

Whatman

SOLVENT IFD

AQUEOUS IFD

Disposable Filter Devices

Introduction

Important

Read these instructions carefully before using the products.

Intended use

The products are intended for research use only, and shall not be used in any clinical or *in vitro* procedures for diagnostic purposes.

Description

SOLVENT IFD and Aqueous IFD disposable filter devices were designed to provide purer filtration of HPLC mobile phases. SOLVENT IFD is designed and built with a polypropylene housing and filter media. AQUEOUS IFD has a polypropylene housing and nylon filter media. A housing security ring seals the circumference of both IFDs. Solvent resistant ferrule nut assemblies are included with each package. This provides the finest in disposable in-line filtration devices.

The IFD works on the “bubble point” principle. A “bubble point” is the pressure at which gasses will pass through a wet membrane. If the pressure is maintained below the bubble point, the gas will not pass through the filter. The IFD traps the gas and keeps it from passing through the filter media.

SOLVENT IFD is designed to work with mobile phases containing at least 80% of the organic component. AQUEOUS IFD is designed to work with aqueous mobile phases.

SOLVENT IFD

- In-line Filtration and Degassing of Organically Based HPLC Mobile Phases
- ALL Polypropylene FILTER DEVICE

AQUEOUS IFD

- In-line Filtration and Degassing of Aqueous Based HPLC Mobile Phases
- Polypropylene Housing, Nylon Membrane

All IFDs

- Fits all Tubing 1/32 to 5/32 (0.8mm to 4mm) O.D.
- Adapter Nuts and O-rings Included
- Rugged Construction
- Air Vent on Inlet with Luer Lock Cap

- Lightweight—won't cause collapsed tubing
- Integrity Testable BP
- Biosafe™ materials USP Class VI

IN-LINE FILTER DEVICES — 50mm Filters

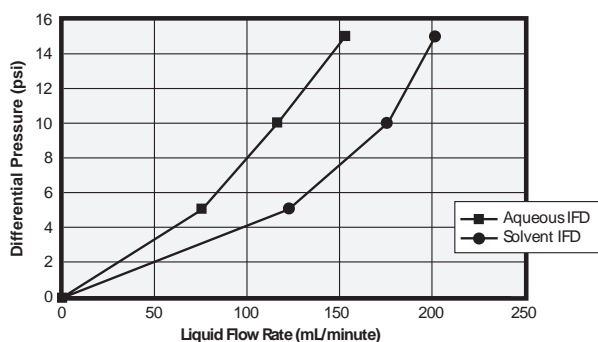
Product Code	Product Name	Pore Size (µm)	Media	Qty./Pkg.
6725-5002	SOLVENT IFD	0.2	Polypropylene	10
6726-5002	AQUEOUS IFD	0.2	Nylon	10

TECHNICAL DATA: SOLVENT IFD AQUEOUS IFD Disposable Filter Devices

Product Code	Pore Size Microns (µm)	INTEGRITY TEST DATA ¹	
		Bubble Point	
		bar	psi
6725-5002	0.2	0.76	11.0
6726-5002	0.2	2.9	42

¹ Typical Values

Whatman IFD: Liquid Flow Rates



CHEMICAL COMPATIBILITY SUMMARY

1	SOLVENT IFD	AQUEOUS IFD
	PP Membrane	Nylon Membrane
Acids, dilute	R	LR
Acids concentrated	R	NR
Acetone	R	R
Acetonitrile	R	R
Ammonium Hydroxide	R	R
Amyl Alcohol	R	R
Aniline	R	-
Benzyl Alcohol	R	LR
Butanol	R	R
Chloroform (*)	LR	NR
Dioxane	R	R
DMF	R	R
DMS	R	R
Ethanol	R	R
Ethyl Acetate	R	R
Ethyl Ether	R	R
Freon TF	R	R
Hexane	LR	LR
Hydrochloric Acid	R	NR
Isopropanol	R	R
Methanol	R	R
Methylene Chloride (*)	LR	NR
Methyl Ethyl Ketone	R	R
Methyl Isobutyl Ketone	R	-
Propanol	R	R
Sodium Hydroxide	R	LR
THF (*)	LR	LR

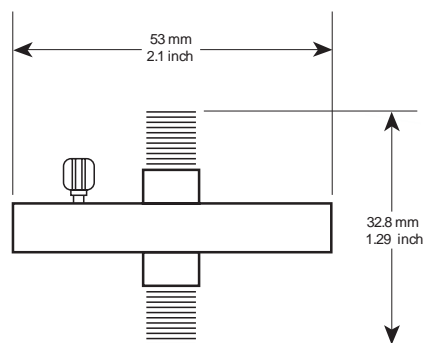
R=Resistant LR=Less Resistant NR=Not Resistant

¹ This chemical compatibility chart is intended as a general guide only. Any compound followed by an (*) indicates a lesser degree of resistance according to manufacturer's studies. The above guide has been compiled from results of in-house studies, material supplier studies and currently available technical literature. Because of solvent condition variabilities, which may exist from lab to lab, component compatibility cannot be guaranteed. In order to verify chemical compatibility, studies on individual chemicals of interest should be undertaken.

Dimensions:	53 mm (2.1 in.) x 32.8mm (1.29 in.)
Weight:	11.5 grams (20 gms with ferrule nuts)
Filtration Area:	16 cm ²
Maximum Pressure	
Housing Burst:	4.1 bar (60 psi)
Operating	2.1 bar (30 psi)
Housing:	Polypropylene
Volume "Hold Up":	Full housing 1.0 ml with Air Purge < 0.1 ml

Filter media:

SOLVENT IFD:	Polypropylene
AQUEOUS IFD:	Nylon
Flow Direction:	Flow should enter from the inlet
Operating Flow Rate:	≤ 2.5 ml/min
Connectors:	5/16-22 Threads, Adapters and O-rings for 1/32" to 5/32" (0.8 to 4mm) O.D. Tubing
Biosafe:	All Materials Pass USP Class VI



Connections • 5/16-22 Threads
Adapter Nuts for 1/32" to 5/32" (0.8 to 4mm) O.D. Tubing are included with each Package

OPERATING INSTRUCTIONS

Safety: Considering the special factors of your application, consult the table of Technical Data to determine correct use. Do not exceed the pressure, temperature or chemical compatibility recommendations.



CAUTION

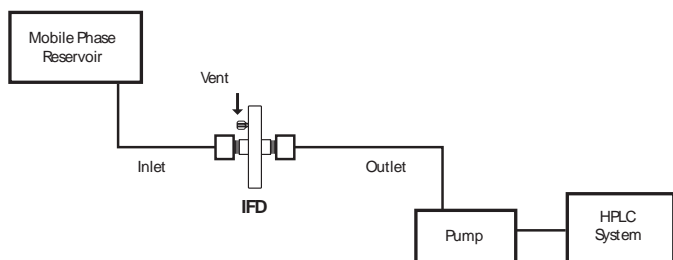
High pressures are easily obtained when using syringes. Do not exceed the recommended pressures. Hold the filter to the syringe when pressure is applied to prevent disengaging the filter from the syringe. This could occur if excessive pressure is applied.

Filter Media Considerations: The polypropylene filter media in the SOLVENT IFD is resistant to commonly used organic solvents. The nylon media in the AQUEOUS IFD provides high flow rates and throughput. For specific solutions see the Chemical Compatibility Summary. "Wetted" media will not allow gas to easily pass through the media. The pressure required for gas to pass through the wetted media (bubble point) is dependent on the media's pore size. Air trapped on the upstream side of wetted media can block the flow path and reduce or stop flow.

Equipment Needed to Install But Not Included

1. (2) 10 ml syringes
2. Single edged razor blade
3. 100 ml beaker
4. Paper towels
5. Parafilm M or equivalent

Filter Installation and Priming



Step Action

- 1 Turn off HPLC pump.
- 2 At an easily accessible location always below the liquid level in the mobile phase reservoir, cut the connecting tubing (1/32 to 5/32 or 0.8mm to 4mm respectively) with a razor blade as square as possible, being careful not to inflict personal injury. Slide IFD connectors and o-rings onto inlet (side closest mobile phase reservoir) and outlet (side closest HPLC pump) lines.
- 3 Plug the threaded inlet of the IFD with a piece of Parafilm and remove white vent cap.
- 4 Pour at least 20 ml of mobile phase into a beaker and aspirate 10 ml into a syringe.
- 5 Attach syringe to IFD via the vent cap. Keeping thumb over IFD inlet/ Parafilm, point outlet upward and slowly force all air out of the device, Note: Once a steady stream of fluid exits the outlet, direct fluid back into beaker, being careful not to spill until syringe is empty of liquid.
- 6 Attach syringe/IFD/ assembly to outlet line via IFD outlet and tighten connector nut until finger tight. Over-tightening the nut will cause the tube to come loose.
- 7 Remove Parafilm from IFD inlet and attach inlet line to IFD inlet. Tighten nut until finger tight.
- 8 Attach second 10ml syringe to HPLC pump, bleed valve and turn on HPLC pump. Using normal procedures remove any air which may have entered the line during the installation process. Remove an additional 10 ml of mobile phase to ensure no air remains in the downstream side of the IFD. Remove syringe from pump, bleed valve.
- 9 With HPLC pump on, use attached syringe to remove any air which may be trapped in the upstream side of the IFD device.
- 10 Remove syringe and re-attach white IFD vent cap, always maintaining the IFD below the liquid level in the mobile phase reservoir. The IFD is ready for use.

Trouble Shooting:

Step Action

- 1 **To check the IFD connections for air tightness:** plug the tubing at the mobile phase reservoir. Remove vent cap and secure an empty syringe to the vent. Pull back on the plunger. If there are any air leaks, air bubbles will be observed.

Step Action

- 2 **Air present in the inlet side of the IFD during operation:** The air may be evacuated by holding the IFD level with the mobile phase in the reservoir, removing the vent cap, securing an empty syringe to the vent and **pulling back** on the syringe plunger. Then remove the syringe and replace the vent cap. **Normally a small bubble of air will remain in the vent. This will not interfere with mobile phase flow.**
- 3 **Trouble with priming:** Follow steps 5 through 10 exactly. Check for mobile phase leaks and/or air leaks (bubbles), step 1 or Trouble Shooting.
- 4 **No flow immediately after installation:**
 - a. The SOLVENT IFD is designed to work with $\geq 80\%$ solvent mixtures. The AQUEOUS IFD is designed to work with aqueous mobile phases.
 - b. Check for air blocking the inlet side of the IFD by repeating steps 5 through 10.
 - c. To determine if the mobile phase is flowing from the reservoir to the inlet side of the IFD; secure a syringe filled with mobile phase to the vent and push the syringe plunger. Fluid should flow back from the IFD to the reservoir with a small amount of pressure on the syringe plunger.
 - d. To determine if the mobile phase is flowing through the IFD to the pump; attach syringe to the bleed valve, open and aspirate mobile phase into syringe. Fluid should flow easily through the IFD and the tubing to the pump.
- 5 **Slow or no flow after use:** Check for air blockage and clear any entrapped air by following steps 5 through 10. If problem persists, the IFD is probably clogged with particulates and should be replaced.
- 6 **Air appears to be passing through the IFD:** Check for air leaks by following Trouble Shooting step 1. If no air leaks are observed on the outlet side, replace the IFD, the media may have ruptured.

Operating Considerations: Proper operation of the system requires flow rates of ≤ 2.5 ml/min. The filter unit should be changed: • weekly • after filtering 4 liters of mobile phase • or when changing from one mobile phase to another.

Integrity Testing: Bubble Point (BP) Test: Flush filter with 10 ml or more of an appropriate solution. After the media is completely wet, with outlet pointed upward, apply air under controlled pressure to the inlet until air breaks through the media and bubbles from the outlet. The pressure where air begins to pass through the media is the BP.

To flush the HPLC system without an HPLC column installed:

Step Action

- 1 Remove IFD and plug inlet and outlet with Parafilm
- 2 Install the proper low pressure tubing union
- 3 Flush HPLC system
- 4 Reinstall IFD per instructions

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