# optimize technologies
**Innovative** HPLC, UHPLC & LC/MS products

We are continually developing new products to meet the needs of our customers. For the most up-to-date selection of Optimize products and literature, please visit www.optimizetech.com.

**optimize** technologies

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OPTIMIZE
TECHNOLOGIES

# optimizetechnologies
## Innovative HPLC, UHPLC & LC/MS products

Optimize Technologies is dedicated to providing the highest quality HPLC, UHPLC and LC/MS products available. We combine innovative design and superior performance to create products that are straight forward, yet elegant, solutions to daily issues in the lab.

For example, the new EXP® product family provides reusable hand-tight connections and cartridge replacement for UHPLC pressures of 20,000+ psi. The optilynx™ system provides low-dispersion quick-connect capabilities for many applications rated to 6,000 psi. Our piston seals employ unique polymer blends to provide the ultimate performance. Check valve ball and seat sets are perfectly mated and feature optimized geometry for the fastest response time and flawless operation.

We are constantly developing new products and expanding existing offerings. Please contact us if you have a custom design requirement or need support with your scientific instrumentation. Optimize welcomes the opportunity to provide custom design and engineering solutions.

We promise to bring you innovative products that offer unmatched performance, quality, and ease of use - all backed with the most responsive and effective customer service in the industry.

## optimize service
### How can we help you?

At Optimize, we take customer satisfaction seriously. Our products are only as good as the support we provide. Customer service is not just a department, but an integral part of our business. Our sales and quality assurance professionals, technical support specialists, machinists, engineers, chemists, and administrative team are available to provide answers to your questions.

Contact us directly or find your local authorized dealer at **www.optimizetech.com.** Optimize is always here to back you up.

## our guarantee
Every component and product is designed to offer optimal performance and to meet or exceed original equipment specifications. Every Optimize product carries our full guarantee. For more information, please see page 83.

## Thank you for your business.

**Mt. Hood** is located 55 miles east of **optimize** technologies.

## **optimize**profile

## EXP® | UHPLC

## opti-lynx™
### hardware components

## velocity®

# opti-solv® filtration

# opti-pak® trap columns

# opti-guard® guard colums

# oem replacement parts

# opti-lok™ fittings, tubing & adapters

# optimizemisc

# **optimize**manufacturing

made in the
**u.s.a.**

## PRECISION MACHINING

Optimize products are manufactured by skilled machinists at our facility in Oregon City, Oregon. To meet our exacting standards for quality and reliability, our designs push the limits of manufacturing tolerances. To achieve these dimensional tolerance controls, **we individually machine components and avoid mold-based manufacturing techniques.** We ensure the consistency of our manufacturing process with a rigorous quality control program.
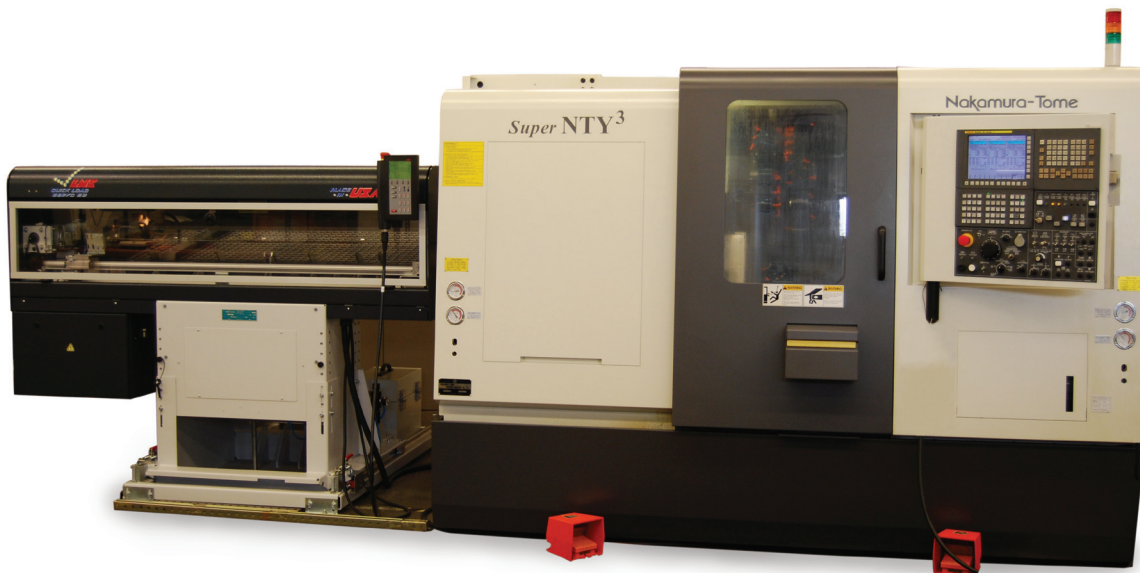


## THE DRIVING FORCE

Innovation started Optimize and innovation continues to fuel our progress. The spirit of Optimize is exemplified by products such as the Auto-Adjusting Stem, Hand-Tight EXP® hardware rated to 20,000psi, Opti-Max® check valve components, and the Opti-Lynx™ quick-connect system. We push the limits of excellence in everything we create.

## RESEARCH & DEVELOPMENT

At Optimize Technologies we are obsessed with Research and Development.  It's hard not to be when we define and pride ourselves on continual progress. Our team of engineers and chemists are constantly engaging in the evaluation of existing product designs and the conceptualization of new ones. Our many collaborative efforts with various original equipment manufacturers (OEMs) and pharmaceutical research companies have resulted in customized components and devices for a variety of unique applications, increasing our experience beyond the realm of HPLC.

# **custom** design & manufacturing

## SPECIFIC NEEDS, SPECIFIC RESULTS

Team with Optimize Technologies to bring your ideas to reality. From simple one-piece fittings to entire fluid handling assemblies- no project is too small or too large. Optimize specializes in custom design and development services including packed-bed products, quick-connect technology and complex fluid handling devices. Offering patented features such as EXP®, Opti-Lynx™ and Opti-Solv®, we are able to customize our existing products or can design new solutions from the ground up to meet your specifications.

Virtually all manufacturing and design takes place in the USA. On-site engineering and manufacturing allows us to make rapid changes during the production process to meet the immediate needs of our customers. Highly experienced machinists bring to life the innovations created by our team of design specialists, engineers, and chemists. Our quality assurance professionals, who have an established reputation for being the most demanding in the field, ensure all Optimize products meet or exceed the highest standards in the industry.



Custom packed Opti-Lynx™ trap and Opti-Solv® filtration application at the Pfizer Lab.

Some of the industries we serve:

- Chromatography
- Drug Discovery
- Mass Spectrometry
- Nuclear Pharmacy
- Clinical
- Environmental
- Petrochemical
- Bio-Defense
- Pharmaceuticals

## **optimize**partners
### see what our customers are saying...

Our partnerships continue to benefit a variety of companies and customers with diverse applications. Now more than ever, Optimize is the perfect partner to adapt existing designs to specific applications, engineer solutions for problematic situations, and create innovative products. To see what our customers are saying, please visit our website, www.optimizetech.com/testimonials.

**optimize**custom
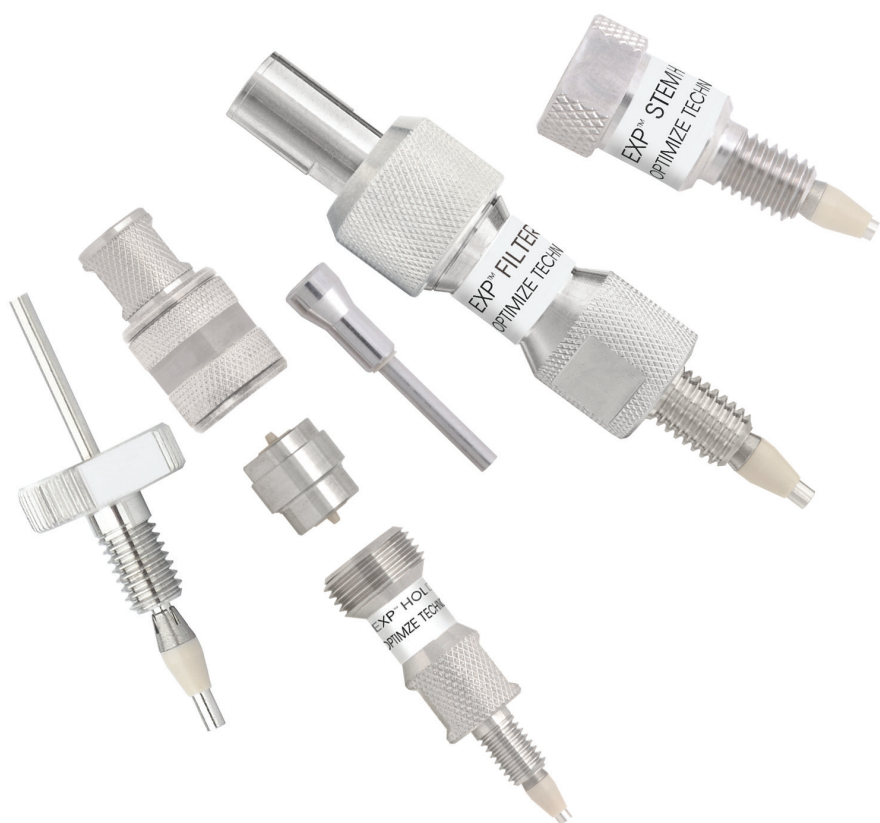
# Introducing EXP®

the new gold standard of
extreme pressure chromatography
hardware and consumables.

# UHPLC

# extreme pressure

Welcome to the new gold standard of ultra high pressure liquid chromatography (UHPLC) hardware and consumables. Optimize Technologies' EXP product family includes fittings, filters and packed-bed products which offer unparalleled convenience and ease of use through exciting new patented and patent-pending innovations. This advanced system is the first design to provide reusable hand-tight connections and hand-tight cartridge replacement for UHPLC. These innovations significantly accelerate challenging UHPLC applications and reduce costly instrument downtime.

Revolutionary features include:
- EXP titanium/PEEK hybrid ferrule offering repeated zero-dead-volume connections, hand-tight to 8,700 psi or wrench-tight to 20,000 psi (1,400+ bar).
- EXP holders and cartridges with ultra-low internal swept volume and hand-tight cartridge changeover for use to 20,000 psi (1,400+ bar).

This rare combination of attributes enables our EXP components to provide excellent protection with negligible impact on analyte retention and peak symmetry. The elegant design of our EXP line showcases sleek architecture for easy installation in restricted instrument compartments, without compromising accessibility. Our commitment to exceed industry standards yields an entire EXP product family conservatively rated to 20,000+ psi (1,400+ bar). The EXP product line, as well as virtually all Optimize products, are proudly designed and manufactured in our facility in Oregon, USA*.

From the name you've trusted for 25 years of precision innovation in HPLC accessories and consumables, EXP represents the culmination of a generation of research and development. High standards consistently guarantee that every product bearing the EXP trademark exemplifies our quality control, responsive customer service and expert technical support. Optimize is always here to back you up.

\* 100% of all Optimize **EXP** products are made in the U.S.A. from raw materials originating in the U.S.A.
  98% of all Optimize products are made in the U.S.A. from raw materials originating in the U.S.A.

# EXP® fittings

## The Foundation of the EXP Family

Optimize Technologies recognizes the challenges faced by scientists and technicians in the constantly evolving field of chromatography and LC instrumentation. Ultra high pressure liquid chromatography is one example of how these advances present an opportunity for innovative products.

In response to evolving UHPLC technologies, Optimize delivers with the EXP Titanium PEEK Hybrid ferrule. The ingenuity of the EXP ferrule lies in a design which adjusts to any 10-32 port depth and can subsequently be removed and reused in a different port while still maintaining adjustability. The EXP ferrule provides the necessary zero-dead-volume seal to allow connections beyond 20,000+ psi (1,400+ bar).

The EXP ferrule, with its innovative capabilities, forms the foundation of our EXP product family. A quick look through these pages shows that the EXP ferrule is incorporated into the entire EXP product line, demonstrating its wide array of applications. If you are interested in seeing how our EXP products can work for you, please contact Optimize Technologies or one of our authorized dealers. At Optimize, we strive to develop new products that are straight forward, yet elegant, solutions to daily issues in the lab.

## ADVANTAGES OF THE EXP FERRULE

- Rated to 20,000+ psi (1,400+ bar)
- Tested to 30,000 psi
- Auto-adjusting ZDV connection
- Intended for many repeat uses
- No more cut-off and replacement of swaged ferrules

actual size

# A Perfect Seal
## with every connection

**PEEK:**
Proven sealing ability beyond 20,000 psi (1,400 bar).

**Titanium:**
Enables the swage to be released and reset. Intended for many repeat connections.

Patents Pending

10

www.optimizetech.com

# EXP fitting system

The EXP Fitting System is the premier adjustable nut and ferrule compression fitting for extreme high-pressure connections between 1/16" tubing and any 10-32 port. The key advantages of the EXP fitting lie at the confluence of simplicity and versatility.

The patent-pending Titanium Hybrid Ferrule integrates the resilience of titanium with the proven sealing ability of PEEK in a superb one-piece design. The Hybrid Ferrule provides a perfect seal with every connection, yet the swage can be released without tools to adjust to the different port depths of various hardware. This adjustability provides unlimited value through repeated zero-dead-volume connections with any 10-32 port configuration.

With the EXP Fitting System, you no longer have to clip off and replace swaged ferrules or wonder if you are achieving the best possible connection.

## ADVANTAGES OF EXP FITTINGS

- Available in hand-tight & wrench-tight configurations
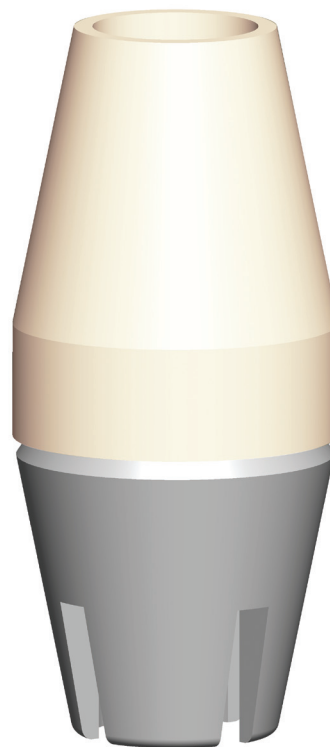- Rated to 20,000+ psi (1,400+ bar)
- Tested to 30,000 psi
- Auto-adjusting ZDV connection
- Intended for many repeat uses

**HAND-TIGHT**
hand-tight to 8,700+ psi
wrench-tight to 20,000+ psi

**EXP Titanium Hybrid Ferrules**

| | |
|---|---|
| 15-24-03831 | Titanium Hybrid Ferrule |
| 15-24-03832 | Titanium Hybrid Ferrules, 10/Pk |

**HAND-TIGHT EXP Fittings**

| | |
|---|---|
| 15-20-03888 | 10-32 Hand-Tight Nut & Titanium Hybrid Ferrule |
| 15-20-03930 | 10-32 Hand-Tight Nuts & Titanium Hybrid Ferrules, 10/Pk |

**HEX HEAD EXP Fittings**

| | |
|---|---|
| 15-20-04120 | 10-32 Standard Hex Head Nut & Titanium Hybrid Ferrule |
| 15-20-03839 | 10-32 Hex Head Nut, Short |
| 15-20-03840 | 10-32 Short Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk |
| 15-20-03833 | 10-32 Hex Head Nut, Standard |
| 15-20-03834 | 10-32 Standard Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk |
| 15-20-03841 | 10-32 Hex Head Nut, Long |
| 15-20-03842 | 10-32 Long Hex Head Nuts & Titanium Hybrid Ferrules, 10/Pk |

**HAND-TIGHT EXP Coupler**

| | |
|---|---|
| 15-20-04128 | 1/16" OD x 0.005" ID x 5 cm Stainless Steel Tubing (Includes 2 EXP Hand-Tight Fittings) |

**HEX HEAD**
rated to 20,000+ psi

Patents Pending

# EXP® filtration

# EXP stem filter

Modern UHPLC and UHPLC/MS instrumentation pushes the envelope in fluid handling with tiny passages and extremely high pressures. At any time, an unprotected system is virtually a stray 1$\mu$m seal fragment away from failure, loss of priceless data continuity and subsequent troubleshooting and repair. The best assurance against this costly prospect comes from safeguarding your system with thorough filtration.

The EXP Stem Filter features a choice of frit porosities integrated with our patented auto-adjusting stem for repeated ZDV connections with any 10-32 port. The entire filter stem and reusable holder are only slightly larger than a standard HPLC fitting. This slim architecture allows it to easily fit into crowded instrument compartments, tightly spaced injection ports, and anywhere else you need an extra level of protection against clogging and contamination. The EXP Stem Filter is an ideal solution to protect expensive UHPLC columns, injectors, autosamplers, and MS electrospray tips without extra-column effects.

When tightened by hand, the EXP Stem Filter seals to 8,700+ psi.  The reusable holder hardware also incorporates wrench flats to enable flawless sealing to 20,000+ psi (1,400+ bar). The  EXP Stem Filter is the ultimate low-impact protection for expensive UHPLC and MS equipment, assuring trouble-free performance so you can concentrate on the data, not troubleshooting.

## ADVANTAGES OF EXP STEM FILTERS

- Approved for use at 20,000+ psi (1,400+ bar)
- Hand-tight and wrench-tight configuration
- Reusable holder intended for many repeat uses
- Auto-adjusting ZDV connections
- Low-dispersion cartridges
- Custom volumes/porosities available
- Ultra-low .27 $\mu$L total swept volume

actual size

EXP™ STEM
OPTIMIZE TECHN

HAND-TIGHT EXP NUT & TITANIUM HYBRID FERRULE

EXP STEM FILTER CARTRIDGE

EXP™ STEMI
OPTIMIZE TECH

EXP STEM HOLDER

EXP TITANIUM HYBRID FERRULE

U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954
and other U.S. and foreign patents pending.

### EXP Stem Filter Kit

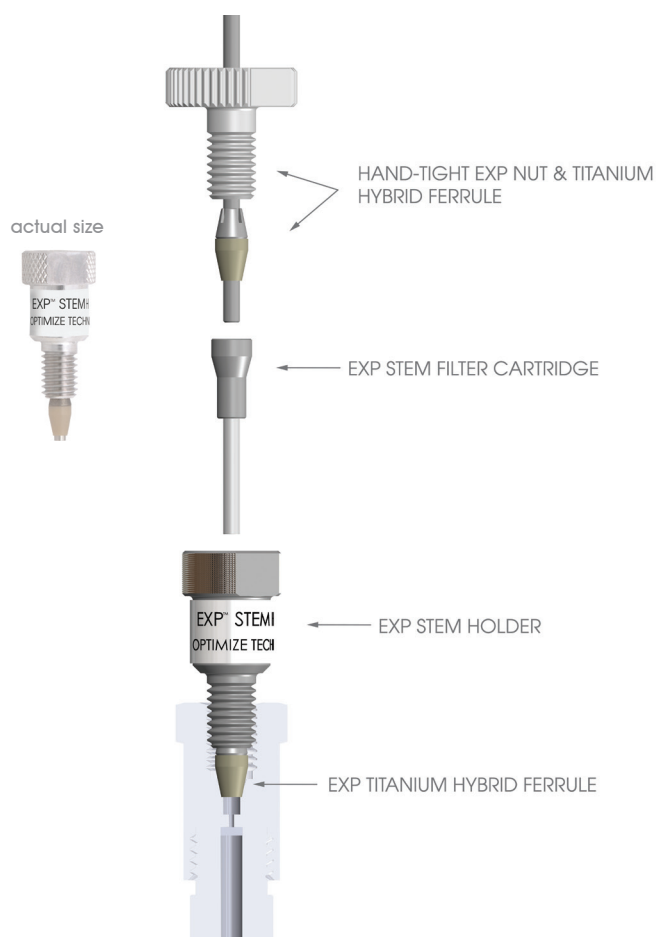| | |
|---|---|
| **15-04-04122** | 0.2 $\mu$m, EXP Stem Filter Kit |
| **15-04-04123** | 0.5 $\mu$m, EXP Stem Filter Kit |

Includes: Holder, 3 Stem Filter Cartridges and Fittings

### EXP Stem Filter Cartridges

| | |
|---|---|
| **15-04-04117** | 0.2 $\mu$m, EXP Stem Filter Cartridge, 5/Pk |
| **15-04-04119** | 0.5 $\mu$m, EXP Stem Filter Cartridge, 5/Pk |

# EXP pre-column filter

The EXP Pre-Column Hand-Tight Filter is ideal for protecting small-particle UHPLC columns at extreme pressures. Such techniques analyze samples in the most demanding applications, which can decrease the life of these expensive columns. EXP Pre-Column Filters help extend that life and protect your column investment without sacrificing performance. Free-turn® architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet.

EXP Pre-Column Filter holders are available with Titanium Hybrid ferrules for easy direct connection to any 10-32 port. The filter holder comes as a complete package including fittings to provide repeated zero-dead-volume column connections.

## ADVANTAGES OF EXP PRE-COLUMN FILTERS

- Approved for use at 20,000+ psi (1,400+ bar)
- Hand-tight filter replacement - NO TOOLS!
- Depth filtration maximizes capacity
- Auto-adjusting ZDV column connection
- Custom volumes/porosities available
- Low-volume, low-dispersion cartridges
- Hardened stainless steel end cap eliminates galling

actual size

EXP 10-32 FITTING

FREE-TURN®
HOLDER CAP

UNI-DIRECTIONAL
CARTRIDGE WITH
DEPTH-FILTRATION

HOLDER BODY

AUTO-ADJUSTING
TITANIUM HYBRID
FERRULE FOR ZDV
CONNECTIONS

### EXP Pre-Column Filter Holder

**15-04-03837**    EXP Pre-Column Filter Holder (Fittings Included)

### EXP Pre-Column Filter Cartridges

**15-04-03093**    0.5 $\mu$m, EXP Filter Cartridge, 5/Pk
**15-04-03096**    0.2 $\mu$m, EXP Filter Cartridge, 5/Pk
**15-04-03094**    0.5 $\mu$m, EXP Filter Cartridge, 10/Pk
**15-04-03097**    0.2 $\mu$m, EXP Filter Cartridge, 10/Pk
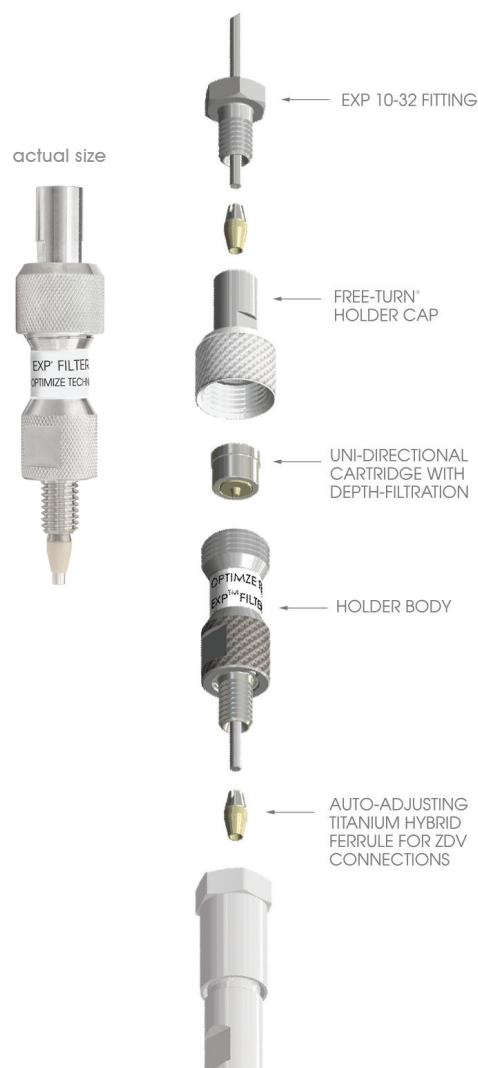
U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954 and other U.S. and foreign patents pending.

# EXP® multi-purpose packed beds

# EXP stem traps

The entire EXP Stem Trap and reusable holder are only slightly larger than a standard HPLC fitting. Its slim architecture allows it to easily fit into crowded instrument compartments or to connect directly to tightly-spaced injection ports. When tightened by hand, the EXP Stem Trap seals to 8,700+ psi. All configurations incorporate wrench-flats to enable flawless sealing to 20,000+ psi (1,400+ bar). The unique packed floating stem installs directly into any 10-32 port and automatically adjusts to provide a perfect ZDV connection.

Our specialized features, patented technology, precision engineering, and state-of-the-art manufacturing make the new EXP Stem Trap an unbeatable choice for Ultra High Pressure trapping applications.



EXP Stem Trap Kit

stems

fitting

holder

## ADVANTAGES OF EXP STEM TRAPS

- Hand-tight and wrench-tight configurations
- Intended for many repeat uses
- Auto-adjusting ZDV connection
- Rated to 20,000+ psi (1,400+ bar)
- Custom packing available
- Bed volumes from 0.17 $\mu$L to 2.6 $\mu$L
- Low-volume, low-dispersion cartridges

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

**Example:** a three pack of 0.17 $\mu$L Stem Traps packed with HALO® C8 would have part number 15-03992-HB.

### EXP STEM TRAP KIT / REPLACEMENT STEM SELECTION GUIDE

| | Bed Volume | Suggested Max Load Rate** | Dimensions | Dimension Code | Phase Code | Phase | |
|---|---|---|---|---|---|---|---|
| Stem Trap Kit | 0.17$\mu$L | 60$\mu$L/min | 0.13 x 13.5mm | 0 3 9 9 7 | H A | C18 | 2.7$\mu$m HALO® |
| Replacement Stems* | 0.17$\mu$L | | | 0 3 9 9 2 | H B | C8 | |
| Stem Trap Kit | 0.33$\mu$L | 120$\mu$L/min | 0.18 x 13.5mm | 0 4 0 0 3 | H D | HILIC | |
| Replacement Stems* | 0.33$\mu$L | | | 0 4 0 0 1 | H E | RP-Amide | |
| Stem Trap Kit | 0.68$\mu$L | 250$\mu$L/min | 0.25 x 13.5mm | 0 4 0 0 9 | H F | Phenyl-Hexyl | |
| Replacement Stems* | 0.68$\mu$L | | | 0 4 0 0 8 | H N | Peptide ES-C18 | |
| Stem Trap Kit | 1.5$\mu$L | 500$\mu$L/min | 0.36 x 13.5mm | 0 4 0 1 5 | H G | C18 | 3$\mu$m EXP® |
| Replacement Stems* | 1.5$\mu$L | | | 0 4 0 1 4 | H H | C8 | |
| Stem Trap Kit | 2.6$\mu$L | 1mL/min | 0.51 x 13.5mm | 0 4 0 2 1 | H I | C4 | |
| Replacement Stems* | 2.6$\mu$L | | | 0 4 0 2 0 | H J | HILIC | |
| | | | | | H K | Phenyl-Hexyl | |
| | | | | | H L | SAX | |
| | | | | | H M | SCX | |
| | | | | | E S | Custom | |

15-▢▢▢▢▢ -▢▢

Part Number

### Additional EXP Stem Holders

15-02-03996     EXP Stem Holder (Fittings Included)



actual size

* Includes 3 replacement stems. To be used with reusable EXP Stem holder only.

** Suggested max load rate is based on 60/40 Acetonitrile/Water mobile phase.

U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954 and other U.S. and foreign patents pending.

# EXP trap columns

The patent-pending Hand-Tight EXP Trap Column is rated for use at 20,000+ psi (1,400+ bar). This unique design connects directly to any injection valve (with 10-32 threads) or in-line with 1/16" stainless tubing for unparalleled convenience and efficiency.

The EXP Cartridge System enables chemists to quickly remove detergents or salts which can affect the ionization process in MS work. This trapping technique can concentrate the sample directly on-line, allowing for increased recovery of precious sample material compared to off-line techniques. On-line trapping readily lends itself to automation for high-throughput analysis in UHPLC/MS applications. Free-turn® architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet.

Our specialized features, patented technology, precision engineering, and state-of-the-art manufacturing make the new EXP Trap Column an unbeatable choice for Ultra High Pressure trapping applications.

EXP Direct Connect Holder          EXP In-Line Holder

## ADVANTAGES OF EXP TRAP COLUMNS

- Hand-tight trap replacement - NO TOOLS!
- Rated to 20,000+ psi (1,400+ bar)
- Uni-directional cartridge
- Auto-adjusting ZDV connections
- Custom packing available
- Bed volumes from 4 $\mu$L to 100 $\mu$L
- Hardened stainless steel end cap eliminates galling
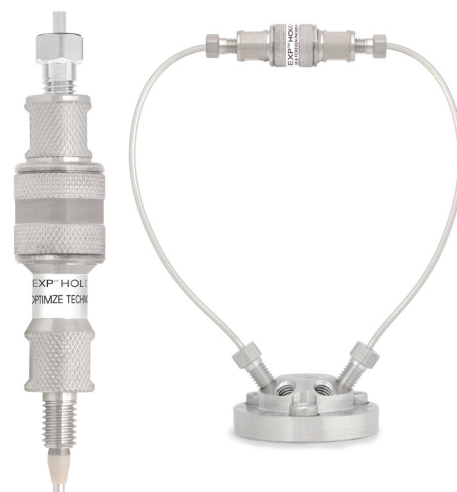
actual size

### EXP Holders

| | |
|---|---|
| **15-02-03956** | EXP Direct-Connect Holder (Fittings Included) |
| **15-02-03946** | EXP In-Line Holder (Fittings Included) |
| **15-02-04041** | EXP All-In-One Holder Kit (Includes: In-Line and Direct-Connect Holder Components) |

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

**Example:** a three pack of 4 $\mu$L Cartridges packed with HALO® C8 would have part number 15-03964-HB.

### EXP TRAP CARTRIDGE SELECTION GUIDE

| | Bed Volume | Suggested Max Load Rate* | Dimensions | Dimension Code | Phase Code | Phase | |
|---|---|---|---|---|---|---|---|
| 3 PACKS | 4$\mu$L | 2mL/min | 1.0 x 5mm | 0 3 9 6 4 | HA<br>HB<br>HD<br>HE<br>HF<br>HN | C18<br>C8<br>Hilic<br>Rp-Amide<br>Phenyl-Hexyl<br>Peptide ES-C18 | 2.7$\mu$m HALO® |
| | 10$\mu$L | 4mL/min | 1.5 x 5mm | 0 3 9 6 9 | | | |
| | 20$\mu$L | 6mL/min | 2.1 x 5mm | 0 3 9 7 3 | HG<br>HH<br>HI<br>HJ<br>HK<br>HL<br>HM | C18<br>C8<br>C4<br>Hilic<br>Phenyl-Hexyl<br>SAX<br>SCX | 3$\mu$m EXP™ |
| | 40$\mu$L | 8mL/min | 3.0 x 5mm | 0 3 9 7 8 | | | |
| | 100$\mu$L | 10mL/min | 4.6 x 5mm | 0 3 9 8 3 | E S | Custom | |

15-  ☐☐☐☐☐  -☐☐

Part Number

* Suggested max load rate is based on 60/40 Acetonitrile/Water mobile phase.
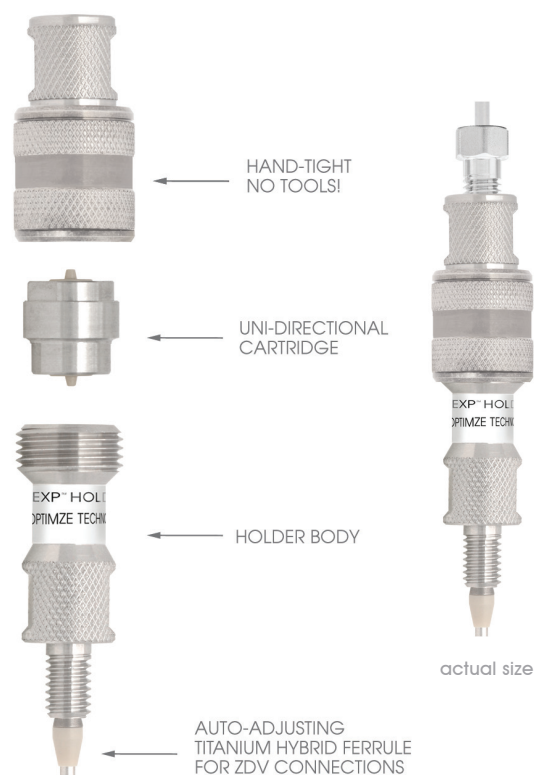
# EXP® multi-purpose packed beds

# EXP guard columns

The EXP Guard Column cartridge system is rated to 15,000 psi with hand-tight replaceable cartridges. This unique design connects directly to any UHPLC column with the auto-adjusting Titanium Hybrid Ferrule and EXP® Fittings, providing repeated zero-dead-volume connections and easy adjustability between various column types.

Free-turn® architecture allows the user to change cartridges by hand without breaking fluid connections on the holder inlet/outlet. The combination of low-dispersion and ultra high-pressure capabilities provides effective protection with negligible effects on retention time, plate count, and peak shape.

## ADVANTAGES OF EXP GUARD COLUMNS

- Hand-tight guard replacement - NO TOOLS!
- Hardware rated to 20,000+ psi (1,400+ bar)
- Packed guard rated for routine use to 15,000 psi (1,000 bar)
- 1.4 $\mu$L Swept Volume (excluding packed bed)
- Hardened stainless steel end cap eliminates galling
- Low-volume, low-dispersion cartridges
- Auto-adjusting ZDV column connection
- Custom packing available



HAND-TIGHT NO TOOLS!

UNI-DIRECTIONAL CARTRIDGE

HOLDER BODY

actual size

AUTO-ADJUSTING TITANIUM HYBRID FERRULE FOR ZDV CONNECTIONS

### EXP Holder

| | |
|---|---|
| 15-02-03956 | EXP Direct Connect Holder (Fittings Included) |

For bed volume and phase requirements, please refer to the selection guide on the right. Custom packing is also available, please contact us for details.

**Example:** a three pack of 2.1 x 5 mm with C8 Phase (1.8 $\mu$m) would have part number 15-04104-HB.

## EXP GUARD CARTRIDGE SELECTION GUIDE

| 3 PACKS | Dimension | Dimension Code | | | | | Phase Code | | Phase | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.0 x 5 mm | 0 | 4 | 1 | 0 | 0 | H A | | C18 | 1.8 µm |
| | | | | | | | H B | | C8 | |
| | 1.5 x 5 mm | 0 | 4 | 1 | 0 | 2 | H C | | C4 | |
| | | | | | | | H D | | HILIC | |
| | 2.1 x 5 mm | 0 | 4 | 1 | 0 | 4 | H E | | C18 | 3 µm |
| | | | | | | | H F | | C8 | |
| | 3.0 x 5 mm | 0 | 4 | 1 | 0 | 6 | H G | | C4 | |
| | | | | | | | H H | | HILIC | |
| | | | | | | | H I | | Phenyl-Hexyl | |
| | 4.6 x 5 mm | 0 | 4 | 1 | 0 | 8 | H J | | SAX | |
| | | | | | | | H K | | SCX | |
| | | | | | | | E S | | Custom | |

15-□□□□□-□□

Part Number

The best way
to predict the
**future** is to
**invent it.**

Team with Optimize Technologies to bring your UHPLC concepts to reality – no challenge is too small or too large.  We offer state-of-the-art manufacturing and design on-site in Oregon, USA, and our highly experienced engineers, design specialists, chemists, and machinists have exactly what it takes to bring ideas to fruition.

• Need a check valve rated to 30,000+ psi (2,100+ bar)?

• Would a quick-connect UHPLC column improve productivity?

• Interested in upgrading your current HPLC system to perform at UHPLC pressures?

Contact us to discuss ways we can incorporate Optimize Technologies' patented features into your custom applications.  Some of the key industries we serve include: Chromatography, Mass Spectrometry, Pharmaceutical Research, Clinical, Environmental, Petrochemical, Defense, and other High Pressure Fluidics. We look forward to helping you optimize your laboratory.
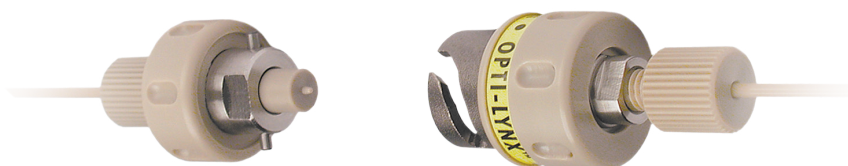
# hplc opti-lynx™

## A **revolutionary** quick-connect system.



U.S. PAT. NO. 6,095,572
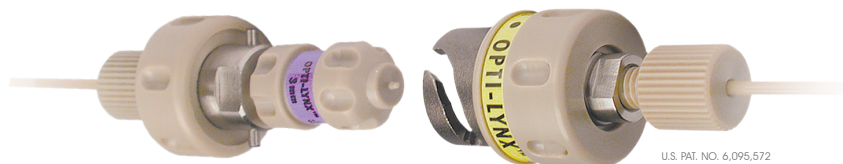
**GUARD COLUMN**
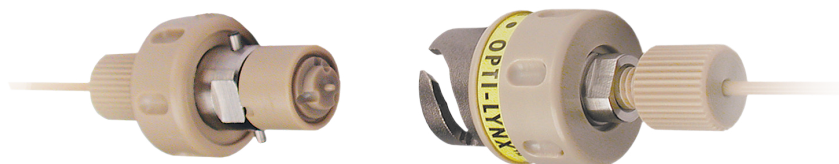
**FILTER OR TRAP**

**SEALING ELEMENT**
(for straight through union)

When Opti-Lynx was first introduced, it was a revolutionary idea in the HPLC industry–eliminating the use of wrenches for holders, stainless steel fittings, and the cranking down of finger tights to prevent leaks.

"Problems with consistency and column longevity have been virtually eliminated since we started using Opti-Lynx products."

**Partner: PFIZER**

Opti-Lynx was the first to fulfill the promise of a low dispersion quick-connect system. From high-throughput labs with the need for replacing components with the utmost efficiency, to single instrument labs that enjoy the ease of use Opti-Lynx offers - many have realized the advantages of the Opti-Lynx quick-connect system.

# Simple. Innovative. Easy to use.

- Quarter-turn connection rated to 6,000 psi

- Low volume/low dispersion interface for volume critical regions

- True zero-dead-volume connection

- Hardware connection is only made once

- NO TOOLS

## Versatility

The Opti-Lynx modular design provides the maximum in versatility for your system. Opti-Lynx inserts can be a filter, guard column, trap cartridge or analytical column. Since the interacting surfaces are identical, the only variable component is the holder tube. Install a guard column for one application and then switch to a pre-column filter for the next. Use an in-line filter with different porosities and diameters just by changing the insert. Switch out columns in an instant with the Velocity' system or retrofit current columns with the universal port adapter. We also offer columns with integrated Opti-Lynx end fittings. You can make and break flow paths for multiple detectors, or anywhere else a break in flow is frequently made. Opti-Lynx allows all of this without ever having to change out the basic components.

## Limitless Potential

The potential of Opti-Lynx goes beyond what is listed in this catalog. Opti-Lynx was designed without constraints in mind, and should be viewed as a hardware platform to make your applications easier and more efficient. At Optimize Technologies, we work hard to provide the ideal solution to our customers' applications. If you have a special requirement for your stationary phase, or need Opti-Lynx in a custom dimension or configuration, please contact us.

**Our best ideas come from the needs of our customers.**

opti-lynx™

> "The Quick-Connect design makes changing columns fast and easy, eliminating the need for any tools."

# opti-lynx™
## how it works

With Opti-Lynx, you can make and break tubing connections instantly - all it takes is a quarter-turn, by hand. To make an Opti-Lynx connection, two components - a slotted side and a pinned side- come together around a polymeric insert. One reason why the Opti-Lynx system is so useful and versatile is that the polymeric insert can contain a guard column, a filter, a trap cartridge, or even a whole analytical column. Practically any component found in the HPLC flow path can be made into an Opti-Lynx insert!
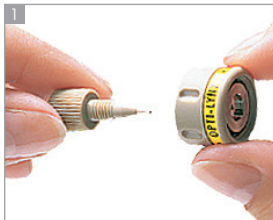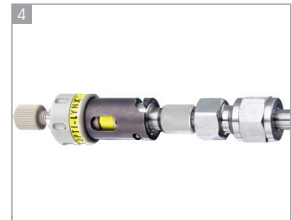
Connect your existing tubing to the Opti-Lynx Holder Cap using the included finger-tight fitting.

Tighten the slotted Holder Tube into the Holder Cap.

Align the Holder Tube and Cap with the Column and Insert.

Bring the pins to the slot guide and twist closed.

# opti-lynx | applications

Opti-Lynx may be used in any number of different applications. Below are just three ways Opti-Lynx quick-connect hardware can be used, but don't let this limit your thinking! We are constantly developing new ways of applying this system through both our applications lab and our customers' imaginations.

### column switching

### guards to filters & back again

### switching flow paths
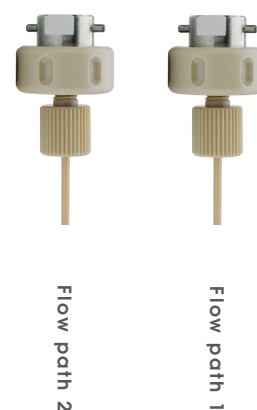


Flow path 2    Flow path 1

Set up a simple column-switching rig without the need for expensive high-pressure valves. Install Opti-Lynx universal port adapters on your columns and switch between different columns quickly and easily. When columns are not in use, seal them with the Opti-Lynx quick plug.

One method requires a filter, while another calls for a guard column - no problem. Simply choose the insert you want, couple it with the correct holder tube, and you're off and running. There is no need to disconnect any tubing, and the only tools you need are your fingers.

If you need to reroute flow paths with the utmost efficiency, the Opti-Lynx In-Line Kit is your answer. Simply terminate one tube with a holder cap, and get extra bayonet connectors for each mating tube connection. Switching flow paths becomes a easy task with this setup, not a huge production.

# opti-lynx™
## hardware components

All Opti-Lynx hardware can be purchased in kits or separately as needed for your application. Opti-Lynx hardware is precision machined to maintain the highest quality and strictest tolerances. Below are a few examples of individual Opti-Lynx hardware components, and some complete kits are shown on the facing page to demonstrate how Opti-Lynx works.

## INSERTS

a.
Pre-Column Filter
(Order Filters on page 25)

b.
Trap Cartridge
(Order Cartridges on page 26)

c.
Guard Column Cartridge
(Order Cartridges on page 27)

d.
Velocity® Column Cartridge
(Order Cartridges on page 29)

## INDIVIDUAL HOLDER COMPONENTS

1.
11-02333-AA
Holder Cap
(With 10-32 Female Port)

2.
11-02212-AA
Bayonet Connector
(With 10-32 Female Port)

3.
11-02290-AA
Universal Port Adapter
(For all 10-32 Female Ports)

4.
12-02415-AA
Bayonet Coupler

5.
11-02327-AA
Holder Tube
(For Sealing Elements)

6.
11-02570-AA
Filter & Trap Holder Tube
(For Filter Inserts & Traps)

7.
11-02328-AA
Guard Holder Tube
(For 15 mm Guard Column Cartridges)

8.
12-02617-AA
Holder Tube
(For 30 mm Velocity® Cartridges)

# configurations

There are many ways to use Opti-Lynx, and there are many options for Opti-Lynx inserts. If you have special requirements for your stationary phase or would like Opti-Lynx hardware in custom dimensions or configurations, please contact us. Here are a few examples of how Opti-Lynx can be used:

## pre-column filter / direct-connect trap example

6.

a. or b.

3.

1.
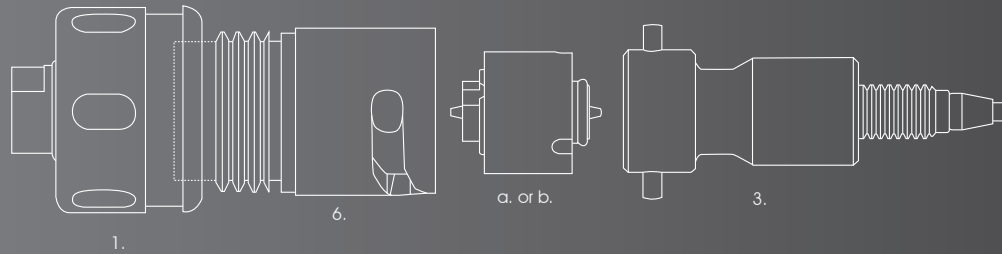
## in-line filter / trap column example

1.

6.

a. or b.

2.
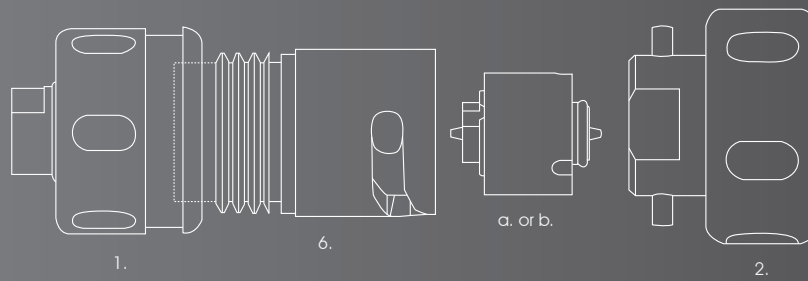
## guard column example

1.

7.

c.

3.
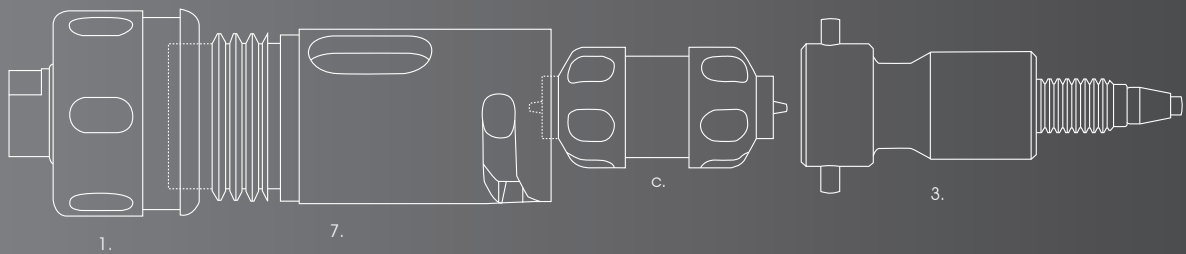
## analytical column example

1.

8.

d.

2.
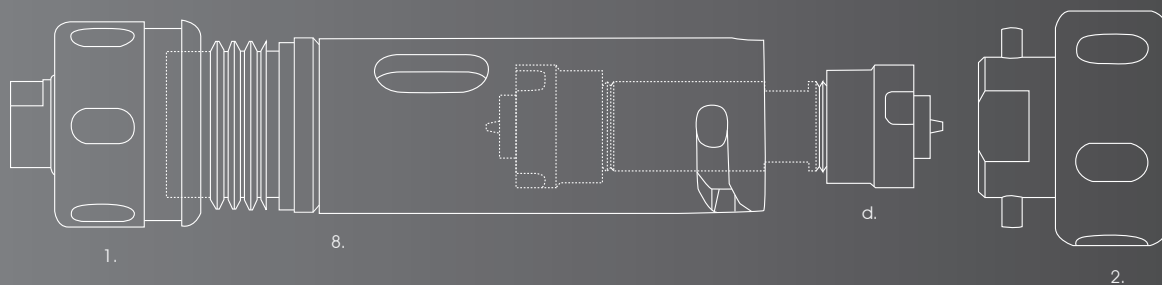
# opti-lynx™
## filtration

Need more room to change your in-line or pre-column filter? With HPLC systems getting smaller and more compact, the areas to work with are also decreasing in size. This often makes getting to the components that need frequent changing quite a task - especially if you need wrenches.

The Opti-Lynx In-Line Filter System features Optimize Technologies' proprietary Opti-Lynx hardware, allowing filter changes to be done in a quick quarter-turn. Opti-Lynx In-Line Filters offer unmatched versatility with a choice of nine different porosity/diameter combinations for every possible filtration need. Our revolutionary quick-connect design is ideal for high temperature GPC and position-emitting radionuclide filtration - not just HPLC.

U.S. PATENT NO. 5,525,303
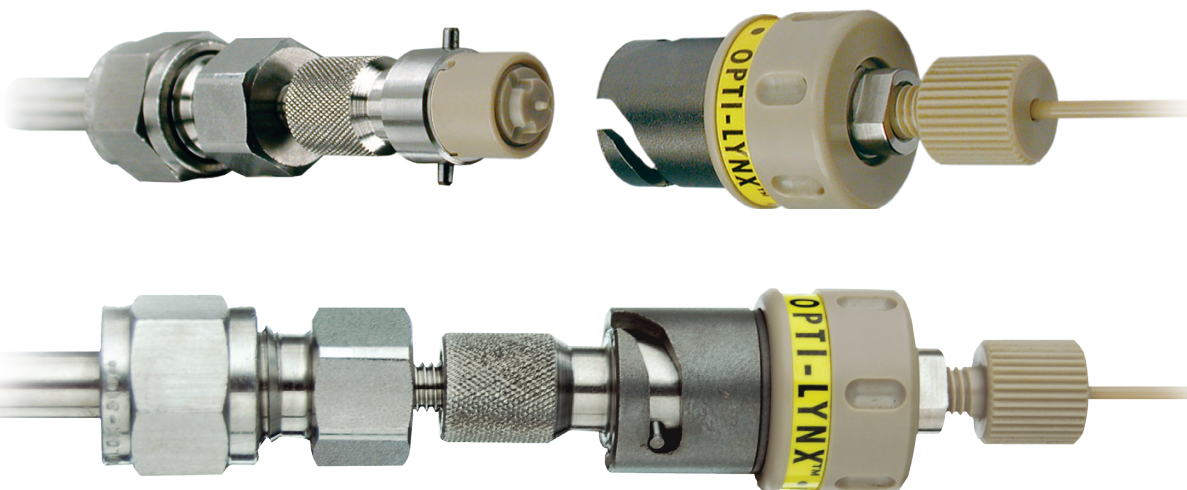
## To change an **opti-lynx**™ pre-column filter, simply twist the holder - **no tools required.**

Pre-Column Filters can help extend the life of your analytical column by catching particulates that would otherwise clog the column inlet frit. The Opti-Lynx Pre-Column Filter System brings unparalleled versatility to pre-column protection, with the added convenience of quick-connect operation.

Each **opti-lynx™** filter insert shares the same external dimensions, allowing you to use different diameters and porosities with the same holder hardware.

## OPTI-LYNX FILTER INSERT SELECTION GUIDE

| | | Single | 10 Pack | |
|---|---|---|---|---|
| **Recommended for Pre-Column use** | | 11-02595-CD | 11-02797-CD | Low Volume Filter Insert, 0.5 $\mu$m/0.062" diameter |
| | | 11-02595-CE | 11-02797-CE | Low Volume Filter Insert, 2.0 $\mu$m/0.062" diameter |
| | | 11-02595-CF | 11-02797-CF | Medium Capacity Filter Insert, 0.5 $\mu$m/0.125" diameter |
| | | 11-02595-CG | 11-02797-CG | Medium Capacity Filter Insert, 2.0 $\mu$m/0.125" diameter |
| **Recommended for In-Line use** | | 11-02595-CH | 11-02797-CH | High Capacity Filter Insert, 0.5 $\mu$m/0.187" diameter |
| | | 11-02595-CI | 11-02797-CI | High Capacity Filter Insert, 2.0 $\mu$m/0.187" diameter |
| | | 11-02595-CJ | 11-02797-CJ | Semi-Prep Filter Insert, 2.0 $\mu$m/0.250" diameter* |
| | | 11-02595-CL | 11-02797-CL | Semi-Prep Filter Insert, 10.0 $\mu$m/0.250" diameter* |
| | | Single | 5 Pack | |
| **Prep** | | 11-03038-C4 | 11-03039-C4 | Prep Filter Insert, 10.0 $\mu$m/0.250" diameter (For use with OPTI-LYNX Prep Holder only) |

*Opti-Lynx Semi-Prep Filter Inserts are rated for use at pressures of up to 4,000 psi (other Opti-Lynx products are rated to 6,000 psi unless otherwise stated). Opti-Lynx Filter Inserts are rated at temperatures up to 175° C.

**In-Line Filter / Prep Filter Holder**



Fitting    Bayonet Connector    Filter Insert    Holder Tube    Holder Cap    Fitting

**Pre-Column Filter**



Universal Port Adaptor    Filter Insert    Holder Tube    Holder Cap    Fitting

## OPTI-LYNX Filter Holders

**11-02225-AA**    OPTI-LYNX In-Line Filter Holder
Includes: Bayonet Connector, Holder Cap, Holder Tube, Fittings

**11-03200-AA**    OPTI-LYNX In-Line Prep Filter Holder - For use with Prep Inserts only
Includes: Bayonet Connector, Holder Cap, Holder Tube, Fittings

**11-02226-AA**    OPTI-LYNX Pre-Column Filter Holder
Includes: Universal Port Adapter, Holder Cap, Holder Tube, Fitting

OPTI-LYNX filter inserts are ordered separately. Please use the table above to find your part number.

opti-lynx™ filtration

# opti-lynx™
## trap columns



**OPTI-LYNX** In-line Trap Holder

Opti-Lynx trap columns combine the convenience of our quick-connect holder with a versatile selection of packed-bed cartridges to offer chromatographers numerous options for on-line or off-line sample cleanup and preconcentration.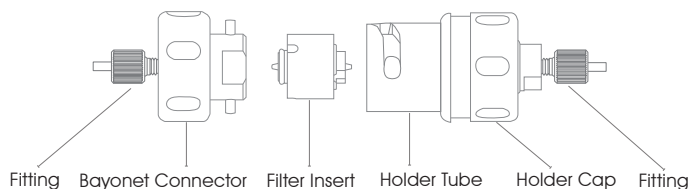  Each cartridge shares the same external dimensions, allowing you to use different diameters and porosities with the same holder hardware.

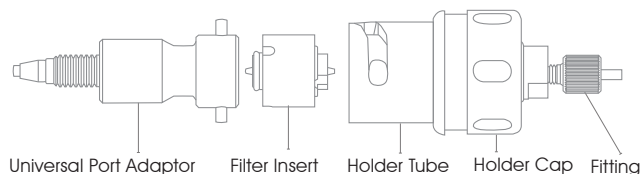Opti-Lynx traps are available in packed-bed volumes of 4 μL to 100 μL with a wide range of standard and custom packings.  Whether you want to separate a peptide digest from its matrix for further analyses, or prepare a dilute small molecule sample for LC injection without any sample loss – Opti-Lynx Traps are the ideal tool to optimize your technique.  These columns can be loaded and regenerated repeatedly for maximum value. For smaller volume packed-bed trapping columns, please see Opti-Pak on pg. 36. For more information on Trapping Applications, please visit www.optimizetech.com/literature.

## selecting your opti-lynx™ trap

Use the selection guide below to find the five digits that match the trap dimensions you require. Then find the two letter packing code for your phase. **Example:** a five-pack of 20 μL trap cartridges with SCX phase would have part number 11-02870-TB.

### OPTI-LYNX TRAP SELECTION GUIDE

| Capacity | Load Rate | Bed Volume | Dimension | Dimension Code | Phase Code | Phase |
|---|---|---|---|---|---|---|
| 16 μg | 40 - 160 μL/min | **4 μL** | 1 x 5 mm | 0 2 8 6 8 | T A | C18 |
| 40 μg | 100 - 500 μL/min | **10 μL** | 1.5 x 5 mm | 0 3 7 8 7 | T B | SCX |
| 80 μg | 200 - 800 μL/min | **20 μL** | 2.1 x 5 mm | 0 2 8 7 0 | T D | C18AQ |
| 160 μg | 0.4 - 1.6 mL/min | **40 μL** | 3.0 x 5 mm | 0 2 8 7 2 | T E | SAX |
| 400 μg | 1 - 4 mL/min | **100 μL** | 4.6 x 5 mm | 0 2 8 7 4 | T F | C8 |
| | | | | | T G | C4 |
| | | | | | T H | DVB |
| | | | | | D Q | DVB/SCX |
| | | | | | E S | Custom |

**5 PACKS**

11– ☐ ☐ ☐ ☐ ☐ – ☐ ☐

Part Number

### OPTI-LYNX Trap Holders

**11-02225-AA**  OPTI-LYNX In-Line Trap Holder
Includes: Bayonet Connector, Holder Cap, Holder Tube, Fittings

**11-02226-AA**  OPTI-LYNX Direct-Connect Trap Holder
Includes: Universal Port Adapter, Holder Cap, Holder Tube, Fitting
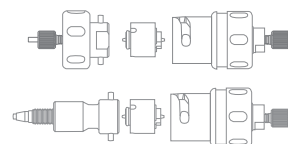


OPTI-LYNX trap cartridges are ordered separately. Please use the table above to find your part number.

## Contact us for Biocompatible Holder and Cartridge options.

# opti-lynx™
## guard columns

The Opti-Lynx Guard Column is a high performance, cartridge-based guard system, suitable for use with any analytical column. Some cartridge-based guard column products offer convenience with a price: higher internal volumes. At Optimize Technologies, we refuse to compromise performance for anything. Opti-Lynx utilizes low dispersion component interfaces to keep extra column volume to a minimum: connection paths have a total internal volume of less than 2 $\mu$L. You get quick-connect convenience and low dispersion, all in one package.

The Opti-Lynx Guard Column fits any analytical column with a 10-32 port.
Start with our Opti-Lynx Guard Column Holder Kit, then select Opti-Lynx Guard Cartridges in the chemistries you require. They are available individually and in packs of five.

## selecting your opti-lynx™ guard column cartridges

Use the selection guide below to find the five digits that match the dimension and quantity you require. Then, find the two letter packing code for your sorbent/phase. Complete your guard column cartridge part number by using these codes in the part number template below the table.

**Example:** a five-pack of 3 mm C18 guard cartridges would have part number 11-02630-EA.

### OPTI-LYNX GUARD SELECTION GUIDE

| | Quantity | Dimension Code | | | | | Phase Code | | Phase |
|---|---|---|---|---|---|---|---|---|---|
| **3.0 x 15 mm** | Singles | 0 | 2 | 2 | 5 | 5 | E | A | C18, 5 $\mu$m |
| | 5 Pack | 0 | 2 | 6 | 3 | 0 | E | B | C8, 5 $\mu$m |
| **2.1 X 15 mm** | Singles | 0 | 2 | 6 | 4 | 0 | E | C | Silica, 5 $\mu$m |
| | 5 Pack | 0 | 3 | 7 | 8 | 2 | E | D | Phenyl, 5 $\mu$m |
| **1.0 x 15 mm** | Singles | 0 | 2 | 3 | 0 | 8 | E | E | Cyano/CN, 5 $\mu$m |
| | 5 Pack | 0 | 3 | 1 | 2 | 8 | E | F | Amino/NH2 |
| | | | | | | | E | G | Anion/SAX |
| | | | | | | | E | H | Cation/SCX |
| | | | | | | | J | D | DVB/SCX |

11– ☐☐☐☐☐ – ☐☐

Part Number

### OPTI-LYNX Guard Column Direct-Connect Holder

**11-02232-AA**   Holder for direct connection to analytical columns
   Includes: Universal Port Adapter, Guard Holder Tube, Holder Cap, Fitting

OPTI-LYNX guard cartridges are ordered separately. Please use the table above to find your part number.

opti-lynx™ guard columns

# velocity®
## analytical columns

Liquid chromatography is no longer limited to the "one column, one assay" setup. Researchers are now being asked to screen thousands upon thousands of compounds, all in less time. This is why Optimize Technologies offers Velocity - a true quick-connect analytical column system.

Velocity incorporates the Opti-Lynx™ system to provide connections in a quarter-turn. Rated to 6,000 psi, Velocity columns are individually quality tested and certified to guarantee analytical performance. Opti-Lynx quick-connect technology allows columns to be changed effortlessly: scale down column dimensions, switch between stationary phases, or swap methods in seconds - all without the use of tools.

Need to use a pre-column filter or guard column? With Velocity's integral pre-column protection hardware, adding or changing guard columns and filters is as easy as changing Velocity columns - just grab and twist.

Most importantly, Velocity and Opti-Lynx hardware will not adversely affect your chromatographic applications. Velocity is not affected by the shortcomings of other cartridge column designs such as excessive dead volumes and substandard performance versus conventional designs. Velocity has been meticulously engineered to the most stringent of standards. All connections conduct liquid through low-volume interfaces minimizing hardware contributions to dispersion and peak broadening.

# velocity®
## At the speed of discovery.

# how does **velocity**® work?

Velocity is based on the Opti-Lynx™ system, so it uses the same four basic components: bayonet connector, insert, slotted connector, and holder cap. All columns of the same length share the same external dimensions, so switching between different IDs and packings requires no change in hardware configuration. To see a demonstration, go to www.optimizetech.com/velocityhplc.

## A simple quarter-turn engages the **opti-**lynx™ connection.



Bayonet Connector      Velocity Column      Slotted Connector      Holder Cap
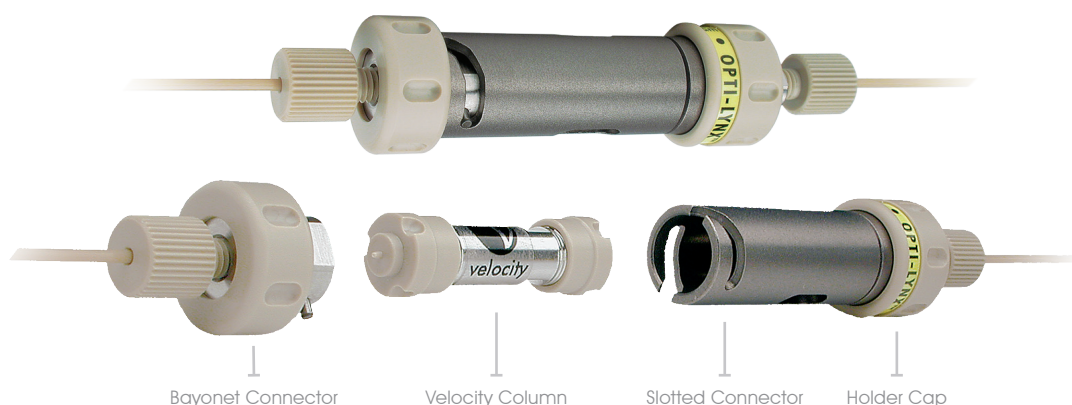
## **Velocity**® is an improvement over conventional designs plagued with excessive dead volume or cumbersome hardware.

Need to change column lengths? No problem. Just unscrew and install the appropriate slotted connector tube - no need to re-plumb any solvent lines. Once you are ready to go, a simple quarter-turn engages the Opti-Lynx connection. The actuation torque is so small, it's easier than opening a pickle jar.

### PHASES & CHEMISTRIES

Velocity cartridge columns are available in multiple flavors, each available in 3 $\mu$m and 5 $\mu$m particle sizes. We also offer a selection of custom phases.

For more information or to order Velocity, contact an Optimize representative or visit our website at www.optimizetech.com.

velocity® columns

# opti-solv® filtration

Keeping particulates out of the flow path prevents premature wear on vital components, drastically reducing the need for costly replacements or repairs. A holistic approach to filtration addresses potential particulates throughout the solvent flow path and leads to consistent and efficient chromatography. Generally, there are three critical areas where filtration is necessary.

## solvent reservoir

While the availability of HPLC-grade solvents diminishes the need for pre-filtering, it is still imperative that a filtration device be installed in the reservoir. Placing a filter in the reservoir is an economical way to filter particles that may result from buffer salt precipitation, airborne dust, improperly cleaned glassware, or microbial contamination; none of which are remedied by the use of HPLC-grade solvents.

## in-line

The frictional forces generated at the piston/seal interface inevitably lead to particulate shedding. Placement of a filtering element between the pump and injector/autosampler removes these particulates, preventing problems with downstream components and costly downtime.

## pre-column | direct connect

Many things contribute to particulates in the post-injector region: incompatibilities between sample matrix and mobile phase, septa coring from the sample needle and shedding from moving parts in the injector, among others. Use of a low-impact, pre-column filter removes these particulates from the flow path, saving your analytical column and detector from deleterious effects.

## filtration process

IN-LINE FILTER
GUARD COLUMN OR PRE-COLUMN FILTER

SOLVENT RESERVOIR FILTER      PUMP      AUTOSAMPLER      DETECTOR      WASTE
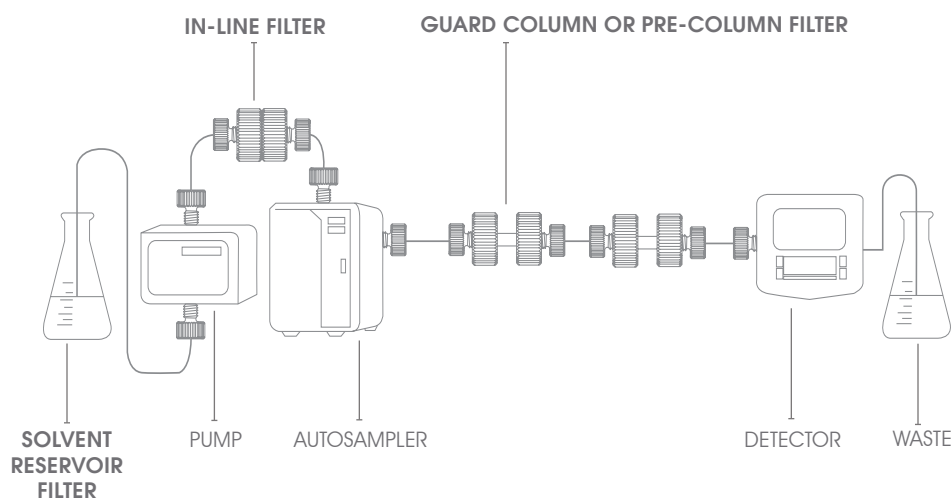
# solvent reservoir filter

Opti-Solv Reservoir Filters employ a unique conical design inside the filter housing to prevent air bubbles from getting trapped and disturbing your analysis.

A solid PTFE body keeps Opti-Solv in the bottom of the bottle where a bottom-mounted titanium frit provides unrestricted solvent access. As always, Optimize makes installation as simple as possible - no tools or fittings required.

U.S. PATENT NO. 5,525,303

PTFE Body

Titanium Frit

## Biocompatible Opti-Solv Analytical Reservoir Filters

| | | Singles | 5 Packs |
|---|---|---|---|
| 1/16" OD Tubing | 2 $\mu$m | 10-04-00079 | 10-04-00080 |
| | 10 $\mu$m | 10-04-00081 | 10-04-00082 |
| 1/8" OD Tubing | 2 $\mu$m | 10-04-00047 | 10-04-00050 |
| | 10 $\mu$m | 10-04-00051 | 10-04-00053 |
| 3/16" OD Tubing (Waters Style) | 2 $\mu$m | 10-04-00054 | 10-04-00056 |
| | 10 $\mu$m | 10-04-00057 | 10-04-00058 |

## Biocompatible Opti-Solv Analytical Reservoir Prep Filters

| | | | |
|---|---|---|---|
| 1/8" OD Tubing | 10 $\mu$m | 10-04-00063 | 10-04-00065 |

All of the above filters are supplied with 5 feet of PTFE tubing pre-installed

## Reservoir Filters with Tube Stem

Reservoir Filters with tube stems are made with Hastelloy C® for maximum corrosion resistance and inertness.

| | | Singles | 5 Packs |
|---|---|---|---|
| 1/16" ID Tubing | 2 $\mu$m | 10-04-00071 | 10-04-00072 |
| | 10 $\mu$m | 10-04-00073 | 10-04-00074 |
| 1/8" ID Tubing (Waters Style) | 2 $\mu$m | 10-04-00115 | 10-04-00119 |
| | 10 $\mu$m | 10-04-00111 | 10-04-00114 |

opti-solv® filtration

**opti-solv** filtration

# in-line filter

Installed between the pump and injector/autosampler, the in-line filter prevents damage to downstream components – damage that can cost you in both instrument downtime and troubleshooting labor.

Stainless Steel Wrench-Tight Version

" We have been using **Opti-Solv· In-Line Filters** for several years in our high-throughput LC/MS Analysis of ADME screening samples. "

**Partner: Pfizer ADME Technology Group**

PEEK "Gorilla Grip" Hand-Tight Version

Hand tighten the PEEK holder to make a high-pressure seal, or for those who prefer wrenches, we also offer a wrench-tight stainless steel version. The user-friendly designs are well suited for a number of applications, such as high temperature environments where quick changes are imperative.
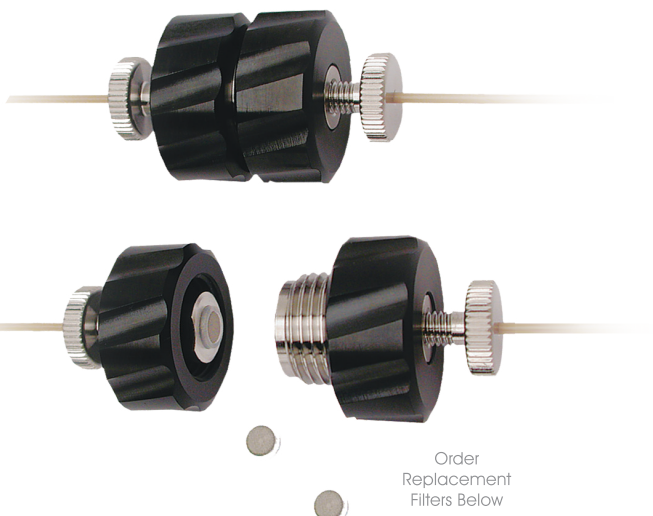
Order Replacement Filters Below

## OPTI-SOLV In-Line Solvent Filter Holders

| | |
|---|---|
| 10-04-03685 | In-Line Solvent PEEK Hand-Tight Holder |
| 10-04-03686 | In-Line Solvent Stainless Steel Wrench-Tight Holder |

## OPTI-SOLV Filter Elements (Frits)

| | |
|---|---|
| 10-04-03699 | 0.5 $\mu$m, 0.062" Dia. Filter, 10/Pk |
| 10-04-03700 | 2 $\mu$m, 0.062" Dia. Filter, 10/Pk |
| 10-04-03701 | 0.5 $\mu$m, 0.125" Dia. Filter, 10/Pk |
| 10-04-03702 | 2 $\mu$m, 0.125" Dia. Filter, 10/Pk |
| 10-04-02370 | 0.2 $\mu$m, 0.187" Dia. Filter, 10/Pk |
| 10-04-00100 | 0.5 $\mu$m, 0.187" Dia. Filter, 10/Pk |
| 10-04-00103 | 2 $\mu$m, 0.187" Dia. Filter, 10/Pk |

Two-Piece PEEK or Stainless Steel Holders

SS Insert — 10-32 Port

Nut & Ferrule — Tubing

Filter Element
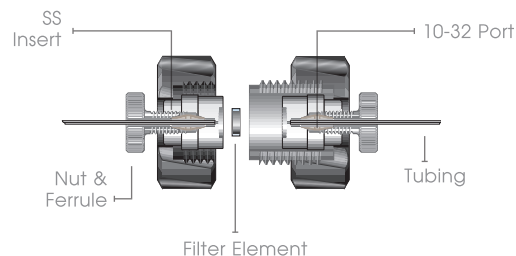
The Opti-Solv's unique swivel design allows frits to be changed without removing the connecting tubing. Just plumb it once and leave it.

www.optimizetech.com

# opti-solv®
## mini filter

The Opti-Solv Mini Filter provides low-impact filtration in a package no larger than a finger tight fitting. Use them to extend the life of your analytical column, or before your mass spectrometer as a last line of defense against debris.

Perfect zero-dead-volume connections are obtained every time with our patented automatic tube stop depth adjustment. Unique depth-filtering elements allow for greater capacity with no band spreading or loss of performance. The efficient design requires no holder, and threads directly into any 10-32 port.

## The optisolv® mini filter automatically adjusts to fit all brands of columns.

Depth-filter design delivers higher capacity with low volume.

PEEK body

2 $\mu$m SS Frit (or 0.5 $\mu$m)

5 $\mu$m SS frit

Floating tube stem provides ZDV connection into any port

U.S. PATENT NO. 5,525,303
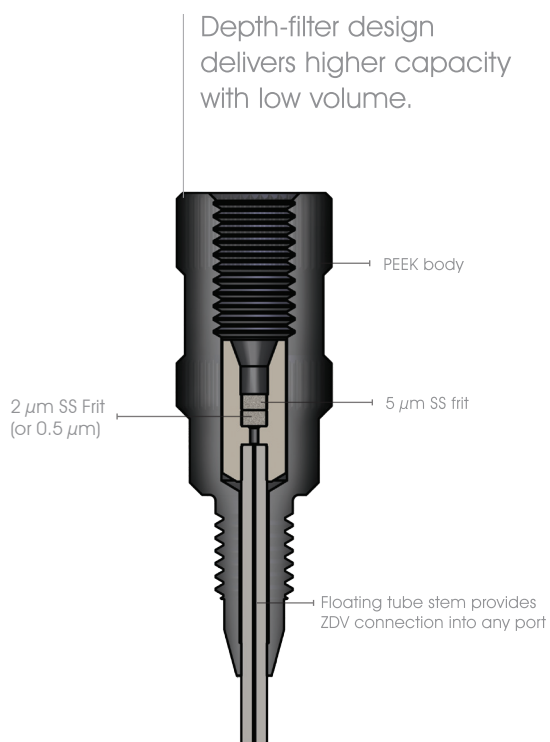
## OPTI-SOLV Mini Filters

| | |
|---|---|
| **10-04-00095** | OPTI-SOLV Mini Filter, 0.5 $\mu$m, 5/Pk |
| **10-04-00097** | OPTI-SOLV Mini Filter, 2.0 $\mu$m, 5/Pk |
| **10-04-02768** | OPTI-SOLV Mini Filter, 5.0 $\mu$m, 5/Pk |

# opti-solv®
## micro filter

For your volume critical filtering needs, we now offer the Opti-Solv Micro Filter. Based on the same design that has made the Mini Filter a huge success, the Micro Filter cuts the internal volume to less than 200 nL but retains the ease of use and functionality of the Mini Filter.

The Micro Filter is designed to be used in today's low volume, high sensitivity chromatographic applications as a last line of defense against debris. As with all Optimize column protection products, the Opti-Solv Micro Filter features a zero-dead-volume connection utilizing our patented floating stem (auto-adjusting) technology.

## The optisolv® micro filter is easy to use and performs exceptionally well for volume-critical applications.

## Advantages of the optisolv® mini, micro and nano filters:

- Designed to filter out particles extending column life

- Perfect Zero-Dead-Volume connections every time

- Floating stem automatically adjusts to any depth port

- Easy to use finger tight - No tools required

- Rated to 6,000 psi

U.S. PATENT NO. 5,525,303

### OPTI-SOLV Micro Filters

| | |
|---|---|
| 10-04-03707 | OPTI-SOLV Micro Filter, 10 $\mu$m, 5/Pk |
| 10-04-03357 | OPTI-SOLV Micro Filter, 1.0 $\mu$m, 5/Pk |
| 10-04-03389 | OPTI-SOLV Micro Filter, 2.0 $\mu$m, 5/Pk |
| 10-04-03621 | OPTI-SOLV Micro Filter, 0.5 $\mu$m, 5/Pk |

### OPTI-SOLV Biocompatible Micro Filters

| | |
|---|---|
| 10-04-03936 | OPTI-SOLV Biocompatible Micro Filter, 0.5 $\mu$m, 5/Pk |

# opti-solv®
## nano filter

The Opti-Solv Nano Filter follows our Micro Filter but cuts the internal volume down even further.

With less than 50 nL of internal volume, the Opti-Solv Nano Filter is ideal for mass spectrometry to protect your electrospray and nanospray tips from clogging with debris.



PEEK Body

0.5 µm SS Screen

U.S. PATENT NO. 5,525,303

Floating tube stem provides ZDV connection into any port (mini, micro and nano filters).

### OPTI-SOLV Nano Filters

| | |
|---|---|
| 10-04-03625 | OPTI-SOLV Nano Filter, 0.5 µm, 5/Pk |

### OPTI-SOLV Biocompatible Nano Filters

| | |
|---|---|
| 10-04-03939 | OPTI-SOLV Biocompatible Nano Filter, 0.5 µm, 5/Pk |

800-669-9015

# opti-pak®
## trap columns

The Opti-Pak is specially designed for use in today's low volume applications. With bed volumes ranging from 0.12 $\mu$L to 5.0 $\mu$L, you can find the perfect balance between sample capacity and trap volume. A proprietary method of frit placement allows the packed stem to be positioned directly into the flow path, which eliminates all excess swept volume. Less swept volume translates to absolute minimum sample dilution and dispersion.

The unique hardware design integrates a PEEK holder with an auto-adjusting stem which provides a fluid interface with any 10-32 standard or microinjector port, and guarantees a zero-dead-volume connection despite variances in tubestop depth.

For larger volume packed-bed trapping columns, please see Opti-Lynx on pg. 26.

U.S. PATENT NO. 5,525,303

opti-pak® trap columns with bed volumes as low as 0.12 $\mu$L can be installed into any 10-32 injection port. The stem auto-adjusts to provide a flawless ZDV connection every time.

Floating Stem Design
For ZDV Connection
into Any Port

PEEK/SS Flow path
Frit
Bed Volumes from 0.12 to 5.0 $\mu$L
Frit
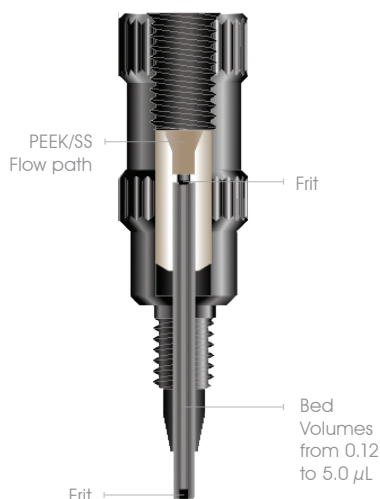
Installing an Opti-Pak into the outlet of a switching valve will facilitate the trapping, desalting, and pre-concentration of an analyte mixture. With Opti-Pak's versatility, a second trap can be added downstream in the loop of an injection valve and effectively perform a 2D separation.

The elegant, flexible design of Opti-Pak makes it amenable to virtually any trapping application. Opti-Pak can be installed directly into the fitting port of an injection valve. Two or more Opti-Paks can also be installed side by side in the same valve stator without interference.

For more information on Trapping Applications, please visit www.optimizetech.com/literature.

# selecting your **opti-pak** trap

Use the trap cartridge selection guide below to find the five digits that match the bed volume you require. Then find the two letter packing code for the phase. Complete the trap cartridge part number by using these codes in the part number template located below the selection guide. **Example:** a five pack of 0.5 $\mu$L trap cartridges with SCX phase would have part number 10-03317-TE.

Opti-Pak is available in a number of sorbents and chemistries to fit any application. Custom packing is also available - please contact us if you do not see the materials you require.
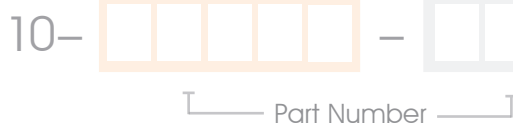
## Opti-Pak Trap Columns for standard 10-32 injection valves
(Includes 5 disposable holders and cartridges)

| | Capacity | Load Rate | Bed Volume | Dimension Code | | | | | Phase Code | Phase |
|---|---|---|---|---|---|---|---|---|---|---|
| **STANDARD 10-32** | 0.5 $\mu$g | 1.25 - 5 $\mu$L/min | **0.12 $\mu$L** | 0 | 3 | 3 | 2 | 8 | T A | C18 |
| | 1 $\mu$g | 2.5 - 10 $\mu$L/min | **0.25 $\mu$L** | 0 | 3 | 3 | 2 | 4 | T B | C18AQ |
| | 2 $\mu$g | 5.0 - 20 $\mu$L/min | **0.5 $\mu$L** | 0 | 3 | 3 | 1 | 7 | | |
| | 4 $\mu$g | 10 - 40 $\mu$L/min | **1 $\mu$L** | 0 | 3 | 2 | 2 | 5 | T C | C8 |
| | 8 $\mu$g | 20 - 80 $\mu$L/min | **2 $\mu$L** | 0 | 3 | 2 | 2 | 9 | | |
| | 20 $\mu$g | 50 - 200 $\mu$L/min | **5 $\mu$L** | 0 | 3 | 2 | 3 | 3 | T D | C4 |
| **BIO-COMPATIBLE 10-32** | 12 $\mu$g | 30 - 120 $\mu$L/min | **3 $\mu$L** | 0 | 3 | 6 | 0 | 8 | T E | SCX |

## Opti-Pak Trap Columns for micro injection valves
(Includes 5 disposable holders and cartridges)

| | Capacity | Load Rate | Bed Volume | Dimension Code | | | | | Phase Code | Phase |
|---|---|---|---|---|---|---|---|---|---|---|
| **RHEODYNE M4 STYLE** | 0.7 $\mu$g | 1.75 - 7 $\mu$L/min | **0.17 $\mu$L** | 0 | 3 | 7 | 1 | 8 | T F | SAX |
| | 2 $\mu$g | 5.0 - 20 $\mu$L/min | **0.5 $\mu$L** | 0 | 3 | 7 | 2 | 0 | T G | DVB |
| **VALCO 6-40** | 0.7 $\mu$g | 1.75 - 7 $\mu$L/min | **0.17 $\mu$L** | 0 | 3 | 7 | 2 | 4 | | |
| | 2 $\mu$g | 5.0 - 20 $\mu$L/min | **0.5 $\mu$L** | 0 | 3 | 7 | 2 | 6 | E S | Custom |

10–☐☐☐☐☐ – ☐☐

Part Number


10-32


Biocompatible


M4


6-40

## OPTI-PAK Method Development Kit

**10-02-04134**     Each kit includes 5 assorted cartridges of choice

**opti-pak trap columns**

# opti-guard®
## guard colums

The column is the heart of any liquid chromatography system and remains the most problematic component. HPLC columns accumulate retained material which can dramatically reduce longevity and cause costly downtime costs resulting from premature column failure and troubleshooting efforts.

## why use a guard column?

The best way to protect an analytical column from fouling is to install a guard column between the injection valve and the analytical column. The guard column traps particulates, solvent impurities, and retained sample components. The ideal guard column should have no effect on the separation. In order to achieve this, a guard column with matching bonded phase and optimal hardware configuration should be selected.

U.S. PATENT NO. 5,525,303

## extra column volume

The ever-changing needs of HPLC applications such as smaller bed-volume columns, higher pressures, and increased sensitivity raise new demands on guard columns today. Many guard column manufacturers overlook the dead volume that results when a guard column or holder is connected to the analytical column. The use of pre-swaged or one piece nut and ferrule designs with fixed tube stems will increase extra column volume (shown in blue) and affect column efficiency (Figure 1).

**Figure 1**

Conventional Guard Column

Analytical Column

Dead volume resulting from fixed stem at incorrect depth
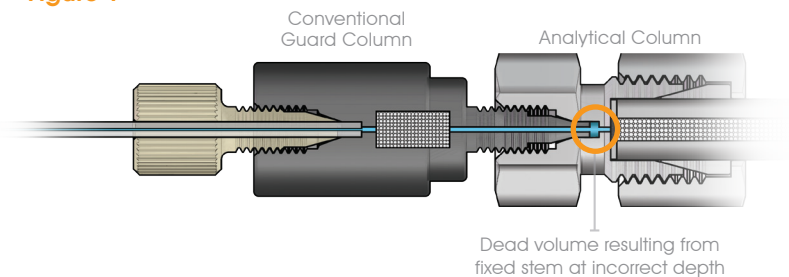
In addition, other cartridge-style guard column systems require extra connections and tubing, adding to extra column volume and decreasing your system's overall performance. (Figure 2)

**Figure 2**

Conventional Guard Column

Analytical Column

Dead volume results from improperly installed tubing

## Floating tube stem provides ZDV connection into any port.
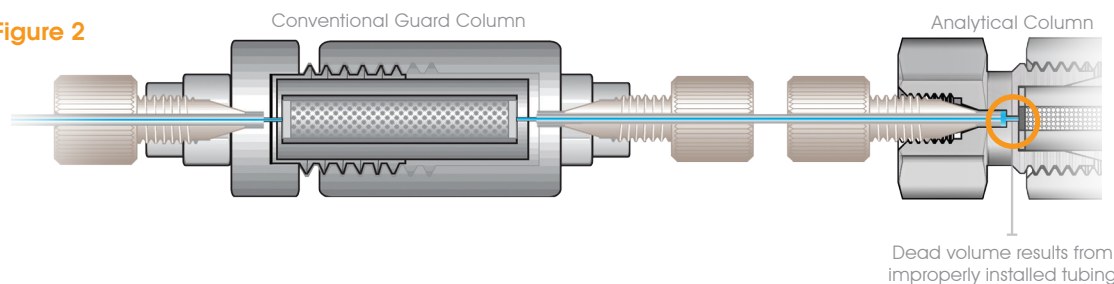
Standard Fitting    **OPTI-GUARD**    Column

# opti-guard 3mm

Opti-Guard sets the standard for low impact, easy to use pre-column protection. Designed for use with analytical (4.6, 3.0 mm i.d.) and narrow-bore (2.1, 1.0 mm i.d.) columns, the patented floating stem design automatically adjusts to any manufactur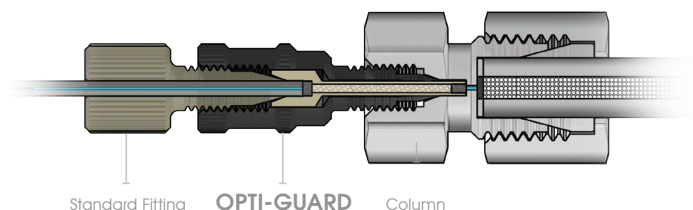er's tube stop depth for a zero-dead-volume connection every time. The best part? It's no larger than a standard fitting.

Connecting the Opti-Guard requires no extra tubing or tools, maintaining the minimal impact philosophy that has made the Opti-Guard line so popular. As always, custom packing is available.

# opti-guard 1mm

The Opti-Guard 3 mm maintains the tool-free connectivity of the 1 mm, but incorporates a cartridge-based format to allow for a larger bed with more capacity. The two-part holder is designed for use with any analytical column to provide vital protection from dirty samples and strongly retained contaminants. An auto-adjusting stem conforms to any tube stop depth for a perfect zero-dead-volume connection.

## OPTI-GUARD 1mm Guard Column

| | |
|---|---|
| 10-02-00007 | C18, 5/Pk |
| 10-02-00010 | C8, 5/Pk |
| 10-02-03211 | C4, 5/Pk |
| 10-02-00014 | Silica, 5/Pk |
| 10-02-00018 | Phenyl, 5/Pk |
| 10-02-00022 | Cyano/CN, 5/Pk |
| 10-02-00026 | Amino/NH2, 5/Pk |
| 10-02-00030 | Anion Exchange, 5/Pk |
| 10-02-00034 | Cation Exchange, 5/Pk |
| 10-02-01714 | Method Development Kit (Assorted 5/Pk) |
| 10-02-03463 | Custom Packed, 5/Pk |

## OPTI-GUARD 1mm Biocompatible Guard Column

| | |
|---|---|
| 10-02-03532 | Biocompatible C18, 5/Pk |
| 10-02-03680 | Biocompatible Anion Exchange, 5/Pk |
| 10-02-03683 | Biocompatible Cation Exchange, 5/Pk |
| 10-02-03534 | Biocompatible Silica, 5/Pk |

## OPTI-GUARD 3mm Guard Column Cartridges

| | |
|---|---|
| 10-02-01482 | C18 Guard Column Cartridge, 5 $\mu$m, 3/Pk |
| 10-02-01485 | C8 Guard Column Cartridge, 5 $\mu$m, 3/Pk |
| 10-02-01494 | C4 Guard Column Cartridge, 5 $\mu$m, 3/Pk |
| 10-02-01491 | Silica Guard Column Cartridge, 5 $\mu$m, 3/Pk |
| 10-02-01488 | Amino/NH2 Guard Column Cartridge, 5 $\mu$m, 3/Pk |
| 10-02-03050 | Cyano/CN Guard Column Cartridge, 5 $\mu$m, 3/Pk |

## OPTI-GUARD 3mm Guard Column Holder

| | |
|---|---|
| 10-02-01495 | OPTI-GUARD 3 mm PEEK/Stainless Steel Holder |



OPTI-GUARD
U.S. PAT. 5,525,3

OPTI-GUA
U.S. PAT. 5,525,3

1 mm Disposable Guard Column

U.S. PATENT NO. 5,525,303

Stainless Steel

3 mm Disposable Cartridge

OPTI-GUARD

PEEK

opti-guard guard columns
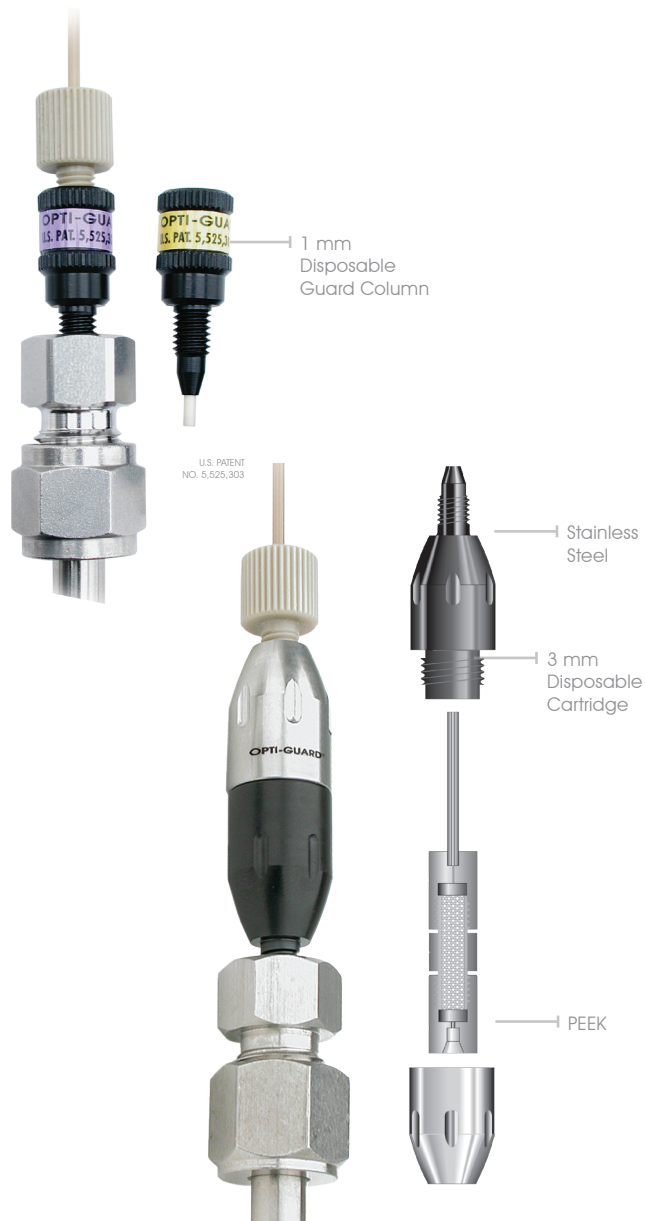
# hplc & uhplc oem systems

In the following pages you will find a list of replacement components designed specifically for OEM HPLC/UHPLC solvent delivery systems. At Optimize Technologies, we precision machine our components to the most exacting standards in the industry. Everything in the manufacturing process is controlled to ensure the continuing quality that has long been associated with the Optimize name. From the individual matching of check valve ball and seat sets to the proprietary blend of materials in our seals - experience the Optimize advantage.

Every replacement component we offer is designed to meet or exceed original equipment specifications. **Guaranteed.**

## optimize and oem components

Most instrument manufacturers will tell you quite emphatically that for optimal instrument performance, you should only use components that match their performance specifications. We could not agree more. Every replacement component we offer is designed to meet or exceed original equipment specifications - guaranteed. In fact, several major OEM manufacturers incorporate Optimize components as original equipment on their new HPLC and UHPLC instruments. They realize the positive impact Optimize quality can have on instrument performance.

## optimize innovation

Innovation is our driving force. Although we offer a comprehensive selection of components for most brands of HPLC systems, we are always in the process of R&D to discover new products that will save your laboratory time and money. If you have a need for a product you do not see in this catalog, please call a technical support representative to discuss your particular fluid handling needs.

# HPLC Finder™

| | BRAND | MODELS | PAGE NO. |
|---|---|---|---|
| **A** | ABI | Spectraflow 400 | 50 |
| | Agilent | 1050, 1090, 1100, 1200 | 51-53 |
| | Alcott | Micromeritics 760, 765 | 56 |
| | Anspec | SM 909 | 56 |
| **B** | BAS | PM-48 | 64 |
| | Beckman/Altex | 100A, 105, 110A/B, 110 Prep, 112/112M, 114/114M, 116, 118, 125, 126, 127, 128 | 54 |
| | Bio-Rad | 1330, 1350, 1350T, 2700, 2800 | 55 |
| | Bischoff | 2200, 2250 | 56 |
| **D - G** | Dionex | DQP, GPM-1&2, DRP, DXP, AGP, 2000, 4000, GP-40, IP-20, GP-50, IP-25 | 57 |
| | Dupont | 8800 | 64 |
| | ESA | Model 580, 582, 584, 5700 SDM | 62-64 |
| | Gilson | All Pumps with 5, 10 or 25 mL S/SC Heads | 67-68 |
| | Gynkotek | 300, M480 | 50 |
| **H - J** | Hewlett Packard | See Agilent | 51-53 |
| | Hitachi | 655, L-6000, L-6200/6200A, L-7100/LaChrom, L-2100, Smash Pump, L-2130, 7200, 7250 | 58 |
| | Jasco | BIP-1, 880/980 Series, PU-2080, 2085, 2089, 1580-C02, 980, 1586, 2086, 986 | 59 |
| **K - P** | Kratos | Spectraflow 400 | 50 |
| | LDC/Milton Roy | All Analytical Pumps (including Constametric, Minimetric, Minipump) | 65 |
| | LKB/Amersham/Pharmacia | 2150, 2248, 2250 | 60 |
| | Perkin-Elmer | Series 1, 2, 3, 3B, 4, 10, 100, Model 250, 200, 400, 410, 620, Integral 4000 | 61 |
| **R - S** | Rainin | HP, HPX, HPXL, SD 200/300, Prostar 210/215 | 67-68 |
| | Shimadzu | LC-6A, LC-7A, LC-8A, LC-9A, LC-10AT, LC-10ATVP, LC-10AD, LC-10ADVP, LC-10AS, LC-600 LC-AD/LC-20 AB, LC-20 AT, LC-2010, GP-20 & 50, LC-20 ADXR, SIL-10ADUP, GEP | 62-63 |
| | Spectra-Physics | 8700, 8800, 8810, IsoChrom, P-Series, 8700XR, 8750 | 66 |
| | SSI | 200 Series, Model 300 | 64 |
| | Sysmex | CA1000, CA500 | 50 |
| **T - W** | Thermo | See LDC/Milton Roy, Spectra-Physics for model listings | 65-66 |
| | Varian | 2010, 2510, 9000 Star/9000 Series, Prostar 210/215 | 67-68 |
| | Waters | 6K/6KA, Alliance, 2690, 2695, 2790, 2795, M45/45G, M501, 510, 515, 590, 600/600E, 610, 616, 625/626, 650, 6000, 6000A, DeltaPrep 3000 (#4 and #6 Heads), 1525, 1515 | 69-72 |

replacement parts

# opti-max®
## check valves

Check valves are a crucial, yet often overlooked component of the HPLC system. While a properly functioning check valve is virtually unnoticeable, an improperly functioning check valve can lead to a noisy baseline, pressure fluctuations, and inconsistent flow. Because a check valve can have such a large impact on the performance of your pump, it is imperative when choosing your replacement check valves to select the very best. Of course, we believe that the Opti-Max check valve system is the very best - otherwise we wouldn't sell it.

Read on for the innovations we have implemented in our check valves. And as with any Optimize part–if you're not satisfied, return it for a refund.

Bubbles of nitrogen/minute at 90 psi which leak from ball & seat.
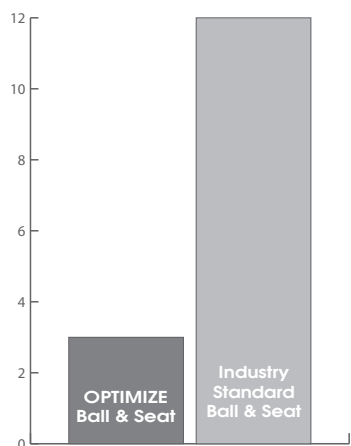
## A Better Check Valve

Tighter specifications make a better valve. A check valve can only function effectively if it activates and seals properly in response to the piston cycle. The seating process is fairly simple - the ball lands on the seat and creates a seal - but there are many factors that contribute to optimal seating. At Optimize, we engineer our check valves to be as responsive as possible, scrutinizing every detail.

Each ball and seat set is individually matched to ensure a lock-and-key fit. This guarantees 3 bubbles/minute or less in the industry standard nitrogen bubble test; common acceptable standards are 12 bubbles or less. We have also minimized the ball travel distance within the check valve; less travel distance equals quicker seating and more accurate pump metering.

# opti-max® cartridges

## a universal solution

WATERS   AGILENT   BIO-RAD   JASCO

OPTI MAX

WATERS   ABI/KRATOS   SHIMADZU   HITACHI
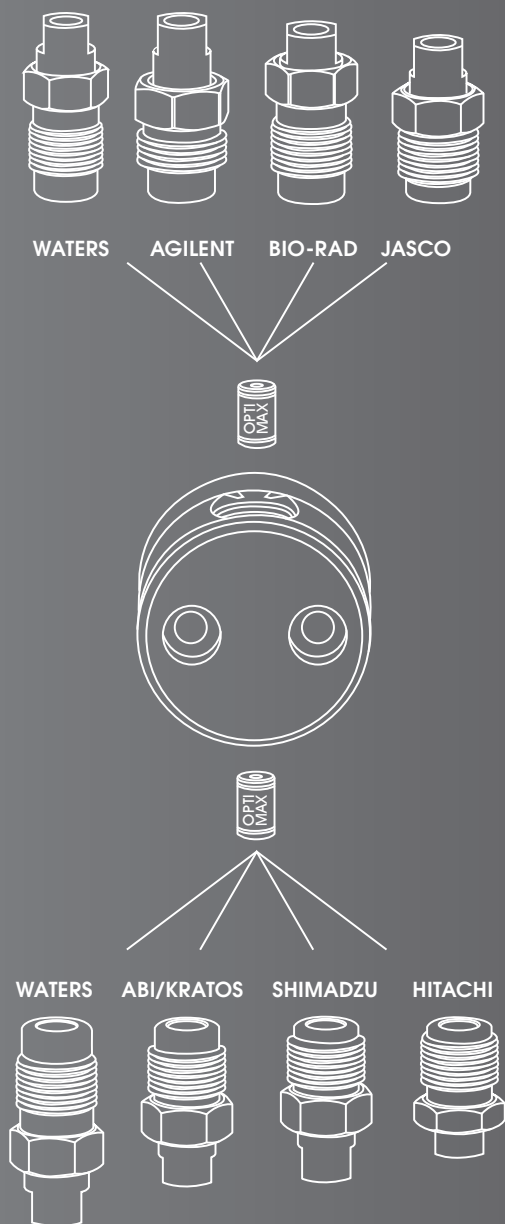
A single Opti-Max cartridge is interchangeable across multiple pump brands and can function in either the inlet or outlet position.

The same Opti-Max cartridge will fit into Opti-Max housings for pumps manufactured by Waters, Shimadzu, Agilent/HP, and many other OEM solvent delivery systems.

The modular cartridge system allows you to minimize the number of spare check valve cartridges you keep on hand and dramatically reduce the cost of inventory required to cover your maintenance needs.

# opti-max®
## free-turn housing

"Make it easier for the user" is the mantra at Optimize. We were the first to introduce the concept of the Opti-Max Free-Turn® housing where the thread that tightens a check valve housing into the pump head spins independently from the inner housing body. This enables you to change out a check valve without having to disconnect any tubing - an idea born in efficiency.

Most Opti-Max check valve housings feature the Free-Turn design. To see if they are available for your system, look for the Free-Turn logo next to the Opti-Max listings for your HPLC.

opti-max® FREE-TURN® housings can be removed with the tubing still attached, accelerating check valve maintenance while reducing fitting wear.

## FREE-TURN® IN ACTION



**1** Place wrench on the hex nut and turn. The hex nut or thread ring will turn independently of the fitting connection.



**2** Continue to unscrew the thread ring until the entire check valve assembly is removed from the pump head.



**3** Discard old check valve cartridge & replace with new cartridge.



**4** Install entire assembly into pump head.

# opti-max® materials

Opti-Max cartridges are available in several different sizes and combinations of body and ball/seat materials, all manufactured and leak tested to meet the same high standard of performance.

## Our Recommendation: Stainless/Ceramic

For high mechanical strength, stainless steel cartridges are the best choice. Ceramic ball & seat sets have higher density, which can make the valve more responsive and help the ball seat faster in lighter solvents.

For biocompatible HPLC systems with nonmetallic flow paths or high percentages of THF, use PEEK cartridges with ceramic balls & seats.

Both cartridge body materials listed above are also available with ruby and sapphire ball & seat combos. Each pair is matched to the same exacting standards as our ceramic ball/seat sets.



SS Cartridge

Ceramic Ball & Seat

Ruby Ball w/ Sapphire Seat

PEEK Cartridge

Ceramic Ball & Seat

Ruby Ball w/ Sapphire Seat

### CARTRIDGE MATERIAL OPTIONS | 2 PACKS

**hplc**

| Size | Part No. | Description |
|------|----------|-------------|
| 1/32" | 10-39-02004 | Cartridge fits in all housings that will take 1/16" and 1/8" cartridge. This size is only available in PEEK/PPS body with ruby/sapphire ball & seat. |
| 1/16" | 10-46-02004 | **Recommended:** Microbore stainless steel cartridge body with ceramic ball & seat |
| | 10-48-02004 | Microbore PEEK cartridge body with ceramic ball & seat |
| | 10-47-02004 | Microbore stainless steel cartridge body with ruby ball & sapphire seat |
| | 10-49-02004 | Microbore PEEK cartridge body with ruby ball & sapphire seat |
| 1/8" | 10-56-02004 | **Recommended:** Standard stainless steel cartridge with ceramic ball & seat |
| | 10-58-02004 | Standard PEEK cartridge body with ceramic ball & seat |
| | 10-57-02004 | Standard stainless steel cartridge with ruby ball & sapphire seat |
| | 10-59-02004 | Standard PEEK cartridge body with ruby ball & sapphire seat |
| 3/16" | 10-66-02005 | **Recommended:** Stainless steel cartridge with ceramic ball & seat |
| | 10-68-02005 | PEEK cartridge with ceramic ball & seat |
| | 10-67-02005 | Stainless steel cartridge with ruby ball & sapphire seat |
| | 10-69-02005 | PEEK cartridge with ruby ball & sapphire seat |

**UHPLC**

| Size | Part No. | Description |
|------|----------|-------------|
| 1/16" | 10-76-02004 | OPTI-MAX EXP Single Ball & seat Cartridge - Rated to 18,000 psi (1,250 bar) stainless steel cartridge body with ceramic ball & seat. |
| | 10-86-02004 | OPTI-MAX EXP Double Ball & Seat Cartridge - Rated to 20,000 psi (1,400 bar) Stainless steel cartridge body With ceramic balls & seats. |

*We cannot guarantee the Opti-Max check valve cartridge will fit in OEM housings.
Opti-Max cartridges must be used with Opti-Max housing for optimal results.

# seals&pistons

Seals and pistons are, by design, a consumable part of the HPLC pump and should be replaced on a regular preventative maintenance schedule. To maintain peak performance and avoid unplanned downtime, piston seals should be replaced every three to six months while sapphire pistons require inspection every six months with yearly or as-needed replacement.

## seals

Optimize Piston Seals are the longest lasting seals on the market. Machined from either of two proprietary polymer blends, UHMW-PE or ITB, Optimize Seals provide the ultimate in high pressure sealing capacity. For mostly aqueous buffered mobile phases, Opti-Seal UHMW-polyethylene is the wisest choice. Specially designed to be more resistant to abrasion and wear than standard polyethylene seals, they can last up to seven times longer under mostly aqueous conditions. Despite the UHMW-PE's durability, it has a coefficient of friction approaching that of PTFE. The homogenous polymer nature leads to less shedding, but when it does occur, a larger, more fibrous particle is produced which is easily caught by a filter frit.

PTFE-based Improved Blend (ITB) seals are a superior choice for applications with elevated temperatures, high organic content, or when the broadest possible solvent compatibility is required. ITB seals tend to be softer than those made from UHMW-PE, making them more forgiving at high pressures where piston side-loading or misalignment may occur. This softer nature also leads to more shedding, but the ITB proprietary blend is designed to shed particles that are large enough to be caught at the surface of a standard 2 $\mu$m frit, not embed within it.

## pistons

Optimize sapphire pistons offer optimal concentricity and resistance to wear. Each sapphire rod is specifically cut in relation to the grain of the crystal lattice, yielding maximal resistance to breakage and superior wear characteristics. Attachment of the rod to the piston ferrule is performed through a proprietary process ensuring concentricity. This is an important, often overlooked procedure parameter that has a direct effect on seal lifetime.

# seal form tool kit

Installing a piston seal can be a tricky undertaking. A relatively small seal must be fit into the seal cavity in such a way to ensure that it is pressed in evenly without distortion or damage. The Optimize Seal Forming/Insertion Tool Kit was specifically designed to aid in this endeavor.

This kit contains three tools to accommodate all of your HPLC piston seals. One end has a beveled cavity for seal forming, while the other is an insertion support for perfect seal installation. Also included with each kit are complete instructions for maximizing seal life and a solvent compatibility guide to aid in prudent seal material selection.

## This kit includes three sizes assuring the perfect seal fit every time

Forming cavities in three different sizes lets you pick the best tool for the seal you are installing.

The piston seal is formed by pressing the tool onto the seal jacket.

Then, the seal is pressed into the pump head seal cavity using the insertion support.

### Seal Forming/Insertion Tool

10-10-02695    Seal Forming/Insertion Tool Kit Includes: Three Forming/Insertion Tools
(Small, Medium, Large), Instruction Booklet & Solvent Compatibility Chart

**Tip:** For best performance, always use methanol or isopropanol to presoak piston seals for five to ten minutes prior to installation and wet all mating surfaces (seal, piston, seal cavity) as the seal is formed and installed.

# opti-max®
## conversion kits

Make the switch to Opti-Max for less than ever before with Opti-Max Conversion Kits. These kits contain all the check valves you need for your HPLC pump grouped under a single part number and priced at **over 20% off list!**

Each kit includes all the Opti-Max check valve housings and cartridges you need to convert your HPLC instrument. Simply find your HPLC pump/brand model in the list below and use the conversion kit part number to order. By default, each kit includes our recommended Opti-Max cartridge–the stainless steel/ceramic Opti-Max (PEEK cartridges are supplied for biocompatible systems). However, if you'd like to substitute an alternate material the kit price will not be affected.

Bio-Rad
23-56-02139

Dionex
25-58-01242

Hitachi
28-46-02148

LDC
31-56-02153

| BRAND | MODEL | CONVERSION KIT PART # | INLETS | OUTLETS |
|-------|-------|----------------------|--------|---------|
| ABI/Kratos | Spectraflow 400 | 21-56-02136 | 1 | 1 |
| Agilent/HP | 1090 Systems | 27-38-01959 | 1 | 1 |
| | 1050/1100/1200 | 27-56-01330 | 0 | 1 |
| Beckman | 100A, 126, | 22-66-02137 | 2 | 2 |
| | 110A/B, 112/114, 116 | 22-66-02138 | 1 | 1 |
| Bio-Rad | 1330, 1350 | 23-56-02139 | 2 | 2 |
| Bischoff | 2200 Microbore | 24-46-02141 | 1 | 1 |
| | 2200, SM909, 760 | 24-56-02140 | 1 | 1 |
| Dionex | DQP, GPM-1, DRP, DP-1 | 25-58-02143 | 1 | 1 |
| | GPM-2, XP, AGP, 2000, 4000 | | 1 | 1 |
| GBC | 1150, 1120 | 47-46-02271 | 1 | 1 |
| | 1150, 1120 | 47-48-02271 | 1 | 1 |
| Gilson/Rainin | 5, 10, & 25 mL Head | 26-56-02144 | 1 | 1 |
| Gynkotek | 300, M480, | 44-46-02145 | 1 | 1 |
| Hitachi | 655, L-6000, L-6200, L-6200A | 28-46-02147 | 1 | 1 |
| | 7100 | 28-46-02148 | 1 | 1 |
| ISCO | 2300, 2350 | 29-66-02149 | 1 | 1 |
| Jasco | BIP-1 | 42-56-02150 | 2 | 2 |
| | 880, 980 | 42-56-02151 | 1 | 1 |

# opti-max®
## conversion kits

| BRAND | MODEL | CONVERSION KIT PART # | INLETS | OUTLETS |
|---|---|---|---|---|
| Kontron | 420, 422 | 45-46-02223 | 1 | 1 |
| LDC/Milton Roy | Minipump, Minimetric | 31-56-02152 | 1 | 1 |
| | Constametric, Mini Duplex | 31-56-02153 | 2 | 2 |
| LKB/Amersham/ Pharmacia | 2150, 2248 | 32-46-02154 | 2 | 2 |
| Perkin-Elmer | Series 1, 2, 3, 3B | 33-56-02155 | 2 | 2 |
| | Series 10 | 33-56-02156 | 1 | 1 |
| | 4, 200, 400, 410, 4000, 250 | 33-56-02157 | 2 | 1 |
| Shimadzu | LC-600/9A, LC-10AD | 34-46-02158 | 2 | 2 |
| | LC-10AT, LC-10ATVP | 34-46-02160 | 1 | 1 |
| | LC-10ADVP/LC-20AD/LC-20AB/ LC2010 | 34-46-02627 | 2 | 2 |
| | LC-6A, LC-10AS | 34-56-02159 | 1 | 1 |
| | LC-8A | 34-66-02114 | 2 | 2 |
| | LC-20ABXR, LC-20ABXR | 34-86-04139 | 2 | 2 |
| Spectra-Physics | 8700, 8800, 8810, IsoChrom | 35-56-02161 | 1 | 1 |
| | P-Series | 35-56-02162 | 1 | 1 |
| SSI | 200 Series, Model 300 | 36-56-02163 | 1 | 1 |
| Thermo-Electron | Surveyor L-Pump | 50-46-03645 | 1 | 1 |
| Varian | 9000 Star, 9010, 9012 | 38-56-01704 | 0 | 1 |
| | 2010 | 38-56-02164 | 2 | 2 |
| | 2510 | 38-56-02165 | 1 | 1 |
| Waters | 616 | 39-46-02168 | 2 | 2 |
| | 625/626 | 39-48-02170 | 2 | 2 |
| | Alliance 2690, 2695, 2790, 2795 | 39-46-02187 | 2 | 0 |
| | 100µL/Dual Head Systems | 39-56-02166 | 2 | 2 |
| | 100µL/Single Head Systems | 39-56-02186 | 1 | 1 |
| | Extended Flow Systems | 39-66-01712 | 1 | 1 |
| | 225µL/Head | 39-66-02167 | 2 | 2 |
| | 400µL & 900µL/Head | 39-66-02169 | 0 | 2 |

Perkin Elmer
33-56-02157

Shimadzu
34-46-02158
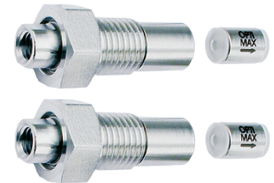
Waters
39-46-02187

Waters
39-48-02170

replacement parts

# abi, kratos, sysmex & gynkotek



OPTI-MAX for ABI, Kratos, & Gynkotek

INLET

OUTLET

## opti-max® check valves

| ABI/Kratos Spectraflow 400 | | OEM # |
|---|---|---|
| 21-56-00451 | OPTI-MAX Inlet Housing & Cartridge | 7200-0060, 1400-1999 |
| 21-56-00460 | OPTI-MAX Outlet Housing & Cartridge | 7200-0062, 1400-2250 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" ball, 2/Pk | |

| Gynkotek 300 & M480 | | OEM # |
|---|---|---|
| 44-46-00451 | OPTI-MAX Inlet Housing & Cartridge | 5005-3200 |
| 44-46-00460 | OPTI-MAX Outlet Housing & Cartridge | 5005-3100 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above. For other options, please see page 45.

## seals & pistons

| ABI/Kratos Spectraflow 400 | | OEM # |
|---|---|---|
| 21-36-00437 | OPTI-SEAL UHMW PE* Piston Seal, w/Backup Ring | 7200-0087, 7200-0088 |
| 21-36-00439 | OPTI-SEAL UHMW PE* Piston Seal, w/Backup Ring, 10/Pack | 7200-0087, 7200-0088 |
| 21-34-00434 | Sapphire Piston | 1400-1970 |

| Gynkotek 300 & M480 | | OEM # |
|---|---|---|
| 44-36-00437 | OPTI-SEAL UHMW PE* Piston Seal w/Backup Ring | 2266-0304 |
| 44-36-00439 | OPTI-SEAL UHMW PE* Piston Seal, w/Backup Ring 10/Pack | |
| 44-34-00434 | Sapphire Piston | 2267-0032 |

| Sysmex CA1000, CA500 | |
|---|---|
| 21-36-00437 | OPTI-SEAL UHMW PE* Piston Seal |
| 21-36-00439 | OPTI-SEAL UHMW PE* Piston Seal, 10/Pack |

*UHMW PE - Ultra High Molecular Weight Polyethylene



21-36-00437/
44-36-00437

21-34-00434/
44-34-00434

## lamps

| ABI/Kratos Spectraflow 400, Gynkotek 300 & M480 | | OEM # |
|---|---|---|
| 44-32-02838 | DoubleLife™ Deuterium Lamp, for Gynkotek SP6 | |
| 21-32-02812 | Deuterium Lamp, SF 757, 759A, 770, 773,783, 783A, 785A, 970, 980, 15X, 120A, 130A, 230A, 270A, 471A | 2900-0489 |



ABI/Kratos
21-32-02812

# agilent / hewlett-packard

## Purge Valve Upgrade Kit for Agilent/HP 1100/1050

In-line filtration is a necessity for protecting downstream components from damage and blockages due to particulates. The placement of the Agilent/HP PTFE filter is buried deep within the pump head, making what is usually a quick job into a laborious procedure. What use is a filter if it is never replaced? Optimize continues its tradition of innovative solutions with the Purge Valve Upgrade Kit.

The Purge Valve Upgrade Kit resolves this difficulty by permanently replacing the PTFE filter with a low volume PEEK insert and then relocating the filter frit to an easily accessible holder on the side of the purge valve. What once was a cumbersome process of changing the filter becomes a quick and easy task.

Filter is relocated to an easily accessible holder - never remove your purge valve again!

PEEK insert replaces original PTFE frit

Our **FREE-TURN®** filter holder lets you change frits without removing any tubing.

### Purge Valve Upgrade Kit

| | |
|---|---|
| **27-31-02277** | Purge Valve Upgrade Kit for Agilent/HP 1100, 1050<br>Includes: Filter Holder, PEEK Insert and 2 Filter Elements (2.0 $\mu$m) |
| **10-04-00100** | Replacement Frits, 0.5 $\mu$m, 10/Pk |
| **10-04-00103** | Replacement Frits, 2.0 $\mu$m, 10/Pk |

# agilent / hewlett-packard (continued)



**OPTI-MAX** for Agilent



Active Inlet
Check Valve Cartridge



Agilent/HP 1090, Outlet
Housing & Cartridge



27-36-01570



27-36-02364



27-36-02366



27-36-01572



27-34-00658



27-36-00663



27-36-00665



27-34-00671

## opti-max check valves

| Agilent/HP 1050, 1100, 1200 | | OEM # |
|---|---|---|
| 27-56-01330 | OPTI-MAX Outlet Housing & Cartridge | G1311-60012, G1312-60012 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |
| 27-38-02363 | Replacement Cartridge for Active Inlet Valve | 5062-8562 |

**OPTIONS:** Stainless Steel/Ceramic OPTI-MAX Cartridges are listed above.
For other options, please see page 45.

## oem-type check valves

| Agilent/HP 1090 | | OEM # |
|---|---|---|
| 27-38-00680 | Inlet Housing & Cartridge | 79835-25211 |
| 27-38-00682 | Outlet Housing & Cartridge | 79835-25211 |
| 27-38-00672 | Replacement Cartridges, 2/Pk | 79835-67101 |

## seals, pistons & other parts

| Agilent/HP 1050, 1100 | | OEM # |
|---|---|---|
| 27-36-01570 | OPTI-SEAL UHMW-PE* Piston Seal | 0905-1420 |
| 27-36-01571 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 27-36-01572 | ITB PTFE** Piston Seal | 5063-6589 |
| 27-36-01573 | ITB PTFE** Piston Seal, 10/Pk | |
| 27-36-03073 | PTFE*** Pump Seal, Green, Premium Grade | |
| 27-36-03074 | PTFE*** Pump Seal, Green, Premium Grade, 10/Pk | |
| 27-36-02364 | OPTI-SEAL UHMW-PE* Wash Seal | 0905-1175 |
| 27-36-02365 | OPTI-SEAL UHMW-PE* Wash Seal, 10/Pk | |
| 27-36-02366 | ITB PTFE** Wash Seal | 0905-1175 |
| 27-36-02367 | ITB PTFE** Wash Seal, 10/Pk | |
| 27-36-02851 | Gasket Wash Seal, 6/Pk | 5062-2484 |
| 27-04-02852 | PTFE Frits, 5/Pk | 01018-22707 |
| 27-31-02853 | 2-in-1 Seal Cap (See adjacent page.) | 5062-2485, 5001-3707 |
| 27-34-00658 | Sapphire Piston | 5063-6586 |

| Agilent/HP 1090 | | OEM # |
|---|---|---|
| 27-36-00663 | OPTI-SEAL UHMW-PE* Piston Seal | 0905-1194 |
| 27-36-00664 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 27-36-00665 | ITB PTFE** Piston Seal | 5062-2494 |
| 27-36-00666 | ITB PTFE** Piston Seal, 10/Pk | |
| 27-34-00671 | Sapphire Piston | 3980-0672 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend
***Premium grade PTFE for maximum chemical compatibility and wear resistance

## 2-in-1 Seal Cap for 1050/1100/1200

Our 2-in-1 Seal Cap replaces both the OEM outlet gold seal and outlet cap with a single component. Use it on your purge valve, OEM outlet check valve, or anywhere else on your 1050/1100/1200 system where gold seals and outlet caps are required.

| Agilent/HP 1050, 1100, 1200 | | OEM # |
|---|---|---|
| 27-31-02853 | 2-in-1 Seal Cap | 5062-2485, 5001-3707 |

## autosampler replacement parts

| Agilent/HP 1100, 1200 | | OEM # |
|---|---|---|
| 27-31-03212 | Rotor Seal Assembly | 0100-1853 |
| 27-31-03215 | Needle | G1313-87201 |
| 27-31-03329 | Needle Seat Assembly | G1313-87101 |

| Agilent/HP 1050 | | OEM # |
|---|---|---|
| 27-31-03603 | Rotor Seal | 0101-0626 |

| Agilent/HP 1090 | | OEM # |
|---|---|---|
| 27-31-03649 | Rotor Seal, 3 Grooves, Polyimide | 7010-039 |
| 27-31-03650 | Rotor Seal Rebuild Kit | 7010-999 |
| 27-31-03670 | Rotor Seal, 2 Grooves, Polyimide | 0101-0623 |

## lamps

| Agilent/HP | | OEM # |
|---|---|---|
| 27-32-02817 | Deuterium Lamp, 1050 VWD A-Series, 79853A | 79853-60002 |
| 27-32-02827 | Deuterium Lamp, 1100 (CE System DAD) | 2140-0585 |
| 27-32-02844 | Deuterium Lamp, 1050C, 1050DAD, 1090, 1040 | 79883-60002 |
| 27-32-02845 | DoubleLife™ Deuterium Lamp, 1100, 1200 DAD | 5181-1530, 2140-0813 |
| 27-32-02846 | DoubleLife™ Deuterium Lamp, 1100, 1200 VWD | G1314-60100 |
| 27-32-02715 | Deuterium Lamp, 1100 VWD G1314A | G1314-60100 |
| 27-32-04037 | Xenon Lamp, 1100 | 2140-0600 |
| 27-32-04038 | Doublelife Deuterium Lamp, 1050 | 79883-60002 |



2-in-1 Seal Cap on Agilent Purge Valve Base
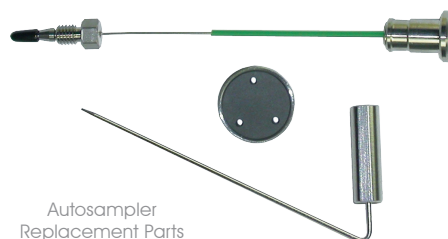


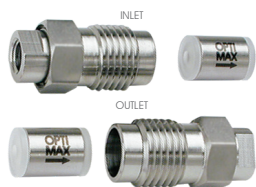Autosampler Replacement Parts



Rotor Seal
27-31-03603
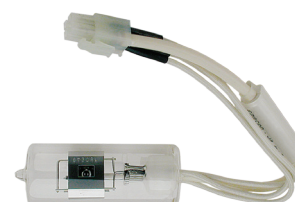


Agilent 1050 VWD A-Series
27-32-02817



Agilent 1100 DAD
27-32-02845

replacement parts

# beckman / altex



**OPTI-MAX for Beckman/Altex**



22-36-00498



22-36-00492



22-36-00484



22-36-00486



22-36-00482



22-36-00494



22-34-00475



22-36-00500



22-34-00476



22-32-03659

## opti-max check valves

### 110A, 110A/B, 112/112M, 114/114M, 116, 118, 125, 126, 127, 128

| | | OEM # |
|---|---|---|
| 22-66-00516 | OPTI-MAX Inlet Housing & Cartridge | 240720 |
| 22-66-00520 | OPTI-MAX Outlet Housing & Cartridge | 240721 |
| 10-66-02005 | OPTI-MAX Replacement Cartridges, 3/16" Ball, 2/Pk | |

OPTIONS: Stainless Steel/Ceramic OPTI-MAX Cartridges are listed above. For other options, please see page 45.

## seals & pistons

### 100A, 110A/B

| | | OEM # |
|---|---|---|
| 22-36-00498 | OPTI-SEAL UHMW-PE* Piston Seal | 887138, 2530-004 |
| 22-36-00499 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 22-36-00492 | ITB PTFE** Piston Seal | 887138, 2530-004 |
| 22-36-00493 | ITB PTFE** Piston Seal, 10/Pk | |
| 22-34-00475 | Sapphire Piston, 110A/110B, 112/112M | 243053, 110-07 |

### 105,110 Prep

| | | OEM # |
|---|---|---|
| 22-36-00484 | OPTI-SEAL UHMW-PE* Piston Seal | 887139 |
| 22-36-00485 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 22-36-00486 | ITB PTFE** Piston Seal | 887139 |
| 22-36-00487 | ITB PTFE** Piston Seal, 10/Pk | |

### 112/112M

| | | OEM # |
|---|---|---|
| 22-36-00482 | OPTI-SEAL UHMW-PE* Piston Seal | 236797 |
| 22-36-00483 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 22-34-00475 | Sapphire Piston, 110A/110B, 112/112M | 243053 |

### 114/114M, 116, 126

| | | OEM # |
|---|---|---|
| 22-36-00500 | OPTI-SEAL UHMW-PE* Piston Seal | 241037 |
| 22-36-00501 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 22-36-00496 | ITB PTFE** Piston Seal | 241037 |
| 22-36-00497 | ITB PTFE** Piston Seal, 10/Pk | |
| 22-34-00476 | Sapphire Piston | 240714 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

## lamps

### Beckman/Altex

| | | OEM # |
|---|---|---|
| 22-32-03659 | Deuterium Lamp, Beckman M-168 | 538711 |
| 22-32-02781 | Deuterium Lamp, Beckman M-166, Altex 166 | 239372 |
| 22-32-01295 | Deuterium Lamp for Beckman M-163 | 22 947029 |
| 22-32-04036 | Deuterium Lamp for Beckman DU600, 620, 630, 640, 650, 6000, 7000, 7500 | 514366 |

# bio-rad

## opti-max check valves

**1330, 1350**

| | | OEM # |
|---|---|---|
| **23-56-00546** | OPTI-MAX Inlet Housing & Cartridge | 8001306, 125-0306 |
| **23-56-00551** | OPTI-MAX Outlet Housing & Cartridge | 8001306, 125-0307 |
| **10-56-02004** | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

**OPTIONS:** Stainless Steel/Ceramic OPTI-MAX Cartridges are listed above. For other options, please see page 45.



INLET
OUTLET
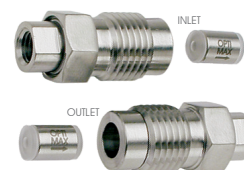
**OPTI-MAX** for Bio-Rad

## seals & pistons

**1330, 1350, 1350T, 2700, 2800**

| | | OEM # |
|---|---|---|
| **23-36-00534** | OPTI-SEAL UHMW-PE* Piston Seal | 9100363, 125-0302 |
| **23-36-00535** | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| **23-36-00531** | ITB PTFE** Piston Seal | 9100363 |
| **23-36-00532** | ITB PTFE** Piston Seal, 10/Pk | |
| **23-34-00530** | Piston, 1330, 1350, 1350T | 8001311, 125-0304 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend



23-36-00534



23-36-00531

## lamps

**Bio-Rad**

| | | OEM # |
|---|---|---|
| **23-32-02081** | Deuterium Lamp, Model 1790 Biofocus 300 CE | 930-6106 |
| **23-32-03119** | Deuterium Lamp, REMEDI | |



23-34-00530



Bio-Rad
23-32-02081

# bischoff



**OPTI-MAX**
For Bischoff



24-36-01297



24-36-01303



24-36-00569



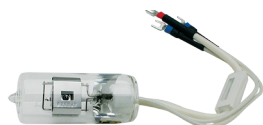24-34-00559
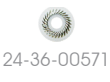


24-36-00571



24-36-00573
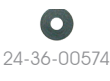


24-36-00574



24-34-00562



Bischoff
24-32-02838

## opti-max check valves

**Bischoff 2200, 2250, Anspec SM909,
Alcott Micromeritics 760, 765 (Analytical Versions)**

| | | OEM # |
|---|---|---|
| 24-56-00576 | OPTI-MAX Inlet Housing & Cartridge | 2200-0220, 760/25602/00 |
| 24-56-00581 | OPTI-MAX Outlet Housing & Cartridge | 2200-0230, 760/25604/00 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

**Bischoff 2200, Anspec SM909,
Alcott Micromeritics 760 (Microbore Versions), 765**

| | | OEM # |
|---|---|---|
| 24-46-00585 | OPTI-MAX Inlet Housing & Cartridge | 2200-0120, 760/25602/01 |
| 24-46-00589 | OPTI-MAX Outlet Housing & Cartridge | 2200-0130, 760/25604/01 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | |

OPTIONS: Stainless Steel/Ceramic OPTI-MAX Cartridges are listed above.
For other options, please see page 45.

## seals & pistons

**Bischoff 2200, Anspec SM909,
Alcott Micromeritics 760, 765 (Analytical Versions)**

| | | OEM # |
|---|---|---|
| 24-36-01297 | OPTI-SEAL UHMW-PE* Piston Seal | 2200-0212, 760/25601/00 |
| 24-36-01298 | OPTI-SEAL UHMW-PE* Piston Seal 10/Pk | |
| 24-36-01303 | ITB PTFE** Piston Seal | 2200-0212, 760/25601/00 |
| 24-36-01304 | ITB PTFE** Piston Seal, 10/Pk | |
| 24-36-00569 | Piston Seal Support Ring | 2200-0211, 760/25603/00 |
| 24-34-00559 | Sapphire Piston | 2200-0210, 760/25803/00 |

**Bischoff 2200, Anspec SM909,
Alcott Micromeritics 760 (Microbore Versions), 765**

| | | OEM # |
|---|---|---|
| 24-36-00571 | OPTI-SEAL UHMW-PE* Piston Seal | 2200-0112, 760/25601/01 |
| 24-36-00572 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 24-36-00573 | ITB PTFE** Piston Seal | 2200-0112, 760/25601/01 |
| 24-36-00575 | ITB PTFE** Piston Seal, 10/Pk | |
| 24-36-00574 | Piston Seal Support Ring | 2200-0111, 760/25603/01 |
| 24-34-00562 | Sapphire Piston | 2200-0110, 760/25803/01 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

## lamps

**Bischoff**

| | |
|---|---|
| 24-32-02838 | DoubleLife™ Deuterium Lamp, Bischoff, Gynkotek SP6, LATEK VISI-6 |

# dionex

## opti-max check valves

### GP-40*/IP-20*, DQP, GPM-1, DRP, GPM-2, DXP, AGP (Analytical), 2000, 4000, GP-50/IP-25

| | | OEM # |
|---|---|---|
| 25-58-00613 | OPTI-MAX Inlet Housing & Cartridge | 047660, 38273 |
| 25-58-00612 | OPTI-MAX Outlet Housing & Cartridge | 047661, 42761 |
| 10-58-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

**OPTIONS:** PEEK/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

*The OPTI-MAX Check Valves above fit GP-40/IP-20 pumps. Users of microbore versions of these pumps should order OPTI-MAX microbore (1/16") cartridges. Please see page 45.

**OPTI-MAX** for
Dionex

## pistons & seals

### GP-40/IP-20 (Analytical), DQP, GPM-1, DRP, GPM-2, DXP, AGP (Analytical), 2000, 4000

| | | OEM # |
|---|---|---|
| 25-36-00597 | OPTI-SEAL UHMW-PE* Piston Seal (Hastelloy C® Spring) | 40859 |
| 25-36-00598 | OPTI-SEAL UHMW-PE* Piston Seal (Hastelloy C® Spring), 10/Pk | |
| 25-36-00599 | UHMW-PE* Piston Seal, (Elastomer O-Ring) | 35686 |
| 25-36-00600 | UHMW-PE* Piston Seal, (Elastomer O-Ring), 10/Pk | |
| 25-36-00601 | Back-Up Seal, for all models except GP40/IP20 | 36901 |
| 25-36-00602 | Back-Up Seal, 10/Pk | |
| 25-34-00596 | Sapphire Piston, for all models except GP40/IP20 | 36904 |

*UHMW PE - Ultra High Molecular Weight Polyethylene

25-36-00597

25-36-00599

25-36-00601

25-34-00596

## lamps

| Dionex | | OEM # |
|---|---|---|
| 25-32-02081 | Deuterium Lamp, Dionex VDM-1, DSA-1 | |
| 25-32-02820 | Deuterium Lamp, Dionex CES 1. VDM-2 | 40651 |

Dionex
25-32-02081

replacement parts

# hitachi



**OPTI-MAX** for 655, L-6000, L-6200/L-6200A
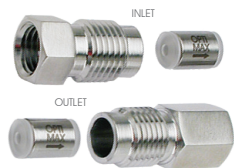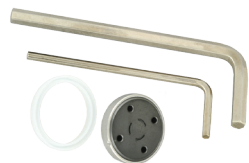


**OPTI-MAX** for L-7100



28-36-00690



28-36-00688



28-36-00691



28-34-00685



28-31-03650



Hitachi
28-32-02829

## opti-*max* check valves

### 655, L-6000, L-6200/L-6200A

| | | OEM # |
|---|---|---|
| 28-46-00703 | OPTI-MAX Inlet Housing & Cartridge | ANO-0833, 885-1330 |
| 28-46-00712 | OPTI-MAX Outlet Housing & Cartridge | ANO-0834, 885-1331 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | |

### L-7100 (LaChrom), L-2130

| | | OEM # |
|---|---|---|
| 28-46-02092 | OPTI-MAX Inlet Housing & Cartridge | ANO-0836, 810-1004, 809-1408 |
| 28-46-02094 | OPTI-MAX Outlet Housing & Cartridge | ANO-0837, 810-1005, 809-1409 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

### L-2100, Smash Pump, L-2130

| | |
|---|---|
| 28-39-02092 | OPTI-MAX Inlet Housing & Cartridge |
| 28-39-02094 | OPTI-MAX Outlet Housing & Cartridge |
| 10-39-02004 | OPTI-MAX Check Valve Cartridge Replacement, Microbore 1/32", 2/Pk |

## seals & pistons

### 655, L-6000, L-6200/L-6200A, L-7100 (LaChrom), L-2100, Smash Pump

| | | OEM # |
|---|---|---|
| 28-36-00690 | OPTI-SEAL UHMW-PE* Piston Seal | 655-1080 |
| 28-36-00692 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 28-36-00688 | ITB PTFE** Piston Seal | 655-1080 |
| 28-36-00689 | ITB PTFE** Piston Seal, 10/Pk | |
| 28-36-00691 | OPTI-SEAL UHMW-PE* Piston Seal with Hastelloy C° Spring | |
| 28-36-00693 | OPTI-SEAL UHMW-PE* Piston Seal with Hastelloy C° Spring, 10/Pk | |
| 28-34-00685 | Sapphire Piston | 810-1033 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

## autosampler replacement parts

### 7200, 7250

| | | OEM # |
|---|---|---|
| 28-31-03650 | Polyimide Rotor Seal Rebuild Kit | ANO-0818 |

## lamps

### Hitachi

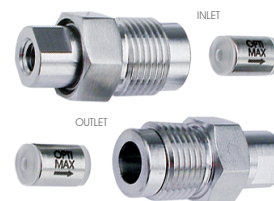| | | OEM # |
|---|---|---|
| 28-32-02375 | Deuterium Lamp, L-7000 Series, L-2400, L-3500, L-4000 Series | 885-3570 |
| 28-32-02829 | Deuterium Lamp, Hitachi 200, 300, 330, 340, 1500, 1800, 2000, 2001, 2800, 2810, 3200, L2500, -3000, -3100, U-Series, 655A, 150-20 | ANO-0424, 890-2430 |
| 28-32-03928 | Deuterium Lamp, Lachrom/Merck L-Series (excluding L-7000) | ANO-0424, 890-2430 |

# jasco

## opti-max® check valves

| BIP 1 | | OEM # |
|---|---|---|
| 42-56-01038 | OPTI-MAX Inlet Housing & Cartridge | 6260-H101A |
| 42-56-01043 | OPTI-MAX Outlet Housing & Cartridge | 6260-H102A |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

| 880/980 Series 1580, 2080, 2086, 2089 | | OEM # |
|---|---|---|
| 42-56-01544 | OPTI-MAX Inlet Housing & Cartridge | 6560-H405A , 6778-H109A |
| 42-56-01546 | OPTI-MAX Outlet Housing & Cartridge | 6560-H404A, 6778-H110A |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above. For other options, please see page 45.



INLET
OUTLET
**OPTI-MAX for BIP 1**
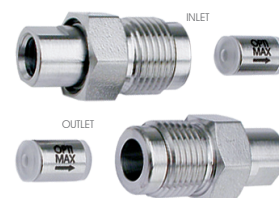


INLET
OUTLET
**OPTI-MAX**
For 880/980 Series

## seals & pistons

| BIP-1, PU-2080, 2085, 2089, 1580-C02, 980, 880, 1586, 2086, 986 | | OEM # |
|---|---|---|
| 42-36-01357 | OPTI-SEAL UHMW-PE* Piston Seal | 6560-H148, H149A |
| 42-36-01358 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 42-36-01355 | ITB PTFE** Piston Seal | 6560-H148-PE, H149A |
| 42-36-01356 | ITB PTFE** Piston Seal, 10/Pk | |
| 42-34-01354 | Sapphire Piston | 2305-0005A, 2305-009A |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend



42-36-01357



42-36-01355



42-34-01354

## lamps

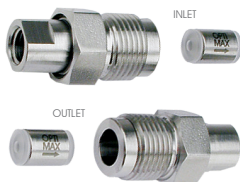| Jasco | | OEM # |
|---|---|---|
| 42-32-02841 | DoubleLife™ Deuterium Lamp, 870, 875 | 5330-0097 |
| 42-32-02842 | DoubleLife™ Deuterium Lamp, UV-1570, -1575, -2070, -2075, 975 B/C Series | 5330-0091 |



42-32-02842

replacement parts
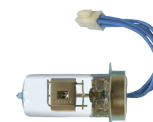
# lkb / amersham / pharmacia

**OPTI-MAX**
For LKB/Pharmacia

## opti-max check valves

| **LKB 2150, 2248, 2500** | | **OEM #** |
|---|---|---|
| **32-46-00782** | OPTI-MAX Inlet Housing & Cartridge | 80-1035-19 |
| **32-46-00787** | OPTI-MAX Outlet Housing & Cartridge | 2150-300 |
| **10-46-02004** | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | |

**OPTIONS:** Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

32-36-01303

32-36-01297

## seals & pistons

| **LKB 2150, 2248, 2500** | | **OEM #** |
|---|---|---|
| **32-36-01297** | OPTI-SEAL UHMW-PE* Piston Seal with Back-Up Ring | 80-1037-39 |
| **32-36-01298** | OPTI-SEAL UHMW-PE* Piston Seal with Back-Up Ring, 10/Pk | |
| **32-36-01303** | ITB PTFE** Piston Seal, with Back-Up Ring | 80-1037-39 |
| **32-36-01304** | ITB PTFE** Piston Seal, with Back-Up Rings, 10/Pk | |
| **32-34-00771** | Sapphire Piston, 2150 | 80-1035-52 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

32-34-00771

## lamps

| **LKB/Amersham/Pharmacia** | | **OEM #** |
|---|---|---|
| **32-32-02821** | Deuterium Lamp, LKB Ultraspec I, II, III, Plus, 4050, 4051, 4054, 2141, 2151 | |

# perkin-elmer

## opti-max check valves

### Series 1, 2, 3, 3B, 10

| | | OEM # |
|---|---|---|
| 33-56-00840 | OPTI-MAX Inlet Housing & Cartridge | 0254-0546 |
| 33-56-00845 | OPTI-MAX Outlet Housing & Cartridge | 0254-0547 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

### Model 250, Series 4, 200*, 400, 410, 620, Integral 4000*

| | | OEM # |
|---|---|---|
| 33-56-00830 | OPTI-MAX Inlet Housing & Cartridge | 0254-0177 |
| 33-56-00835 | OPTI-MAX Outlet Housing & Cartridge | 0254-0197 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |
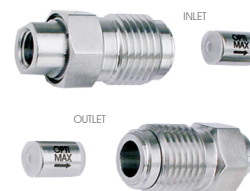
**OPTIONS:** Stainless steel/ceramic OPTI-MAX cartridges are listed above. For other options, please see page 45.

*These pumps have an intermediate check valve which is identical to the inlet check valve; to order a replacement intermediate valve, use the OPTI-MAX inlet part number.


Series 1, 2, 3, 3B, 10


Model 250, Series 4, 200, 400, 410, 620, Integral 4000

## seals & pistons

### Model 250, Series 200, 410, 620, Integral 4000 (Mfd. After 12/89)

| | | OEM # |
|---|---|---|
| 33-34-00798 | Piston (High Pressure) | N260-0124 |
| 33-34-00797 | Piston (Low Pressure) | N260-0104 |


33-34-00798


33-34-00797

### Model 250, Series 4, 200, 400, 410, 620, Integral 4000, Series 1, 2, 3, 3B, 10

| | | OEM # |
|---|---|---|
| 33-36-01301 | OPTI-SEAL UHMW-PE* Piston Seal (High Pressure) | 0990-7324 |
| 33-36-01302 | OPTI-SEAL UHMW-PE* Piston Seal (High Pressure), 10/Pk | |
| 33-36-01299 | ITB PTFE** Piston Seal (High Pressure) | 0990-7328 |
| 33-36-01300 | ITB PTFE** Piston Seal (High Pressure), 10/Pk | |


33-36-01301


33-36-01299

### Series 4, 400, 410, 620, Integral 4000

| | | OEM # |
|---|---|---|
| 33-36-00804 | OPTI-SEAL UHMW-PE Piston Seal (Low Pressure) | 0990-7330 |
| 33-36-00805 | OPTI-SEAL UHMW-PE Piston Seal (Low Pressure), 10/Pk | |
| 33-36-00802 | ITB PTFE Piston Seal (Low Pressure) | 0990-7330 |
| 33-36-00803 | ITB PTFE Piston Seal (Low Pressure), 10/Pk | |


33-36-00804


33-36-00802

### Series 100

| | | OEM # |
|---|---|---|
| 33-36-00806 | OPTI-SEAL UHMW-PE* Piston Seal | N260-0108 |
| 33-36-00807 | OPTI-SEAL UHMW-PE* Piston Seal , 10/Pk | |
| 33-36-00808 | ITB PTFE** Piston Seal        N260-0109 | |
| 33-36-00809 | ITB PTFE** Piston Seal, 10/Pk | |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend


33-36-00806


33-36-00808

## lamps

### Perkin-Elmer

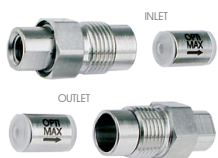| | | OEM # |
|---|---|---|
| 33-32-03117 | Deuterium Lamp, 200 UV/Vis | N292-0149 |
| 33-32-03114 | DoubleLife™ Deuterium Lamp, Series 200 DAD | N292-2046 |


33-32-03114

# shimadzu

## opti-max check valves

### LC-10AT, LC-10ATVP


LC-10AT, LC-10ATVP

| | | Shimadzu # |
|---|---|---|
| 34-46-01983 | OPTI-MAX Inlet Housing & Cartridge | 228-32166-91 |
| 34-46-00893 | OPTI-MAX Outlet Housing & Cartridge | 228-39093-92, 228-32531-92 228-34976-91 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" ball, 2/Pk | |

### LC-10ADVP, LC-20AD/LC-20AB (Prominence), LC-2010, GPC-20 & 50 (100 µL Head), ESA Models 582 & 584


LC-10ADVP

| | | Shimadzu # | ESA # |
|---|---|---|---|
| 34-46-02644 | OPTI-MAX Inlet Housing & Cartridge | 228-39093-92 228-45704-91 | 70-4056 |
| 34-46-00893 | OPTI-MAX Outlet Housing & Cartridge | 228-34976-91 228-45705-91 228-37147-93 | 70-4057 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" ball, 2/Pk | | |

### LC-20ABXR

UHPLC

| | | Shimadzu # |
|---|---|---|
| 34-86-02644 | OPTI-MAX Inlet Housing & Cartridge | 228-48249-91 |
| 34-86-00893 | OPTI-MAX Outlet Housing & Cartridge | 228-45705-91 |
| 10-86-02004 | OPTI-MAX Replacement Cartridges 1/16" ball, 2/Pk | |

### LC-10AD, LC-600, LC-9A (also ESA Model 580)


LC-10AD, LC-600, LC-9A

| | | Shimadzu # | ESA # |
|---|---|---|---|
| 34-46-00885 | OPTI-MAX Inlet Housing & Cartridge | 228-18522-91 228-33492-91 | 70-0734 |
| 34-46-00893 | OPTI-MAX Outlet Housing & Cartridge | 228-18522-92 228-32531-92 | 70-0735 |
| 10-46-02004 | OPTI-MAX Replacement Cartridges, 1/16" ball, 2/Pk | | |

### LC-10AS, LC-6A


LC-10AS, LC-6A

| | | Shimadzu # |
|---|---|---|
| 34-56-00902 | OPTI-MAX Inlet Housing & Cartridge | 228-12353-91 |
| 34-56-00907 | OPTI-MAX Outlet Housing & Cartridge | 228-09054-93 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" ball, 2/Pk | |

### LC-8A


LC-8A

| | | Shimadzu # |
|---|---|---|
| 34-66-02112 | OPTI-MAX Inlet Housing & Cartridge | 228-20256-91 |
| 10-66-02005 | OPTI-MAX Replacement Cartridges (for LC-8A Inlet), 3/16" ball, 2/Pk | |
| 34-56-00907 | OPTI-MAX Outlet Housing & Cartridge | 228-09054-93 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges (for LC-8A Outlet), 1/8" ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

## lamps


Shimadzu
34-32-02837

| | | Shimadzu # |
|---|---|---|
| 34-32-02837 | DoubleLife™ Deuterium Lamp, SPD-10A, -10AV, -M10A, -10AS, -10AVP, -M10AVP, -20AV | 228-34016-02 |
| 34-32-02838 | DoubleLife™ Deuterium Lamp, SPD-2A, SPD-6A (V), LC-3A, -4A, 6A, SP4, 6500AA | |
| 34-32-03102 | DoubleLife™ Deuterium Lamp, LC 2010 | 228-37401-00 |

## seals & pistons

### LC-10ADVP, 2010, LC-20AD (also ESA Models 582 & 584)

| | | Shimadzu # | ESA # |
|---|---|---|---|
| 34-36-00855 | OPTI-SEAL UHMW-PE* Piston Seal | 228-32628-00 228-18745-00 | |
| 34-36-00856 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | | |
| 34-36-03472 | ITB PTFE** Piston Seal | 228-35146-00 228-18745-00 | 70-3602 |
| 34-36-03473 | ITB PTFE** Piston Seals, 10/Pk | | |
| 34-34-02645 | Sapphire Piston for LC-10ADVP, 2010, LC-20AD | 228-35601-91 228-35601-92 | 70-4052 70-4052 |


34-36-00855


34-34-02645

### LC-6A, LC-7A, LC-10AS, LC-10AT, LC-10ATVP, LC-20AT, SIL-10ADVP, GFP

| | | Shimadzu # |
|---|---|---|
| 34-36-00865 | OPTI-SEAL UHMW-PE* Piston Seal | 228-11999-00, 228-21975-00, 228-35145-00 |
| 34-36-00866 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 34-36-00863 | ITB PTFE** Piston Seal | 228-11999-00, 228-21975-00, 228-35145-00 |
| 34-36-00864 | ITB PTFE** Piston Seal, 10/Pk | |

Piston Wash Users: The above seals can also be used as Back Seals (OEM# 228-28499-00)

| | | |
|---|---|---|
| 34-34-00854 | Sapphire Piston for LC-6A | 228-12904-93 |
| 34-34-01345 | Sapphire Piston for LC-10AS | 228-17019-93 |
| 34-34-01997 | Sapphire Piston for LC-10AT (Universal Piston) | 228-32654-91 |
| 34-34-02650 | Sapphire Piston for LC-10ATVP | 228-35009-92 |


34-36-00865


34-36-00863


34-34-00854


34-34-01345

### LC-600, LC-9A, LC-10AD (and ESA 580)

| | | Shimadzu # | ESA # |
|---|---|---|---|
| 34-36-00855 | OPTI-SEAL UHMW-PE* Piston Seal | 228-18745-00 | |
| 34-36-00856 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | | |
| 34-36-00857 | UHMW-PE* Elastomer Energized Seal | 228-18745-00 228-35146-00 | |
| 34-36-00858 | UHMW-PE* Elastomer Energized Seal, 10/Pk | | |
| 34-34-00853 | Sapphire Piston | 228-18523-91 | 70-1166 |
| 34-36-03472 | ITB PTFE** Piston Seal | 228-35146-00 | 70-3602 |
| 34-36-03473 | ITB PTFE** Piston Seals, 10/Pk | | |


34-34-02650


34-36-00857

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

### Universal Sapphire Piston for Shimadzu LC-10AT

Our Universal Piston System for Shimadzu lets you install LC-10AS plungers into a special reusable housing for use in the LC-10AT. Now, the same piston can be used in both the LC-10AS and 10AT, consolidating your inventory and reducing replacement cost.

| | |
|---|---|
| 34-34-01997 | **First Time:** LC-10AT Universal Piston Assembly |
| 34-34-01345 | **Subsequent:** LC-10AT piston replacement requires only one LC-10AS piston |
| 34-34-01991 | Sapphire Plunger Holder for Shimadzu LC-10AT (requires LC-10AS plunger as insert) |


34-34-00853


34-34-01997

## filtration

### LC-6AD, LC-610, LC-6A, LC-6AEF, LC- 9A, LC-10AD, LC-10AS, LC-10AT

| | | Shimadzu # |
|---|---|---|
| 34-04-03881 | In-Line Filter Assembly | 228-12642-93 |


34-04-03881

replacement parts

# ssi

## opti-max® check valves

| 200 Series, Model 300 (also BAS PM-48, ESA 5700 SDM, DuPont 8800) | | OEM # |
|---|---|---|
| 36-56-00982 | OPTI-MAX Inlet Housing & Cartridge | 02-0162 |
| 36-56-00987 | OPTI-MAX Outlet Housing & Cartridge | 02-0163 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

**OPTI-MAX** for SSI

## opti-max® cartridge upgrades

**ULTRA CP**

**10-76-02004**   OPTI-MAX Microbore 1/16" Diameter Ceramic Ball & Seat,
SS Replacement Check Valve Cartridges w/ flangeless
PEEK caps (For OEM Housing), 2/Pk
Rated for use at 18,000 psi

## seals

36-36-01301

| 200 Series, Model 300 | | OEM # |
|---|---|---|
| 36-36-01301 | OPTI-SEAL UHMW-PE* Piston Seal | 90-1034 |
| 36-36-01302 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 36-36-01299 | ITB PTFE** Piston Seal | 90-1012 |
| 36-36-01300 | ITB PTFE** Piston Seal, 10/Pk | |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

36-36-01299

# thermo: ldc / milton roy

## opti-max check valves

| All Analytical (including Constametric, Minimetric, Minipump) | | OEM # |
|---|---|---|
| 31-56-00759 | OPTI-MAX Inlet Housing & Cartridge | 900947001 |
| 31-56-00764 | OPTI-MAX Outlet Housing & Cartridge | 900947002 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

OPTIONS: Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

INLET

OUTLET

**OPTI-MAX** for LDC

## check valve fittings

| All Analytical (including Constametric, Minimetric, Minipump) | | OEM # |
|---|---|---|
| 31-24-00735 | 1/8" Nut & Ferrule, for Suction Tube | 1960066976 |
| 31-24-00736 | 1/16" Nut & Ferrule, for Discharge Tube | 1960066975 |

31-24-00735

## seals & pistons

| All Analytical (including Constametric, Minimetric, Minipump) | | OEM # |
|---|---|---|
| 31-36-00806 | OPTI-SEAL UHMW-PE* Piston Seal | 206234 |
| 31-36-00807 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 31-36-00754 | OPTI-SEAL Replacement Kit | 801598 |
| 31-36-00808 | ITB PTFE** Piston Seal, Black | 206129001 |
| 31-36-00809 | ITB PTFE** Piston Seal, Black, 10/Pk | |
| 31-36-00750 | Seal Replacement Kit, ITB | 801598 |
| 31-36-00745 | UHMW-PE* Piston Seal, Gold | 206234 |
| 31-36-00746 | UHMW-PE* Piston Seal, Gold, 10/Pk | |
| 31-36-00747 | Seal Replacement Kit, Gold | 801892001 |
| 31-34-00738 | Sapphire Piston | 801306 |
| 31-34-00739 | Crosshead Spring, Constrametric II, Mini-pump | 9160282000 |
| 31-34-00740 | Crosshead Spring, Minimetric | 204040 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

31-24-00736

31-36-00806

31-36-00808

31-36-00745
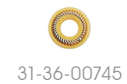
## lamps

| LDC/Milton Roy | | OEM # |
|---|---|---|
| 31-32-01295 | Deuterium Lamp, 3000 and 4000 Series, Spectromonitor I-II-III-D | 108035 |
| 31-32-02824 | Deuterium Lamp, 5000 (PDA) | |

31-34-00738

31-32-01295

# thermo: spectra-physics
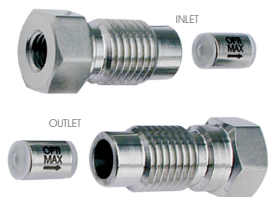


**OPTI-MAX** for
Spectra-Physics

## opti-max® check valves

| 8700, 8800, 8810, IsoChrom, P-Series | | OEM # |
|---|---|---|
| 35-56-00956 | OPTI-MAX Inlet Housing & Cartridge | A3495-010 |
| 35-56-00961 | OPTI-MAX Outlet Housing & Cartridge | A3490-010 |
| 35-56-00952 | OPTI-MAX Transducer Housing & Cartridge | A3990-010 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |

**OPTIONS:** Stainless steel/ceramic OPTI-MAX cartridges are listed above.
For other options, please see page 45.

35-36-00930

## seals & pistons

| 8800, 8810, IsoChrom, P-Series | | OEM # |
|---|---|---|
| 35-36-00930 | OPTI-SEAL UHMW-PE* Piston Seal | A2962-010 |
| 35-36-00931 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 35-36-00938 | ITB PTFE** Piston Seal | A2962-010 |
| 35-36-00939 | ITB PTFE** Piston Seal, 10/Pk | |
| 35-36-00916 | Back-Up Seal, PCTFE | A4848-010 |
| 35-36-00917 | Back-Up Seal, PCTFE, 10/Pk | |
| 35-36-00918 | OPTI-SEAL UHMW-PE* Flush Seal | A2963-010 |
| 35-36-00919 | OPTI-SEAL UHMW-PE* Flush Seal, 10/Pk | |
| 35-36-00920 | ITB PTFE** Flush Seal | A2963-010 |
| 35-36-00921 | ITB PTFE** Flush Seal, 10/Pk | |
| 35-34-00915 | Sapphire Piston | A3102-010 |

35-36-00938

35-36-00916

35-36-00918

35-36-00920

| 8700, 8700XR, 8750 | | OEM # |
|---|---|---|
| 35-36-00934 | OPTI-SEAL UHMW-PE* Piston Seal | A1703-020 |
| 35-36-00935 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 35-36-00936 | ITB PTFE** Piston Seal | A1703-020 |
| 35-36-00937 | ITB PTFE** Piston Seal, 10/Pk | |

35-34-00915

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

35-36-00934

## lamps

| Thermo: Spectra-Physics | | OEM # |
|---|---|---|
| 35-32-01333 | Deuterium Lamp, Spectra-Physics Focus, 100, 200, UV-100, -150, -200, -100, 2000, 3000, CE Series | 9551-0023 |

35-36-00936

# varian, gilson / rainin

## opti-max® check valves

### 5, 10 & 25 mL S/SC Heads (Gilson, Rainin, ProStar 210/215, HP, HPX, HPXL, SD 200/300)

| | | OEM # |
|---|---|---|
| 26-56-00638 | OPTI-MAX Inlet Housing & Cartridge | R007101616, R007101678 |
| 26-56-00647 | OPTI-MAX Outlet Housing & Cartridge | R007101617, R007101679 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |



INLET

OUTLET

**OPTI-MAX** for Gilson/Rainin

### 2010

| | | OEM # |
|---|---|---|
| 38-56-01038 | OPTI-MAX Inlet Housing & Cartridge | 00-997261-09 |
| 38-56-01043 | OPTI-MAX Outlet Housing & Cartridge | 00-997261-10 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |



INLET

OUTLET

2010 for Varian

### 2510

| | | OEM # |
|---|---|---|
| 38-56-01544 | OPTI-MAX Inlet Housing & Cartridge | 00-997554-19 |
| 38-56-01546 | OPTI-MAX Outlet Housing & Cartridge | 00-997554-18 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |



INLET

OUTLET

2510 for Varian

### 9000 Star, 9010, 9012, PROSTAR 220, 230, 240

| | | OEM # |
|---|---|---|
| 38-56-01067 | OPTI-MAX Outlet Housing & Cartridge | 03-919465-90 |
| 10-56-02004 | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | |



OUTLET

38-56-01067
**OPTI-MAX** for Varian

**OPTIONS:** Stainless steel/ceramic OPTI-MAX cartridges are listed above. For other options, please see page 45.

## seals & pistons

### 10mL S/SC Heads (Gilson, Rainin, HP, HPX, HPXL, SD 200/300)

| | | OEM # |
|---|---|---|
| 26-36-00632 | OPTI-SEAL UHMW PE* Piston Seal | 5463125895, R007101637 |
| 26-36-00633 | OPTI-SEAL UHMW PE* Piston Seal, 10/Pk | |
| 26-36-00630 | ITB PTFE** Piston Seal | 5463125095, R007101636 |
| 26-36-00631 | ITB PTFE** Piston Seal, 10/Pk | |
| 26-34-00624 | Piston, 10 mL S/SC Head | 3650009, R007101658 |



26-36-00632



26-36-00630



26-34-00624

### 5mL S/SC Heads (Gilson, Rainin, HP, HPX, HPXL, SD 200/300)

| | | OEM # |
|---|---|---|
| 26-36-00634 | OPTI-SEAL UHMW-PE* Piston Seal | 5463088863, R007101634 |
| 26-36-00635 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 26-36-00636 | ITB PTFE** Piston Seal | 5463088063, R007101633 |
| 26-36-00637 | ITB PTFE** Piston Seal, 10/Pk | |
| 26-34-00625 | Piston, 5 mL SC Head | 3650008, R007101657 |
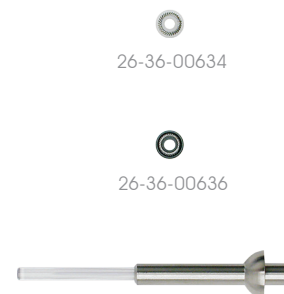
*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend



26-36-00634



26-36-00636



26-34-00625

replacement parts

# varian, gilson / rainin (continued)

38-36-01000

38-36-01002

38-34-00999

38-36-01555

## seals & pistons cont.

| ProStar 210/215 (10 mL Heads) | | OEM # |
|---|---|---|
| 38-36-00632 | OPTI-SEAL UHMW-PE* Piston Seal | R007101637 |
| 38-36-00633 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 38-36-00630 | ITB PTFE** Piston Seal | R007101636 |
| 38-36-00631 | ITB PTFE** Piston Seal, 10/Pack | |
| 38-34-00624 | Sapphire Piston, 10 mL Head | R007101658 |

| ProStar 210/215 (5 mL Heads) | | OEM # |
|---|---|---|
| 38-36-00634 | OPTI-SEAL UHMW-PE* Piston Seal | R007101634 |
| 38-36-00635 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 38-36-00636 | ITB PTFE** Piston Seal | R007101633 |
| 38-36-00637 | ITB PTFE** Piston Seal, 10/Pk | |
| 38-34-00625 | Sapphire Piston, 5 mL Head | R007101657 |

| 2010, 2510 | | OEM # |
|---|---|---|
| 38-36-01000 | OPTI-SEAL UHMW-PE* Piston Seal | 00-997261-37 |
| 38-36-01001 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 38-36-01002 | ITB PTFE** Piston Seal | 00-997261-37 |
| 38-36-01003 | ITB PTFE** Piston Seal, 10/Pk | |
| 38-34-00999 | Sapphire Piston | 00-997261-08 |

38-36-01553

38-34-01342

| 9000 Star, 9010, 9012, 9020, 220, 230, 240 | | OEM # |
|---|---|---|
| 38-36-01555 | OPTI-SEAL UHMW-PE* Piston Seal | 03-919397-00 |
| 38-36-01556 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 38-36-01553 | ITB PTFE** Piston Seal | 03-919397-00 |
| 38-36-01554 | ITB PTFE** Piston Seal, 10/Pk | |
| 38-34-01342 | Sapphire Piston | 03-919180-00, 03-919102-90 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

## lamps

26-32-01295

38-32-01637

| Gilson / Rainin Models | | OEM # |
|---|---|---|
| 26-32-01295 | Deuterium Lamp, Gilson/Rainin 112 | |
| 26-32-03671 | Deuterium Lamp, Gilson/Rainin 115, 116, 117, 118, 119, 151, 152, 155, 156 | 100326 |
| 26-32-03069 | Deuterium Lamp, Gilson/Rainin 170 DAD | 2140-0590 |

| Varian Models | | OEM # |
|---|---|---|
| 38-32-01637 | Deuterium Lamp, Varian 2050, 2550, 5500 | |
| 38-32-03673 | Deuterium Lamp, Varian Prostar 330 DAD | 0393570502 |
| 38-32-02831 | DoubleLife™ Deuterium Lamp, Vista 5000-5500, UV-50, -100, -200, -9050 | 0391615691 |
| 38-32-02081 | Deuterium Lamp, Varian Prostar 340, 345, U-VC, UV-DII, UV-M, UVDII, UV | R000088515 |
| 38-32-03654 | Deuterium Lamp, Varian Prostar 325, 335 | |
| 38-32-04022 | Xenon Lamp, Varian Prostar 363 | 392613102 |

# waters

## opti-max check valves

### 2690, 2695, 2790, 2795, Alliance*

| | | OEM # |
|---|---|---|
| **39-46-01949** | OPTI-MAX Inlet Housing & Cartridge | WAT027112, 700002332 |
| **10-46-02004** | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | WAT270941, 700002761 |

*2690/Alliance Systems have inlet check valves only - outlets are not required.
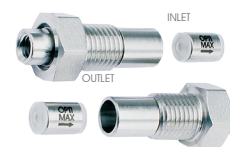


2690/Alliance

### 100 µL Head Systems
(M45/45G, M501, 510, 515, 590, 600/600E, 610, 6K/6KA, 1515, 1525)

| | | OEM # |
|---|---|---|
| **39-56-01251** | OPTI-MAX Inlet Housing & Cartridge | WAT033679, 700000253 |
| **39-56-01256** | OPTI-MAX Outlet Housing & Cartridge | 700000253 |
| **10-56-02004** | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | 700000254, 700002399 |



100 µL Head Systems

### 225 µL Head (#3) Systems
(510, 515, 590, 600/600E, 610, 650, 6K/6KA)

| | | OEM # |
|---|---|---|
| **39-66-01262** | OPTI-MAX Inlet Housing & Cartridge | WAT033679, WAT060307 |
| **10-66-02005** | OPTI-MAX Replacement Cartridges, 3/16" Ball, 2/Pk | |
| **39-56-01256** | OPTI-MAX Outlet Housing & Cartridge | WAT025216 |
| **10-56-02004** | OPTI-MAX Replacement Cartridges, 1/8" Ball, 2/Pk | 700000254, 700002399 |
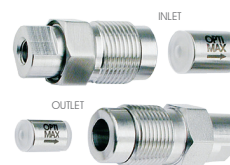


225 µL Head Systems

### 400 µL (#4), 500 µL (#5), & 900 µL (#6) Heads
(Delta Prep 3000, 600/600E, 650)

| | | OEM # |
|---|---|---|
| **39-66-01267** | OPTI-MAX Outlet Housing & Cartridge | WAT033326 WAT033325 |
| **10-66-02005** | OPTI-MAX Replacement Cartridges, 3/16" Ball, 2/Pk | |



400 µL, 500 µL & 900 µL Heads/Systems

### 625/626

| | | OEM # |
|---|---|---|
| **39-48-01907** | OPTI-MAX Inlet Housing & Cartridge, PEEK | WAT030541 |
| **39-48-01909** | OPTI-MAX Outlet Housing & Cartridge, PEEK | WAT030543 |
| **10-48-02004** | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | WAT024120 |
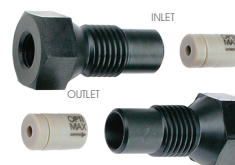


625/626

### 616, 1525 µ (Micro)

| | | OEM # |
|---|---|---|
| **39-46-01949** | OPTI-MAX Inlet Housing & Cartridge | WAT055845 |
| **39-46-01950** | OPTI-MAX Outlet Housing & Cartridge | WAT055845 |
| **10-46-02004** | OPTI-MAX Replacement Cartridges, 1/16" Ball, 2/Pk | WAT270941, 700002761 |
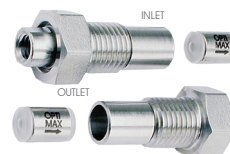
**OPTIONS:** Stainless Steel/Ceramic OPTI-MAX cartridges are listed above (except for the 625/626, which requires PEEK housings and cartridges). For other options, please see page 45.



616

replacement parts

# waters (continued)

## seals & pistons

| Alliance/2690, 2695, 2790, 2795 | | OEM # |
|---|---|---|
| 39-36-02596 | OPTI-SEAL UHMW-PE* Piston Seal | WAT270938 |
| 39-36-02603 | OPTI-SEAL UHMW-PE* Piston Seal, 2/Pk | WAT270938 |
| 39-36-02597 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 39-36-02855 | Face Seals Replacement Kit, 4/Pk | WAT270939 |
| 39-36-02856 | Seal Wash Face Seal | WAT271017 |
| 39-36-02858 | Seal Wash Tube Seals Replacement Kit, 4/Pk | WAT270940 |
| 39-36-02860 | Seal Wash, Piston Seal, Replacement Kit, 2/Pk | WAT271018 |
| 39-34-02180 | Sapphire Piston | WAT270959 |

| 100 µL Head Systems (M45/45G, M501, 510, 590, 600/600E, 610, 6K/6KA, 1515, 1525, 515) | | OEM # |
|---|---|---|
| 39-36-01305 | OPTI-SEAL UHMW-PE* Piston Seal | WAT022934/ WAT022946 |
| 39-36-01306 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 39-36-01206 | ITB PTFE** Piston Seal, Black | WAT026613 |
| 39-36-01207 | ITB PTFE** Piston Seal, Black, 10/Pk | |
| 39-36-01208 | ITB PTFE** Piston Seal, Red | WAT025638 |
| 39-36-01210 | ITB PTFE** Piston Seal, Red, 10/Pk | |
| 39-36-01211 | ITB PTFE** Piston Seal, Tan | WAT025384 |
| 39-36-01213 | ITB PTFE** Piston Seal, Tan, 10/Pk | |
| 39-34-01188 | Piston, 510, 590, 600/600E, 610, 6K/6KA | WAT025656 |
| 39-34-01191 | Piston, M45/45G, M501 | WAT026524 |
| 39-34-01195 | Piston Indicator Rod & Spring Kit, 2/Pk | WAT069583 |
| 39-34-03522 | Sapphire Piston, 1515, 1525, 515 | WAS207069 |

| 225 µL Head (#3) Extended Flow Systems (510, 590, 600/600E, 610, 650, 6K/6KA) | | OEM # |
|---|---|---|
| 39-36-01216 | OPTI-SEAL UHMW-PE* Piston Seal | WAT026644 |
| 39-36-01217 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 39-36-01214 | ITB PTFE** Piston Seal | WAT026644 |
| 39-36-01215 | ITB PTFE** Piston Seal, 10/Pk | |
| 39-34-01193 | Piston | WAT060304 |

| 616, 625/626 | | OEM # |
|---|---|---|
| 39-36-02124 | OPTI-SEAL UHMW-PE* Piston Seal | |
| 39-36-02228 | OPTI-SEAL UHMW-PE* Piston Seal, 10/Pk | |
| 39-36-02127 | ITB PTFE** Piston Seal | WAT031790 |
| 39-36-02229 | ITB PTFE** Piston Seal, 10/Pk | |
| 39-34-01930 | Piston and Spring | WAT031788 |

*UHMW PE - Ultra High Molecular Weight Polyethylene
**ITB PTFE - Improved PTFE Blend

39-36-02596

39-34-02180

39-36-01305

39-36-01206

39-36-01208

39-36-01211

39-34-01188

39-34-01191

39-36-01216

39-36-01214

39-34-01193

39-36-02124

39-36-02127

39-34-01930

## lamps

| Waters | | OEM # |
|---|---|---|
| 39-32-01175 | Mercury Lamp, Waters 440, 441 | WAT097323 |
| 39-32-01178 | Quartz Lamp, Waters 150C | WAT075631 |
| 39-32-01179 | Deuterium Lamp, Waters 484 | WAT080357 |
| 39-32-01294 | Deuterium Lamp, Waters 450 | WAT098946 |
| 39-32-01295 | Deuterium Lamp, Waters 480, 481, 481AZ | WAT099499 |
| 39-32-02823 | Deuterium Lamp, Waters 486 | WAT080678 |
| 39-32-02825 | Deuterium Lamp, Waters 2487, 2488, Alliance | WAS081142 |
| 39-32-02835 | DoubleLife™ Deuterium Lamp, Waters 996, 2996, PDA | WAT052586 |
| 39-32-02688 | Xenon Lamp, Waters 490E | WAT046660 |
| 39-32-02185 | Deuterium Lamp, Waters 996, 2996, PDA | WAT057760 |

Waters
39-32-02825

Waters
39-32-02835

## filtration

| 2690/2695, 2790/2795, 600 | | OEM # |
|---|---|---|
| 39-04-03524 | 2 $\mu$m Filter Insert Assembly - In-Line | WAT088084 |
| 10-04-03151 | Solvent Filter, 1/8", 10 $\mu$L, 4/Pk | WAT025531 |

For additional filtration configurations, see page 31.

39-04-03524
Filter Insert Assembly

10-04-03151
Solvent Filter

## inlet manifold parts & priming accessories

| Part No | Description | OEM # |
|---|---|---|
| 39-31-01293 | Threaded Seal Insert, M45/M45G, M501, 510, 590, 600/600E, 610, 6KA | WAT060015 WAT005098 |
| 39-31-01171 | Optimize Safety Syringe (for pump priming) | WAT027629 |
| 39-31-01147 | Needle with Nut & Ferrule | WAT025559 |
| 39-31-01151 | Priming Syringe Kit | |

**Includes**:
Priming Syringe
Needle
Nut & Ferrule

Ball Plug

Threaded Seal Insert

Ruby Ball

Actuator Seat

Needle with /Nut & Ferrule

Priming Syringe

replacement parts

# waters (continued)

Rebuild your Waters WISP™ Autosampler with these rebuild kits and individual components.

WISP Syringe

## waters WISP™ autosampler
**Rebuild Kits for WISP Autosamplers**

| 39-30-01132 | 715/717 Seal Pack Assembly Rebuild Kit |
|---|---|

**Includes:**

| 39-30-01106 | Needle Wash Frit (4) |
|---|---|
| 39-30-01114 | PTFE Washer (1) |
| 39-30-01115 | Upper Wash Spacer (2) |
| 39-30-01119 | Gasket (4) |
| 39-30-01125 | WISP™ Solvent Seal, long (2) |

| **Replacement Components for WISP Autosamplers** | | OEM # |
|---|---|---|
| 39-30-01093 | 250 µL WISP Syringe | WAT073109 |
| 39-30-01106 | Injector Wash Frit | WAT005106 |
| 39-30-01114 | PTFE Washer | WAT005135 |
| 39-30-01115 | Upper Needle Wash Spacer | WAT005133 |
| 39-30-01125 | WISP Solvent Seal, Long | |

# Team with Optimize to bring your concepts to reality
## We look forward to helping you optimize your laboratory

Use this space to take notes, sketch an idea or design new components for your instruments.
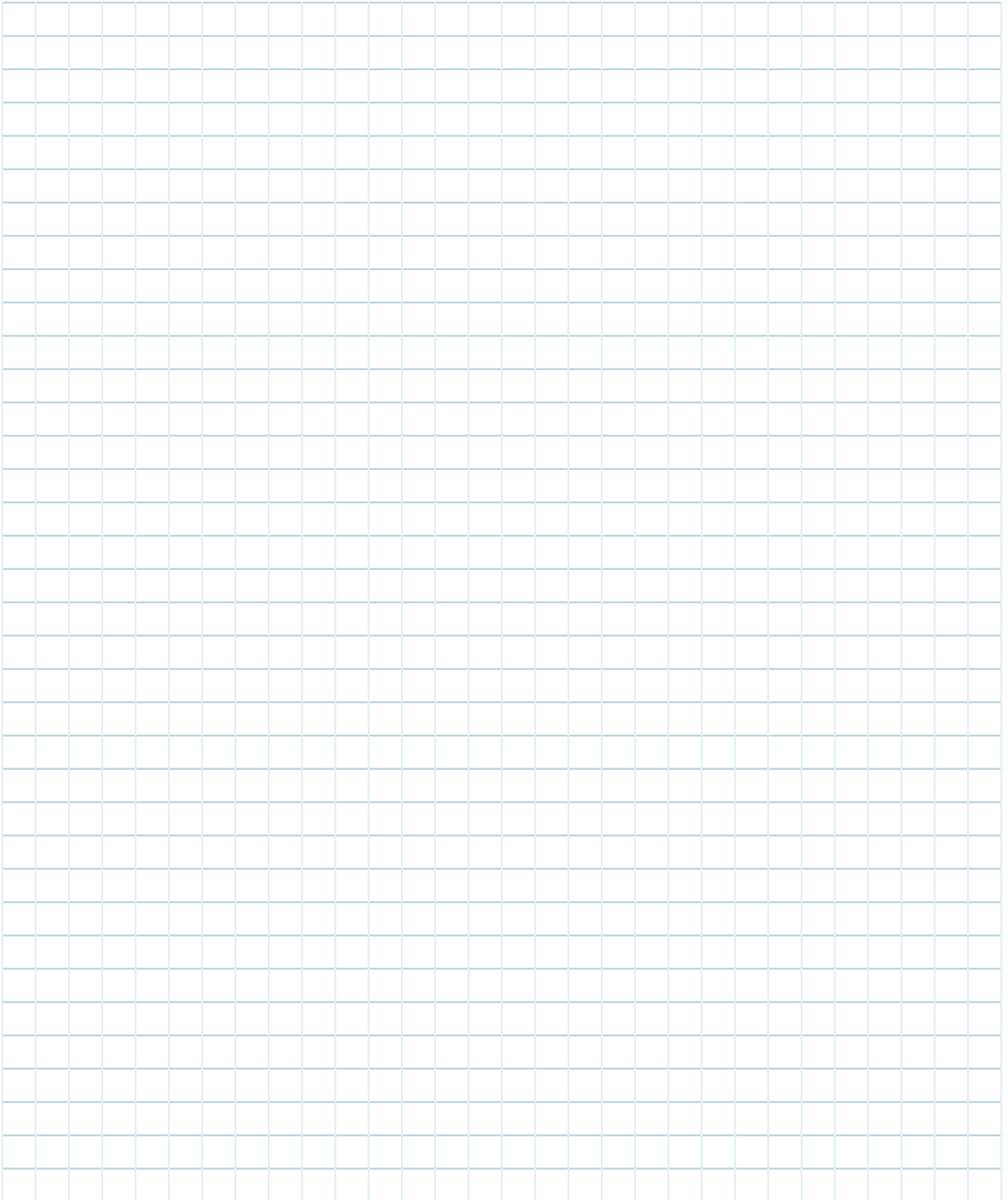
## We believe the best way to predict the future is to invent it.

# back pressure regulators

Optimize flow-through back pressure regulators utilize an active mechanism to maintain steady back pressure across a range of mobile phase viscosities and flow rates. Placing one downstream from your detector will prevent solvent decompression and bubble formation in the flow cell, reducing baseline noise and drift.

Each regulator has an internal volume of 100 $\mu$L and is available in pre-set pressures of 10, 30, 60, 100, or 150 psi.

Place a back pressure regulator downstream from your detector to prevent solvent outgassing and bubble formation in the flow cell, reducing baseline noise and drift.

**Back Pressure Regulators** (Fittings Included)

| | |
|---|---|
| 10-06-00120 | Back Pressure Regulator, 10 psi |
| 10-06-00128 | Back Pressure Regulator, 30 psi |
| 10-06-00129 | Back Pressure Regulator, 60 psi |
| 10-06-00130 | Back Pressure Regulator, 100 psi |
| 10-06-00132 | Back Pressure Regulator, 150 psi |

# opti-lok™
## fittings, tubing & adapters

As complex and advanced as HPLC systems have become, they still need conduits for fluid transfer: tubing, fittings, and adapters. Though these components are simple in design and, with the advent of finger tight fittings, fairly easy to use, their role in the plumbing of an HPLC system is often overlooked until something goes wrong. Anyone who has ever used an HPLC instrument knows the troubles a faulty or failing fitting can cause.

We realize that your time is valuable and should not be wasted worrying about fittings. For this reason, **all Optimize fittings are precision machined in the USA** for optimal quality and thread consistency. The machining process is the best way to ensure tight manufacturing tolerances and minimal product variance.

What does all this mean? It means that every fitting you purchase from Optimize will perform just as well as the last, so you'll have no worries about faulty fittings. This reflects our commitment to providing our customers with the highest quality, best-designed product available.

If you have questions about the machining process and how it differs from injection molding, give us a call. We are always eager to share our fabrication process and unyielding dedication to excellence.
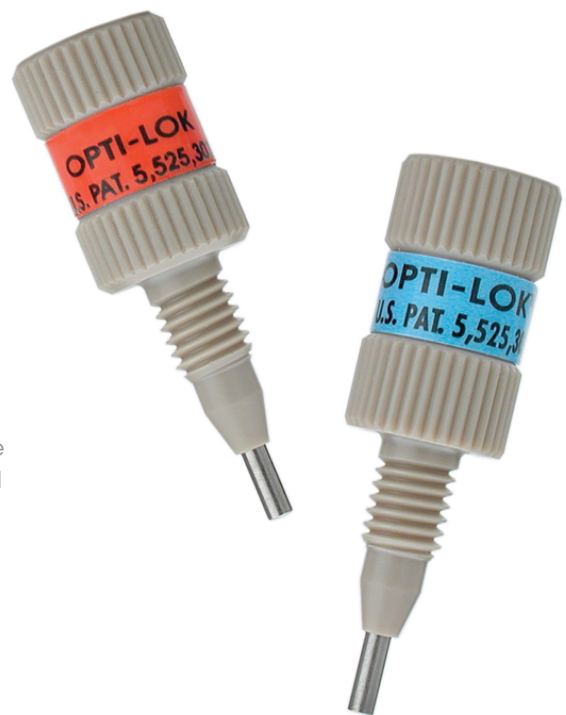
# opti-lok™
## high pressure fittings

Opti-Lok™ fittings are ideal for making high-pressure connections with 1/16" OD tubing. All Optimize fittings are precision machined for optimal quality and thread consistency, and are designed for trouble-free operation at pressures of up to 6,000 psi.

Looking for UHPLC Fittings? See page 11.
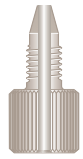
OPTI-LOK I
(PEEK)

### OPTI-LOK I 10-32 Hand-Tight Fittings with Integral Ferrule

| Singles | | 10 Pack | | |
|---------|------------|---------|------------|----------------|
| | 10-20-00258 | | 10-20-00259 | OPTI-LOK I, PCTFE |
| | 10-20-00264 | | 10-20-00265 | OPTI-LOK I, PEEK |
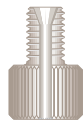
6K Knurled
Head (PEEK)

### OPTI-LOK 6K 10-32 Nuts & Ferrules

| Singles, Nut Only | | 10 Pack, with Ferrules | | |
|-------------------|------------|------------------------|------------|----------------------------|
| | 10-20-00268 | | 10-20-00270 | Knurled Head, PEEK |
| | 10-20-00271 | | 10-20-00272 | Hex Head, Short, PEEK |
| | 10-20-00275 | | 10-20-00276 | Hex Head, Long, PEEK |
| | 10-20-00273 | | 10-20-00274 | Knurled Head, w/wrench-flat, SS |
| | 10-20-00269 | | 10-20-00518 | Double Tight Ferrule, PEEK |

6K Hex Head,
Short (PEEK)

### 10-32 Couplers with 1/16" OD x .006" ID x 6cm SS Tubing

| | |
|-------------|----------------|
| 10-20-00263 | Coupler, PCTFE |
| 10-20-00266 | Coupler, PEEK |

6K Knurled
Head (SS)

Ferrule       Double
(PEEK)        Tight
              Ferrule
              (PEEK)
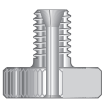
### Universal 10-32 Nuts & Ferrules for 1/16" OD Tubing

| | |
|-------------|----------------------------------------|
| 10-24-00367 | Universal Nut, SS |
| 10-24-00376 | Universal SS Nuts with SS Ferrules, 10/Pk |
| 10-24-00369 | Universal Ferrule, SS |
| 10-24-00370 | Universal Ferrule, PEEK |

Universal
Nut (SS)

### 10-32 Unions for 1/16" OD Tubing

| | |
|-------------|---------------------------------------------------|
| 10-20-00261 | PEEK Union, .010" Thru |
| 10-20-00262 | PEEK Union, .020" Thru |
| 10-24-00375 | Universal Union, with Nuts & Ferrules, 010" Thru, SS |
| 10-24-00373 | Universal Union, with Nuts & Ferrules, 020" Thru, SS |
| 10-24-00371 | Universal Union, with Nuts & Ferrules, 030" Thru, SS |
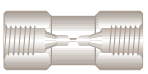
Union (PEEK)

### 10-32 Tees for 1/16" OD Tubing

| | |
|-------------|-------------------------|
| 10-20-00287 | Tee, .020" Thru, PEEK |

Tee (PEEK)

### 10-32 OPTI-LOK Plugs

| Singles | | 10 Pack | | |
|---------|------------|---------|------------|--------------------|
| | 10-20-00251 | | 10-20-00253 | Plug, White Acetal |
| | 10-20-00255 | | 10-20-00256 | Plug, PEEK |

Plug (White Acetal)

# opti-lok™
## low pressure fittings

Opti-Lok™ LP Fittings are an excellent choice for making low-pressure connections into 1/4-28 ports. Connections to flat-bottomed ports can be made using Opti-Lok flat-bottomed ferrules for 1/16" or 1/8" tubing, without the need for pre-flanged tubing ends. Opti-Lok LP fittings are precision machined to deliver leak-free, zero-dead-volume connections every time. We also offer 1/4-28 unions in various through-hole sizes for joining flat-bottom fittings together.

### OPTI-LOK LP 1/4-28 Nuts & Ferrules for 1/16" OD Tubing

| | | | |
|---|---|---|---|
| 10-21-00290 | Nut, PEEK | 10-21-00293 | Nut, White Acetal |
| 10-21-00292 | Nut, ETFE | 10-21-00299 | Nut, (PTFE) |
| 10-21-00291 | Nut, Long, PEEK | 10-21-00296 | Ferrule, PEEK |
| 10-21-00295 | Ferrule, ETFE | 10-21-00300 | Ferrule, (PTFE) |
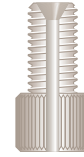
### OPTI-LOK LP 1/4-28 Nuts & Ferrules for .100" OD Tubing

| | | | |
|---|---|---|---|
| 10-21-00283 | Nut, White Acetal | 10-21-00284 | Nut, PEEK |
| 10-21-00281 | Ferrule, ETFE | | |

### OPTI-LOK LP 1/4-28 Nuts & Ferrules for 1/8" OD Tubing

| | | | |
|---|---|---|---|
| 10-21-00307 | Nut, PEEK | 10-21-00305 | Nut, Black Acetal |
| 10-21-00310 | Nut, White Acetal | 10-21-00306 | Nut, PCTFE |
| 10-21-00309 | Nut, ETFE | 10-21-00317 | Nut, (PTFE) |
| 10-21-00308 | Nut, long, PEEK | 10-21-00313 | Ferrule, PEEK |
| 10-21-00312 | Ferrule, ETFE | 10-21-00318 | Ferrule, (PTFE) |
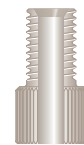
### 1/4-28 Unions

| | | | |
|---|---|---|---|
| 10-21-00322 | Union, Polypropylene | 10-21-00323 | Union, Natural PEEK |

### 1/4-28 Peek Unions, Knurled with Wrench Flats

| | | | |
|---|---|---|---|
| 10-21-00341 | Union, .010" Thru, PEEK | 10-21-00342 | Union, .020" Thru, PEEK |
| 10-21-00343 | Union, .050" Thru, PEEK | | |
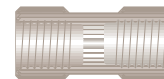
### 1/4-28 Tees for 1/16" OD Tubing

| | |
|---|---|
| 10-20-00286 | Tee, .062" Thru, PEEK |

### OPTI-LOK LP 1/4-28 Plugs

| | | | |
|---|---|---|---|
| 10-21-01292 | Plug, White Acetal | 10-21-00326 | Plug, (PTFE) |


Nut (PEEK)


Ferrule (PEEK)


Nut (PEEK)


Union (PEEK)


Union (PEEK)


Plug (white Acetal)

# opti-lok™ | m6 metric nuts & ferrules

### OPTI-LOK 6K PEEK Metric Fittings for 1/16" OD Tubing

| | | | |
|---|---|---|---|
| 10-22-00328 | Nut, Knurled Head w/Hex, PEEK | 10-20-00269 | Double Tight Ferrule, PEEK |
| 10-22-00329 | Nut, Knurled Head w/Hex & Ferrules, 10/Pk | | |

### OPTI-LOK LP Metric Fittings for 1/16" OD Tubing

| | | | |
|---|---|---|---|
| 10-22-00297 | Nut, White Acetal | 10-22-00301 | Ferrule, Short, ETFE |
| 10-22-00303 | Ferrule, PPS | | |
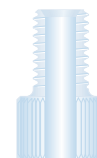
### OPTI-LOK LP Metric Fittings for 1/8" OD Tubing
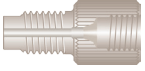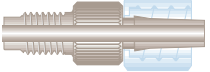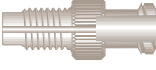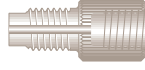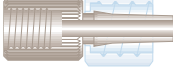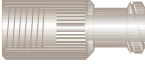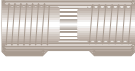
| | | | |
|---|---|---|---|
| 10-22-00314 | Nut, White Acetal | 10-22-00315 | Nut, Black Acetal |
| 10-22-00319 | Ferrule, Short, ETFE | | |


Double Tight Ferrule (PEEK)


Nut (White Acetal)
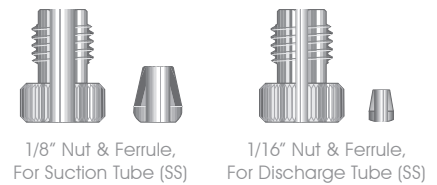

Ferrule (PPS)

# opti-lok™
## adapters

Opti-Lok™ Adapters offer maximum flexibility for making connections between your 1/4-28, M6 (Metric), Luer and 10-32 fittings and ports. They are available in a useful variety of thread-type combinations, all precision machined from PEEK.

| | Part Number | Description | | Adapter |
|---|---|---|---|---|
| ¼-28 TO 10-32 | 10-23-00350 | 1/4-28 Male | 10-32 Parker Female | |
| ¼-28 TO LUER | 10-23-00352 | 1/4-28 Male | Luer Male | |
| | 10-23-00353 | 1/4-28 Male | Luer Female | |
| ¼-28 TO M6 | 10-23-00351 | 1/4-28 Male | M6 (Metric) Female | |
| ¼-28 TO LUER | 10-23-00347 | 1/4-28 Female | Luer Male | |
| | 10-23-00349 | 1/4-28 Female | Luer Female | |
| ¼-28 TO M6 | 10-23-00346 | 1/4-28 Female | M6 Female, (with Web) | |
| ¼-28 TO 10-32 | 10-23-00335 | 1/4-28 Female | 10-32 Parker Female | |
| M6 TO 10-32 | 10-23-00357 | M6 (Metric) Male | 10-32 Parker Female | |
| | 10-23-00355 | M6 (Metric) Female | 10-32 Parker Female | |
| M6 TO LUER | 10-23-00363 | M6 (Metric) Female | Luer Female | |
| LUER TO 10-32 | 10-23-00358 | 10-32 Parker Female | Luer Female | |
| | 10-23-00359 | 10-32 Parker Female | Luer Male | |

# oem specific fittings

### LDC-Style 5/16-24 Fittings

| | |
|---|---|
| 31-24-00735 | 1/8" Nut & Ferrule for Suction Tube, SS |
| 31-24-00736 | 1/16" Nut & Ferrule for Discharge Tube, SS |



1/8" Nut & Ferrule,
For Suction Tube (SS)

1/16" Nut & Ferrule,
For Discharge Tube (SS)

### SSI-Style 1/4-28 Fittings
### for 1/16" OD Tubing

| | |
|---|---|
| 10-20-00330 | 6K Nut, PEEK |
| 10-20-00331 | 6K Nut & Ferrules, PEEK, 10/Pk |
| 10-20-00269 | Double Tight Ferrule, PEEK |



6K Nut (PEEK)

Double Tight
Ferrule (PEEK)
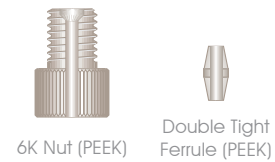
### Parker-Style 10-32 Fittings
### for 1/16" OD Tubing

| | |
|---|---|
| 40-24-01275 | Nut, SS |
| 40-24-01276 | Nuts & Ferrules, SS, 10/Pk |
| 40-24-01291 | Ferrule, SS |
| 40-24-01290 | Ferrule, PEEK |
| 40-24-01271 | Union with Nuts & Ferrules, SS, .010" Thru |
| 40-24-01273 | Union with Nuts & Ferrules, SS, .020" Thru |



Nut (SS)

Ferrule
(PEEK)

Union (SS)
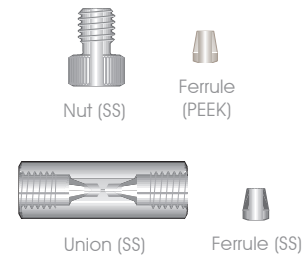
Ferrule (SS)

### Genuine Valco 10-32 Fittings
### for 1/16" OD Tubing

| | |
|---|---|
| 41-24-01277 | Nut, SS |
| 41-24-01281 | Nuts & Ferrules, SS, 10/Pk |
| 41-24-01278 | Nut, Long, SS |
| 41-24-01279 | Ferrule, SS |
| 41-24-01283 | Union with Nuts & Ferrules, SS, .010" Thru |
| 41-24-01280 | Union with Nuts & Ferrules, SS, .030" Thru |
| 41-24-01282 | Ferrule, PEEK |



Nut (SS)

Nut, Long (SS)

Ferrule (SS)

Union (SS)
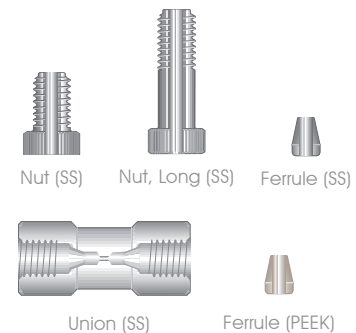
Ferrule (PEEK)

### Waters-Style 10-32 Fittings
### for 1/16" OD Tubing

| | | OEM # |
|---|---|---|
| 39-24-01090 | Compression Screw, SS | WAT005070 |
| 39-24-01091 | Compression Screws & Ferrules, SS, 10/Pk | WAT025604 |
| 39-24-01291 | Ferrule, SS, single | WAT005063 |
| 39-24-01290 | Ferrule, PEEK | WAT021817 |
| 39-24-01088 | Union w/ Nuts & Ferrules, SS | WAT097332 |



Ferrule (SS)

Compression
Screw (SS)

Union (SS)

Ferrule (PEEK)
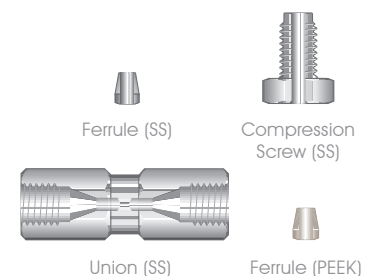
3/16" OD
PTFE

1/8" OD
PTFE

.100" OD
PTFE

1/16" OD
PTFE

1/8" OD
ETFE

1/16" OD
ETFE

# tubing

## (ptfe) tubing

### 1/16" Outside Diameter PTFE Tubing

| | |
|---|---|
| 10-15-00214 | 1/16" OD x .010" ID x 10 ft |
| 10-15-00215 | 1/16" OD x .010" ID x 50 ft |
| 10-15-00220 | 1/16" OD x .020" ID x 10 ft |
| 10-15-00221 | 1/16" OD x .020" ID x 50 ft |
| 10-15-00226 | 1/16" OD x .030" ID x 10 ft |
| 10-15-00227 | 1/16" OD x .030" ID x 50 ft |
| 10-15-00232 | 1/16" OD x .040" ID x 10 ft |
| 10-15-00233 | 1/16" OD x .040" ID x 50 ft |

### .100" Outside Diameter PTFE Tubing

| | |
|---|---|
| 10-15-00205 | .100" OD x .040" ID x 10 ft |
| 10-15-00206 | .100" OD x .040" ID x 50 ft |

### 1/8" Outside Diameter PTFE Tubing

| | |
|---|---|
| 10-15-00238 | 1/8" OD x .062" ID x 10 ft |
| 10-15-00240 | 1/8" OD x .062" ID x 50 ft |

### 3/16" Outside Diameter PTFE Tubing

| | |
|---|---|
| 10-15-00243 | 3/16" OD x .125" ID x 10 ft |
| 10-15-00245 | 3/16" OD x .125" ID x 50 ft |

## (etfe) tubing

### 1/16" Outside Diameter ETFE Tubing

| | |
|---|---|
| 10-14-00193 | 1/16" OD x .010" ID x 10 ft |
| 10-14-00194 | 1/16" OD x .010" ID x 50 ft |
| 10-14-00196 | 1/16" OD x .020" ID x 10 ft |
| 10-14-00197 | 1/16" OD x .020" ID x 50 ft |
| 10-14-00199 | 1/16" OD x .030" ID x 10 ft |
| 10-14-00200 | 1/16" OD x .030" ID x 50 ft |

### 1/8" Outside Diameter ETFE Tubing

| | |
|---|---|
| 10-14-00202 | 1/8" OD x .062" ID x 10 ft |
| 10-14-00203 | 1/8" OD x .062" ID x 50 ft |

# tubing

## optipeek™ tubing

**1/16" Outside Diameter PEEK Tubing**

| | |
|---|---|
| **10-13-00168** | 1/16" OD x .006" ID x 10 ft |
| **10-13-00170** | 1/16" OD x .006" ID x 50 ft |
| **10-13-00175** | 1/16" OD x .010" ID x 10 ft |
| **10-13-00177** | 1/16" OD x .010" ID x 50 ft |
| **10-13-00183** | 1/16" OD x .020" ID x 10 ft |
| **10-13-00186** | 1/16" OD x .020" ID x 50 ft |
| **10-13-00187** | 1/16" OD x .030" ID x 10 ft |
| **10-13-00191** | 1/16" OD x .030" ID x 50 ft |
| **10-13-00179** | 1/16" OD x .040" ID x 10 ft |
| **10-13-00181** | 1/16" OD x .040" ID x 50 ft |

## stainless steel pre-cut tubing

**1/16" Outside Diameter Stainless Steel Tubing**

| | |
|---|---|
| **10-12-00145** | 1/16" OD x .006" ID x 6 cm |
| **10-12-00143** | 1/16" OD x .006" ID x 10 cm |
| **10-12-00144** | 1/16" OD x .006" ID x 20 cm |
| **10-12-00141** | 1/16" OD x .006" ID x 10 ft |
| **10-12-00151** | 1/16" OD x .010" ID x 6 cm |
| **10-12-00148** | 1/16" OD x .010" ID x 10 cm |
| **10-12-00149** | 1/16" OD x .010" ID x 20 cm |
| **10-12-00150** | 1/16" OD x .010" ID x 30 cm |
| **10-12-00146** | 1/16" OD x .010" ID x 10 ft |
| **10-12-00157** | 1/16" OD x .020" ID x 6 cm |
| **10-12-00154** | 1/16" OD x .020" ID x 10 cm |
| **10-12-00155** | 1/16" OD x .020" ID x 20 cm |
| **10-12-00156** | 1/16" OD x .020" ID x 30 cm |
| **10-12-00152** | 1/16" OD x .020" ID x 10 ft |
| **10-12-00162** | 1/16" OD x .030" ID x 6 cm |
| **10-12-00160** | 1/16" OD x .030" ID x 10 cm |
| **10-12-00161** | 1/16" OD x .030" ID x 20 cm |
| **10-12-00158** | 1/16" OD x .030" ID x 10 ft |
| **10-12-00167** | 1/16" OD x .040" ID x 6 cm |
| **10-12-00165** | 1/16" OD x .040" ID x 10 cm |
| **10-12-00166** | 1/16" OD x .040" ID x 20 cm |
| **10-12-00163** | 1/16" OD x .040" ID x 10 ft |

## tubing cutters

| | |
|---|---|
| **10-10-00139** | Plastic Tubing Cutter |
| **10-10-00140** | Stainless Steel Tubing Cutter |

Plastic Tubing Cutter

1/16" OD PEEK

1/16" OD Stainless Steel

Stainless Steel Tube Cutter

Optimize stainless steel tubing is pre-cut and electropolished to ensure square, burr-free ends, and is passivated prior to shipment.

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OPTI-PAK® Trap Columns: U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954
OPTI-LOK™ Adjustable Adapter: U.S. Pat. No.s 5,525,303; 5,730,943; 5,911,954
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# product index

## notes

# optimizetechnologies
## Please join us in supporting a place for children to heal

## Optimize Technologies supports the Children's Center

A private, non-profit medical assessment center, the Children's Center supports children and families in cases of suspected physical abuse, sexual abuse, neglect, drug endangerment and witness to violence. Specialized evaluations are conducted to confirm and document abuse a child may have suffered, and include a complete medical exam, child forensic interview, treatment planning and family support. The results assure the child's safety, allow professionals to plan appropriate prevention and intervention services and prosecute perpetrators.

## At the Children's Center

· Two-thirds of the children served at the Children's Center are girls and half are younger than seven years old.

· Seventy percent of child abuse assessments provided by the Children's Center are for suspected sexual assault of children.

· The Children's Center provides child abuse assessments for approximately 300 children every year and must turn away others due to limited capacity.

## How You Can Help

Child abuse takes a toll on a child's physical, mental and emotional development. The Children's Center is committed to reducing the incidence and impact of child abuse. Please take a moment to learn more about the Children's Center at **www.childrenscenter.cc.**

optimize