mL/min and above; 80:20 Water/IPA at 1,000 PSI

ORDERING INFORMATION

PART NO without degasser	PART NO with degasser	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
PB-LST05S	PBD-LST05S	standard (SS Energiser)	5	SS	6,000	G
PB-LST05B	PBD-LST05B	standard (FP Energiser)	5	PEEK	6,000	A
PB-LST10S	PBD-LST10S	standard (SS Energiser)	10	SS	6,000	A
PB-LST10B	PBD-LST10B	standard (FP Energiser)	10	PEEK	6,000	A
PB-LST40S	PBD-LST40S	standard (SS Energiser)	40	SS	1,600	A
PB-LST40B	PBD-LST40B	standard (FP Energiser)	40	PEEK	1,600	A

*Flow rate is dependent on solvent selection and operating pressure



TECH TIP

Other pump models and specifications are available, please contact our technical sales department to discuss your particular requirements

REPLACEMENT PARTS	PBD-LST05S PB-LST05S	PBD-LST05B PB-LST05B	PBD-LST10S PB-LST10S	PBD-LST10B PB-LST10B	PBD-LST40S PB-LST40S	PBD-LST40B PB-LST40B
Piston Seal Kit*, Aqueous	P-1595	P-1595B	P-1095	P-1095B	P-1096	P-1096B
Piston Seal Kit*, Organic	P-1599	—	P-1099	P-1099B	P-3009	—
Check Valve Kit, Inlet & Outlet	P-1085-2	P-1085-2	P-1085	P-1086	P-1085	P-1086
Replacement Check Valve Capsules, 10/pk	P-1075	P-1076	P-1075	P-1076	P-1075	P-1076
Self-Flush Check Valve Kit	P-1084	P-1084	P-1084	P-1084	P-1084	P-1084
Replacement Piston	P-1597	P-1597	P-1097	P-1097	P-1198	P-1198
Inlet Filter Assy (Fitting & Element)	06-0110	06-0110	06-0110	06-0110	06-0110	06-0110
Replacement Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170	P-1170	P-1170
Replacement Outlet Filter Elements, 2/pk	P-1175	P-1171 (ea)	P-1175	P-1171 (ea)	P-1175	P-1171 (ea)
Pulse Dampener Rebuild Kit	P-1063	P-1063	P-1063	P-1063	P-1063	P-1063

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

NEW **Biocompatible Seals**
Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

Constant Pressure Column Packing System

The Next Generation Column Packing System is perfect for quickly and safely packing efficient, reproducible columns. With pressures up to 10,000psi or 18,000psi (depending on version ordered), the user can expect increased plate counts by up to 20%, higher yields, and the ability to pack ultra-small particles with consistent bed density.

For continuous and repeatable high throughput applications where purchasing new columns can quickly become expensive, users can easily pack their own columns to rapidly see a return on their investment. This system can also be used for new column research and development, and comes with an intuitive column packing reservoir, column hardware, stationary phase, and all necessary inlet and outlet tubing (solvents and computer not included).

Quick-Set column packing computer software is included, giving full control of the packing process, including the ability to create and save methods, set the desired packing pressure (pump flow rate automatically adjusts to maintain pressure), vary the PID loop variables, and set the upper pressure limit to avoid over pressuring the column, preventing potential damage to the packing particles. This system gives complete control over the packing process, producing professionally packed columns time and time again.



SYSTEM INCLUDES

- Next Generation CP Class Constant Pressure Pump with pressure transducer, RS-232, and Micro USB control; Stainless Steel; non-flushing pump heads; 110/220 Volt
- 20 mL packing reservoir assembly with inlet & outlet caps attached
- 4.6 mm pre-column assembly with packing adapter for 4.6 mm columns
- Two (2) 4.6 mm x 150 mm columns
- 10g bottle of C18 stationary phase
- Bracket assembly to mount Packing Reservoir to the pump
- Quick-Set Disk to allow full control of the packing process through a computer
- Step by step instructions explaining how to set up and pack columns
- Set of tubing to connect the system for use
- Set of cables to connect the pump to a computer
- All necessary fittings and ferrules for tubing connections



TECH TIP

Alternative Pump Models

Other pump models and specifications are available, please contact our technical sales department to discuss your particular requirements



TECH TIP

Dual Piston Pump Maintenance

In order to do maintenance on a dual piston pump, kits are sold per head, a quantity of two is required.

ORDERING INFORMATION

PART NO	P-CPU12S-PIAB	P-CP24S-NF-PIAB
Application	Column Packing	Column Packing
Pump Class	CP Class	CP Class
Flow Rate	12 mL/min	24 mL/min
PSI	18,000 PSI	10,000 PSI
Material	Stainless Steel	Stainless Steel
Self-Flush	No Self-Flush	No Self-Flush
Pulse Dampener	Pressure & Leak Sensors (18,000 psi max)	Pressure & Leak Sensors (18,000 psi max)
Piston Seal	Aqueous / Standard Seal (Stainless Steel Energizer)	Aqueous / Standard Seal (Stainless Steel Energizer)
Inlet / Outlet Tubing	Inlet: 1/8" OD (flexible) Outlet: 1/16" OD	Inlet: 1/8" OD (flexible) Outlet: 1/16" OD
Pump Heads	Dual	Dual

Dual Piston Isocratic Pumps - LD & PR Class

- Autoprime™ one button toggles flowrate to maximum for rapid solvent change
- Real-time pressure monitoring with upper and lower pressure limits
- Drip tray and leak sensor
- Pulse dampener
- Self-flushing pump heads and prime purge valve
- Stainless steel or PEEK fluid path
- Simple front panel keypad controls with LED display
- 3 year warranty



Models with alternative specifications are available on the website or please contact our sales team for information.



SPECIFICATIONS

Flow Accuracy	Within 2% of set flow rate*	LD 12
	Within 2% of set flow rate*	LD36
	Within 2% of set flow rate*	LD100
	Within 3% of set flow rate*	PR 100
	Within 4% of set flow rate*	PR 300
Pulsation	≤ 0.5% at 1 mL/min and 1,000 PSI	LD12
	≤ 2% at 1 mL/min and 1,000 PSI	LD 36
	≤ 4% at 50 mL/min and 250 PSI	LD100
	≤ 4% at 50 mL/min and 500 PSI	PR 100
	≤ 4% at 50 mL/min and 500 PSI	PR 300
Pressure Accuracy	± 2% of full scale pressure	
Flow Precision	0.2% RSD (12 mL)	
	0.5% RSD (36 mL, 100mL, 300mL)	
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE, Ceramic	
Dimensions (h x w x d)	6.5" x 10" x 17" (16 x 25 x 43 cm)	
Weight	30 lbs (14 kg)	
Power	100-240 VAC, (± 10%), 50-60 Hz	
Control	RS-232, Micro USB, Voltage Flow Control, Run/ Stop	

* Flow rate range for flow accuracy specification:
LD 12 - 0.200 mL/min and above; 80:20 Water/IPA at 1,000 PSI
LD 36 - 0.80 mL/min and above; 80:20 Water/IPA at 1,000 PSI
LD 100 - 2.0 mL/min and above; 80:20 Water/IPA at 1,000 PSI
PR 100 - 2.0 mL/min and above; 80:20 Water/IPA at 1,000 PSI
PR-300 - 5.0 mL/min and above; 80:20 Water/IPA at 100 PSI

ORDERING INFORMATION

PART NO	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
P-LD12S	standard (SS Energizer)	12	SS	6,000	A
P-LD12S-O	organic (SS Energizer)	12	SS	6,000	A
P-LD12B	standard (FP Energizer)	12	PEEK	6,000	A
P-LD36S	standard (SS Energizer)	36	SS	6,000	A
P-LD36B	standard (FP Energizer)	36	PEEK	6,000	A
P-LD100S	standard (SS Energizer)	100	SS	1,000	A
P-LD100B-8	standard (FP Energizer)	100	PEEK	1,000	D
P-PR100S	standard (SS Energizer)	100	SS	4,000	A
P-PR100S-O	organic (SS Energizer)	100	SS	4,000	A
P-PR100B	standard (FP Energizer)	100	PEEK	4,000	A
P-PR300S-8 ⁺	standard (SS Energizer)	300	SS	1,000	E
P-PR300S-O ⁺	organic (SS Energizer)	300	SS	1,000	E

* A - 1/8" OD Flexible - 1/16" OD Rigid; D - 1/8" OD Flexible - 1/18" OD Flexible
E - 1/4" OD Rigid - 1/8" OD Rigid

⁺ - Does not come equipped with pulse dampener.



TECH TIP

Dual Piston Pump Maintenance -

In order to do maintenance on a dual piston pump, kits are sold per head, quantity of two required.

REPLACEMENT PARTS	P-LD12S P-LD36S	P-LD12B P-LD36B	P-LD100S P-PR100S	P-LD100B P-PR100B	P-PR300S
Piston Seal Kit*, Aqueous	P-1095	P-1095B	P-1096	P-1096B	P-1795
Piston Seal Kit*, Organic	P-1099	P-1099B	P-3009	—	—
Check Valve Kit, Inlet & Outlet	P-1085	P-1086	P-1085	P-1086	P-1781
Repl Check Valve Capsules, 10/pk	P-1075	P-1076	P-1075	P-1076	P-1785 (4/pk)
Self-Flush Check Valve Kit	P-1084	P-1084	P-1084	P-1084	P-1084
Replacement Piston	P-1097	P-1097	P-1198	P-1198	P-1798
Inlet Filter Assy (Fitting & Element)	06-0110	06-0110	06-0110	06-0110	06-0110
Repl Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170	P-1170
Repl Outlet Filter Elements, 2/pk	P-1175 (0.5 µm) ¹ P-1172 (2 µm) ²	P-1171 (ea)	P-1172	P-1171 (ea)	P-1172
Pulse Dampener Rebuild Kit	P-1063	P-1063	P-1063	P-1063	P-1063

1) 0.5 µm outlet filter element standard with 12 mL pump

2) 2 µm outlet filter element standard with 36 mL pump

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool

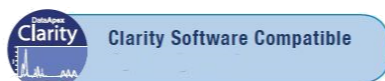


Biocompatible Seals

Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)

Ultra High Pressure Isocratic Pumps - LU Class

- Self-flushing pump head
- Real-time pressure monitoring with upper and lower pressure limits
- Drip tray and leak sensor
- Pulse dampener
- Simple keypad controls, LED display
- Advanced solvent select feature
- Automatic pressure compensation
- 3 year warranty



The analytical LU Class consists of dual-headed, positive displacement piston pumps, delivering accurate flow rates at extremely high pressures. The pumps are designed for fast, high pressure analytical HPLC, with increased peak resolution and exceptional retention time repeatability. The advanced solvent select feature provides very accurate flow rates at high pressures for a wide variety of solvents, particularly where compressibility is a major factor. With pulse-free performance and precise control, the LU Class provides the highest flow accuracy over the entire pressure range.

SPECIFICATIONS

Flow Accuracy	Within 1% of set flow rate*
Pulsation	≤ 0.75% from 3,000 PSI - 8,000 PSI
Pressure Accuracy	± 2% of full scale pressure
Flow Resolution	0.001 mL
Flow Precision	0.5% RSD on > 30 sec. average flows
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE
Dimensions (h x w x d)	6.5" x 10" x 17" (16 x 25 x 43 cm)
Weight	27 lbs (12 kg)
Power	100-240 VAC, (± 10%), 50-60 Hz
Control	RS-232, Micro USB, Voltage Flow Control, Run/Stop

*Flow rate range for flow accuracy specification:
0.100 mL/min and above; 80:20 Water/IPA at 5,000 PSI

ORDERING INFORMATION

PART NO	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
P-LU05S	standard (SS Energiser)	5,000	SS	18,000	A
P-LU05S-8	standard (SS Energiser)	5,000	SS	18,000	D

* A - 1/8" OD Flexible - 1/16" OD Rigid; D - 1/8" OD Flexible - 1/18" OD Flexible
Flow Rate is dependent on solvent selection and operating pressure

REPLACEMENT PARTS

Seal Kit*, UHP	P-1895
Check Valve Kit, double inlet/single outlet	P-1885
Replacement Check Valve Capsules, 10/pk	P-1875
Self-Flush Check Valve Kit	P-1084
UHP Piston	P-1897
Inlet Filter Assembly (Fitting & Element)	06-0110
Replacement Inlet Filter Elements, 2/pk	P-1170
Replacement Outlet Filter Elements, 2/pk	P-1175



TECH TIP

Other pump models and specifications are available, please contact our technical sales department to discuss your particular requirements



TECH TIP

Differences in solvent compressibility factors can greatly influence flow accuracy, especially at ultra-high system pressures. The Solvent Select Feature optimizes pump performance with six pre-set compressibility settings for common solvents. For uncommon applications, an isothermal compressibility factor may be entered directly to assure accurate solvent delivery.

Constant Pressure Isocratic Pumps - CP Class

- Pressure monitoring with automatic pressure compensation
- Self-flushing pump heads and integrated prime-purge valve
- Stainless steel fluid path
- Simple keypad controls, LED display
- 3 year warranty

The high performance CP Class pumps consist of dual-headed, positive displacement piston pumps with constant pressure control, covering a wide range of flows, with pressures up to 25,000 PSI. The CP Class are widely used for LC Column packing, as well as many process applications. Advanced pressure over-shoot by allowing the user to select a wide range of process parameters, including desired pressure set point, ramp rate, and upper flow rate limit. Control software included.



SPECIFICATIONS

Pressure Accuracy	± 2% of full scale pressure
Wetted Materials	Synthetic Ruby, Sapphire, UHMWPE, PTFE, Ceramic
Dimensions (h x w x d)	6.3" x 10" x 17" (16 x 25.5 x 43 cm)
Weight	30lbs (14 kg)
Power	100-240 VAC, (± 10%), 50-60 Hz
Control	RS-232, Micro USB, Voltage Flow Control, Run/Stop



TECH TIP

Pressure Control Accuracy

Pressure Control Accuracy is dependent on hydraulic system parameters. Pump automatically adjusts fluid flow to maintain constant system pressure under typical column-packing usage. Pump does not contain an automatic pressure-relief valve.

ORDERING INFORMATION

PART NO	SEAL TYPE	FLOW RATE (mL/min)	MATERIAL	PRESSURE (PSI)	INLET/OUTLET *
P-CPU05S	standard (SS Energiser)	5	SS	25,000	A
P-CP12S	standard (SS Energiser)	12	SS	10,000	A
P-CPU12S	standard (SS Energiser)	12	SS	18,000	A
P-CPU12S-PIAB	standard (SS Energiser)	12	SS	18,000	A
P-CP24S	standard (SS Energiser)	24	SS	10,000	A
P-CP24S-NF-PIAB	standard (SS Energiser)	24	SS	10,000	A
P-CP100S-8	standard (SS Energiser)	100	SS	4,000	G
P-CP300S-8	standard (SS Energiser)	300	SS	1,000	E

* A - 1/8" OD Flexible - 1/16" OD Rigid; G - 1/8" OD Flexible - 1/18" OD Rigid
E - 1/4" Rigid - 1/8" OD Rigid
Flow Rate is dependent on solvent selection and operating pressure



TECH TIP

Dual Piston Pump Maintenance

In order to do maintenance on a dual piston pump, kits are sold per head, a quantity of two is required.

REPLACEMENT PARTS	P-CPU05S	P-CPU12S	P-CP12S	P-CP24S	P-CP100S	P-CP300S
Piston Seal Kit*, Aqueous	P-1895	P-1895	P-1595	P-1095	P-1096	P-1795
Piston Seal Kit*, Organic	P-1899	P-1899	P-1596	P-1099	P-3009	—
Check Valve Kit, Inlet & Outlet	P-1881	P-1985	P-1085-2	P-1085	P-1085	P-1781
Replacement Check Valve Capsules, 10/pk	—	P-1875	P-1075	P-1075	P-1075	P-1785
Self-Flush Check Valve Kit	P-1084	P-1084	P-1084	P-1084	P-1084	P-1084
Replacement Piston	P-1897	P-1597	P-1597	P-1097	P-1198	P-1798
Inlet Filter Assy (Fitting & Element)	06-0110	06-0110	06-0110	06-0110	06-0110	—
Replacement Inlet Filter Elements, 2/pk	P-1170	P-1170	P-1170	P-1170	P-1170	—
Replacement Outlet Filter Elements, 2/pk	P-1175 (ea)	P-1175 (ea)	P-1175 (ea)	P-1175	P-1172	P-1172

*Seal Kits include: Self-flush seal, O-Ring, Primary Seal, and Removal Tool



Biocompatible Seals

Now offering biocompatible seals which contain a fluoropolymer energizer (vs the Stainless Steel Energizer)