

# Geotech Filter Holders

Installation and Operation Manual



**Acrylic In-Line  
Filter Holder**



**Polycarbonate In-Line  
Filter Holder**



## Table of Contents

Section 1: System Description .....	3
Section 2: System Installation .....	7
Section 3: System Specifications .....	9
Warranty and Repair .....	12

## DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



**WARNING**

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



**CAUTION**

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



**NOTE**

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

## Section 1: System Description

### Function and Theory

The Geotech Filter Holders are designed for rapid filtration of water samples in the lab or at field sites. The filtrate is then available for analysis, not only of major constituents, but also of trace elements at the microgram-per-liter-level. The back flushing feature reduces the time required for filtration and prolongs the life of the filter media. These units, made of polycarbonate or acrylic, are durable, lightweight, and easy to operate.

### System Components and Part Numbers

The following item numbers identify and describe the parts to the In-Line Filter Holder Assembly (Figure 1-1).

Item #	Description
1	<b>Top Plate</b> - comes in 102mm and 142mm Acrylic, and in 142mm Polycarbonate.
2	<b>Threaded “T” Valve (for pressure relief) with O-ring</b> – (see Figure 1-2.)
3	<b>3/8 x 3/8 MPT Nylon Hose Barb</b> - two come with the spare parts bag.
4	<b>Sample Disbursement Disc</b> – comes in 102mm and 142mm.
5	<b>Filter Support Screen</b> - comes in 102mm and 142mm.
6	<b>Glass fiber Pre-filter</b> – (optional component – contact Geotech Sales for more information).
7	<b>Filter Membrane</b> – purchased separately, contact Geotech Sales for the correct size.
8	<b>Silicon O-ring</b>
9	<b>Bottom Plate</b> – comes in 102mm and 142mm Acrylic, and 142mm Polycarbonate. When replacing the Polycarbonate Bottom Plate, the swing-a-way bolts must also be purchased and installed to the plate by Geotech.
10	<b>Nylon Swing-A-Way Bolt Assembly</b> – The nylon bolt assembly (Figure 1-3) can be purchased separately for use with the Acrylic Bottom Plate and installed using the Nylon L-Retaining Pins. However, a Polycarbonate Bottom Plate must be purchased along with the bolt assemblies and assembled by Geotech.
11	<b>Stainless Steel Swing-A-Way Bolt Assembly</b> – The stainless steel bolt assembly (Figure 1-3) can be purchased separately for use with the Acrylic Bottom Plate and installed using the Nylon L-Retaining Pins. However, a Polycarbonate Bottom Plate must be purchased along with the bolt assemblies and assembled by Geotech.

- 12 **Nylon L-Retaining Pin** – six come with the spare parts bag. These pins are used to hold the Nylon or Stainless Steel Swing-A-Way Bolt Assemblies to the Acrylic Bottom Plate only. Swing-A-Way bolts must be factory installed to the Polycarbonate Bottom Plate.
- 13 **Nylon Tripod Leg Kit** – comes with three legs with feet.
- 14 **Nylon Tripod Leg** – individual legs are also sold separately.

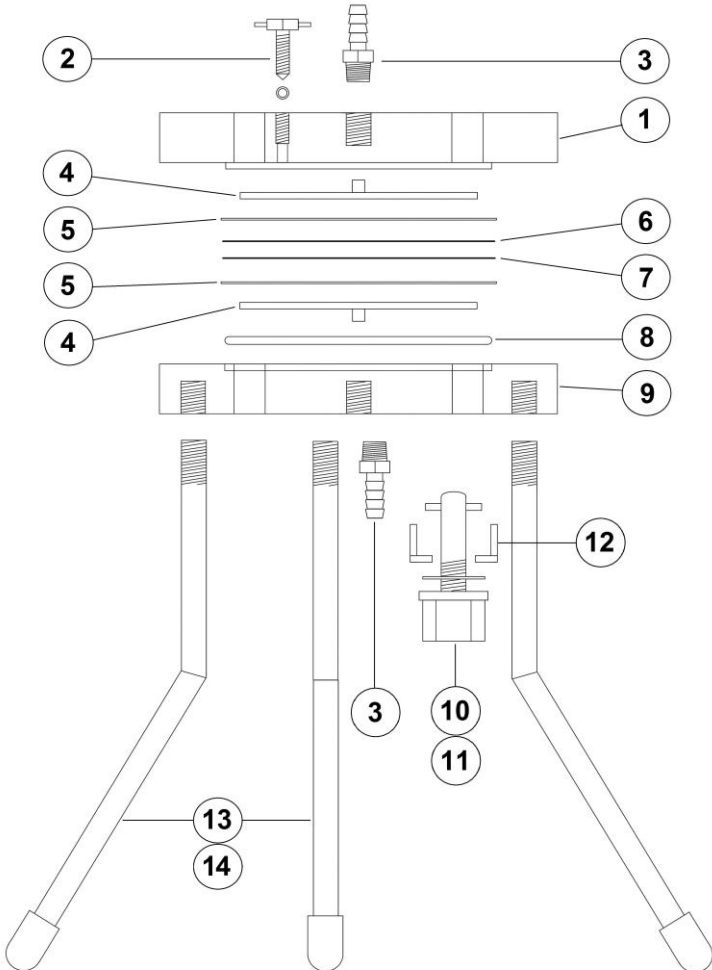


Figure 1-1 – Break out diagram of the Acrylic or Polycarbonate In-Line Filter Holder

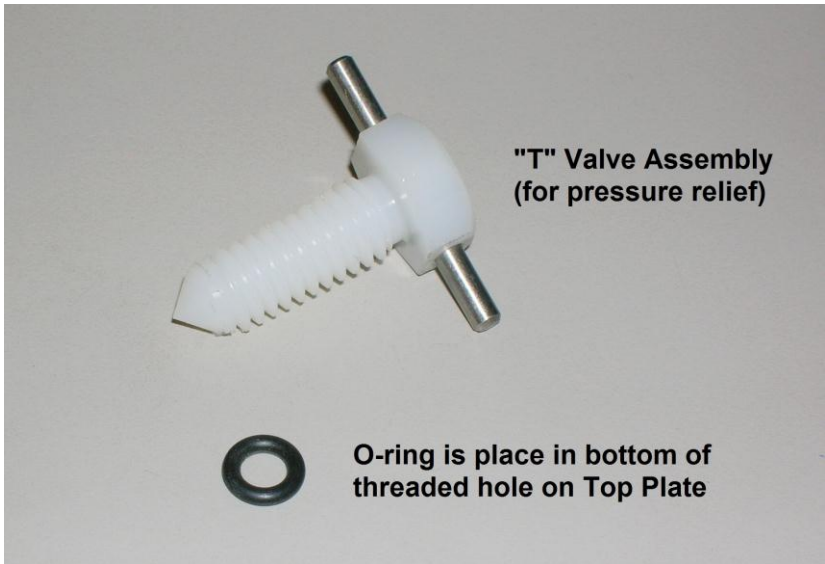


Figure 1-2 – "T" Valve Assembly and O-ring.



Figure 1-3 – Example of the two kinds of Swing-A-Way Bolt Assemblies.

The following page contains part numbers for Geotech's In-Line Filter Holders.

## Acrylic and Polycarbonate In-Line Filter Holders

	<b>102mm In-Line Filter Holder, Acrylic</b>	<b>142mm In-Line Filter Holder, Acrylic</b>	<b>142mm In-Line Filter Holder, Polycarbonate</b>
	83150003 (SS)	83150004 (SS)	83150008 (SS)
	83150002 (Nylon)	83150005 (Nylon)	83150009 (Nylon)
<b>Item #</b>	<b>Part Numbers</b>	<b>Part Numbers</b>	<b>Part Numbers</b>
1	23150009	23150011	53150020
2	53150006	53150006	53150006
3	17200038	17200038	17200038
4	13150006	13150008	13150008
5	13150016	13150017	13150017
6	Optional - Contact your Geotech Sales Representative for this part.		
7	Contact your Geotech Sales Representative for this part.		
8	17500014	17500015	17500015
9	23150006	23150010	53150019
10	53150003	53150003	53150003
11	53150004	53150004	53150004
12	23150004	23150004	23150004
13	57500005	57500005	57500005
14	57500006	57500006	57500006

## Aluminum In-Line Filter Holder

<b>Part Name</b>	<b>Part Number</b>
FILTER HOLDER,AL5,142,ALUMINUM	83150007
PLATE,AL5,142,TOP,AFH	23150013
PLATE,AL5,142,BOTTOM,AFH	23150012
CLAMP,SS,6.75,VBAND,AFH	17500004
VALVE,SS6,1/4MPT	17500022
O-RING,FEP/SIL,AFH 5.125x.157 FEP COATED SILICONE	17500013
KIT,LEG,AL6,TRIPOD,3/PK,STRT ALUMINUM, FH,FLOW CELL,LOW VOL.	57500003
SCREEN,SUPORT,SS6,142SS,ACC,FH 72978	13150048



### **Polypropylene In-Line Filter Holder**

FILTER HOLDER,PP,47MM POLYPROPYLENE	83150000
HOSEBARB,NYL,1/4X1/4FPT	17500000

### **Stainless-Steel In-Line Filter Holders**

FILTER HOLDER,316SS,47MM	73150001
FILTER HOLDER,316SS,90MM	73150003

### **PFAIn-Line Filter Holders**

FILTER HOLDER,PFA,90MM,3/4COMP, 3/4" COMPRESSION FTNG	73150004
FILTER HOLDER,PFA,90MM,5/8TUBE, 5/8" TUBE ENDS	73150005
KIT,FILTER HOLDER,PFA,47MM 1/4TUBE, 1/4" TUBE ENDS	73150006

### **Accessories**

KIT,SPARE PARTS,ACR,FH	53150010
KIT,SPARE PARTS,PC,FH	53150012
MANUAL,PC-ACR,102-142,FH	23150035

## Section 2: System Installation

1. Place the o-ring into the bottom plate o-ring groove.
2. Insert disbursement disc into bottom plate, center pin down, circular grooves up, flush with surface of plate.
3. Lay and center the filter support screen on the disbursement plate, or nest inside the alignment pins (polycarbonate only), stepped edge down.
4. Lay filter media on center of support screen.
5. If a pre-filter is used, center it on top of the filter media.
6. Lay filter support screen on top of filter media, stepped edge up.
7. Insert disbursement disc into top plate, center pin up, circular grooves down.
8. Place top plate over assembled filter parts and line up the sides for the swing-away bolts, or check to see that alignment pins are engaged (polycarbonate only). Swing clamping bolts into place.
9. By hand, tighten the nuts directly opposite to each other halfway. Then follow the same pattern to tighten completely. Following this pattern will assure a proper seal.
10. Connect the tubing to the top plate hose barb fitting, it is recommended that a hose clamp be used for higher operating pressures.
11. When you begin pressurizing the sample through the unit, the air trapped inside must be released for maximum filtration. There is a manual air release "T" valve in the top plate, turn counter clockwise to release air.

The optimum pressure for filtration with a filter membrane of 0.45um pore size is 7-10 psi (.5 - .7 bar). Maximum operating pressure should not exceed 25 psi (1.7 bar).

### Section 3: System Specifications

#### Acrylic In-Line Filter Holder (142 mm)

Filter Membrane Size:	5.59" (142 mm) diameter
Filter Area:	4.8 in <sup>2</sup> (31 cm <sup>2</sup> )
Clamping Device:	6 swing-away bolts
Total Height with Legs:	13.5" (34.3 cm)
Height of Filter Holder Alone:	2" (5.1 cm)
Nut and Bolt Height:	3.14" (7.9 cm) when engaged
Filter Holder Plates:	Polycarbonate
Bolts:	6 swing-a way bolts (Nylon or stainless steel)
Nuts:	Polycarbonate or stainless steel
Legs:	Nylon with non-skid feet
Filter Support Screen:	Polyester
Sealing Ring:	Silicon
Disbursement Disc:	Polycarbonate
Pressure Relief Valve:	Nylon w/external stainless steel pegs
Total Diameter:	7.95" (20.2 cm)
Maximum Temperature:	275°F (135° C)
Max. Liquid Temperature:	176°F (80°C)
Inlet/Outlet Fittings:	.375" NPT by .375" hose barb
Autoclaving:	20 minutes, 250° F (121° C), 15 psi (1 bar)
Approximate Shipping Wt.:	3.1 lbs. (1.4 kg) with nylon bolts 4.1 lbs. (1.9 kg) with stainless steel bolts

#### Acrylic In-Line Filter Holder (102 mm)

Filter Membrane Size:	4.0" (102 mm) diameter
Filter Area:	3.49 in <sup>2</sup> (22.5 cm <sup>2</sup> )
Clamping Device:	3 swing-away bolts
Total Height with Legs:	13.25" (33.7 cm)
Height of Filter Holder Alone:	1.75" (4.5 cm)
Nut and Bolt Height:	2.9" (7.4 mm) when engaged
Filter Holder Plates:	Polycarbonate
Bolts:	3 swing-a way bolts (Nylon or stainless steel)
Nuts:	Polycarbonate or stainless steel
Legs:	Nylon with non-skid feet
Filter Support Screen:	Polyester
Sealing Ring:	Silicon
Disbursement Disc:	Polycarbonate
Pressure Relief Valve:	Nylon w/external stainless steel pegs
Total Diameter:	7.95" (20.2 cm)
Maximum Temperature:	275°F (135° C)
Max. Liquid Temperature:	176°F (80°C)
Inlet/Outlet Fittings:	.375" NPT by .375" hose barb
Autoclaving:	20 minutes, 250° F (121° C), 15 psi (1 bar)
Approximate Shipping Wt.:	3.0 lbs. (1.4 kg) with nylon bolts 3.5 lbs. (1.6 kg) with stainless steel bolts

## Polycarbonate In-line Filter Holder (142 mm)

Filter Membrane Size:	5.59" (142 mm) diameter
Filter Area:	4.8 in <sup>2</sup> (31 cm <sup>2</sup> )
Clamping Device:	6 swing-away bolts
Total Height with Legs:	13.5" (34 cm)
Height of Filter Holder Alone:	2" (5.1 cm)
Nut and Bolt Height:	3.14" (7.9 cm) when engaged
Filter Holder Plates:	Polycarbonate
Bolts:	6 swing-a way bolts (Nylon or stainless steel)
Nuts:	Polycarbonate or stainless steel
Legs:	Nylon with non-skid feet
Filter Support Screen:	Polyester
Sealing Ring:	Silicon
Disbursement Disc:	Polycarbonate
Pressure Relief Valve:	Nylon w/external stainless steel pegs
Total Diameter:	7.95" (20.2 cm)
Maximum Temperature:	275°F (135° C)
Max. Liquid Temperature:	176°F (80°C)
Inlet/Outlet Fittings:	.375" NPT by .375" hose barb
Autoclaving:	20 minutes, 250° F (121° C), 15 psi (1 bar)
Approximate Shipping Wt.:	3.1 lbs. (1.4 kg) with nylon bolts 4.1 lbs. (1.9 kg) with stainless steel bolts

## Aluminum In-Line Filter Holder

Filter Membrane Size:	5.59" (142 mm) diameter
Pre-filter Size Area:	1.9 in <sup>2</sup> (12.5 cm <sup>2</sup> )
Filter Area:	17.5 in <sup>2</sup> (113 cm <sup>2</sup> )
Filter Holder Plates:	Aluminum
O-ring:	FEP coated silicone
Support:	3 legs
Width	6" (15 cm)
Total Height with Legs:	14" (35.5 cm)
Height of Filter Holder Alone:	1.8" (4.6 cm)
Maximum Temperature:	275°F (135° C)
Max. Liquid Temperature:	176°F (80°C)
Inlet/Outlet Fittings:	.375" NPTF – requires male adapter
Legs:	Anodized aluminum with red rubber non-skid feet
Clamping Mechanism:	Quick release band clamp
Clamp:	300 series stainless steel with plastic knob
Support Screen:	Stainless steel
Pressure Relief Valve:	Stainless steel
Relief Valve Pressure Rating:	45 psi (3 bar) (preset)
Autoclaving:	20 minutes, 250° F (121° C), 15 psi (1 bar)
Approximate Shipping Wt.	6.2 lbs. (2.8 kg)

## **Polypropylene In-Line Filter Holder**

Filter Membrane Size:	1.77" (4.5 cm) diameter
Pre-filter Size Area:	1.67" (10.8 cm <sup>2</sup> )
Filter Area:	2.1 in <sup>2</sup> (13.5 cm <sup>2</sup> )
Filter Holder Plates:	Polypropylene
O-ring:	Silicone
Support Screen Material:	Polypropylene
Max. Pos. Pressure at 77°F (25°C):	5.0 Kg/cm <sup>2</sup> (71 psi ) differential
Max. Pos. Pressure at 176°F (80°C):	3.0 Kg/cm <sup>2</sup> (42 psi ) differential
Max. Neg. Pressure at 77°F (25°C):	5.0 Kg/cm <sup>2</sup> (71 psi ) differential
Max. Neg. Pressure at 176°F (80°C):	3.0 Kg/cm <sup>2</sup> (42 psi ) differential
Vacuum:	1 atmosphere maximum
Maximum Temperature:	275°F (135° C)
Max. Liquid Temperature:	176°F (80°C)
Inlet/Outlet Fittings:	Combination .25" NPTM, female lure slip
Diameter:	2.5" (6.4 cm)
Height:	2.0" (5.1 cm)
Autoclaving:	20 minutes, 250° F (121° C), 15 psi (1 bar)
Approximate Shipping Wt.	3.5 oz. (99 g)

## The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

## Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR  
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

## Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.



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