

广州绿百草生物科技有限公司是一家经营色谱分析仪器、实验室用品及耗材配件的专业公司。

我们自成立以来，一直保持着高速稳定的发展步伐。

我们向全国的科学工作者提供各类实验设备、化学品、试剂、耗材等科研用品。

我们坚持给客户提供最佳最快捷的服务，诚信为本。

主要经营的和有优势的产品：

一级代理品牌：

WATERS,岛津色谱配件，Merck（色谱柱、薄层板、填料、试剂），瓦里安色谱耗材，贺利氏氙灯，Inertsil 色谱柱，Sigma-Aldrich 试剂及分析产品

自主品牌：

Ecosil C18 色谱柱（日本进口），2ml 样品瓶（德国进口），PEEK 接头、堵头（德国进口），SPE 小柱转换接头，Kromasil 国产色谱柱，YWG 国产色谱柱，葡聚糖 G-10 国产色谱柱

其他代理品牌：

Kromasil（进口原装及国内组装色谱柱），YMC,天津津腾，英国 PL 聚合物色谱柱及标准品，Millipore 针头滤器，美国剑桥 CIL 同位素标准品，USP 标准品，日本 TOSOH（TSK 色谱柱、树脂填料），Hypersil 及热电配件（热电报价的95折），RHEODYNE（液相进样阀），UPCHURCH（管路接头），日本 SHODEX（GPC 系列），德国 DR 标准品、Daicel 手性柱，美国 B&J 色谱试剂、三菱化学大孔树脂，兰化所 GC 色谱柱，德国 Brand（移液器，玻璃容器等），Agilent，phenomenex，日本信和，Hamilton、SGE 进样针。

广州绿百草生物科技有限公司

广州市越秀区解放北路 932 号中海酒店商业大厦 508 室

邮编：510040

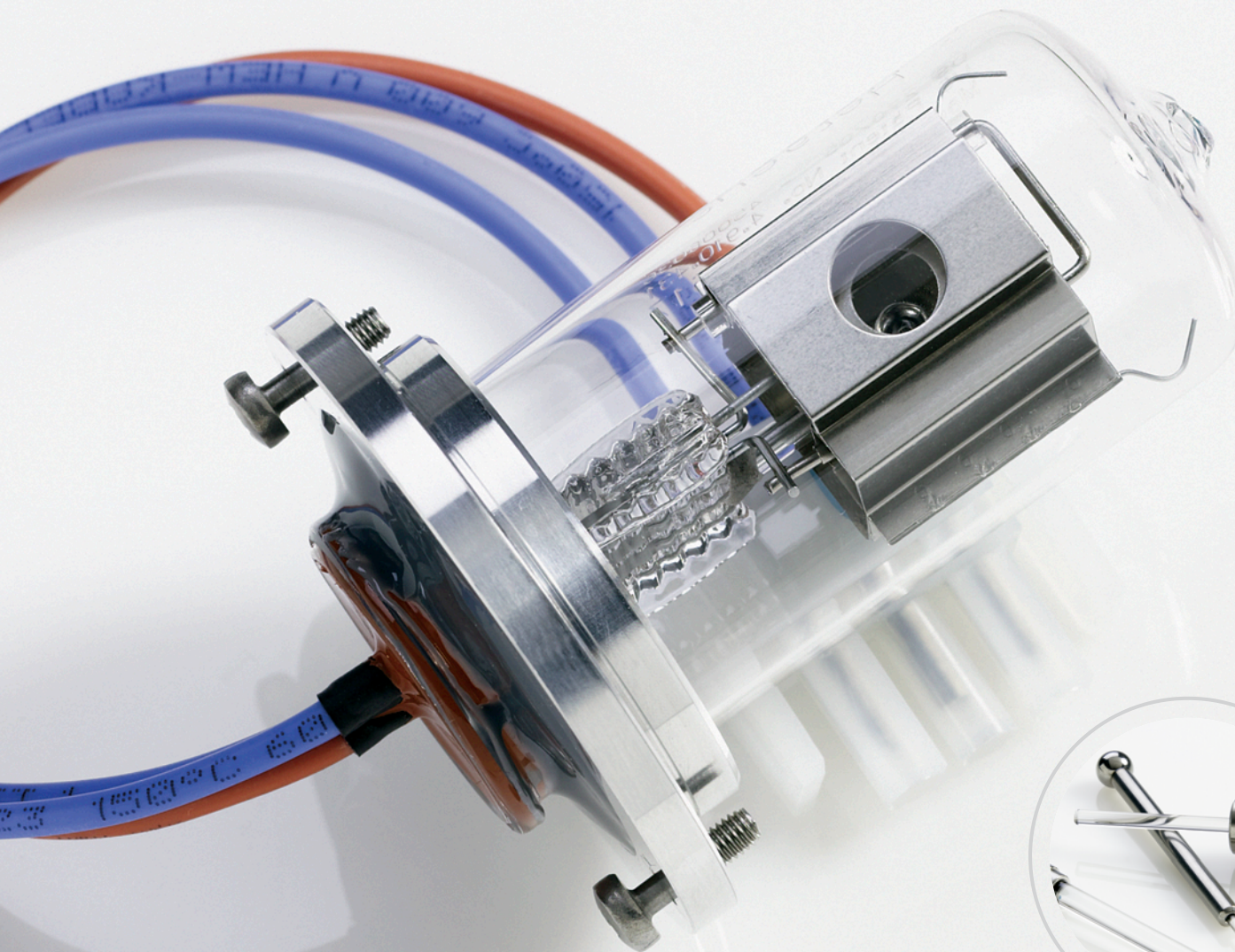
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www.lubex.com.cn, www.gzlbc.com

2007.2008 catalog



HPLC Products

*Provider of High-Quality Aftermarket
Repair Parts for High-Performance Liquid
Chromatography Equipment*



Chromatography Technology Services Corp.

our process

*materials. geometry.
performance. appearance.*

Understanding the requirements of our customers and the analytical instrumentation industry is at the core of our process for solid product design. It all starts with listening. With years of experience and discussions with a variety of customers we have distilled what we've learned into the 4 pillars of our product design process: materials, geometry, performance, and appearance.

Our intent is to provide CTS replacement parts that are, in each case, "equivalent to" or better than the corresponding OEM part.

With the product process in mind CTS pursues 2 possible paths towards offering OEM alternative parts. Firstly, CTS has cultivated relationships with many parts and component manufacturing companies that cater to high tech industries such as analytical instrumentation. Where it is possible and feasible, CTS uses these vendors to source parts that match the performance, and look of the OEM's. Alternatively, we develop the products in-house. This process includes such steps as acquiring OEM product for examination and testing, creating drawings, and sending parts to ISO 17025 certified A2LA accredited laboratories for analysis (for assistance in defining materials and/or geometries). Once we are satisfied with the materials and geometries, prototypes are made, evaluated, and performance tested.

Our desired outcome from this rigorous process is to provide you with the analytical instrumentation parts and services you need, when you need them; all supplied by friendly, knowledgeable people at a reasonable price. We want you to be completely satisfied with every aspect of your dealings with CTS Corp., from order placement, through product delivery and performance. Please help us in our pursuit. Let us know of any issues you have had with any order from CTS Corp. We will work with you to try and get it satisfactorily resolved whether through warranty claims, product replacement or process improvement.

That is our process and guarantee to you.

letter from the owner

I want to thank God for those of you who have trusted us and given us the opportunity to serve you. For those of you who are not familiar with CTS I want to explain to you why we do what we do on a daily basis.

At the core of achieving our mission are two factors that will either lead us to succeed or cause us to fail. The first is the sovereignty of God and the second is the collective group of individuals that make up CTS.

The willingness of God to see our work through to completion is the very thing that we are dependent on for our future. We are acting on the assumption that God is willing since we don't know what the future holds. If God is willing, what we can say is that CTS wills to become a leading, worldwide alternative source for analytical instrumentation parts and services.

God has created each person with certain talents and those are to be used for His glory. As each of us comes together day in and day out with our purpose in mind, it is expected that we put forth our best efforts in a focused and determined manner. The end result being that we are diligently working each day to provide HPLC parts that reflect our knowledge of our customer's needs and requirements. When we have a good understanding of those needs and requirements, our efforts will lead to meeting or exceeding them on a long term basis.

When we serve one another along with our customers and vendors, we are living in a way that glorifies God. But more importantly it is the life of Jesus Christ that may be working in us that really pleases God. Each day presents an opportunity to serve and glorify God should we see it in that light. And that light is truth, the truth which comes through the Word of God, Jesus Christ.

As I mentioned earlier, I want to thank God for those of you who have trusted us and given us the opportunity to serve you. You are very much appreciated. For those of you who haven't worked with us, consider us if we have something to offer you. It will be a pleasure to be given the opportunity to serve you. If you ever have any comments or questions, please feel free to contact me directly at 952.767.1065 or brett.harris@ctshplc.com.

Sincerely,



Brett Harris

ordering instructions

by phone

Call toll-free 800.682.6480 or 952.895.8292

Our normal business hours are 8 a.m. to 5 p.m., Central Standard Time.

Orders placed after 2 p.m. will be processed the next business day.

by fax

Dial 952.895.8493 to send your order by fax, 24 hours a day.

by e-mail

CTSales@CTSHPLC.com

by mail

Chromatography Technology Services Corp.

P. O. box 1336

Burnsville, MN 55337-0336

please provide the following information with your order

- Purchase order number
- Name of purchaser
- Shipping address
- Billing address
- Telephone number
- Item quantities and part numbers
- Contact person in your accounts payable department

by EDI

D. I. Central

by credit card

Visa, MasterCard, American Express

terms

Various payment options available. Please contact customer service or your sales representative for availability and qualification. No minimum order size requirement.

shipping

All packages are shipped, according to customer requests.

Our default shipping protocol is UPS ground for domestic packages, and UPS express for international shipments.

warranty returns

CTS warrants all products to be free from defects in material and workmanship. We will replace without cost any materials with such defects. We must authorize returns of any item except lamps within 60 days of original shipment. Lamp returns may be made up to the guaranteed lifetime of the lamp or up to one year after purchase, whichever comes first. All returns must have the return authorization number assigned to them before being sent to CTS. Please call CTS at 800.682.6480 for a RA number.

ship returns to

Chromatography Technology Services Corp.

11975 Portland Ave. South, Suite 116

Burnsville, MN 55337-1530

Shipment of returned warranty parts to CTS is the responsibility of the customer; shipment of replacement parts to the customer's place of business is the responsibility of CTS.

restocking charges

A restocking fee of \$20.00 will be assessed for any items being returned to stock.

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tech service

Call toll-free 800.682.3295



Model - 1050, 1100

CTS-10303
OEM 5063-6586

Sapphire Plunger
each \$90.92



Model - 1050, 1100

CTS-10675
OEM 0905-1175

Wash Seal
2/pk \$39.71



Model - 1050, 1100

CTS-10417
OEM 5063-6589

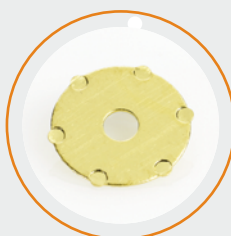
Piston Seals
2/pk \$68.97



Model - 1050, 1100

CTS-10683
OEM 01018-22707

PTFE Frits
5/pk \$23.00



Model - 1050, 1100

CTS-10671
OEM 5001-3707

Outlet Gold Seal
each \$24.00



Model - 1100

CTS-10807
OEM 5063-6505

Outlet Valve Sieves
10/pk \$10.45



Model - 1050, 1100

CTS-10674
OEM G1311-60012

Outlet Ball Valve
each \$218.41



Model - 1100

CTS-A162
OEM G1312-60012

**Outlet Ball Valve,
Binary Pump**
each \$250.80



Model - 1090

CTS-10273

OEM 3980-0672

Sapphire Plunger

each \$89.00



Model - 1090

CTS-10416

OEM 5062-2494

Plunger Seals, Black

4/pk \$108.68



Model - 1090

CTS-10662

OEM 79835-65213

Replacement Sieve

each \$26.75



Model - 1090

CTS-10272

OEM 79835-67101

**Check Valve
Cartridge Assembly**

each \$123.31

**1100
Kit**

CTS-10800

**Seal Wash Kit,
Binary Pump**

\$146.30

- Seals 4
- Gaskets 4

**1100
Kit**

CTS-10814

Seal Wash Kit

\$83.60

- Seals 2
- Gaskets 2

**1100
1050
Kit**

CTS-10833

OEM G1311-68710

Pump Maintenance Kit

\$365.75

- Piston Seals 2
- Outlet Gold Seal 1
- Active Inlet Cartridge 1
- Outlet Cap 1
- PTFE Frits 2
- Glass Solvent Filters 2



Model - 1100

CTS-10835

OEM G1313-87201

Needle Assembly

each \$51.21



Model - 1100

CTS-10842

OEM G1313-87101

Needle Seat Assembly

each \$80.47



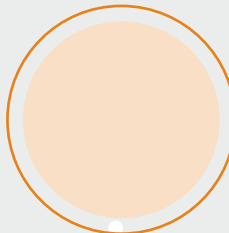
Model - 1100

CTS-10459

OEM 0100-1853

**Rotor Seal, Vespel,
2-groove, 7750-020**

each \$58.52



Model - 1050

CTS-10677

OEM 01078-67200

Needle Assembly

each \$64.00



Model - 1050

CTS-10725

OEM 01078-87303

Seat Capillary

each \$82.59



Model - 1050

CTS-10458

OEM 0101-0626

**Rotor Seal, Vespel,
2-groove, 7010-083**

each \$73.15



Model - 1050, 1090

CTS-A160

OEM 79846-67101

Needle Seat

each \$31.35



Model - 1090

CTS-A083

OEM 1535-4048

**Rotor Seal, Rheodyne
7010, 7000, 7040**

each \$61.66

1100 Kit

CTS-10722

OEM G1313-68709

**Autosampler
Preventative
Maintenance Kit**

\$209.00

- Rotor Seals 1
- Piston Seals 2
- Needle 1
- Needle Seat 1
- Finger Clips 3

1050 Kit

CTS-10723

**Autosampler
Preventative
Maintenance Kit**

\$240.35

- Rotor Seals 1
- Needle 1
- Needle Seat 1
- Seat Capillary 1



Model - 1090, 1050

CTS-00127

OEM 79883-60002

**VW (79583C),
DAD (G1306A),
MWD (79854A)**

each \$480.70



Model - 8452A

CTS-00128

OEM 08452-60104

Deuterium Lamp

each \$480.70



Model - 8453

CTS-10594

OEM 2140-0605

Deuterium Lamp

each \$514.14



Model - 79853A

CTS-00129

OEM 79853-60002

1050 VW Lamp

each \$365.75



Model - G1315A, G1365A

CTS-10473

OEM 2140-0590

1100 DAD Lamp

each \$514.14



Model - G1315A, G1365A

CTS-10827

OEM 5181-1530

**1100 DAD Long
Life Lamp**

each \$746.13



Model - G1314A

CTS-10494

OEM G1314-60100

1100 VWD Lamp

each \$454.58



Model - G1321

CTS-10806

OEM 2140-0600

Fluorescence Flash Lamp

each \$361.18

pump parts

pump parts



**Model - 100A,
110A, 110B, 112,
114M, 116, 118,
125, 126, 127, 128**

CTS-0620
OEM 240621

**Outlet Check
Valve Cartridge**
each \$103.46



**Model - 100A,
110A, 110B, 112,
114M, 116, 118,
125, 126, 127, 128**

CTS-0621
OEM 240620

**Inlet Check
Valve Cartridge**
each \$103.46



**Model - 100A,
110A, 110B, 112,
114M, 116, 118,
125, 126, 127, 128**

CTS-0721
OEM 240721

**Outlet Check
Valve Assembly**
each \$133.76



**Model - 110A,
110B, 112, 114M,
116, 118, 125,
126, 127, 128**

CTS-0720
OEM 240720

**Inlet Check
Valve Assembly**
each \$133.76



Model - 110A, 110B

CTS-A033
OEM 240619

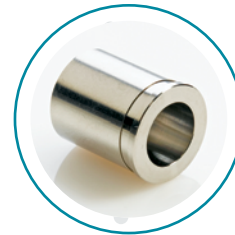
**Outlet Check
Filter Assembly**
each \$16.72



Model - 110A, 110B

CTS-8871
OEM 887138

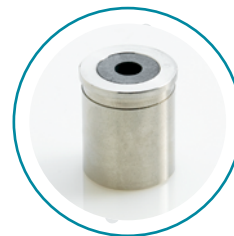
Plunger Seal
each \$32.40



Model - 110A, 110B

CTS-10271
OEM 243713

**Guide Sleeve,
Graphite Plunger
Guide**
each \$54.34



Model - 110A, 110B

CTS-A092
OEM 243045

**Plunger Guide
Assembly**
each \$59.57



**Model - 110A,
110B, 112**

CTS-2430
OEM 243053

Sapphire Plunger
each \$141.08

pump parts

detector lamps



Model - 112

CTS-6797

OEM 236797

Plunger Seal

each \$44.94



**Model - 114M,
116, 118, 125,
126, 127, 128**

CTS-7162

OEM 241037

Plunger Seal, Black

each \$45.98



**Model - 114M,
116, 118, 125,
126, 127, 128**

CTS-10557

OEM 241037

Plunger Seal, Gold

each \$42.00



**Model - 114M,
116, 118, 125,
126, 127, 128**

CTS-2369

OEM 240714

Sapphire Plunger

each \$154.14



**Model - 125, 126,
127, 128**

CTS-10391

OEM 728772

Plunger Wash Seal

each \$53.30



**Model - DU60, 62,
64, 65, 68, 70**

CTS-00032

OEM 596791

Deuterium Lamp

each \$470.25



Model - 1632

CTS-10577

OEM 22947029

Deuterium Lamp

each \$402.33

beckman

gilson



Model - 10SC, 10WSC

CTS-10889-01

OEM (Gilson) 5463125895,
(Rainin) R007101637

Seal Assembly, Gold
each \$36.58



Model - 118, 119

CTS-00245

OEM 100-326

**Deuterium Lamp,
Prealigned**
each \$450.00



**Model - 10SC,
10WSC, WTI**

CTS-10889-02

OEM (Gilson) 5463125095,
(Rainin) R007101636

Seal Assembly, Black
each \$36.58



Model - 170 DAD

CTS-10473

OEM 2140-60001

Deuterium Lamp
each \$514.14



Model - 25SC

CTS-11014-01

OEM 5463050825

Seal Assembly, Gold
each \$36.58

jasco



Model - 880, 980
CTS-10972
OEM 6560-404A
Outlet Check Valve
each \$217.36



Model - 880, 980
CTS-10955
OEM 2305-0009A
Sapphire Plunger
each \$209.00



Model - 880, 980, PU1580
CTS-10971
OEM 6560-405A
6778-H109A
Inlet Check Valve
each \$217.36



Model - 880, 980, PU1580, BIP-1
CTS-11027
OEM 6560-H148A
Pump Seal, Gold
2/pk \$83.60

rheodyne



Model - 7125, 7126, 7725, 9725
CTS-A019
OEM 7125-047
Rotor Seal, Vespel
each \$61.66



Model - 7010, 7040, 7000, 7067
CTS-A083
OEM 7010-039
Rotor Seal, Vespel
each \$61.66



Model - 7010
CTS-10612
OEM 7010-015
Isolation Seal
each \$12.23

pump parts

pump parts



**Model – 655, 6000,
6200, 6200A, L-7100**

CTS-10322

OEM ANO-2328

Ceramic Plunger
each \$73.15



**Model – 655, 6000,
6200, 6200A**

CTS-A084

OEM ANO-0833

**Inlet Check
Valve Assembly**
each \$146.30



**Model – 655, 6000,
6200, 6200A, L-7100**

CTS-10394

OEM 655-1080

Pump Seal, Black
each \$32.40



**Model – 655, 6000,
6200, 6200A**

CTS-A085

OEM ANO-0834

**Outlet Check
Valve Assembly**
each \$151.53



**Model – 655, 6000,
6200, 6200A, L-7100**

CTS-10547

OEM 655-1080

Pump Seal, Gold
each \$33.44



Model – L-7100

CTS-A125

OEM ANO-0836

**Inlet Check
Valve Assembly**
each \$156.75



**Model – 655, 6000,
6200, 6200A, L-7100**

CTS-10493

OEM ANO-0835

Check Valve Cartridge
2/pk \$160.93



Model – L-7100

CTS-A126

OEM ANO-0837

**Outlet Check
Valve Assembly**
each \$156.75



**Model – AS-7200,
AS-7250**

CTS-10573
OEM ANO-0818

**Injection Valve
Rotor Seal**
each \$62.70



**Model – AS-7200,
AS-7250**

CTS-A124
OEM 810-3095

**Dilutor Valve
Rotor Assembly**
each \$78.38



**Model – L4000(H),
L4200(H), L4250(H)**

CTS-10368
OEM ANO-0424

Deuterium Lamp
each \$383.52



**Model – L7400,
L7420, L7450,
L7455**

CTS-11021
OEM 885-3570
890-2430

Deuterium Lamp
each \$407.55

pump parts

detector lamps



**Model - 200 Series,
1, 2, 3, 3B, 4, 10,
250, 400, 410, 620,
Int. 4000**

CTS-10758
OEM 0990-7324

**Pump Seal,
High Pressure**
each \$35.53



Model - 200 Series

CTS-10772
OEM 0990-7339

**Pump Seal,
Low Pressure**
each \$39.71



**Pump
Kit**

CTS-10757
OEM 0254-0275

High Pressure Seal Kit
\$127.49

- Pump Seals 4
- Backup Rings 4
- O-Rings 4



**Model - PE 200, 4,
250, 400, 410, 620,
Integral 4000**

CTS-A159
OEM 0254-0177

Inlet Check Valve
each \$271.70



**Model - PE 200, 4,
250, 400, 410, 620,
Integral 4000**

CTS-A157
OEM 0254-0197

Outlet Check Valve
each \$271.70



Model - 200, 785A

CTS-00025
OEM N2920149

Deuterium Lamp
each \$355.00



**Model - PE Lambda
2, 5, 7, 9, 10, 11,
12, 14, 15, 16, 17,
18, 19, 20, 40, 900**

CTS-10854
OEM B016-0917

Deuterium Lamp
each \$444.13

pump parts



Model – LC-6A
CTS-10267
 OEM 228-12904-93
Sapphire Plunger
 each \$90.00



**Model – LC-10AS,
 LC-7A**
CTS-10319
 OEM 228-17019-93
Sapphire Plunger
 each \$129.58



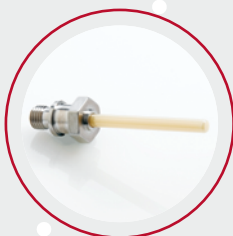
**Model – LC-600,
 LC-9A, LC-10AD**
CTS-10320
 OEM 228-18523-91
Sapphire Plunger
 each \$85.00



**Model – LC-10ADvp,
 LC-20AD**
CTS-11011
 OEM 228-35601-92
Sapphire Plunger
 each \$105.00



**Model – LC-10ADvp,
 LC-20AD**
CTS-A138
 OEM 228-35601-91
**Ceramic Plunger
 Assembly**
 each \$105.00



Model – LC-10ATvp
CTS-10584
 OEM 228-35009-92
**Ceramic Plunger
 Assembly**
 each \$95.00



Model – LC-6A
CTS-0422
 OEM 228-11999-00
Plunger Seal
 each \$25.50



**Model – LC-7A,
 LC-10AS, LC-10AT,
 LC-10ATvp**
CTS-10340
 OEM 228-21975-00
Plunger Seal
 each \$51.21



**Model – LC-600,
 LC-9A, LC-10AD,
 LC-10ADvp,
 LC-20AD**
CTS-10693
 OEM 228-35146-00
Plunger Seal
 each \$52.00

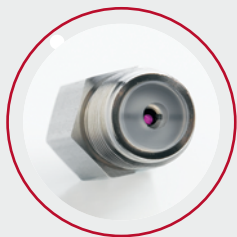


**Model – LC-10ATvp,
 SIL-10ADvp**
CTS-10694
 OEM 228-35145-00
Plunger Seal
 each \$62.00



Model – LC-10AS
CTS-10583
 OEM 228-28499-00
Plunger Rinse Seal
 each \$59.57

shimadzu



**Model – LC-6A,
LC-10AS**
CTS-A099
OEM 228-12353-91
Inlet Check Valve
each \$116.00



**Model – LC-10ATvp,
LC-10AT**
CTS-A117
OEM 228-32166-91
Inlet Check Valve
each \$126.00



**Model – LC-6A,
LC-10AS**
CTS-A100
OEM 228-09054-93
Outlet Check Valve
each \$111.82



Model – LC-10ADvp
CTS-A145
OEM 228-39093-92
Inlet Check Valve
each \$118.50



**Model – LC-600,
LC-9A, LC-10AD**
CTS-A102
OEM 228-33492-91,
228-18522-91
Inlet Check Valve
each \$140.00



**Model – LC-10ATvp,
LC-10ADvp**
CTS-A121
OEM 228-34976-91
Outlet Check Valve
each \$126.00



**Model – LC-600,
LC-9A, LC-10AD,
LC-10AT**
CTS-A103
OEM 228-32531-92
Outlet Check Valve
each \$128.00



**LC-6A
LC-10AS
Kit**

CTS-10595
OEM 228-11200-91
Check Valve Rebuild Kit
(for 2 valves)
\$73.15

- Ruby Balls 2
- Seats 2
- Thin Washers 2
- Thick Washers 2
- Retainer Washers 2

autosampler



**Model – SIL-10A,
SIL-10AXL**

CTS-10578

OEM 228-25237-04

Syringe, 500µL
each \$73.15



**Model – SIL-10AXL,
SIL-10ADvp**

CTS-10686

OEM 228-33355-04

Needle Seal
each \$52.00



Model – SIL

CTS-10694

OEM 228-35145-00

Plunger Seal
each \$62.00



Model – SIL-10ADvp

CTS-10942

OEM 228-21217-97

Rotor Seal
each \$141.08



**Model – SIL-10A,
SIL-10AXL, SIL-10AI**

CTS-A106

OEM 228-21217-91

Rotor Seal
each \$97.00



**Model – SIL-10A,
SIL-10AXL, SIL-10AI**

CTS-A067

OEM 228-21220-91

Stator Assembly
each \$141.00

detector lamps



**Model – SPD-6A,
SPD-6AV, SPD-2A**

CTS-00134

OEM 062-65056-03

Deuterium Lamp
each \$240.00



**Model – SPD-10A,
SPD-10AVvp,
SPD-10AVp,
SPD-M10Avp**

CTS-00135

OEM 228-34016-02

Deuterium Lamp
each \$505.78

shimadzu

pump parts

pump parts



**Model – Constametric
I, II, III, 3000, 3200,
3500, 4000, 4100**

CTS-7000

OEM 801306

Sapphire Plunger

each \$103.19



**Model – Constametric
I, II, III, 3000, 3200,
3500, 4000, 4100**

CTS-2061

OEM 206156001

Plunger Seal, Gold

each \$32.00



**Model – Constametric
I, II, III, 3000, 3200,
3500, 4000, 4100**

CTS-20612

OEM 206129001

Plunger Seal, Black

each \$32.00



**Model – Constametric
I, II, III, 3000, 3200,
3500, 4000, 4100**

CTS-A079

OEM 801892001

Plunger Seal Kit, Gold

\$51.21



**Model – Constametric
I, II, III, 3000, 3200,
3500, 4000, 4100**

CTS-A091

OEM 900946

Check Valve Cartridge

each \$75.24



**Model – SP 8800,
8810, P Series
Pumps, ISOCHROM**

CTS-3102

OEM A3102-010

Sapphire Plunger

each \$100.32



**Model – 8800 Series,
8810, P Series
Pumps, ISOCHROM**

CTS-2962

OEM A2962-010

Plunger Seal, Gold

each \$25.08



**Model – 8800 Series,
8810, P Series
Pumps, ISOCHROM**

CTS-2963

OEM A2963-010

Backup Seal

each \$28.22



**Model – SP 8800,
8810, P Series Pumps,
ISOCHROM, 8700**

CTS-3495

OEM A3495-010

Inlet Check Valve

each \$131.67



**Model – SP 8800,
8810, P Series Pumps,
ISOCHROM**

CTS-3490

OEM A3490-010

Outlet Check Valve

each \$135.85



**Model – P Series,
8700, 8800, 8810**

CTS-3990

OEM A3990-010

**Transducer Check
Valve Assembly**

each \$135.85



Model – P Series

CTS-10396

OEM A4848-010

Washer

each \$4.18



Model – P-4000

CTS-104485

OEM A3904-010S

**4 Solvent Gradient
Proportioning Valve**

each \$635.00

autosampler



Model – 8800 Series

CTS-10517

OEM 3301-0100

Syringe, 500 μ L
each \$73.15



Model – AS100, 300, 1000, 3000, 3500, 8875, 8880

CTS-A096

OEM A3588-020

**Syringe Assembly,
250 μ L**
each \$118.09



Model – AS100, 300, 1000, 3000, 3500, 8875, 8880, 8800 Series

CTS-A083

OEM 2508-0360

**Rotor Seal,
Rheodyne 7010**
each \$61.66



Model – AS100, 300, 1000, 3000, 3500, 8875, 8880, 8800 Series

CTS-10612

OEM 7010-015

**Isolation Seal,
Rheodyne 7010**
each \$12.23

detector lamps



Model – UV100, 200, 1000, 2000, 3000, SP FOCUS

CTS-00246

OEM 9551-0023

Deuterium Lamp
each \$418.00

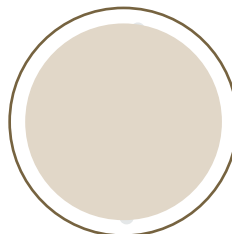


Model – SM 3200, 4100

CTS-00247

OEM 900918001

**Deuterium Lamp,
Prealigned**
each \$402.33



Model – SM 3200, 4100

CTS-10428

OEM 900918002

**Deuterium Lamp,
Not Prealigned**
each \$313.50



Model – SM I, II, III, 3000, 3100(X), 4000

CTS-10577

OEM 108035

9499

Deuterium Lamp
each \$402.33

thermo electron, TSP, IDC, spectra-physics, milton roy



Model - 616
CTS-A057
OEM WAT024960
Check Valve Cartridge
each \$56.43



Model - 625, 626
CTS-A058
OEM WAT024120
Check Valve Cartridge, PEEK
each \$56.43



Model - Alliance 2690, 2695, 2690D, 2695D, 2790, 2795
CTS-A094
OEM WAT270941
Check Valve Cartridge
2/pk \$160.93



Model - Delta-Prep, Prep LC-4000
CTS-A136
OEM WAT033325
Inlet Check Valve, #4, #5 Heads
each \$209.00



Model - Alliance 2690, 2695, 2790, 2795
CTS-A142
OEM 700002332
Performance PLUS Check Valve Housing
each \$41.80



Model - 1515, 1525, 510, 515, 600, 610, 2695, 2695D, 2795
CTS-10600
OEM 700000254
Performance PLUS Check Valve Cartridge
2/pk \$150.00



Model - 510, 515, 600 Multisolvant, 610 Powerline
CTS-0100
OEM WAT033679
Inlet Check Valve Assembly
each \$121.22



Model - 510, 515, 600 Multisolvant, 610 Powerline
CTS-0106
OEM WAT025203
Inlet Check Valve Housing
each \$34.49



Model - 510, 515, 600 Multisolvant, 610 Powerline
CTS-0110
OEM WAT060495
Inlet Check Valve Rebuild Kit
rebuilds 2 valves
\$108.68



Model - 1525EF, 510, 515, 600 Multisolvant, 610 Powerline, Prep LC4000
CTS-0307
OEM WAT060307
Inlet Check Valve Assembly - extended flow, 225µL
each \$140.03



Model - 510, 600, LCM 1
CTS-8223
OEM WAT088223
Check Valve Rebuild Kit - extended flow
rebuilds 2 valves
\$133.76



Model - 510
CTS-0200
OEM WAT025028
Outlet Check Valve Assembly - Actuator Style
each \$113.91



Model - 510

CTS-0201

OEM WAT025212

**Outlet Housing -
Actuator Style**
each \$41.80



Model - 510

CTS-0210

OEM WAT026016

**Outlet Check Valve
Rebuild kit -
Actuator Style**
rebuilds 2 valves
\$51.21



**Model - 1525EF, 510,
515, 600, 610**

CTS-0300

OEM WAT025216

**Outlet Check Valve
Assembly - Ball & Seat**
each \$133.76

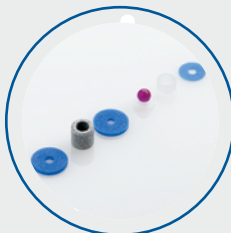


**Model - 1525EF, 510,
515, 600, 610**

CTS-0301

OEM WAT025207

**Outlet Check Valve
Housing - Ball & Seat**
each \$40.76

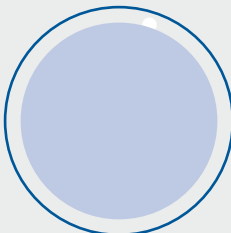


**Model - 1525EF, 510,
515, 600, 610**

CTS-0310

OEM WAT026014

**Outlet Check Valve
Rebuild kit - Ball & Seat**
rebuilds 2 valves
\$110.00



**Model - Delta-Prep
(#4, #6 Heads),
Prep LC-4000**

CTS-3326

OEM WAT033326

Outlet Check Valve
each \$198.55



CTS-00024

**Conversion Disk,
Actuator to Ball & Seat**
each \$5.23



**Model - 1515, 1525,
510, 515, 600, 610**

CTS-2294

OEM WAT022934

**Super Seal -
Analytical heads**
each \$32.40



Model - 510, 515, 600

CTS-6613

OEM WAT026613

Plunger Seal, Black
each \$27.17



**Model - 510, 515,
590, 610, 600E**

CTS-6644

OEM WAT026644

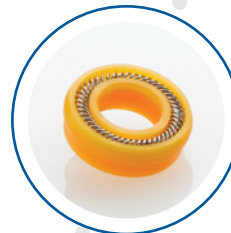
**Plunger Seal,
Black, EF Heads**
each \$27.17



**Model - 1515, 1525,
510, 515, 600, 610**

CTS-10548

**Plunger Seal, Gold,
Analytical Heads**
each \$32.40



Model - 510, 590, 600E

CTS-10832

OEM WAT026644

Plunger Seal, Gold, EF Heads
each \$30.00



**Model - 2690, 2695,
2790, 2795**

CTS-10566

OEM WAT270938

**Head Plunger Seal Kit,
Alliance**
2/pk \$56.43



**Model - M6KA, 510,
590, 600, 610**

CTS-5656

OEM WAT025656

Sapphire Plunger
each \$122.27



**Model - 2690, 2695,
2790, 2795**

CTS-10711

OEM WAT271066

**Head Plunger Seal Kit,
Black, Alliance**
2/pk \$56.43



**Model - 510, 515,
590, 600E**

CTS-6030

OEM WAT060304

**Sapphire Plunger,
Extended Flow**
each \$119.13



**Model - 2690, 2695,
2790, 2795**

CTS-10560

OEM WAT271018

**Seal Wash Plunger Seal,
Alliance**
2/pk \$52.25



Model - M45, 501

CTS-6524

OEM WAT026524

Sapphire Plunger
each \$121.22



**616
625
626
Kit**

CTS-10906

OEM WAT034515

Seal Kit

\$130.63

- Plunger Seals 2
- Plunger Wash Seals 2
- O-Rings 2
- Backup Rings 2



**Model - 616,
625, 626**

CTS-10323

OEM WAT031788

Sapphire Plunger
each \$138.99



**Model - 515,
1515, 1525**

CTS-10475

OEM WAS207069

Sapphire Plunger
each \$145.00



**626
Kit**

CTS-11032

OEM WAT031790

Seal Kit

\$141.08



**Model - 2690, 2695,
2790, 2795, 2796**

CTS-10476

OEM WAT270959

**Sapphire Plunger,
Alliance**
each \$140.00

**510
Kit**

CTS-0012

OEM WAT060012

Insert Seal Parts Kit

\$31.35

- Manifold Insert 1
- Insert Seal, TFE 1
- Belleville Washer 2
- Flat Washer 1

**Model – 510, 515,
600, 610**

CTS-0034

OEM WAT060034
WAT060042

Single Solvent Manifold
each \$316.11

**Model – M6KA, 510,
590, 600**

CTS-0037

OEM WAT060037

Tube, Left Inlet Pigtail
each \$18.81

**Model – M6KA, 510,
590, 601**

CTS-0038

OEM WAT060038

Tube, Right Inlet Pigtail
each \$18.81

**Model – 510, 515,
600, 610**

CTS-0069L

OEM WAT060069
WAT075550

Tube, Left Outlet Pigtail
each \$13.59

**Model – 510, 515,
600, 611**

CTS-0069R

OEM WAT060069, WAT075550

Tube, Right Outlet Pigtail
each \$13.59

**Model – M6KA, M45,
501, 510, 590, 600E**

CTS-5500S

OEM WAT060329

Pressure Transducer
each \$436.81

**Model – M6KA,
510, 590, 600**

CTS-5669

OEM WAT025669
WAT005081

Oil Seal
each \$9.41

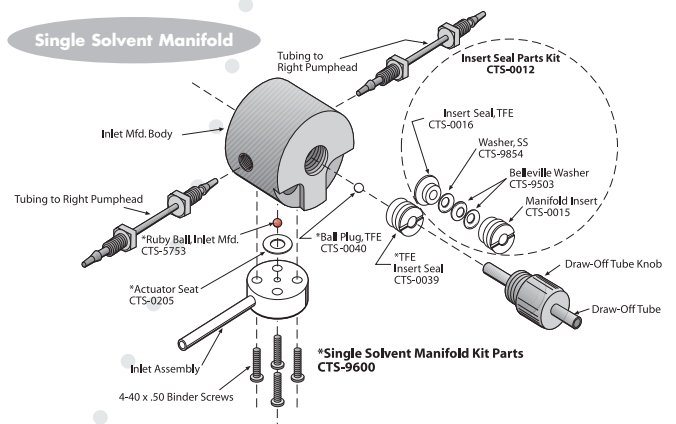
**Model – 510,
515, 600, 610**

CTS-5740

OEM WAT060476

**Draw-Off
Tube Assembly**
each \$47.03

Single Solvent Manifold





**Model - 1515, 1525,
510, 515, 600, 610**

CTS-5746

OEM WAT025746

**Reference Valve
Rebuild Kit**

each \$28.22



**Model - 1515, 1525,
510, 515, 600, 610**

CTS-6958

OEM WAT069583

Indicator Rod Kit

each \$9.41



**Model - 1515, 1525,
510, 515, 600, 610**

CTS-6183

**Valve Disk Spacer,
Reference valve**

each \$20.90



**Model - 1515, 1525,
510, 515, 600, 610**

CTS-6184

**Valve Disk with Lugs,
Reference Valve**

each \$21.95



**M45
501, 510
590, 600E
Kit**

CTS-9600

OEM WAT060448

Indicator Manifold Kit

\$58.52

- Ball Plug, TFE 1
- Seat, TFE 1
- Ruby Ball 1
- Insert Seal Body Part Kit (CTS-0012) 1
- Inlet Tube Body Assembly 1



**Model - M45, 501,
510, 590**

CTS-0058

OEM WAT060058

**Round Pump Head
w/Actuator
Outlet Check Valve**

each \$380.00



Model - 510, 590, 600

CTS-0068

**Round Pump Head
w/Ball & Seat
Outlet Check Valve**

each \$365.75



Model - 510, 590, 601

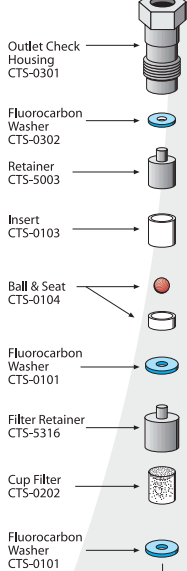
CTS-1068

**Round Pump Head
w/o Check Valves,
Ball & Seat Style**

each \$209.00

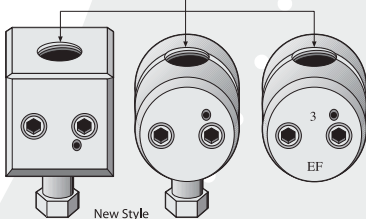
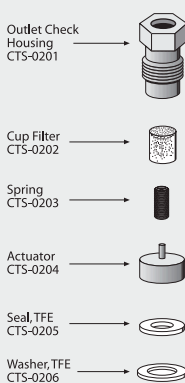
Outlet Check Valves

Ball and Seat Style



Outlet Check Valves

Actuator Style



M510 Actuator Style

M6KA, M501, M510, M590 and #3 or EF Pump Heads



CTS-1106

OEM WAT010106

**Inlet Tube Assembly
w/Ball & Seat**

each \$39.71



**Model - M6KA,
510, 590, 600**

CTS-5464

OEM WAT025464

**Clip Ring,
Plunger Retainer**

each \$5.23



CTS-8056

OEM WAT098056

Fan, Pump

each \$48.07



**510
Kit**

CTS-11009

OEM WAT052670

**Preventative
Maintenance Kit**

\$616.55

- Actuator Outlet Rebuild Kit 1
- Performance PLUS Check Valves 2
- Plunger Seal 2
- Solvent Reservoir Filter, 10 micron 1
- Sapphire Plungers 2
- Reference Valve Rebuild Kit 1
- Inlet Manifold Kit 1



**515
Kit**

CTS-11010

OEM WAT052587

**Preventative
Maintenance Kit**

\$710.60

- Solvent Reservoir Filter, 10 micron 1
- Performance PLUS Check Valves 2
- Sapphire Plungers 2
- Plunger Seal 2
- Sparge Diffuser 1



**600E
Kit**

CTS-10985

OEM WAT052675

**Preventative
Maintenance Kit**

\$783.75

- Solvent Reservoir Filter, 10 micron 4
- Performance PLUS Check Valves 2
- Sapphire Plungers 2
- Plunger Seal 2
- Sparge Diffuser 4
- Reference Valve Rebuild Kit 1
- Inlet Manifold Kit 1



**616
Kit**

CTS-10986

OEM WAT052672

**Preventative
Maintenance Kit**

\$862.13

- Sapphire Plungers 2
- Sparge Diffuser 4
- Solvent Reservoir Filter, 10 micron 4
- Pump Seal Kit 1
- Check Valve Cartridges 4



**626
Kit**

CTS-11026

OEM WAT052673

**Preventative
Maintenance Kit**

\$862.13

- Sapphire Plungers 2
- Sparge Diffuser 4
- Solvent Reservoir Filter, 10 micron 4
- Pump Seal Kit 1
- Check Valve Cartridges 4



**Model - 715,
717, 2690**

CTS-10285
OEM WAT045407

Valve 4, TFE 3-way
each \$193.33



**Model - 715, 717, 2690,
2695, 2790, 2795**

CTS-3209
OEM WAT077347

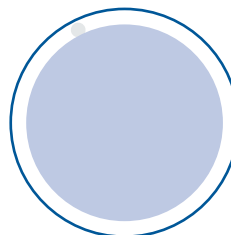
**Syringe Seal,
250uL, 2500uL**
each \$4.02



Model - 717

CTS-10324S
OEM WAT045559

**Seal Pack
With Needle**
each \$433.68



Model - 710, 712

CTS-2324
OEM WAT072324

Needle Wash Frit
each \$3.14



**Model - 710, 712,
715, 717**

CTS-2036
OEM WAT072036

Spool, WISP, HPMV
each \$135.85



Model - 712

CTS-7230
OEM WAT077230

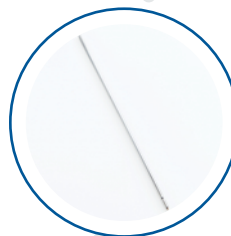
**Seal, High Pressure
Valve & Injector**
each \$43.89



**Model - 710, 712,
715, 717, 2690, 2695
2790, 2795**

CTS-3109
OEM WAT073109

250uL Syringe
each \$108.00



CTS-7550

OEM WAT077233
WAT075507

**Needle Assembly,
Polished**
each \$111.82



**Model - 710, 712,
715, 717, 2690, 2695
2790, 2795**

CTS-3195
OEM WAT073195

Syringe Tip, 250uL
each \$3.34



Model - 717

CTS-A087
OEM WAT025893

Valve 3 Solenoid Assembly
each \$219.45

**715, 717
2690, 2695
Kit**

CTS-10761

OEM WAT045424

**HPMV 1 & 2 Rebuild Kit
w/Spool**

\$140.00

- O-Ring, TFE 1
- HPMV Seals 2
- Spool Assembly 1

**717
Kit**

CTS-10987

OEM WAT052669

**Preventative
Maintenance Kit**

\$574.75

- Seal Pack Kit 1
- 250µL Syringe 1
- Filter Insert Assembly 1

**2690
2695
Kit**

CTS-10734

OEM WAT271019

Seal Pack Rebuild Kit

\$219.45

- Lower Seal Wash Assembly 1
- Wash Tube Seal 1
- Washer, TFE 1
- Seal Wash Tube 1
- Filter Retainer 1
- Lower Seal Wash Frit 1
- Needle Wash Frit 1
- Ferrule, SS 1
- Compression Screw 1
- Washer, TFE, Small 2
- Injection Needle 1
- High Pressure Injector Seals 2

**2690
2695
Kit**

CTS-11029

OEM WAT270942

Seal Pack Kit, Assembled

\$500.00

- Lower Seal Wash Assembly 1
- Wash Tube Seal 1
- Washer, TFE 1
- Seal Wash Tube 1
- Filter Retainer 1
- Lower Seal Wash Frit 1
- Needle Wash Frit 1
- Ferrule, SS 1
- Compression Screw 1
- Washer, TFE, Small 2
- Injection Needle 1
- Upper Seal Wash Assembly 1
- High Pressure Seal Body 1
- Screws 3
- Frit Retainer 1

**2690
2695
Kit**

CTS-10839

Seal Pack Rebuild Kit

\$198.55

- Wash Tube Seal 1
- Washer, TFE 1
- Seal Wash Tube 1
- Filter Retainer 1
- Lower Seal Wash Frit 1
- Needle Wash Frit 1
- Ferrule, SS 1
- Compression Screw 1
- Washer, TFE, Small 2
- Injection Needle 1

**2690
2695
Kit**

CTS-10839-1

**Seal Pack Rebuild Kit
without needle**

\$141.08

- Wash Tube Seal 1
- Washer, TFE 1
- Seal Wash Tube 1
- Filter Retainer 1
- Lower Seal Wash Frit 1
- Needle Wash Frit 1
- Ferrule, SS 1
- Compression Screw 1
- Washer, TFE, Small 2

detector lamps

detector lamps



Model - 470

CTS-8389

Xenon Lamp, without holder or mirror

each \$418.00



Model - 474

CTS-10611

Xenon Lamp

each \$418.00



Model - 480, 481, Lambda Max

CTS-9499

OEM WAT099499

Deuterium Lamp

each \$402.33



Model - 484, 486, 490

CTS-0335

OEM WAT080335

Window Gasket

each \$23.00



Model - 484, 486, 490

CTS-0336

OEM WAT080336

Lamp Side Gasket

each \$23.00



Model - 484

CTS-0357

OEM WAT080357

Deuterium Lamp

each \$428.45



Model - 486

CTS-0678

OEM WAT080678

Deuterium Lamp

each \$428.45



Model - 486

CTS-8068

OEM WAT080687

Quartz Lens

each \$156.75



Model - 484, 486

CTS-10328

OEM WAT080244

Optics Cover Window

each \$26.13



Model - 486

CTS-10699

OEM 700000356

Deuterium Lamp, Long Life

each \$550.00



Model - 996, 2996

CTS-10268

OEM WAT052586

Deuterium Lamp

each \$564.30



Model - 2487, 2488, Acquity TUV

CTS-10465

OEM WAS081142

Deuterium Lamp

each \$465.03

agilent



Model - 1090, 1050

CTS-00127
OEM 79883-60002

VW, DA, MWD
each \$480.70



Model - 8452A

CTS-00128
OEM 08452-60104

Deuterium Lamp
each \$480.70



Model - 8453

CTS-10594
OEM 2140-0605

Deuterium Lamp
each \$514.14



Model - 79853A

CTS-00129
OEM 79853-60002

1050 VW Lamp
each \$365.75



CTS-10494
OEM 2140-0585

CE DAD
each \$454.58



Model - G1314A

CTS-10494
OEM G1314-60100

1100 VWD Lamp
each \$454.58



**Model - G1315A,
G1365A**

CTS-10827
OEM 5181-1530

**1100 DAD
Long Life Lamp**
each \$746.13



**Model - G1315A,
G1365A**

CTS-10473
OEM 2140-0590

1100 DAD Lamp
each \$514.14



Model - G1321

CTS-10806
OEM 2140-0600

**Fluorescence
Flash Lamp**
each \$361.18

lamps

detector lamps

detector lamps

applied biosystems (ABI), kratos



**Model - 230A,
1000S, SF757,
SF759, SF759A,
SF773, SF775,
SF783, SF783A,
SF785A, SF980**

CTS-00025

Deuterium Lamp
each \$355.00

bausch & lomb



Model - 3100, 3200

CTS-10577

Deuterium Lamp
each \$402.33

beckman



Model - 163

CTS-10577

OEM 22947029

Deuterium Lamp
each \$402.33



**Model - DU60,
DU62, DU64,
DU65, DU68**

CTS-00032

OEM 596781

Deuterium Lamp
each \$470.25

biorad



**Model - BioFocus
3000, CE2000,
HPE100, MDL 1790**

CTS-00246

Deuterium Lamp
each \$418.00

dionex



Model - DSA-1, VDM-1

CTS-00246

Deuterium Lamp
each \$418.00

detector lamps

gilson



**Model - 118, 119,
151, 152, 153,
155, 156 Dual,
160 Diode Array**

CTS-00245
OEM 100-326

Deuterium Lamp
each \$450.00



Model - 170 DAD

CTS-10473
OEM 2140-60001

Deuterium Lamp
each \$514.14

hitachi, merck



**Model - 2500, L3000,
L4000, L4200, L4225,
L4250, L4500, L4720**

CTS-10368
OEM ANO-0424

Deuterium Lamp
each \$383.52



**Model - L7400, L7420,
L7450A, L7455 DAD**

CTS-11021
OEM 885-3570
890-2430

Deuterium Lamp
each \$407.55

detector lamps

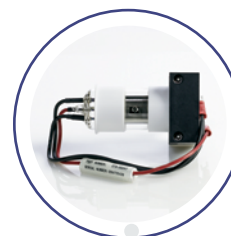
IBM



**Model - LC-Detectors
CTS-10577**

Deuterium Lamp
each \$402.33

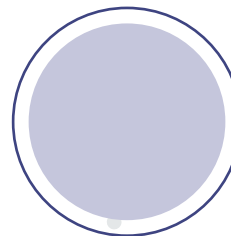
TSP, LDC, milton roy



**Model - 3100,
3200, 4100
(Prealigned)**

CTS-00247
OEM 900918001

**Deuterium Lamp,
Prealigned**
each \$402.33



**Model - 3100, 3200,
4100 (Not Prealigned)**

CTS-10428
OEM 900918002

**Deuterium Lamp,
Not Prealigned**
each \$313.50



**Model - 3000, 4000,
4200, 5000, 12020,
Spectromometer I, II, III,
Spectromometer D**

CTS-10577
OEM 108035
9499

Deuterium Lamp
each \$402.33

lamps

detector lamps

detector lamps

perkin elmer



Model – 550, 551, 552, 553, 559A, Lambda 2, 5, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 25, 35, 40, 45, 800, 900, Lambda BIO, LC-480 PDA

CTS-10854

OEM B016-0917

Deuterium Lamp
each \$444.13



Model – Series 200 UV/Vis

CTS-00025

OEM N2920149

Deuterium Lamp
each \$355.00

scientific systems, inc



Model – UV200, 500, 506, UV-Vis, 525/201

CTS-00246

Deuterium Lamp
each \$418.00

shimadzu



Model – SPD-2A, SPD-6A, SPD-6AV

CTS-00134

OEM 062-65056-03

Deuterium Lamp
each \$240.00



Model – SPD-10, SPD-10AS, SPD-10AV, SPD-10Avp

CTS-00135

OEM 228-34016-91

Deuterium Lamp
each \$505.78

detector lamps

spectra physics



Model - 3100
CTS-10577
Deuterium Lamp
each \$402.33



**Model - SP770,
SP970, SP8480**
CTS-00025
Deuterium Lamp
each \$355.00



**Model - 200, 201,
203, 204, 205, 206,
206PH, UV-100,
-150, -200, -1000,
2000, SP100,
SP200, CE100,
CE500, CE1000,
CE2000**
CTS-00246
OEM 9551-0023
Deuterium Lamp
each \$418.00

detector lamps

thermo electron (TSP)



**Model -
Spectrachrom 200,
UV100, UV150,
UV200, UV1000,
UV2000, UV3000**
CTS-00246
OEM 9551-0023
Deuterium Lamp
each \$418.00

tosoh



**Model - 8010,
8011**
CTS-10577
Deuterium Lamp
each \$402.33

varian



**Model - Prostar 340,
Prostar 345**
CTS-00246
Deuterium Lamp
each \$418.00

lamps

waters



Model - 470
CTS-8389
Xenon Lamp,
without holder
or mirror
each \$418.00



Model - 486
CTS-0678
OEM WAT080678
Deuterium Lamp
each \$428.45



Model - 474
CTS-10611
Xenon Lamp
each \$418.00



Model - 486
CTS-10699
OEM 700000356
Deuterium Lamp,
Long Life
each \$550.00



Model - 480, 481,
Lambda Max
CTS-9499
OEM WAT099499
Deuterium Lamp
each \$402.33



Model - 996, 2996
CTS-10268
OEM WAT052586
Deuterium Lamp
each \$564.30



Model - 484
CTS-0357
OEM WAT080357
Deuterium Lamp
each \$428.45



Model - 2487, 2488,
Acquity UPLC,
Nano Acquity UPLC
CTS-10465
OEM WAS081142
Deuterium Lamp
each \$465.03



CTS-00089
Wrench,
Open ended,
5/16" x 3/8"
 each \$11.00



CTS-00090
Wrench,
Open ended,
5/16" x 1/4"
 each \$11.00



CTS-00091
Wrench,
Adjustable, 6"
 each \$20.50



CTS-1079
Slotted 5/16"
Nut Driver
 each \$20.38



CTS-1059
Seal Pick, Straight
 each \$10.40



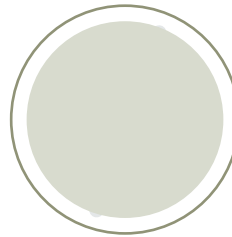
CTS-1060
Seal Pick, Arched
 each \$10.40



CTS-1042
Plunger
Insertion Tool
 each \$41.28



CTS-TT-1001
Terry Tool Cutter,
with 3 wheels
 each \$83.60



Model - 712,
715, 717
CTS-1046
Seal Pack
Alignment Tool
 each \$70.00



CTS-00050
PEEK Cone Ferrule,
F142X
each \$3.66



CTS-00052
PEEK Stepped Ferrule,
F162
each \$3.66



CTS-10999
Flanged Nut 8-32,
7/32 HEX,
Stainless Steel
each \$2.00



Model - Waters
CTS-1817
PEEK Ferrule,
Waters style
each \$3.14



CTS-1818
Grip Tight PEEK Nut
each \$3.14



CTS-1820
Grip Tight PEEK Plug
each \$3.14



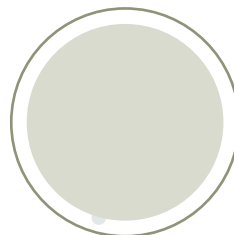
Model - Waters
CTS-2330
Ferrule, Stainless Steel
each \$3.34



CTS-9733
SS Union,
Zero Dead Volume
each \$27.17



CTS-9733P
PEEK Union,
Zero Dead Volume
each \$14.63



Model - Waters 410,
490, 590
CTS-10375
Battery
each \$25.08



Model - Waters 2690,
2695, 717, 486, 484
CTS-10945
Battery
each \$8.36



CTS-2996
PEEK tubing,
.010"x1/16"x10'
each \$35.00



CTS-2999
PEEK tubing,
.030"x1/16"x10'
each \$35.00



CTS-2999-01
PEEK tubing,
.030"x1/16"x4.5"
each \$1.75



CTS-2999-02
PEEK tubing,
.030"x1/16"x9"
each \$3.00



CTS-6804
SS Tubing,
.020"x1/16"x10'
each \$39.71



CTS-6805
SS Tubing,
.040"x1/16"x10'
each \$39.71



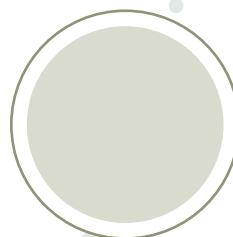
CTS-6973
SS Tubing,
.009"x1/16"x10'
each \$49.12



CTS-6809
Mobile Phase
Transfer Line,
TFE, 1/8"x25'
each \$39.71



CTS-5531
Solvent Reservoir
Filter, 10 micron
each \$33.44



CTS-3289
Lithium Grease,
White, 8cc
each \$5.00

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Requesting Company: _____
 Requesting Individual: _____
 Phone: _____
 email: _____

Date: _____
Source: _____
CTS Contact: _____

Instrument Manufacturer: _____

Instrument Model(s):

Volume of kits needed per year: _____

Required Date for first kit purchase: _____

Is this a replicate of an OEM kit? Yes	Y	N	OEM p/n
	☐	☐	

Are unique kit labels required?

Is this a modification of a CTS stock kit? ☐ Yes ☐ No

Must all subcomponents be labelled? ☐ Y ☐ N

CTSp/n

Kit Components/Quantities

[illegible]

NOTES:

OFFICE USE ONLY		
	Initial	Date
Sales		
Engineering		
Warehouse		

Standard Conditions:

Custom Kit Creation Turnaround Time:

2 weeks from finalization of all parts and quantities for the creation of a part number.

1 week from part number creation to kit assembly, if all parts

1 week from part number creation to kit assembly, if all parts are CTS parts and in stock.

A minimum of 15 kits per year are required before a custom kit will be generated.

A minimum of 48 kits per year are required before a custom kit will be stocked (versus made to order).

pump troubleshooting procedures

You can troubleshoot most pumping problems in a short time by observing the pressure meter on your pump. The following procedures will show you how.

ramp test

This is the first test to try, as it involves the least amount of work and disassembly, and will find most pumping problems.

1. Disconnect the outlet of the pump from the rest of your HPLC system.
2. Connect a short piece of tubing to the pump outlet, and put the other end of this tube into a beaker.
3. Prime the pump thoroughly with methanol: make sure you have drawn enough methanol through the solvent inlet line to assure that the pump is pumping methanol.
4. Remove the tubing at the pump outlet, and install a plug fitting, to stop flow.
5. Set the pressure limit for 4000-5000 psi.
6. Set the flow rate for 0.3-1.0 ml/min, and observe the psi meter and the indicator rods. With a properly-operating pump, you will see a smooth increase in pressure until the pressure limit is reached.
Below are two examples of the most common symptoms of Ramp Test failure and how to resolve them. The examples use the left and right side to describe the symptoms: interchange the left and right in the text if needed to match your symptoms.

symptom #1

While watching the left indicator rod coming out, the pressure increases. When the right indicator rod comes out, the pressure stops increasing, and stays about the same. When the left indicator rod again begins coming out, the pressure again begins increasing.

analysis

The right inlet check valve is not working. This symptom is fairly easy to understand. The inlet check valve is either stuck open, and the mobile phase is sloshing back and forth as the plunger goes in and out, or it is stuck shut, never allowing mobile phase into the pump head.

possible problem	solution
check valve dirty	clean in ultrasonic cleaner. Flush thoroughly with methanol in priming syringe. Disassemble and rebuild check valve.
air bubble trapped in check valve	reprime with methanol

symptom #2

While watching the left indicator rod coming out, the pressure increases. When the right indicator rod comes out, the pressure drops almost back to zero. When the left indicator rod again begins coming out, the pressure again increases.

analysis

The left outlet check valve is leaking back. This symptom is more difficult to understand, until you think about where the mobile phase is going. When the left plunger comes out, the pressure increases. When the right plunger comes out, it pumps mobile phase out, into the reference valve or tee fitting, and over to the left side. The left outlet check valve is leaking backwards, allowing what the right side is pumping to enter and fill the left side as the left plunger is going in.

possible problem	solution
check valve dirty	clean & rebuild
seat worn out	clean & rebuild

other symptoms

If your symptoms differ from these, you may have multiple problems, and should use the Modified Ramp Test. This test is also useful to verify your troubleshooting from the above steps, if you are unsure of your diagnosis.

modified ramp test

Perform steps 1 - 5 in the standard Ramp Test

1. Disconnect the outlet of the pump from the rest of your HPLC system.
2. Connect a short piece of tubing to the pump outlet, and put the other end of this tube into a beaker.
3. Prime the pump thoroughly with methanol: make sure you have drawn enough methanol through the solvent inlet line to assure that the pump is pumping methanol.
4. Remove the tubing at the pump outlet, and install a plug fitting, to stop flow.
5. Set the pressure limit for 4000-5000 psi.
6. Disconnect the tube between the outlet check valve and the reference valve or tee fitting, at the reference valve or tee, on the side of the pump not being tested (if you are testing the left side, disconnect the right side).
7. Put a plug fitting into the reference valve or tee where you removed the tube. You may want to put a towel under the open end of the disconnected tube: it will drip a little during the following steps. Do not cap the dripping tube.
8. Set the flow to 1 ml/min, and observe the psi meter and the indicator rod on the side being tested.

symptom #1

The pressure increases steadily while the plunger is coming out, and holds pressure while the plunger is retracting.

analysis

This pump head is pumping OK.

symptom #2

The pressure never increases above 0 psi.

analysis

The inlet check valve is not working. Reprime this pump head and try again. If this fails, see symptom #1 of the Ramp Test to repair.

symptom #3

The pressure increases steadily while the plunger is coming out, but drops abruptly while the plunger is retracting.

analysis

The outlet check valve is leaking back. See symptom #2 of the Ramp Test to repair.

symptom #4

The pressure increases steadily during the first plunger out stroke, but increases less during the next out strokes; the pressure holds while the plunger is retracting.

solution

The plunger seal is beginning to leak, or the inlet check valve is leaking back slightly. To repair, look at the weep hole at the bottom of the support bushing, or between the pump head and the support bushing, and see if the mobile phase has been leaking past the plunger seal. If so, slightly tighten the two allen head screws holding the pump head and retest. If the pump head is tight against the support bushing, it is time to replace the plunger seal. If the inlet check valve is leaking back, see symptom #1 of the Ramp Test to repair.

other symptoms

If you need any further assistance, please feel free to call 952.895.8292 or toll-free at 800.682.3295 during the hours of 8am to 5pm CST. Thanks for calling!

agilent	CTS p/n	pg
0100-1853	CTS-10459	6
0101-0626	CTS-10458	6
01018-22707	CTS-10683	4
01078-67200	CTS-10677	6
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