

PrimeLine™ HPLC Pumps

Isocratic Model 501



Gradient System 500G



PrimeLine™ Isocratic and Gradient HPLC Pumps Feature:

- ❑ Self-priming pump head requires no manual priming
- ❑ Patented “Floating Pump Seal” design for extended seal wear
- ❑ Available with micro, analytical, semi-prep, and prep pump heads
- ❑ UHPLC versions for pressures up to 15,000 psi
- ❑ Programmable solvent compressibility compensation
- ❑ Easy maintenance and service for all wetted parts
- ❑ Integral™ prime/purge assembly for quick solvent change

HPLC Pumps

Introduction

The *ASI PrimeLine* HPLC pump is designed with the chromatographer in mind. It can be used as a reliable low cost isocratic pump or integrated into a gradient HPLC System. In either case, the pump incorporates several key features which make it truly one of a kind in the world of HPLC Pumps.

Features

➤ Self-priming

The pump will prime itself with any solvent and at any flow rate. Turn on the pump and open the purge valve, the pump will prime itself even from a completely dry start. You will never need to use syringes to prime it.

➤ Patented Floating Pump Seal

The seal actually floats so that it is always perfectly aligned with the piston. Our tests have proved that the average life with this new patented design is more than 5,000 hours of continuous operation at 6,000 PSI and 10 mL/min. with pure water.

➤ Micro, Analytical, Semi-Prep, and Prep Pump Heads

Pump Head	Flow Rate Range	Pressure Rating
Micro Head:	0.5 μ L/min. to 4 mL/min.	6,000 PSI Max
Analytical Head:	1.0 μ L/min. to 10 mL/min.	6,000 PSI Max
Semi-Prep Head:	0.050 mL/min. to 20 mL/min.	2,500 PSI Max
Prep Head:	0.100 mL/min. to 80 mL/min.	1,000 PSI Max

➤ UHPLC Version

Isocratic and gradient systems with a micro pump head are available in UHPLC versions. Specifications are similar to the Micro Pump and include an upper pressure limit of 15,000 PSI up to 1.0 mL/min. and 9,000 PSI up to 2.0 mL/min.

➤ Intuitive Software Control

The control is designed with dedicated keys that allow even a novice to turn on the pump and create methods. An easy to read 4-line x 20-character LCD display allows the user to monitor several pump parameters from the same screen. The model 501 can be controlled from its own keypad or from a Model 500 gradient controller. When configured as a gradient HPLC system users can program and store up to 60 methods with 20 lines each. Methods may be linked or run independently.

➤ Solvent Compressibility Compensation

The user may select from several different solvents from the on board library. The control automatically compensates for compressibility of the selected solvent.

➤ Easy Maintenance

All user serviceable components are easily accessed from the front panel. Once the head assembly is removed, the pistons and seals can be replaced quickly and easily without the use of tools.

Isocratic Model 501

The Model 501 is a high performance, compact solvent delivery module that has been designed to compete with the most expensive pump systems on the market in reliability and performance without the high cost. A dual piston design with solvent compressibility feedback assures virtually pulse-free and accurate solvent delivery. The Model 501 has all of the features of the Model 500, but without gradient programming capability. It may be used as an economical stand alone pump for isocratic operation, or in conjunction with a Model 500 for gradient operation.

Specifications

Accuracy:	+/- 1% or +/- 2 μ L/min. whichever is greater +/- 1% or +/- 1 μ L/min. whichever is greater (Micro)
Flow Rate Settings:	0 - 0.10 mL/min. 0.001 inc. 0.10 - 0.90 mL/min. 0.010 inc. 1.0 mL/min.+ 0.10 inc.
Precision:	0.25% from 0.1 mL/min. to 10 mL/min. at 20 degrees C 0.25% from 0.05 mL/min. to 4 mL/min. at 20 degrees C (Micro)
Pulsation:	1 to 2.0% Δ P/P at >1,500 PSI (Micro/Analytical)
Dimensions:	10-1/4" W x 14" D x 6-1/2" H
Weight:	16 lbs. (7.3 kg)
Power input:	85 to 264 VAC, 47 to 63 Hz, 60 watts

Model 500

The Model 500 has been designed to convert the Model 501 from an isocratic pump to a gradient HPLC system. Full operation and gradient control programming is achieved through the keypad on the front panel of the Model 500. The Model 500 includes a high pressure integral static mixer, connecting tubing, and all the accessories necessary to quickly convert the Model 501 to gradient operation.

Specifications

Accuracy:	+/- 1% or +/- 2 μ L/min. whichever is greater +/- 1% or +/- 1 μ L/min. whichever is greater (Micro)
Flow Rate Settings:	0 - 0.10 mL/min. 0.001 inc. 0.10 - 0.90 mL/min. 0.010 inc. 1.0 mL/min.+ 0.10 inc.
Precision:	0.25% from 0.1 mL/min. to 10 mL/min. at 20 degrees C 0.25% from 0.05 mL/min. to 4 mL/min. at 20 degrees C (Micro)
Pulsation:	1 to 2.0% Δ P/P at >1,500 PSI (Micro/Analytical)
Programming:	60 methods with 20 lines each, methods can be linked to create complex gradient programs.
Remote Start/Stop:	Controlled by external contact closure
Dimensions:	10-1/4" W x 14" D x 6-1/2" H
Weight:	16 lbs. (7.3 kg)
Power input:	85 to 264 VAC, 47 to 63 Hz, 60 watts

HPLC Pumps

Gradient Model 500G

The Model 500G is a complete high pressure gradient HPLC system. The system includes one Model 501, one Model 500, and all necessary electrical and plumbing connections. Specifications listed on previous page.

Specifications

Programming Control:	Alphanumeric keypad
Gradient Profile:	Step and linear profiles at multiple levels
Number of Programmable Files:	20 files with the ability to link programs
Maximum Program Steps:	20
Maximum Time per Step:	650 minutes in 0.1 steps
Remote Control:	Contact closure and RS232
Concentration Range Setting:	0-100% in 1.0% steps
Flow Rate Accuracy:	See pump specifications previous page
Flow Rate Settings:	0 - 0.10 mL/min. 0.001 inc. 0.10 - 0.90 mL/min. 0.010 inc. 1.0 mL/min.+ 0.10 inc.

PrimeLine™ Micro Pump Performance Data

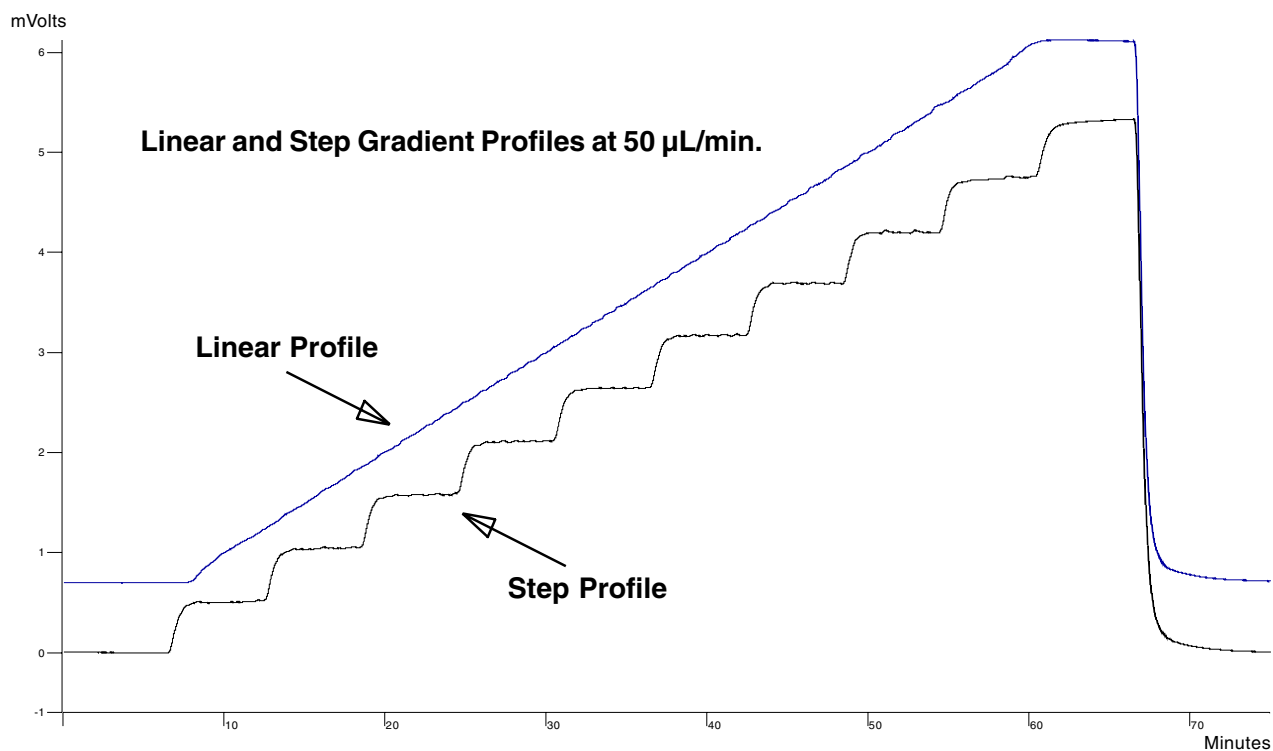


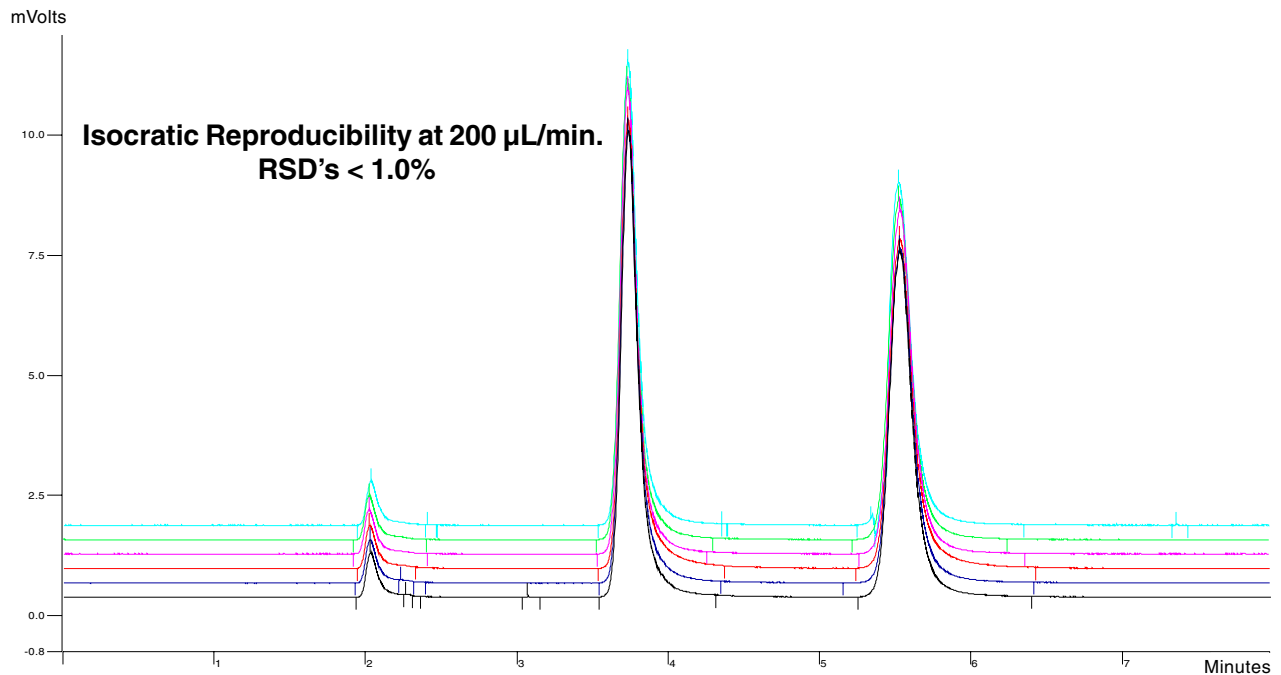
Figure 1

HPLC System Configuration:

ASI PrimeLine Model 500G Micro Head
Detection: UV214
Mixer: ASI HyperShear In-Line 25 µL

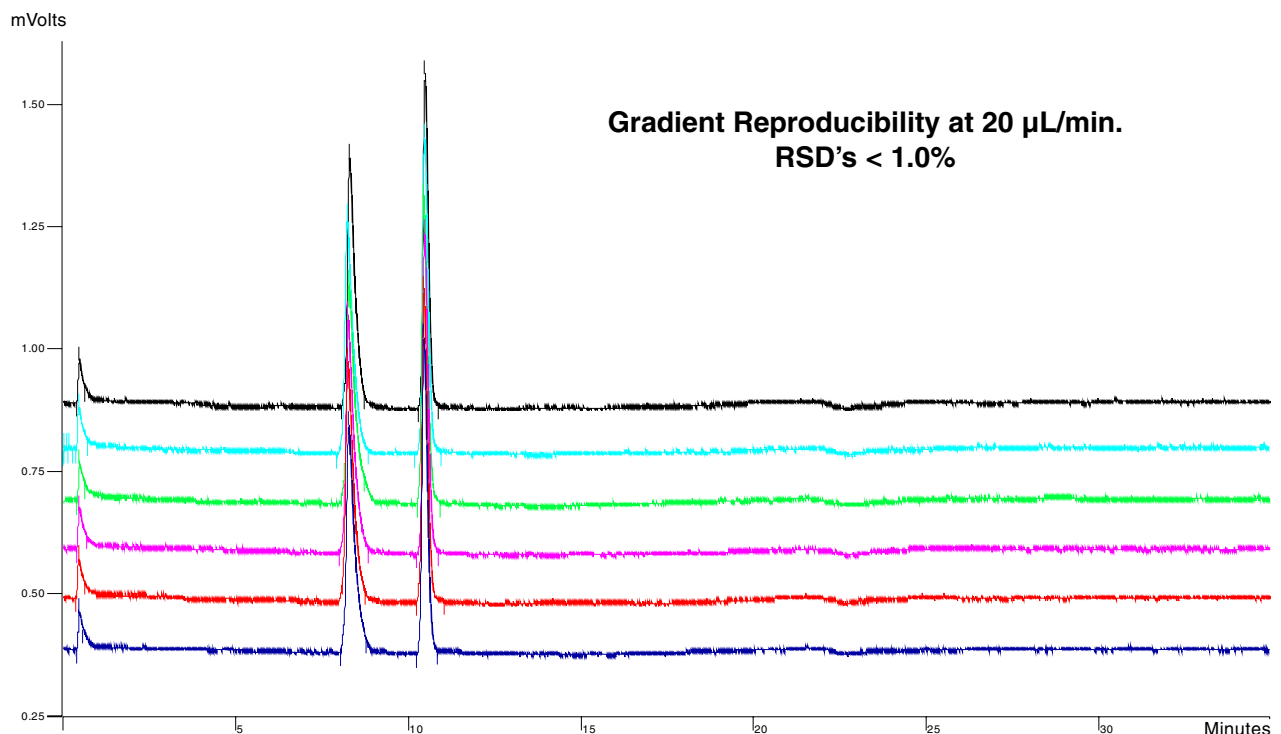
HPLC Conditions:

MP: A = H₂O, B = H₂O doped with 0.05% red dye
Flow Rate: 50 µL/min.
Step Gradient: 0 to 100% B in 60 min., 10% steps
Linear Gradient: Same, 4 min. T0 hold



HPLC System Configuration: ASI PrimeLine Model 500G Micro Head Detection: UV214 Mixer: ASI HyperShear In-Line 150 µL	HPLC Conditions: MP: A = H ₂ O, B = H ₂ O doped with 0.05% red dye Flow Rate: 200 µL/min. Isocratic 35% B Sample: Methyl and Ethyl Parabens
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Figure 2



HPLC System Configuration: ASI PrimeLine Model 500G Micro Head Detection: UV214 Mixer: ASI HyperShear In-Line 25 µL	HPLC Conditions: MP: A = H ₂ O, B = H ₂ O doped with 0.05% red dye Flow Rate: 20 µL/min. Gradient 5 to 95% B in 20 min. Sample: Methyl and Ethyl Parabens
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Figure 3

Easy Maintenance and Repair

Replacing the Check Valve Cartridges

The pump inlet and outlet check valve cartridges are contained in hex nut housings located on the top (outlet) and bottom (inlet) of the pump head assembly.

➤ Outlet Check Valve Cartridge

Using the 1/4" open end wrench (provided) loosen the 1/16" cross over tube nuts and remove the 1/16" cross over tube. Remove the outlet housing with a 1/2" open end wrench and replace the outlet cartridge making sure the *ASI* arrow on the cartridge is aligned with the flow direction. Replace the housing and cross over tube and tighten all fittings until they are leak free.

➤ Inlet Check Valve Cartridge

Remove the fingertight fitting on the inlet line and follow the same general directions for replacing the outlet cartridge. Be sure the *ASI* arrow on the cartridge is aligned with the flow direction.



Spring Housing/
Pump Head
Assembly

Outlet Check Valve Cartridge

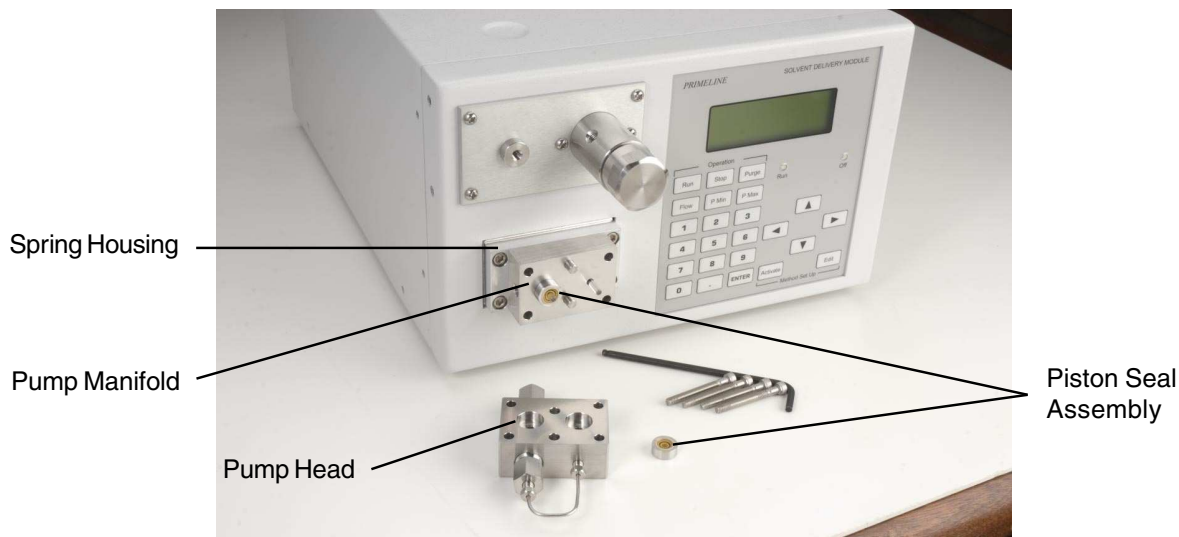
Inlet Housing/Cartridge

Outlet Housing

Replacing the Piston Seal Assemblies

Using the 9/64" allen wrench with a T bar handle loosen and remove the screws which connect the pump head to the manifold and spring housing. Remove and pull the pump head away from the pump. This step will expose the two piston seal assemblies. The seals may be grasped with the finger tips and gently pulled forward and free of the piston.

Push the new piston seal assembly over the end of the exposed piston with a finger tip or thumb. This procedure aligns the piston seal assembly on the piston. When the pump head is pressed firmly against the manifold, the seals will be pressed over the pistons.



Replacing the Pistons

Using the 9/64" T Bar allen wrench, remove the pump head, piston seal assemblies, manifold, and wash seal assemblies, if installed. Using the same tool, remove the screws which attach the spring housing to the frame drive casting. Pull the spring housing free from the pump. The piston shafts are now visibly protruding from the rear of the assembly. Gently remove the pistons from the spring housing assembly. To re-install pistons, push the pistons back into the spring housing through the rear bushings.



HPLC Pumps

PrimeLine™ HPLC Pumps & Replacement Parts

Micro HPLC Pumps

Description	Part Number
Model 501	501-0002*
Model 500	500-0002*
Model 500G Gradient System	500G-0002*
Model 501 High Pressure	501-0002HP*
Model 500G High Pressure Gradient System	500G-0002HP*
* Please specify your local required line voltage for the above items	
Spring Housing/Pump Head Assembly	A500-1000
Hydraulic Module with Damper, Purge Valve & Outlet Manifold	A500-3054
Wash Seal Kit, Isocratic	A500-1023K
Wash Seal Kit, Gradient	A500-1033K
Wash Seal Assembly, 2/Pack	A500-1023-02
Wash Seal Assembly, 10/Pack	A500-1023-10
Solvent Inlet Line Assembly	500-2135-01
Transfer Tube	500-1280-01
Interconnect Tube	500-1285-01
Cross Over Tube	500-3112-01
Static Mixer 150 µL	412-0150
Static Mixer 250 µL	420-0250
Injection Valve Mounting Bracket	500-2117
Injection Valve WX-1000-01 with 20µL loop	A500-1017
Pressure Transducer	A500-4012
Stainless Steel Nuts 10/32, 10/Pack	900-0622
Stainless Steel Ferrules, 10/Pack	910-0622
Fingertight Fittings 10/32, 10/Pack	800-0631
Piston Seal Assembly, UHMW 2/Pack	A500-1009-U-2
Piston Seal Assembly, UHMW 10/Pack	A500-1009-U-10
Ceramic Piston	A500-1117
Inlet Housing	500-1131
Outlet Housing	500-1132
Inlet/Outlet Cartridge	A500-1133
Inlet Check Valve Filter	A500-1180
Solvent Filters, 10 micron, each	850-0620
Solvent Filters, 10 micron, 5/Pack	850-0621

PrimeLine™ HPLC Pumps & Replacement Parts continued**Analytical HPLC Pumps**

Description	Part Number
Model 501	501-0000*
Model 500	500-0000*
Model 500G Gradient System	500G-0000*
* Please specify your local required line voltage for the above items	
Spring Housing/Pump Head Assembly	A500-1001
Wash Seal Kit, Isocratic	A500-1005K
Wash Seal Kit, Gradient	A500-1015K
Wash Seal Assembly, 2/Pack	A500-1005-02
Wash Seal Assembly, 10/Pack	A500-1005-10
Solvent Inlet Line Assembly	500-2135-01
Transfer Tube	500-1280-01
Interconnect Tube	500-1285-01
Cross Over Tube	500-3112-01
Static Mixer 500 µL	420-0500
Static Mixer 350 µL (standard)	420-0350
Mixer Adapter for Analytical Pumps	500-3111
Injection Valve Mounting Bracket	500-2117
Injection Valve WX-1000	A500-1017
Pressure Transducer	A500-4012
Stainless Steel Nuts 10/32, 10/Pack	900-0622
Stainless Steel Ferrules, 10/Pack	910-0622
Fingertight Fittings 10/32, 10/Pack	800-0631
Piston Seal Assembly, Teflon 2/Pack	A500-1006-T-2
Piston Seal Assembly, UHMW 2/Pack	A500-1006-U-2
Piston Seal Assembly, Teflon 10/Pack	A500-1006-T-10
Piston Seal Assembly, UHMW 10/Pack	A500-1006-U-10
Sapphire Piston Assembly	A500-1116
Inlet Housing	500-1167
Outlet Housing	500-1196
Inlet/Outlet Cartridge	A500-1050
Inlet Check Valve Filter	A500-1182
Solvent Filters, 10 micron, each	850-0620
Solvent Filters, 10 micron, 5/Pack	850-0621

HPLC Pumps

PrimeLine™ HPLC Pumps & Replacement Parts continued

Semi-Prep HPLC Pumps

Description	Part Number
Model 501	501-0020*
Model 500	500-0020*
Model 500G Gradient System	500G-0020*
* Please specify your local required line voltage for the above items	
Spring Housing/Pump Head Assembly	A500-1002
Wash Seal Kit, Isocratic	A500-1045K
Wash Seal Kit, Gradient	A500-1055K
Wash Seal Assembly, 2/Pack	A500-1045-02
Wash Seal Assembly, 10/Pack	A500-1045-10
Solvent Inlet Line Assembly	500-2135-02
Transfer Tube	500-1280-02
Interconnect Tube	500-1285-02
Cross Over Tube	500-3112-02
Static Mixer 500 µL	420-0500
Injection Valve Mounting Bracket	500-2117
Pressure Transducer	A500-4012
Stainless Steel Nuts 10/32, 10/Pack	900-0622
Stainless Steel Ferrules 10/Pack	910-0622
Fingertight Fittings 10/32, 10/Pack	800-0631
Piston Seal Assembly, UHMW 2/Pack	A500-1026-U-2
Piston Seal Assembly, UHMW 10/Pack	A500-1026-U-10
Sapphire Piston	A500-1024
Inlet Housing	500-1910
Outlet Housing	500-1196
Inlet Cartridge	A500-1060
Outlet Cartridge	A500-1050
Solvent Filters, 20 micron, each	850-1246
Solvent Filters, 20 micron, 5/Pack	850-1247

PrimeLine™ HPLC Pumps & Replacement Parts continued**Prep HPLC Pumps**

Description	Part Number
Model 501	501-0040*
Model 500	500-0040*
Model 500G Gradient System	500G-0040*
* Please specify your local required line voltage for the above items	
Spring Housing/Pump Head Assembly	A500-1003
Wash Seal Kit, Isocratic	A500-1048K
Wash Seal Kit, Gradient	A500-1058K
Wash Seal Assembly 2/Pack	A500-1048-02
Wash Seal Assembly 10/Pack	A500-1048-10
Solvent Inlet Line Assembly	500-2135-03
Transfer Tube	500-1280-02
Interconnect Tube	500-1285-02
Cross Over Tube	500-3112-02
Static Mixer 500 µL	420-0500
Injection Valve Mounting Bracket	500-2117
Pressure Transducer	A500-4012
Stainless Steel Nuts 10/32, 10/Pack	900-0622
Stainless Steel Ferrules, 10/Pack	910-0622
Fingertight Fittings 10/32, 10/Pack	800-0631
Piston Seal Assembly, Teflon 2/Pack	A500-1046-T-2
Piston Seal Assembly, Teflon 10/Pack	A500-1046-T-10
Sapphire Piston	A500-1044
Inlet Housing	500-1910
Outlet Housing	500-1196
Inlet Cartridge	A500-1060
Outlet Cartridge	A500-1050
Solvent Filters, 20 micron, each	850-1246
Solvent Filters, 20 micron, 5/Pack	850-1247