LC AND LC/MS

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Agilent Technologies

Detector Supplies

Agilent wavelength detectors combine exceptional flexibility with superior instrument control, data communication, and analytical capabilities. This section shows you how to maintain your detector's high level of selectivity and sensitivity.

Detector Maintenance Tips

Symptom	What To Do	Additional Information
Lamp does not ignite	Exchange the lamp	Perform a wavelength calibration test and an intensity test after lamp replacement
Noise exceeds application limit	Exchange the flow cell	Perform a wavelength calibration test after flow cell replacement
Drift exceeds application limit	Exchange the lamp	Perform a wavelength calibration test and a pressure tightness test after flow cell replacement
Leaky flow cell (For G4212 only)	Exchange the flow cell	Perform a wavelength calibration test after flow cell replacement
Leaky flow cell (For all G1314/G1315/G1365 detectors)	Clean or exchange the flow cell	Perform a wavelength calibration test and a pressure tightness test after flow cell replacement
Lower intensity (For G4212 only)	Exchange the flow cell	Perform a wavelength calibration test after flow cell replacement
Lower intensity (For all G1314/G1315/G1365 detectors)	Clean or exchange the flow cell	Perform a wavelength calibration test and a pressure tightness test after flow cell replacement

Deuterium lamp, G1314-60100

Long life HiS Deuterium lamp, 5190-0917

Deuterium longlife lamp, 2140-0813

Long life Deuterium lamp, 5182-1530

Deuterium lamp, 2140-0590

Tungsten lamp assembly, G1103-60001

Certified Lamps

- All lamps are tested for noise and drift specifications, correct operating voltage, light intensity and proper alignment
- Improved coating process increases Agilent lamp lifetimes up to 50%
- Agilent deuterium lamps are designed with a much narrower aperture providing increased light intensity and decreased noise – translating into an appreciably higher signal-to-noise ratio
- By providing higher sensitivity, Agilent lamps can extend detection capabilities and improve qualification at trace levels – for more than 2,000 hours of use

Agilent's lamps are manufactured in an ISO 9001 certified environment and are fully traceable throughout every step of the production process. Each lamp is then tested to ensure it meets Agilent's performance specifications. Test equipment is regularly calibrated using optical standards certified by NIST (National Institute of Standards and Technology) or PTB (Physikalisch-Technische Bundesanstalt).

Detector Lamps

Description	Comments	Part No.
Variable Wavelength Detector (VWD)		
Long life Deuterium lamp with RFID tag	For G1314D/E/F	G1314-60101
Long life Deuterium lamp	For G1314A/B/C, 1120 and 1220 Infinity LC	G1314-60100
Diode Array Detector (DAD)/Multiple Wavelength Detector (MWD)		
Long life HiS Deuterium lamp (8-pin) with RFID tag	For G4212A/B	5190-0917
Long life Deuterium lamp with RFID tag	For G1315C/D and G1365C/D	2140-0820
Long life Deuterium lamp	For G1315A/B and G1365A/B	2140-0813
Long life Deuterium lamp	For G1315A/B and G1365A/B	5182-1530
Deuterium lamp	For G1315A/B and G1365A/B	2140-0590*
Tungsten lamp	For G1315A/B/C/D and G1365A/B/C/D	G1103-60001

*Standard lamp for 1000 hours of use only

Variable Wavelength Detector (VWD)

VWD Flow Cell Selection

Typical Column Length (cm)	Typical Peak Width	Recommended Flow Cell				
< = 5	0.025	Micro Flow Cell				High Pressure Flow Cell For Pressure Above 100 bar
10	0.05	0.05-0.2 mL/min	Semi-micro Flow Cell			
20	0.1			Standard Flow Cell		
> = 40	0.2					
Typical Flow Rate		0.05-0.2 mL/min	0.2-0.4 mL/min	0.4-0.8 mL/min	1-2 mL/min	0.05-5 mL/min
Internal Column Diameter		1.0 mm	2.1 mm	3.0 mm	4.6 mm	

Flow Cell and Repair Kits for VWD*

Description	Use With	Specifications	Part No.	Repair Kit Part No.
Standard flow cell, RFID	G1314D/E/F	10 mm, 14 µL, 40 bar	G1314-60186	G1314-65061
Standard "D" type flow cell	G1314A/B/C	10 mm, 14 µL, 40 bar	G1314-60086	G1314-65061
Semi-micro flow cell, RFID	G1314D/E/F	6 mm, 5 µL, 40 bar	G1314-60183	G1315-68713
Semi-micro flow cell	G1314A/B/C	6 mm, 5 µL, 40 bar	G1314-60083	G1315-68713
Micro flow cell, 3 mm, RFID	G1314D/E/F	2 µL, 120 bar	G1314-60187	G1315-68713
Micro flow cell, 3 mm	G1314A/B/C	2 µL, 120 bar	G1314-60087	G1315-68713
Micro flow cell, 5 mm	G1314A/B/C	1 µL, 40 bar	G1314-60081	G1314-65052
High pressure flow cell, RFID	G1314D/E/F	10 mm, 14 µL, 400 bar	G1314-60182	G1314-65054
High pressure flow cell	G1314A/B/C	10 mm, 14 µL, 400 bar	G1314-60082	G1315-68713

*For more information about what is included in each kit, see page 97.

Variable wavelength detector

Capillaries for VWD Flow Cell

Flow Cell Description	Part No.	Inlet Capillary	Part No.	Outlet Capillary	Part No.
Standard flow cell, RFID	G1314-60186	Inlet capillary, 0.17 mm id, 600 mm long	5062-8522	Waste capillary, PEEK, 0.25 mm id	5062-8535
Standard "D" type flow cell	G1314-60086			1/16 in finger-tight PEEK fitting, 2/pk	0100-1516
Semi-micro flow cell, RFID	G1314-60183	Inlet capillary, 0.12 mm id, 400 mm long	5021-1823	Waste capillary, PEEK, 0.25 mm id	5062-8535
Semi-micro flow cell	G1314-60083			1/16 in finger-tight PEEK fitting, 2/pk	0100-1516
Micro flow cell, 3 mm, RFID	G1314-60187	Inlet capillary, 0.12 mm id, 310 mm long	G1314-87301	Outlet capillary, 0.17 mm id, 120 mm long	G1314-87302
Micro flow cell, 3 mm	G1314-60087				
Micro flow cell, 5 mm	G1314-60081	Inlet capillary, 0.12 mm id, 400 mm long	5021-1823	Outlet capillary, 0.17 mm id, 120 mm long	G1314-87302
High pressure flow cell, RFID	G1314-60182	Inlet capillary, 0.17 mm id, 380 mm long	G1315-87311	Outlet capillary, 0.17 mm id, 120 mm long	G1314-87302
High pressure flow cell	G1314-60082				

Diode Array Detector (DAD)/Multiple Wavelength Detector (MWD)

Diode array detector (DAD)/
Multiple wavelength detector (MWD)

Cleaning or Replacing DAD/MWD Flow Cells

- A decrease in detector performance or unusual noise levels may mean you have dirty flow cell windows
- Clean and reassemble one side of the flow cell before beginning the other side to prevent mixing the front and rear gaskets, which have different hole diameters
- While cleaning or replacing flow cell windows, if the washers fall out of the window assembly, they must be inserted in the correct order with a PTFE ring to prevent any leaks from the flow cell window
- Clean the cell body with water or isopropanol
- After opening the cell you should always use a new gasket

DAD/MWD Flow Cell Selection

Typical Column Length (cm)	Typical Peak Width	Recommended Flow Cell				
< = 5	0.025	80/500 nL Flow Cell				High Pressure Flow Cell
10	0.05		Semimicro Flow Cell			
20	0.1			Standard Flow Cell		
> = 40	0.2					
Typical Flow Rate		0.05-0.2 mL/min	0.2-0.4 mL/min	0.4-0.8 mL/min	1-2 mL/min	0.05-5 mL/min
Internal Column Diameter		0.3-1 mm	2.1 mm	3.0 mm	4.6 mm	

Flow Cell and Repair Kits for DAD/MWD*

Description	Use With	Specifications	Part No.	Repair Kit Part No.
Standard flow cell with RFID tag	G1315C/D, G1365C/D	10 mm, 13 µL, 120 bar	G1315-60022	G1315-68712
Standard flow cell	G1315A/B, G1365A/B	10 mm, 13 µL, 120 bar	G1315-60012	
Semi-micro flow cell, RFID	G1315C/D, G1365C/D	6 mm, 5 µL, 120 bar	G1315-60025	G1315-68713
Semi-micro flow cell	G1315A/B, G1365A/B	6 mm, 5 µL, 120 bar	G1315-60011	
Micro flow cell, RFID	G1315C/D, G1365C/D	3 mm, 2 µL, 120 bar	G1315-60024	G1315-68713
Micro high-pressure flow cell	G1315A/B, G1365A/B	6 mm, 1.7 µL, 400 bar	G1315-60015	
500 nL flow cell		10 mm, 50 bar	G1315-68724	
80 nL flow cell		6 mm, 50 bar	G1315-68716	
Preparative flow cell	G1315A/B, G1365A/B	3 mm, 120 bar, stainless steel	G1315-60016	G1315-68712
Preparative flow cell		0.3 mm, 20 bar, quartz	G1315-60017	
Preparative flow cell		0.06 mm, 20 bar, quartz	G1315-60018	
Max-Light cartridge cell	G4212A/B Infinity LC DAD	10 mm, 1.0 µL, 60 bar	G4212-60008	
Max-Light cartridge cell	G4212A/B Infinity LC DAD	60 mm, 4.0 µL, 60 bar	G4212-60007	
Max-Light cartridge test cell	Must be used to perform detector build-in tests		G4212-60011	
Max-Light ultra low dispersion flow cell	G4212A/B Infinity LC DAD	10 mm V(σ) = 0.6 µL	G4212-60038	
Max-Light High Dynamic Range (HDR) flow cell	G4212A/B Infinity LC DAD	3.7 mm, V(σ) = 0.9 µL	G4212-60032	

*For more information about what is included in this kit, see page 97.

Max-Light cartridge cell, G4212-60008

Ultra-low dispersion flow cell, G4212-60038

TIPS & TOOLS

Learn more about how different flow cells impact your chromatography, and the High Dynamic Range (HDR) Flow Cell. See application note 5991-0115EN at **www.agilent.com/chem/library**

Max-Light cartridge cell, interior view, 60 mm path for high concentrations, G4212-60007

Max-Light HDR flow cell, interior view, to show short 3.7 mm path length for high concentrations, G4212-60032

Capillaries for DAD/MWD Flow Cell

Flow Cell Description	Part No.	Inlet Capillary	Part No.	Outlet Capillary	Part No.
Standard flow cell with RFID tag	G1315-60022	Inlet capillary with heat exchanger, 0.17 mm id, 590 mm long	G1315-87321	Outlet capillary, 0.17 mm id, 200 mm long	G1315-87302
Standard flow cell	G1315-60012				
Semi-micro flow cell with RFID tag	G1315-60025	DAD heat exchanger capillary, 0.17 mm id, 310 mm long	G1315-87319	Outlet capillary, 0.12 mm id, 200 mm long	G1315-87306
				Outlet capillary, 0.17 mm id, 200 mm long	G1315-87302
Semi-micro flow cell	G1315-60011			Outlet capillary, 0.12 mm id, 200 mm long	G1315-87306
				Outlet capillary, 0.17 mm id, 200 mm long	G1315-87302
Micro flow cell with RFID tag	G1315-60024	DAD heat exchanger capillary, 0.12 mm id, 310 mm long	G1315-87339	Outlet capillary, 0.12 mm id, 200 mm long	G1315-87306
				Outlet capillary, 0.17 mm id, 200 mm long	G1315-87302
Micro high-pressure flow cell	G1315-60015	Inlet capillary with heat exchanger, 0.12 mm id, 290 mm long	G1315-87325	Outlet capillary, 0.12 mm id, 200 mm long	G1315-87306

80 nL and 500 nL Flow Cell Supplies

Description	Unit	Part No.
Fitting screw	10/pk	5063-6593
Double winged nuts and 1/32 in ferrules	10/pk	5065-4422
1/32 in ferrule and stainless steel lock ring, lite touch	10/pk	5063-6592
Union adjustment tool	2/pk	5022-2146
Universal ZDV union, stainless steel, no fittings	2/pk	5022-2184
Torque wrench adapter		G1315-45003
Open end wrench, 4 mm		8710-1534

Stainless steel fittings, male (G), 5063-6593

Double winged PEEK nut & ferrule (WPF), 5065-4422

ZDV universal union, 5022-2184

Wrench, open end, for use with PEEK-coated fused silica capillaries, 8710-1534

500 nL Flow Cell and Replacement Parts

Description	Comments	Part No.
500 nL flow cell	Contains quartz flow cell with 10 mm path length and 500 nL volume and connecting capillaries, max 50 bar pressure	G1315-68724
Sealing kit	Includes torque adapter, 2 cell seal assemblies, 5 LiteTouch front and back ferrules	G1315-68715
Quartz cell body, 10 mm		G1315-80001
Cell seal assembly, 500 nL		G1315-87101
Fused silica/PEEK capillary, 100 µm id, 30 cm long	Inlet	G1315-87333
Fused silica/PEEK capillary, 50 µm id, 40 cm long	Inlet	G1315-87323
Fused silica/PEEK capillary, 100 µm id, 12 cm long	Outlet	G1315-87338
Fused silica/PEEK capillary, 50 µm id, 12 cm long	Outlet	G1315-87328

80 nL Flow Cell and Replacement Parts

Description	Comments	Part No.
80 nL flow cell	Contains quartz flow cell with 6 mm path length and 80 nL volume and connecting capillaries, max 50 bar pressure	G1315-68716
Sealing kit for 80 nL flow cell	Includes torque adapter, 2 cell seal assemblies, 5 LiteTouch front and back ferrules and 5 sleeves for 360 µm od capillaries	G1315-68725
Quartz cell body, 80 nL, 6 mm path length		G1315-80002
Fused silica/PEEK capillary, 50 µm id, 40 cm long	Inlet	G1315-87323
Fused silica/PEEK capillary, 50 µm id, 12 cm long	Outlet	G1315-87328
Fused silica/PEEK capillary, 25 µm id, 20 cm long	Inlet	G1315-87313
Fused silica/PEEK capillary, 25 µm id, 60 cm long	Outlet	G1315-87318

Finger-tight PEEK fitting (SPF), 0100-1516

Preparative Flow Cells and Replacement Parts

Description	Part No.
Preparative flow cell, 0.3 mm, 20 bar, quartz	G1315-60017
Preparative flow cell, 0.06 mm, 20 bar, quartz	G1315-60018
PTFE tubing, 0.8 mm id, 2 m	G1315-67301
PTFE tubing, 0.5 mm id, 0.8 m	G1315-67302
Cell housing	G1315-27705
1/16 in finger-tight PEEK fitting, 2/pk	0100-1516
Quartz body, 0.3 mm	G1315-80004
Quartz body, 0.06 mm	G1315-80003
Prep flow cell, stainless steel, 3 mm, 120 bar	G1315-60016
Stainless steel connecting capillary, 0.5 mm, 250 mm	G1315-87305

Detector Maintenance Kits

Detector Maintenance Kits

Description	Kit Contents	Part No.
Variable Wavelength Detector (VWD)		
Standard "D" type flow cell kit	Includes 2 windows, 2 gaskets #1, 2 gaskets #2	G1314-65061
Semi-micro flow cell kit	Includes 2 windows, 4 gaskets: 2 standard #1, 1 semi-micro #1, 1 semi-micro #2	G1314-65056
Micro flow cell kit	Includes 2 windows, 2 gaskets #1, 2 gaskets #2	G1314-65052
Cell repair kit, semi-micro	Includes window screw kit, 4 mm hexagonal wrench and seal kits	G1315-68713
High-pressure flow cell kit	Includes 2 windows, 2 Kapton gaskets and 2 PEEK rings	G1314-65054
Diode Array Detector (DAD)/Multiple Wavelength Detector (MWD)		
Cell repair kit	Includes window screw kit, 4 mm hexagonal wrench and seal kit	G1315-68712
Cell repair kit, semi-micro	Includes window screw kit, 4 mm hexagonal wrench and seal kits	G1315-68713
Sealing kit for 500 nL flow cell	Includes torque adapter, 2 cell seal assemblies, 5 lite touch front and back ferrules	G1315-68715
Sealing kit for 80 nL flow cell	Includes torque adapter, 2 cell seal assemblies, 5 lite touch front and back ferrules and 5 sleeves for 360 µm od capillaries	G1315-68725

1200 Series Evaporative Light Scattering Detector

Standard flow nebulizer, G4218-20000

Cartridge for gas regulator, G4218-40150

Other Detectors

G4218A 1200 Series Evaporative Light Scattering Detector Supplies

Description	Part No.
Standard flow nebulizer	G4218-20000
Semi-micro flow nebulizer	G4218-20001
Large flow nebulizer	G4218-20002
Micro flow nebulizer	G4218-20003
RRLC nebulizer	G4218-20004
Nebulization chamber, glass	G4218-40000
Black plastic nut, 13 mm diameter, glassware	G4218-40010
Black plastic nut, 22 mm diameter, glassware	G4218-40011
Black exhaust tube, 2.5 m	G4218-40110
Bulkhead	G4218-40130
Cartridge, 0.01 µm for gas regulator	G4218-40150
Pneumatic tube with stainless steel fitting	G4218-40220
Drain tube with stainless steel fitting	G4218-40100
Gas regulator with 0.01 µm filter and manometer	G4218-60100
Seal kit for nebulization chamber	G4218-68010
Caffeine standard, 250 µg/mL	G4218-85000

G1362A 1100/1200 Series Refractive Index Detector (RID) Supplies

Description	Part No.
Tubing kit Includes 300 mm recycle valve to recycle port, 200 mm recycle valve to waste port, 120 mm purge valve to recycle valve, 270 mm purge valve to sample cell, 170 mm purge valve to reference cell	G1362-68709
Interface tubing kit Includes 1/8 in ferrule, 1/3 in nut, PTFE tubing	G1362-68706
Interface capillary, 400 mm, 0.17 mm id	G1362-87300
Restriction capillary, 0.17 mm id	G1362-87301

G1321A/B 1100/1200 Series Fluorescence Detector (FLD) Supplies

Description	Part No.
Detector lamp	2140-0600
Flow cell, 8 µL, 20 bar	G1321-60005
Flow cell, 4 µL	G1321-60015
Cuvette kit, 8 µL, 20 bar Includes tubing, stainless steel fitting, front and back ferrule, PEEK fitting, syringe needle and syringe	G1321-60007
Cut-off filter kit:	
389, 408, 450, 500, 550 nm	5061-3327
380, 399, 418, 470, 520 nm	5061-3328
280, 295, 305, 335, 345 nm	5061-3329
Corrugated tubing, polypropylene, 6.5 mm id, 5 m	5062-2463
PTFE tubing, FEP, 0.7 mm id, 5 m	5062-2462
1/16 in finger-tight PEEK fitting, 2/pk	0100-1516
Column connecting capillary with fittings, 380 x 0.17 mm	G1315-87311
1/16 in stainless steel front ferrule, 10/pk	5180-4108
1/16 in stainless steel back ferrule, 10/pk	5180-4114
1/16 in stainless steel fitting, 10/pk	5061-3303
Fluorescence detector calibration sample, 1 g glycogen	5063-6597
Open end wrench, 1/4 and 5/16 in	8710-0510
Glass syringe	9301-1446
Syringe needle	9301-0407

Flow cell for G1321A fluorescence detector, G1321-60005

Finger-tight PEEK fitting (SPF), 0100-1516

Stainless steel front ferrules, 5180-4108

Back ferrules 1/16 in, 5180-4114

1100/1200 Series Chip LC Supplies

1100/1200 Series Chip LC Supplies

Description	Part No.
Rotor, inner valve, 3 grooves, chip LC	G4240-23705
Rotor, outer valve, 5 grooves, chip LC	G4240-25206
PEEK fitting, special for chip LC	G4240-43200
Fused silica/PEEK capillary, 15 µm, 90 cm Nano pump to chip cube	G4240-87300
Fused silica/PEEK capillary, 25 µm, 105 cm Micro well plate sampler to chip cube	G4240-87301
Fused silica/PEEK capillary, 100 µm, 100 cm Chip cube to waste	G4240-87302
Fused silica/PEEK capillary, 75 µm, 100 cm Syringe pump to chip cube	G4240-87303
Fused Silica/PEEK capillary, 50 µm, 50 cm	G4240-87304
Inline micro filter kit, 0.5 µm, PEEK Use with chip cube LC system	5067-1582
Fitting with 0.5 µm PEEK frit, 10/pk	5067-1584
PEEK fitting for use with 1/32 in od, 10/pk	5067-1585
PEEK sample transfer capillary, 25 µm, 100 cm Micro inline filter to chip cube (Phospho-Chip application)	G4240-87309
PEEK capillary, 25 µm, 10 cm Micro well plate samper to micro inline filter (Phospho-Chip application)	G4240-87310