

**VAPLOCK™**  
CLOSED SYSTEMS

## CLOSED SYSTEMS

FOR SOLVENT CONTAINMENT

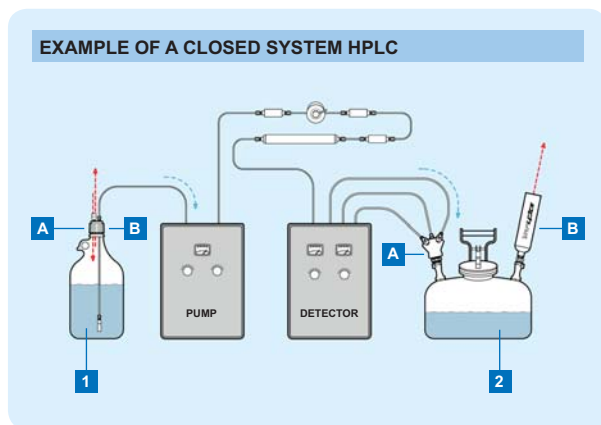
VAPOR AND SPILL CONTROL FOR LABORATORY SOLVENTS



## CLOSED SYSTEMS INTRODUCTION

Through leaks, spills, and ventilation, an "open" solvent-using system will release solvent vapors directly into the laboratory environment. This introduction may be reduced by adding several key components to the typical system. These items are:

- A properly sealed solvent reservoir with ventilation control
- A solvent waste container with secure fluid connections
- A carbon filter to reduce vapors escaping the waste container



1: Solvent Reservoir  
2: Waste Container  
A: Fluid Connections  
B: Air inlet (1) or vent (2)

### 1A SOLVENT RESERVOIR FLUID CONNECTIONS

For a closed system on a bottle, each container first requires a bottle cap with ports to fit the specific tubing sizes. When using caps with threaded ports for fittings, the fittings may be selected and replaced to accommodate different diameters of tubes. Caps with "slip-through" ports (non-threaded holes drilled or molded into a cap) are acceptable, provided the holes fit the tubing sizes securely. Most slip-through caps are made to accommodate 1/8" or 1/16" OD.

### 1B SOLVENT RESERVOIR AIR INLET

In systems where sparging is not employed, to complete the closed system on a bottle each container requires a device to control the bottle cap vent. A closed bottle must function exactly like a coffee travel mug – liquid goes out through one hole, and air comes in through a pinhole to displace the liquid removed. To manage the air flow, the simplest answer is a check valve assembly made to occupy a bottle cap port. The check valve allows air to enter a bottle as the pump moves the liquid phase out to the system. It also minimizes escape of vapors contained in the bottle. Should the bottle ever be exposed to pressure – a result of a rise in lab temperature (over a warm weekend, for example) or a sparging line accidentally connected – to reduce the threat of explosion a check-and-relief valve assembly is also available. The relief function allows pressure to escape while still preserving a "pressure blanket" of 0.5-1 psi in the bottle. Although VapCheck™ units resist many standard solvents, care should be taken to consider the chemical compatibility of a solvent with VapCheck™ materials.

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### 2A WASTE CONTAINER FLUID CONNECTIONS

Many labs are standardizing on Justrite® 2- and 5- gallon HPLC Centura™ waste containers. These safety cans have enough capacity for days or weeks of typical flow, vent automatically at 5 psig if pressurized, and allow users to disengage waste lines and vapor filters quickly during waste collection. Containers are available with either Polypropylene or Stainless Steel quick disconnects. Care should be taken when choosing the disconnect type. For example, at high concentrations the solvent Hexane swells Polypropylene as much as 30%, causing the disconnect to "stick" and restrict fluid flow. Containers and manifolds with stainless steel quick disconnects are advised wherever such chemical compatibility issues may arise; consult a chemical compatibility guide before selecting a container. One should also note that Justrite containers must be grounded while in use and especially while emptying the container, as static electricity has been known to ignite solvent fumes.

For labs which choose not to use Justrite® containers, Vaplock™ products are also available to adapt to standard drum and pail closures, as well as Nalgene® 83B, 53B, and 100-415 carboys. PLEASE NOTE THAT IT IS NOT POSSIBLE TO GROUND DRUM, PAIL, GLASS BOTTLE AND CARBOY (NON-JUSTRITE®) CONTAINERS; THIS MAY RESULT IN A SAFETY HAZARD WITH FLAMMABLE SOLVENTS.

The type and dimension of waste tubing found on an HPLC varies widely, depending on both system and user requirements. Outer and inner diameters range from microns to inches, and tubing material may be hard- or soft-wall plastic, metal, smooth-walled or corrugated. All these lines must be connected to a waste container. Adapting securely, without leaks and vapor release, poses a problem when attempting a closed system. VapLock™ manifolds adapt to tubing sizes up to 1/2" ID or OD (and larger if necessary) and can be stacked to accept additional lines. Most manifold ports permit direct connection of 1/4" or 1/2" threaded NPT fittings.

### 2B WASTE CONTAINER VAPOR VENT

The most significant vapor generator in an HPLC system is the waste can, where solvents draining to the container may volatilize rapidly as solvent entering the container forces vapor into the laboratory. Activated carbon has excellent adsorptive properties for organic solvents. With a Gas Chromatograph, a number of carbon types were tested for vapor breakthrough under a flow of Acetonitrile vapor, one of the more common solvents used in HPLC. After determining the appropriate type, the carbon was similarly tested on other common solvents. The breakthrough data published in this brochure is based on use of 100% concentration of each solvent, at a flow rate of 1 mL per minute at S.T.P. (most analytical HPLCs run at 1-2 mL per minute). Disposal of spent cartridges should be conducted in accordance with local safety codes.

### PURCHASE FROM:

## Apex Chromatography

The complete solution for all your analytical needs

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Fax: (91-40) - 6633 2739; 6631 9699

Email: [pradip@apexchrom.com](mailto:pradip@apexchrom.com)

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## CLOSED SOLVENT SYSTEMS

- Minimize solvent odors entering the lab
- Reduce leaks and spills of reagents and waste
- Ideal for HPLC and other solvent systems

VAPLOCK™ Closed Systems for solvent containment minimizes leaks, spills, and odor escape from solvent waste and supply containers. Use supply kit VK-205 to provide an effective means of sealed solvent delivery, and select from the waste containment kits to collect solvent wastes with minimal release of solvent odors. All Vaplock™ products are designed for ease of use and adaptability, and will conform to a broad array of standard laboratory solvent containers. Choose from the complete kits pictured here, or make your own selection of components from the pages that follow for a more customized closed system solution.



**2-GALLON**  
Polyethylene waste can with  
Polypropylene / EPDM disconnects

**5-GALLON**  
Polyethylene waste can  
with Stainless / PTFE  
disconnects

### SECURE SOLVENT DELIVERY

Use a Vaplock™ Solvent Delivery Kit to minimize release of solvent odors while supplying solvents to your system. A threaded connection for 1/8" OD tubing adapts to an inert PTFE bottle cap on a 2 Liter safety-coated borosilicate bottle, while a 1-way emission control valve allows air to enter the reservoir as solvent is removed. The valve opens at a low 0.07 psi to minimize backpressure. A 10um UHMW Polyethylene solvent filter, five replacement filter elements, Teflon® 1/4-28 plug and five feet of 1/8" OD PTFE tubing are also included. For Reversed Phase solvents only. Please inquire for Normal Phase solutions.



**VK-205** Solvent Delivery Kit

### SOLVENT WASTE CONTAINMENT

Plumb multiple solvent lines securely to a waste container and reduce solvent odor emissions by using a Vaplock™ Waste Containment Kit. The heart of the system is a Justrite® Polyethylene waste can, which includes 2 quick disconnects for ease of use (choose either Polypropylene with EPDM o-rings, or Stainless Steel and Teflon® for more aggressive fluids). A 6-port waste manifold and fittings kit adapt to common HPLC tubing requirements, while a 5-pack of activated carbon and silica filters reduce vapors from the container vent. Antistatic wire grounds the system during use. 1, 2, and 5 gallon container sizes available.



**VK-003** Waste Containment Kit

#### CLOSED SYSTEM KITS

##### SOLVENT DELIVERY KIT

**VK-205** Solvent delivery kit, 2L bottle with accessories

##### WASTE CONTAINMENT KITS

**VK-001** Waste kit, 1-gallon, PP / EPDM quick disconnect

**VK-002** Waste kit, 2-gallon, PP / EPDM quick disconnect

**VK-004** Waste kit, 5-gallon, PP / EPDM quick disconnect

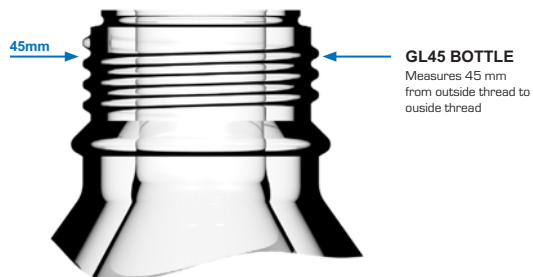
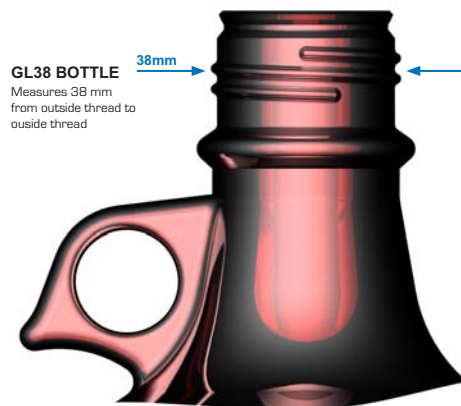
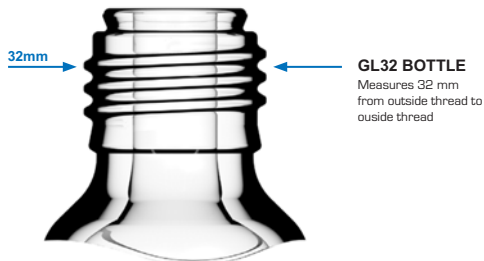
**VK-003** Waste kit, 2-gallon, SS / Teflon® quick disconnect

**VK-005** Waste kit, 5-gallon, SS / Teflon® quick disconnect

## SOLVENT RESERVOIRS

### ■ How to identify common laboratory solvent storage vessels

Although many container types and sizes are available, some of the more commonly used varieties in the laboratory are GL45, GL38 (sometimes known as "38-430"), and GL32 glass bottles. VapLock caps are made to fit these standard sizes. Perhaps the most common reservoir of all, the GL45 lab bottle, is available for purchase. This glassware is manufactured by Schott Duran® and Kontes®, and is available in clear, plastic coated, and pressure-tested versions.



### 1 BAR PRESSURE-TESTED BOTTLES, GL45

<b>BT45-025B</b>	CLEAR, 250ml, pressure-tested
<b>BT45-05B</b>	CLEAR, 500ml, pressure-tested
<b>BT45-1B</b>	CLEAR, 1 Liter, pressure-tested
<b>BT45-1BP</b>	CLEAR 1 Liter, pressure-tested, plastic coated

### GL45 STANDARD LAB BOTTLES

#### 100 ML

<b>BT45-01</b>	CLEAR 100mL
<b>BT45-01P</b>	CLEAR 100mL, plastic safety coated
<b>BT45-01A</b>	AMBER 100mL, non-coated

#### 250 ML

<b>BT45-025</b>	CLEAR 250mL
<b>BT45-025P</b>	CLEAR 250mL, plastic safety coated
<b>BT45-025A</b>	AMBER 250mL, non-coated

#### 500 ML

<b>BT45-05</b>	CLEAR 500mL
<b>BT45-05P</b>	CLEAR 500mL, plastic safety coated
<b>BT45-05A</b>	AMBER 500mL, non-coated

#### 1 LITER

<b>BT45-1</b>	CLEAR 1 Liter
<b>BT45-1P</b>	CLEAR 1 Liter, plastic safety coated
<b>BT45-1A</b>	AMBER 1 Liter, non-coated

#### 2 LITER

<b>BT45-2</b>	CLEAR 2 Liter
<b>BT45-2P</b>	CLEAR 2 Liter, plastic safety coated
<b>BT45-2A</b>	AMBER 2 Liter, non-coated

#### 5 LITER

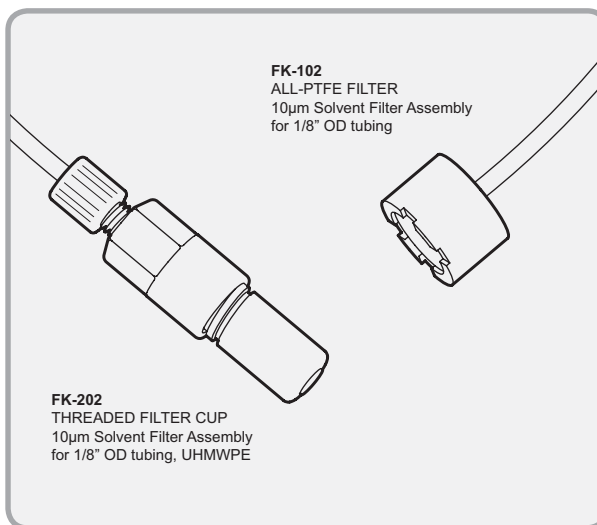
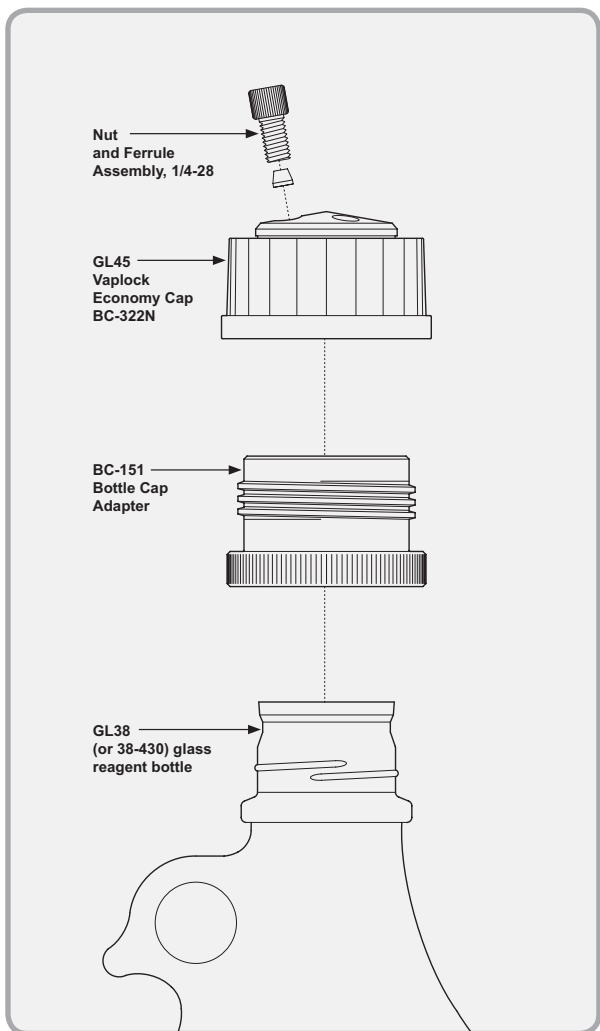
<b>BT45-5</b>	CLEAR 5 Liter
<b>BT45-5P</b>	CLEAR 5 Liter, plastic safety coated
<b>BT45-5A</b>	AMBER 5 Liter, non-coated



## BOTTLE THREAD ADAPTER

- Adapt GL45 caps to fit GL38 solvent bottles
- Polypropylene construction

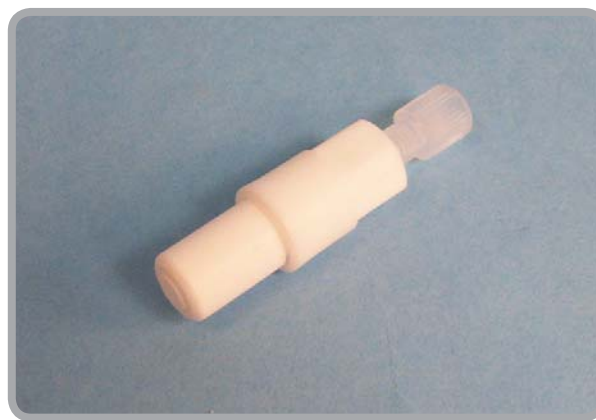
In lab applications where various bottle types are used, there may be occasions when the use of separate bottle caps is inconvenient. Save time and hassle by using the new BC-151 solvent bottle adapter, which will convert Vaplock 'Economy' GL45 bottle caps to standard 38-430 threaded solvent bottles.



## SOLVENT INLET FILTERS

- Filter particulates from the mobile phase
- Various porosities and styles
- Biocompatible polymers

Use these biocompatible filters to remove particulates from a solvent solution before they reach your system. Available in Polyethylene and PTFE, in a variety of porosities.



FK-202 10 micron Threaded UHMWPE filter assembly

### BOTTLE THREAD ADAPTER

BC-151 ADAPTER, GL45 to GL38, Polypropylene

### SOLVENT INLET FILTERS

#### ALL - PTFE FILTERS

FK-101 5 µm all-PTFE filter for 1/8" OD tubing

FK-102 10 µm all-PTFE filter for 1/8" OD tubing

#### THREADED UHMWPE FILTERS

FK-201 10µm UHMWPE filter, for 1/16" OD tubing

FK-202 10µm UHMWPE filter, for 1/8" OD tubing

FK-200V Replacement threaded filters, 5-pack

FK-200C Replacement threaded filters, 100-pack

## 'Q' SERIES CAPS

- With 1/4-28 threaded ports
- Optional valved ports
- Anti-twist design - no twisted tubing!
- Solid PTFE body

'Q' series caps offer the simplest way to connect via 1/4-28 ports and fittings. Each port has a robust Stainless Steel thread insert to enable repeated connect and disconnect. 1/8" OD supply tubing may be press-fit into the underside of each cap. Easy operation on/off valves on each fluid line are an optional extra.

## 'Q' SERIES STANDARD CAP

- With 1/4-28 threaded ports

This compact design can be used where head space is limited. 1.8mm holes through the PTFE cap body allow 1/16" OD tubing to pass straight through into the bottle.



## 'Q' SERIES VALVED CAPS

- 1/4-28 ports include on/off valves
- PTFE body with PCTFE valve rotors

Easily control the flow of liquid into and out of the bottle with the integrated valves. Each fluid line can be switched on or off independently.



**BC-109**  
GL45, (2) 1/4-28



**BC-106**  
GL38, (2) 1/4-28



**BC-110**  
GL45, (3) 1/4-28



**BC-107**  
GL38, (3) 1/4-28



**BC-111**  
GL45, (4) 1/4-28



**BC-108**  
GL38, (4) 1/4-28



**BC-116**  
GL45, 2-valved  
1/4-28



**BC-113**  
GL38, 2-valved  
1/4-28



**BC-117**  
GL45, 3-valved  
1/4-28



**BC-114**  
GL38, 3-valved  
1/4-28



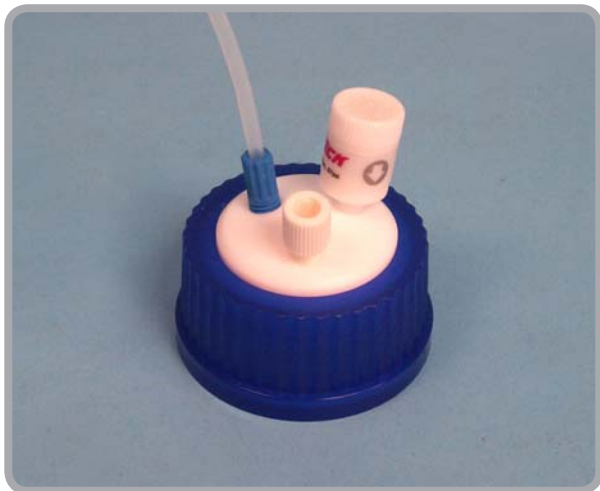
**BC-118**  
GL45, 4-valved  
1/4-28



**BC-115**  
GL38, 4-valved  
1/4-28

### 'Q' SERIES BOTTLE CAPS

<b>BC-106</b>	Q-series cap, 38-430; 2 lines
<b>BC-107</b>	Q-series cap, 38-430; 3 lines
<b>BC-108</b>	Q-series cap, 38-430; 4 lines
<b>BC-109</b>	Q-series cap, GL45; 2 lines
<b>BC-110</b>	Q-series cap, GL45; 3 lines
<b>BC-111</b>	Q-series cap, GL45; 4 lines
<b>BC-112</b>	Q-series cap, GL32; 3 lines w /valves
<b>BC-113</b>	Q-series cap, 38-430; 2 lines w /valves
<b>BC-114</b>	Q-series cap, 38-430; 3 lines w /valves
<b>BC-115</b>	Q-series cap, 38-430; 4 lines w /valves
<b>BC-116</b>	Q-series cap, GL45; 2 lines w /valves
<b>BC-117</b>	Q-series cap, GL45; 3 lines w /valves
<b>BC-118</b>	Q-series cap, GL45; 4 lines w /valves



**BC-322N** GL45 3-port cap shown with DV-115 check valve, AQ-115 fitting kit, and plug

## THREADED CAPS FOR NALGENE 38-430 BOTTLES

- PTFE body with Polypropylene cap collar
- Expanded PTFE sealing gasket
- 1/4-28 threaded ports

Although similar to a standard GL38 thread, Nalgene 38-430 bottles require a slightly different bottle cap design for a proper seal. Caps include PTFE insert and gasket with Polypropylene collar and angled 1/4-28 ports.



**BC-340**  
3-Port cap for Nalgene 38-430 bottles



**BC-440**  
4-Port cap for Nalgene 38-430 bottles

## ECONOMY CAPS FOR GLASS BOTTLES

- PTFE body with PE or PP cap collar
- Expanded PTFE sealing gasket
- 1/4-28 threaded ports

Priced conservatively, these caps for GL38 and GL45 glass bottles have 1/4-28 threaded ports in a PTFE insert, with expanded PTFE gaskets. Each port has a through-hole for 1/8" OD tubing; push tubing through the cap to supply your system. All ports are machined at a 10 degree angle to simplify threading of tube connections.



**BC-220N**  
GL38 Economy Cap, 2-port



**BC-222N**  
GL45 Economy Cap, 2-port



**BC-320**  
GL38 Economy Cap, 3-port



**BC-322N**  
GL45 Economy Cap, 3-port



**BC-420**  
GL38 Economy Cap, 4-port



**BC-422**  
GL45 Economy Cap, 4-port

## NON-STANDARD CAPS

- Caps with 5/16-24 threaded ports
- Caps for 1/4" OD tubing
- Custom bottle caps and assemblies

We also design and manufacture bottle caps for custom applications. Below are several such designs which we now offer as part of our general product portfolio.



**BCS-209**  
GL45 2-port cap for 1/4" OD tubing, non-threaded ports



**SV-129**  
GL45 3-port cap with (2) 5/16-24 ports for 4.0mm or 3/16" OD tubing, and (1) 1/4-28 port

### ECONOMY CAPS FOR GLASS BOTTLES

<b>BC-220N</b>	Economy cap, GL38, 2-port 1/4-28
<b>BC-222N</b>	Economy cap, GL45, 2-port 1/4-28
<b>BC-320</b>	Economy cap, GL38, 3-port 1/4-28
<b>BC-322N</b>	Economy cap, GL45, 3-port 1/4-28
<b>BC-420</b>	Economy cap, GL38, 4-port 1/4-28
<b>BC-422</b>	Economy cap, GL45, 4-port 1/4-28

### CAPS FOR NALGENE 38-430 BOTTLES

<b>BC-240</b>	Nalgene 38-430, 2-port 1/4-28
<b>BC-340</b>	Nalgene 38-430, 3-port 1/4-28
<b>BC-440</b>	Nalgene 38-430, 4-port 1/4-28

### NON-STANDARD CAPS

<b>BCS-202</b>	GL38 cap with (2) slip-through ports for 1/4" OD tube
<b>BCS-209</b>	GL45 cap with (2) slip-through ports for 1/4" OD tube
<b>SV-129</b>	GL45 cap with (2) 5/16-24 and (1) 1/4-28 port
<b>SV-149</b>	GL38 cap with (2) 5/16-24 and (1) 1/4-28 port

## EVAPORATION CONTROL

- Minimize vapor loss from supply bottles
- Air inlet and pressure relief options
- Choose from Viton or perfluoroelastomer seals

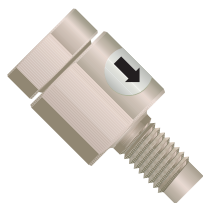
Evaporation control units contain check valves that reduce the flow of vapor in and out of a solvent supply bottle. During a system run, as liquid solvent travels out of the supply bottle to the system, air must enter the bottle to displace the solvent removed. DV-115 and DV-201 allow air to enter the bottle, but not to escape. Part numbers DV-118 and DV-202 operate in the reverse, allowing pressure relief. DV-201 and DV-202 are constructed of PEEK and perfluoroelastomer and are our most chemically resistant option, while DV-115 and DV-118 are constructed from PTFE with Viton seals.



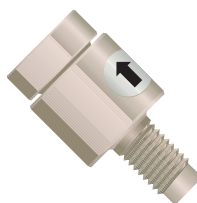
**DV-115**  
Air Inlet Evaporation Control Valve, PTFE with Viton seal,  
0.07 psi cracking pressure



**DV-118**  
Air Outlet Pressure Relief Valve, PTFE with Viton seal,  
1 psi cracking pressure



**DV-201**  
Air Inlet Valve, PEEK with perfluoroelastomer  
seal, 1 psi cracking pressure



**DV-202**  
Air Outlet Pressure Relief Valve, PEEK with  
perfluoroelastomer seal  
1 psi cracking pressure

### EVAPORATION CONTROL AND RELIEF VALVES

#### 1-WAY INLET AIR CONTROL VALVES

<b>DV-115</b>	Air Inlet Valve, 1/4-28, 0.07 psi, Viton seal
<b>DV-201</b>	Air Inlet Valve, 1/4-28, 1 psi, Perfluoroelastomer seal

#### 1-WAY OUTLET AIR CONTROL (RELIEF) VALVES

<b>DV-118</b>	Air Outlet Relief Valve, 1/4-28, 1 psi, Viton seal
<b>DV-202</b>	Air Outlet Valve, 1/4-28, 1 psi, Perfluoroelastomer seal

#### WARNING:

Viton seals in DV-115 and DV-118 are not suitable for use with some solvents, such as THF. Consult a chemical compatibility guide for further information.



## 1/4-28 TUBING CONNECTIONS

- Spare tubing connections for 1/4-28 ports
- For tubing OD sizes 1/16" - 1/8"
- Tefzel® and Polypropylene



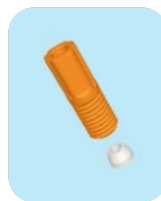
**AQ-111**  
For 1/16" OD tubing



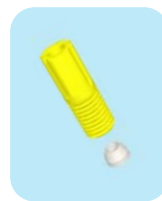
**AQ-112**  
For 1.8-2.0mm OD



**AQ-117**  
For 2.2mm OD



**AQ-113**  
For 2.5mm OD tubing



**AQ-114**  
For 3.0mm OD tubing



**AQ-115**  
For 1/8" OD tubing



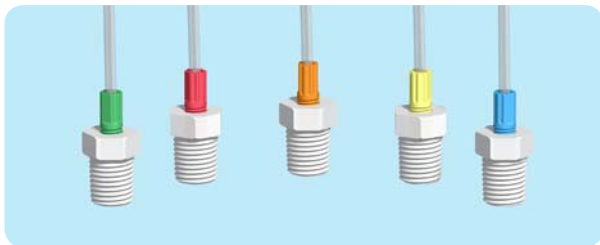
**UC-004**  
1/4-28 PEEK Union, 0.05" bore

### 1/4-28 TUBING CONNECTIONS AND PLUGS

<b>AQ-101X</b>	For 360µm OD tubing, Red / Green, 10 pack
<b>AQ-102X</b>	For 1mm OD tubing, Blue / Purple, 10 pack
<b>AQ-111X</b>	For 1/16" OD tubing, 10pk, Green, 10 pack
<b>AQ-112X</b>	For 1.8-2.0mm OD tubing, 10pk, Red, 10 pack
<b>AQ-117X</b>	For 2.2mm OD tubing, 10pk, Black, 10 pack
<b>AQ-113X</b>	For 2.5mm OD tubing, 10pk, Orange, 10 pack
<b>AQ-114X</b>	For 3.0mm OD tubing, 10pk, Yellow, 10 pack
<b>AQ-115X</b>	For 1/8" OD tubing, 10pk, Blue, 10 pack
<b>PL-103X</b>	Delrin® Plug, 1/4-28, 10 pack
<b>PL-104X</b>	PFA Teflon® Plug, 1/4-28, 10 pack

#### SAMPLER KIT AND UNION

<b>SK-011</b>	1/4-28 Sampler kit, includes 1 connection of each size
<b>UC-004</b>	1/4-28 PEEK Union, 0.05" ID bore



## NPT ADAPTERS FOR HARD WALL TUBING

- Adapt tubing outer diameter (OD) to manifold NPT ports with compression fittings
- 1/4" and 1/2" NPT connections
- Chemically resistant Polypropylene and Tefzel®

For secure fluid connections to a manifold, select a fitting based on your tubing outer diameter (OD). Wrap NPT threads 3-4 times and wrench tighten for leak-resistant connections.



**AC-120**  
For 1/16" OD tubing



**AC-121**  
For 1.8-2.0mm OD



**AC-125**  
For 2.2mm OD tubing



**AC-122**  
For 2.5mm OD tubing



**AC-123**  
For 3.0mm OD tubing



**AC-124**  
For 1/8" OD tubing



## NPT ADAPTERS FOR SOFT WALL TUBING

- Adapt tubing inner diameter (ID) to manifold NPT ports with barbed fittings
- 1/4" and 1/2" NPT connections
- Chemically resistant Polypropylene

A semi-permanent connection for soft-walled tubing only, barbed fittings are an economical means of connecting tubing to Vaplock manifolds. As with NPT adapters for hard wall tubing, wrap NPT threads 3-4 times and wrench tighten for leak-resistant connections.

## TUBING GAUGE

- Measure the inner and outer diameters of waste tubing accurately



## INSTALLATION TOOLKIT

- For quick installation of tubing connections in Vaplock™ manifolds



Easily install fittings in Vaplock™ manifolds with the TK-100 installation toolkit. Includes deep socket set for 9/16" and 7/8" hex fittings, adjustable wrench, guillotine tubing cutter, sealing tape and zip tie adhesive mounts.

### HARDWALL TUBING ADAPTERS FOR NPT PORTS

#### ADAPTERS FOR 1/4" NPT PORTS

<b>AC-120</b>	1/16" OD tube x 1/4" NPT, PP, Tefzel, Green
<b>AC-121</b>	1.8-2.0 mm OD tube x 1/4" NPT, PP, Tefzel, Red
<b>AC-125</b>	2.2 mm OD tube x 1/4" NPT, PP, Tefzel, Black
<b>AC-122</b>	2.5 mm OD tube x 1/4" NPT, PP, Tefzel, Orange
<b>AC-123</b>	3.0 mm OD tube x 1/4" NPT, PP, Tefzel, Yellow
<b>AC-124</b>	1/8" OD tube x 1/4" NPT, PP, Tefzel, Blue
<b>AC-108</b>	4.0 mm OD tube x 1/4" NPT, PP, Tefzel, PEEK, Brown
<b>AC-109</b>	3/16" OD tube x 1/4" NPT, PP, Tefzel, Delrin, White
<b>AC-113V</b>	1/4" OD tube x 1/4" NPT, Natural PP, 5 pack
<b>AC-114V</b>	5/16" OD tube x 1/4" NPT, PP, Tefzel, 5 pack
<b>AC-115V</b>	3/8" OD tube x 1/4" NPT, Natural PP, 5 pack
<b>AC-116V</b>	1/2" OD tube x 1/4" NPT, Natural PP, 5 pack

#### ADAPTERS FOR 1/2" NPT PORTS

<b>AC-204V</b>	3/8" OD tube x 1/2" NPT, Natural PP, 5 pack
<b>AC-205V</b>	1/2" OD tube x 1/2" NPT, Natural PP, 5 pack
<b>AC-206V</b>	5/8" OD tube x 1/2" NPT, Natural PP, 5 pack
<b>AC-207V</b>	3/4" OD tube x 1/2" NPT, Natural PP, 5 pack

### BARBED TUBING ADAPTERS FOR NPT PORTS

<b>AB-111X</b>	1/16" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-112X</b>	1/8" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-118X</b>	5/32" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-113X</b>	3/16" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-114X</b>	1/4" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-115X</b>	5/16" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-116X</b>	3/8" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-117X</b>	1/2" ID tube x 1/4" NPT, PP, 10 pack
<b>AB-204X</b>	1/4" ID tube x 1/2" NPT, PP, 10 pack
<b>AB-205X</b>	3/8" ID tube x 1/2" NPT, PP, 10 pack
<b>AB-206X</b>	1/2" ID tube x 1/2" NPT, PP, 10 pack
<b>AB-207X</b>	5/8" ID tube x 1/2" NPT, PP, 10 pack
<b>AB-208X</b>	3/4" ID tube x 1/2" NPT, PP, 10 pack

#### PLUGS FOR 1/4" AND 1/2" NPT PORTS

<b>PL-101X</b>	Plug for 1/4" NPT, PP, 10 pack
<b>PL-105</b>	Plug for 1/4" NPT, PTFE
<b>PL-102X</b>	Plug for 1/2" NPT, PP, 10 pack

#### SAMPLER KIT, TUBING GAUGE, AND TOOLKIT

<b>SK-003</b>	Barbed fittings sampler kit, includes 1 of each size
<b>TG-001</b>	Vaplock Tubing Gauge
<b>TK-100</b>	VapLock Installation Toolkit

## JUSTRITE® WASTE CANS

- Two Polypropylene or Stainless Steel quick disconnects permit simple attachment of one inlet and one vent

Ideal for HPLC use, Justrite® Centura™ containers streamline the waste containment and disposal process by providing a simple means of connecting waste and vent lines. FM approved, the containers are designed with a spring-loaded closure that opens when contents are subjected to pressure, for explosion safety. Containers are molded of translucent Polyethylene to show fluid level. When ordering, note that quick disconnects will only mate with like materials, i.e., stainless disconnects with stainless. Note that the disconnects mounted on all containers have a 3/8" drain orifice. Also note that Justrite® containers should be grounded with Antistatic Wires while in use, and especially while emptying the container.



**JT-PP12752**  
2-gallon waste can with Polypropylene / EPDM disconnects

**JT-TF12755**  
5-gallon waste can with Stainless / PTFE disconnects



## CPL SAFETY ECO FUNNELS FOR JUSTRITE® CANS

- Quick-connect to Justrite Centura™ waste cans
- HDPE and Polypropylene construction
- Locking lid with Polypropylene sealing gasket

SF-series funnels adapt to CPL safety Eco Funnels to allow quick disposal of pourable solvent waste. Locking, hinged lid minimizes leaks and spills when the funnel is closed. Standard Justrite Centura™ containers include two quick disconnects, one for filling and one for venting; removal of the insert from the venting quick disconnect will prevent vapor release while not in use. If used in tandem with other Vaplock™ products, such as manifolds and vapor filters, a closed system may also be maintained for passive wastes while the funnel is sealed.

As with all solvent-based applications, **chemical compatibility** of the solvent and product should be noted prior to purchase. SF-series funnels are constructed of high density Polyethylene (HDPE) and Polypropylene, with a closed-cell Polypropylene sealing gasket. As Justrite Centura containers are available with two quick disconnect materials, Polypropylene (with EPDM o-ring) and Stainless Steel (with Teflon o-ring), **select a safety funnel according to the type of disconnect material.**

### ANTISTATIC WIRES

#### REDUCE FIRE RISKS FROM STATIC ELECTRICITY

Antistatic wires reduce spark danger from static electricity generated by movement and flow of flammable liquids. Bonding between containers during liquid transfer, and connecting drums to an earth ground are required under Federal and local codes.



**JT-08500**  
Antistatic wires with 3' cable

### WASTE CANS, ANTISTATIC WIRES, AND CONTAINMENT

#### WASTE CONTAINERS

<b>JT-12160</b>	Justrite® 1-gallon PE can, PP / EPDM disconnect
<b>JT-PP12752</b>	Justrite® 2-gallon PE can, PP / EPDM disconnect
<b>JT-TF12752</b>	Justrite® 2-gallon PE can, SS / Teflon® disconnect
<b>JT-PP12755</b>	Justrite® 5-gallon PE can, PP / EPDM disconnect
<b>JT-TF12755</b>	Justrite® 5-gallon PE can, SS / Teflon® disconnect

#### ANTISTATIC WIRES

<b>JT-08500</b>	Justrite® antistatic wire, dual alligator clips, 3'
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#### SECONDARY CONTAINMENT

<b>SC-002</b>	Secondary containment for Justrite 2 or 5-gal can
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## CPLabSafety

Safety Eco Funnel™ is a trademark of CP Lab Safety.

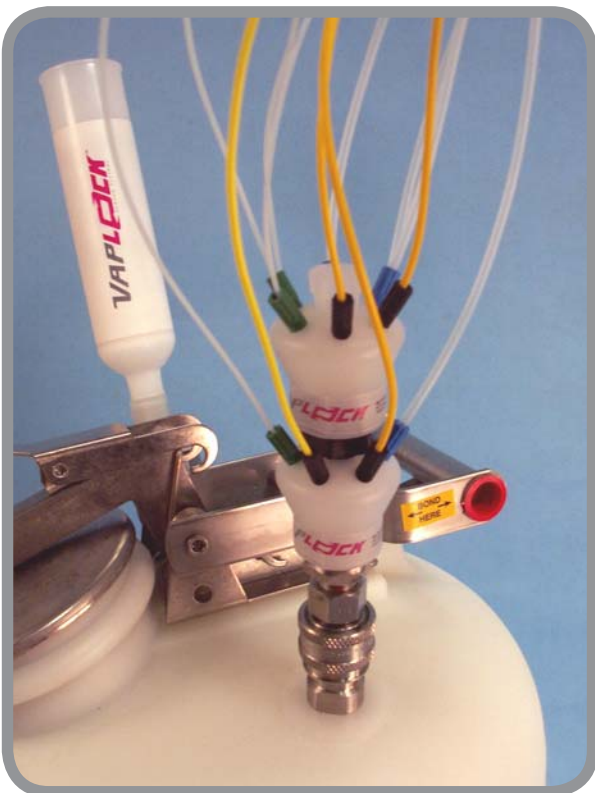
#### SAFETY WASTE FUNNELS

<b>SF-003</b>	Funnel with PP / EPDM disconnect
<b>SF-004</b>	Funnel with SS / Viton® disconnect
<b>SF-005</b>	Funnel with SS / Teflon® disconnect

# WASTE MANIFOLDS FOR JUSTRITE® CANS

- Collect solvent waste easily from various sources into Justrite® Centura™ quick-disconnect containers
- Manifolds fit almost any tubing size with use of the appropriate fitting
- Wide-bore Polypropylene (PP) or PTFE manifold design allows multiple tubing connections with high fluid flow

Select a manifold for a Justrite can based on the type of disconnects on the container. For a Justrite can with Polypropylene and EPDM disconnects, for example, choose part number MA-301 (3-port) or MA-601 (6-port). If a system has more waste lines than a single manifold can accommodate, use stacking manifolds to handle almost any requirement. 1-port Polyethylene adapter MA-101 has one 1/4" NPT port. 3-ported Polypropylene manifolds have three 1/4" NPT ports. 6-ported Polypropylene manifolds have five 1/4" NPT ports radially, and one 1/2" NPT top port. 9-ported PTFE manifolds have eight 1/4-28 ports radially, and one 1/4" NPT top port. To connect tubing to waste manifolds, see tubing connections on pages 7-8.



**MA-301**  
3-ported waste manifold  
for PP/EPDM disconnects



**MA-303**  
3-ported waste manifold  
for Stainless/PTFE disconnects



**MA-701**  
7-ported waste manifold  
for PP/EPDM disconnects



**MA-703**  
7-ported waste manifold  
for Stainless / PTFE disconnects



**MA-601**  
6-ported waste manifold  
for PP/EPDM disconnects



**MA-902**  
9-ported waste manifold  
for Stainless/PTFE disconnects

## MANIFOLD STACK UNITS

- Increase the number of manifold ports by adding a manifold stack unit



**MA-300**  
3-ported stacking unit, Polypropylene,  
With 1/4" NPT male adapter



**MA-600**  
6-ported stacking unit, Polypropylene,  
With 1/2" NPT male adapter

### WASTE MANIFOLDS AND STACKING UNITS

#### MANIFOLDS FOR JUSTRITE® CANS WITH PP DISCONNECTS

<b>MA-101</b>	1-port Polypropylene (PP) adapter, (1) 1/4" FNPT
<b>MA-301</b>	3-Port PP manifold, (3) 1/4" FNPT
<b>MA-601</b>	6-port PP manifold, (5) 1/4" and (1) 1/2" FNPT
<b>MA-701</b>	7-port PP manifold, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-903</b>	9-port manifold, (1) 1/4" FNPT, (8) 1/4-28
<b>MA-1001</b>	10-port PP, (1) 1/2" and (3) 1/4" FNPT, (6) 1/4-28

#### MANIFOLDS FOR JUSTRITE® CANS WITH SS DISCONNECTS

<b>MA-105</b>	1-port adapter, SS/Teflon® o-ring, (1) 1/4" FNPT
<b>MA-303</b>	3-port PP manifold, SS/Teflon®, (3) 1/4" FNPT
<b>MA-603</b>	6-port PP, SS/Teflon®, (5) 1/4" and (1) 1/2" FNPT
<b>MA-703</b>	7-port PP, SS/Teflon®, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-705</b>	7-port PTFE, SS/Teflon®, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-902</b>	9-port PTFE, SS/Teflon®, (1) 1/4" FNPT, (8) 1/4-28
<b>MA-1003</b>	10-port PP, SS/Teflon®, (1) 1/2" and (3) 1/4" FNPT, (6) 1/4-28

#### WASTE MANIFOLD STACKING UNITS

<b>MA-300</b>	3-Port PP with 1/4" MNPT (male thread)
<b>MA-304</b>	3-Port PP with 1/2" MNPT, (3) 1/4" FNPT
<b>MA-600</b>	6-Port PP with 1/2" MNPT, (5) 1/4", (1) 1/2" FNPT
<b>MA-700</b>	7-Port PP with 1/4" MNPT, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-704</b>	7-Port PP with 1/2" MNPT, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-706</b>	7-Port PTFE, 1/4" MNPT, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-900</b>	9-Port PTFE, 1/4" MNPT, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-904</b>	9-Port, 1/2" MNPT, (1) 1/4" FNPT, (6) 1/4-28
<b>MA-1004</b>	10-port PP, 1/2" MNPT, (1) 1/2" and (3) 1/4" FNPT, (6) 1/4-28



## CARBOY MANIFOLDS

- Various manifold options for large and small bore tubing
- Adapt to 83B and 53B, 70mm, 63mm, 61 mm and 100-415 carboys and pails

Carboy and drum manifolds permit multiple waste lines of varying size and type to be connected to the container of your choice. If more tubing lines need connecting than a manifold will permit, use of the appropriate stacking unit will increase the number of ports to suit your needs. Panel mount manifolds may also be used if a nonstandard cap is present; either drill a 1.125" diameter hole (max 1/2" depth) in the cap and thread in place for a secure seal, or remove the lock ring to install in the 3/4" NPT knockout threads found on some carboy caps.



**SV-127**  
53B 6-ported manifold, with free-spinning cap collar; with (5) 1/4" NPT ports, (1) 1/2" NPT port



**SV-165 and SV-165NAL**  
70mm (Hedwin) and 70mm (Nalgene) 7-ported manifolds with free-spinning cap collar; with (5) 1/4-28 ports, (1) 1/2" NPT port



**SV-215 and SV-225**  
83B Nalgene (left, SV-215) and 100-415 Nalgene (right, SV-225), with free-spinning cap collar and 10 ports: (1) 1/2" NPT, (3) 1/4" NPT, and (6) 1/4-28

### CARBOY AND PANEL-MOUNT WASTE MANIFOLDS

#### CARBOY MANIFOLDS

<b>PM-608</b>	51mm, 6-ported, PP/EPDM, cam lock
<b>CM-303</b>	53B, 3-ported, PP/EPDM, cam lock
<b>CM-603</b>	53B, 6-ported, PP/EPDM, cam lock
<b>SV-127</b>	53B, 6-ported, PP, free-spinning collar
<b>CM-903</b>	53B, 9-ported, PP/EPDM, cam lock
<b>PM-303</b>	61mm, 3-ported, PP/EPDM, cam lock
<b>PM-603</b>	61mm, 6-ported, PP/EPDM, cam lock
<b>PM-304</b>	63mm, 3-ported, PP/EPDM, cam lock
<b>PM-604</b>	63mm, 6-ported, PP/EPDM, cam lock
<b>PM-301</b>	70mm, 3-ported, PP/EPDM, cam lock
<b>PM-601</b>	70mm, 6-ported, PP/EPDM, cam lock
<b>SV-165</b>	70mm, 7-ported, PP, free-spinning collar
<b>SV-165NAL</b>	70mm (Nalgene), 7-ported, PP, free-spinning collar
<b>CM-301</b>	83B, 3-ported, PP/EPDM, cam lock
<b>CM-601</b>	83B, 6-ported, PP/EPDM, cam lock
<b>CM-901</b>	83B, 9-ported, PP/EPDM, cam lock
<b>SV-215</b>	83B, 10-ported, PP, free-spinning collar
<b>CM-306</b>	100-415, 3-ported, PP/EPDM, cam lock
<b>CM-606</b>	100-415, 6-ported, PP/EPDM, cam lock
<b>SV-225</b>	100-415, 10-ported, PP, free-spinning collar

#### PANEL MOUNT MANIFOLDS

<b>PM-305</b>	Panel-Mount, 3-ported, PP/EPDM, cam lock
<b>PM-605</b>	Panel-Mount, 6-ported, PP/EPDM, cam lock



## MANIFOLD BOTTLE CAPS

- 3-, 6-, 7-, and 9-ported manifolds
- Polypropylene or PTFE construction
- For GL45, GL38, and Nalgene 38-430 bottles

When using a carboy or Justrite container is not economical or practical, it may be useful to dispose of solvent wastes into a standard laboratory bottle. For vapor control, attach an EF-100 vapor filter with filter adapter to one port when connecting solvent wastes. Most manifolds may also be used to supply solvent to a system; use evaporation control valves to handle the air inlet or pressure relief when used for solvent delivery.



**BC-722**  
7-port manifold for GL45 bottle, with [6] 1/4-28 radial ports, [1] 1/4" NPT top port



**BC-723**  
7-port all-PTFE manifold for GL45 bottle, with [6] 1/4-28 radial ports, [1] 1/4" NPT top port



**BC-324**  
3-port manifold for GL45 bottle, with [3] 1/4" NPT ports



**BC-622**  
6-port manifold for GL45 bottle, with [5] 1/4" NPT ports radially, [1] 1/2" NPT top port

### MANIFOLD BOTTLE CAPS

#### GL38 MANIFOLD CAPS

BC-326 3-port manifold, PP

BC-620 6-port manifold, PP

BC-720 7-port manifold, PP

BC-724 7-port manifold, all PTFE fluid paths

BC-920 9-port manifold, all PTFE fluid paths

#### GL45 MANIFOLD CAPS

BC-324 3-port manifold, PP

BC-622 6-port manifold, PP

BC-722 7-port manifold, PP

BC-723 7-port manifold, all PTFE fluid paths

BC-922 9-port manifold, all PTFE fluid paths

#### MANIFOLD CAPS FOR NALGENE 38-430

BC-350 3-port manifold, PP

BC-640 6-port manifold, PP (solvent waste only), PP

BC-940 9-port manifold, all PTFE fluid paths

## CARBON FILTERS

- Minimize odors by adsorption before they enter the lab environment
- Constructed of activated coconut shell carbon and silica dessicant, with Polypropylene housing
- Economically priced

Reduce odors from solvent waste containers by installing a Vaplock™ carbon filter, which may be adapted to a number of low pressure emission sources. Dispose of spent cartridges in accordance with local safety codes.



## CARBON FILTER ADAPTERS

- Adapt carbon filters to point source emissions
- Custom adapter solutions available
- All adapters are reusable

VAPLOCK™ EF-100 carbon filters require an adapter for connection to various emission sources. Each filter contains a tapered 1/4" female NPT port; select from the list below to adapt filters to a typical system, or contact your distributor for assistance with any special requirements. Note that filter adapters for Justrite containers are made to fit **either** stainless steel **or** Polypropylene quick disconnects, but may not be interchanged. Stainless must connect to stainless, Polypropylene to Polypropylene. Stainless quick disconnect options allow for either a Teflon or Viton O-ring.



**FA-004**  
Adapter with 1/4" NPT male thread



**FA-005**  
Adapter with 1/2" NPT male thread



**FA-017**  
Adapts filter to a female Polypropylene quick disconnect on a Justrite waste can, with elbow adapter



**FA-010**  
Adapts filter to a female Polypropylene quick disconnect on a Justrite waste can



**FA-018**  
Adapts filter to a female stainless steel quick disconnect on a Justrite waste can, with elbow adapter



**FA-015**  
Adapts filter to a female stainless steel quick disconnect on a Justrite waste can

### ACTIVATED CARBON VAPOR FILTERS

<b>EF-100</b>	Vaplock filter cartridge
<b>EF-100V</b>	Vaplock filter cartridge, pack of 5

### VAPOR FILTER ADAPTERS

<b>FA-001</b>	Luer lock adapter, Polypropylene
<b>FA-002</b>	Male slip-type luer adapter, Polypropylene
<b>FA-003</b>	1/4-28 adapter, long, Polypropylene
<b>FA-004</b>	1/4" NPT adapter, Polypropylene
<b>FA-005</b>	1/2" NPT adapter, Polypropylene
<b>FA-010</b>	Justrite® can adapter, PP / EPDM
<b>FA-007</b>	Justrite® can adapter, SS / Viton®
<b>FA-015</b>	Justrite® can adapter, SS / Teflon®
<b>FA-017</b>	Justrite® can adapter, elbow, PP / EPDM
<b>FA-018</b>	Justrite® can adapter, elbow, SS / Viton®



**LA-100-01**  
Alarm control unit with power and sensor cable connected



**LS-102**  
Sensor head connected to Polyethylene tank

## ELECTRONIC LEVEL CONTROL

- Alarms the operator when fluid reaches overflow
- Intrinsically safe, ultrasonic sensing device
- Includes alarm override and red LED
- Auxiliary output plug for accessory control, such as valves, pumps, or instrument shutoff

The LA-100 Electronic Level Alarm is designed to alarm the operator of a full or empty condition in a Polypropylene or Polyethylene tank. The sensor is a low voltage, intrinsically safe device that is connected via a 10 foot cable to the control box unit. The control is powered by a 110 VAC converter which supplies 5 VDC power to the control box. A green operating light and red alarm light allow visual inspection of the operating condition of the level alarm. An alarm override button is easily accessible on the top. For powered relay or accessory control, such as controlling a pump function or instrument shutdown, an auxiliary output is also included.

Only Polyethylene and Polypropylene containers with a wall thickness in the range of 0.1" - 0.125" may be used with the LS-100 at present.

### ELECTRONIC LEVEL CONTROL

<b>LA-100</b>	Level Alarm, includes control box, ultrasonic sensor head, power supply and power cable
<b>LA-100-F</b>	Level Alarm, includes control box, float sensor, power supply and power cable



## CLOSED SYSTEMS FOR SOLVENT CONTAINMENT

VAPOR AND SPILL CONTROL FOR LABORATORY SOLVENTS

## Apex Chromatography

The complete solution for all your analytical needs

Apex Chromatography, Pvt. Ltd.  
2-3-17/5, M. G. Road, First Floor  
Secunderabad - 500003 (AP) India

Phone: [91-40] - 6631 9696 /97; 6632 2739  
Fax: [91-40] - 6633 2739; 6631 9699  
Email: [pradip@apexchrom.com](mailto:pradip@apexchrom.com)  
Website: [www.apexchrom.com](http://www.apexchrom.com)



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