



Millipore®

Pellicon® Mini and MiniX Holders

User Guide

The life science business of Merck
KGaA, Darmstadt, Germany operates as
MilliporeSigma in the U.S. and Canada.

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Contents

Introduction.....	5
Unpacking	6
Plumbing and Instrumentation	8
Assembling the Holders	9
Feed and Retentate Fitting Connections	9
Permeate Fitting Connections	9
Connecting Pressure Gauge Adapter	
Fittings to FEED and RETENTATE Fittings.....	10
Connecting the Pressure Gauge	12
Connect the Permeate Fittings	13
Inserting the Pellicon® Cassettes.....	13
Attaching the End Plate	15
Autoclave Setup	17
Ordering Information	18
Spare Parts and Accessories	18

Introduction

The Pellicon® Mini and MiniX holders are for use with 0.1 m² Pellicon® 2 cassettes and 88 cm² and 0.11 m² Pellicon® 3 cassettes.

The Pellicon® Mini Holder is recommended for 1 to 3 cassettes in parallel.

The Pellicon® MiniX holder is recommended for 3 to 5 cassettes in parallel or 2 to 4 cassettes in series with diverter plates.

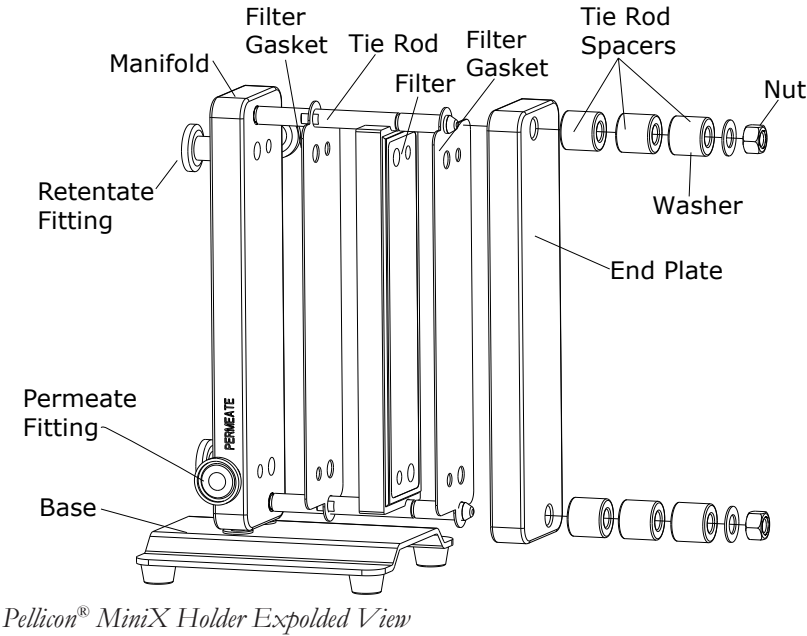
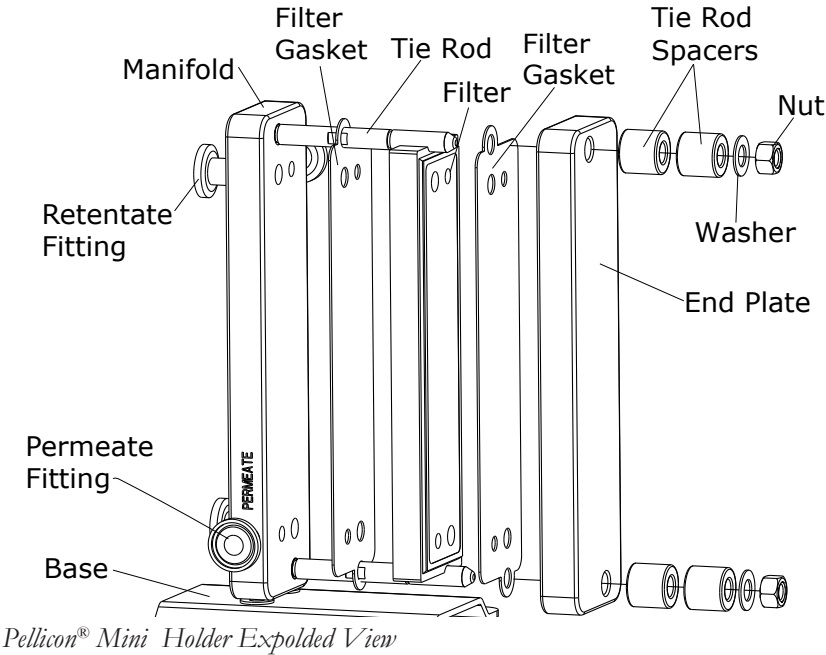
Unpacking

The Pellicon® Mini and MiniX Holders include the following:

Description	Quantity	
	Mini Holder	MiniX Holder
Manifold with two tie rods, attached to a base	1	1
End plate	1	1
Mini Holder Tie rod spacer	4	6
3/8 inch Flat washer	2	2
3/8-16 UNC Hex nut, silicon bronze	2	2
½-inch Sanitary gasket	4	4
Fractional sanitary clamp	4	4
9/16 inch Deep socket	1	1

1. Unpack the holder and deep socket.
2. Remove the FEED and RETENTATE fittings from the holder.
3. Loosen and remove the two nuts on the tie rods.
4. Remove the washers, spacers, and end plate from the holder.
Remove the shipping insert located between the holder manifold and end plate.
5. Place the holder base on a level surface.

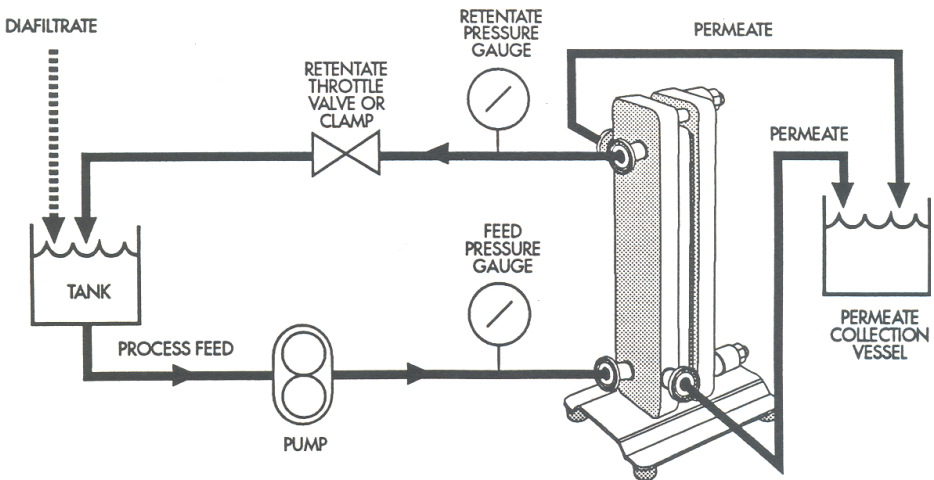
Pellicon® Mini
and MiniX Holder



Plumbing and Instrumentation

The concentration mode is the most commonly used mode for the concentration of proteins and viruses and is shown below without the diafiltrate. During this mode, material retained by the membrane (retentate) flows out of the retentate fitting and is recirculated to the original product container. The material passing through the membrane (permeate) flows out of the permeate outlet fitting onto the permeate collection container.

The constant volume diafiltration mode, shown below, is used for washing product that is retained by the membrane or for recovering additional product that is passed through the membrane. The mode involves the addition of water or buffer to the feed container at the same rate as permeate is being removed from the process.



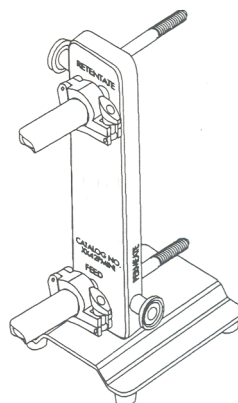
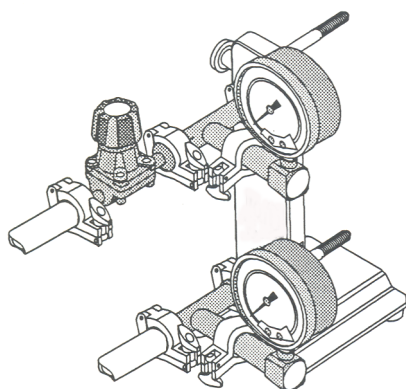
Plumbing and Instrumentation Diagram

Assembling the Holders

Feed and Retentate Fitting Connections

Configurations for connecting fittings to the FEED and the RETENTATE fittings include:

1. Connecting a pressure and sanitary diaphragm valve to the RETENTATE fitting, and a pressure gauge to the FEED fitting.
2. Connecting separate tubing to the FEED and the RETENTATE fittings.

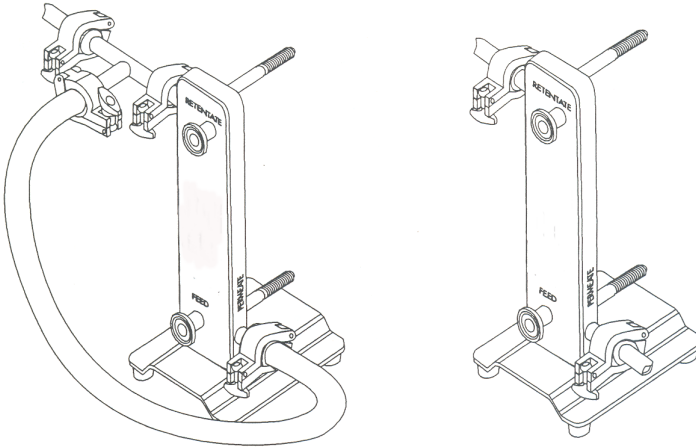


Feed and Retentate Fitting Connections

Permeate Fitting Connections

Configurations for connecting fittings to the PERMEATE fittings include:

1. Connecting the two PERMEATE fittings together with tubing using a tee or Y connection.
2. Connecting separate tubing to the two PERMEATE fittings.

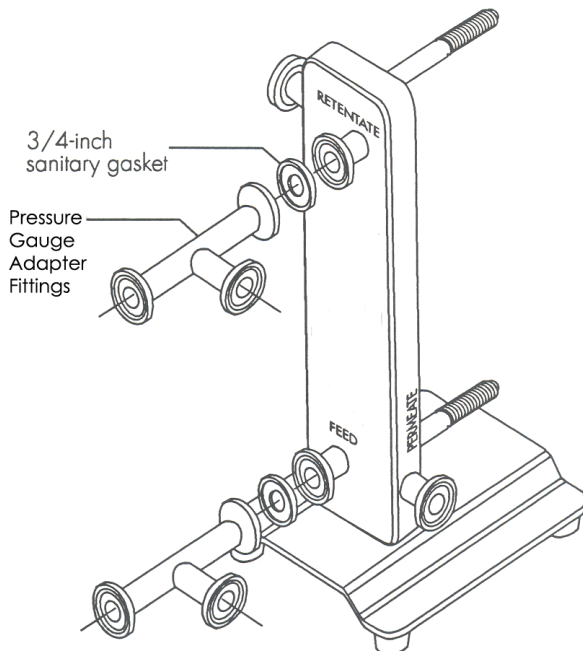


Permeate Fitting Connections

Connecting Pressure Gauge Adapter Fittings to FEED and RETENTATE Fittings

The Pellicon® Mini and MiniX Holder Pressure Gauge Adapter Fittings are short-leg tees to keep the working fluid volume low and avoid non-sanitary low-flow areas in the piping. Two 3/4-inch sanitary gaskets and two sanitary fitting clamps are supplied with each pressure gauge adapter fitting.

1. Seat a 3/4-inch sanitary gasket in the groove on the FEED fitting.

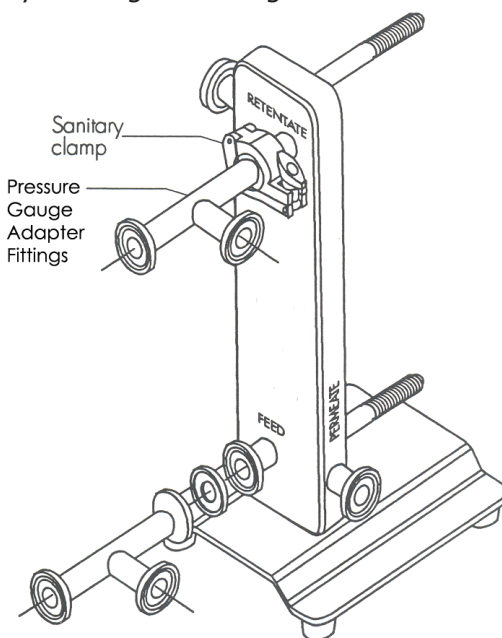


Installing the Gasket and Positioning the Pressure Gauge Adapter Fittings

2. Hold the sanitary gasket in place and press the pressure gauge adapter fittings flange against the FEED fitting flange so the fitting branch is parallel to the holder case and oriented as shown above.

Note The gasket moves easily if not held in place when pressing the pressure gauge adapter fittings flange against the holder fitting flange.

3. Secure the Pressure Gauge Adapter Fittings to the FEED fitting with the sanitary clamp, as shown below.
4. Open the sanitary clamp by moving the swing bolt out of the clamp slot.
5. Place the sanitary clamp over the FEED fitting connection and close the sanitary clamp by moving the swing bolt into the clamp slot.
6. Hand tighten the sanitary clamp closure.
7. Repeat steps 1-3 to connect a pressure gauge adapter fittings to the RETENTATE fitting.

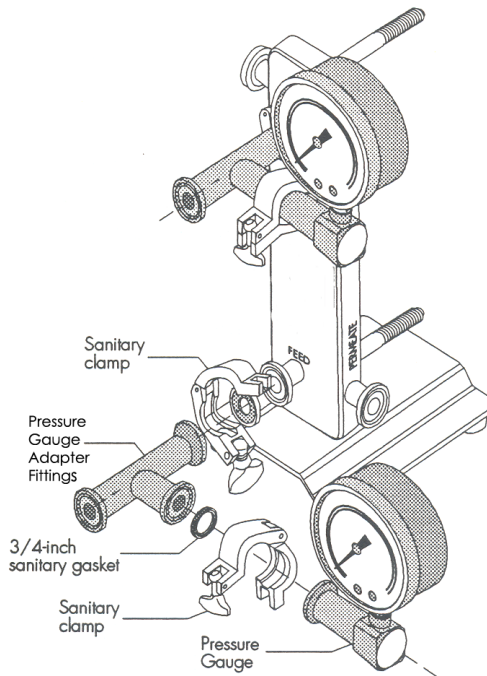


Clamping the Pressure Gauge Adapter Fittings to the Mini Holder Fitting

Connecting the Pressure Gauge

Analog and digital pressure gauges are available from your local representative.

1. Seat the $\frac{3}{4}$ -inch sanitary gasket in the groove on the pressure gauge adapter fittings.
2. Hold the gasket in place and press the pressure gauge diaphragm against the $\frac{3}{4}$ -inch side branch of the pressure gauge adapter fittings.
3. Secure the pressure gauge to the Pressure Gauge Adapter Fittings with the sanitary clamp.
4. Open the sanitary clamp by moving the swing bolt out of the clamp slot.
5. Place the sanitary clamp over the Pressure Gauge Adapter Fittings-PRESSURE GAUGE connection and close the sanitary clamp by moving the swing bolt into the clamp slot.
6. Hand tighten the sanitary clamp closure.
7. Repeat steps 1-3 to connect a Pressure Gauge Adapter Fittings to the RETENTATE fitting.



Attaching the Pressure Gauge to the Pressure Gauge Adapter Fittings

Connect the Permeate Fittings

Two gaskets and two clamps are supplied for attaching fittings to the two PERMEATE fittings located on the sides of the manifold plate. The PERMEATE fittings accommodate standard 1/2-inch or 3/4-inch sanitary fittings and adapters.

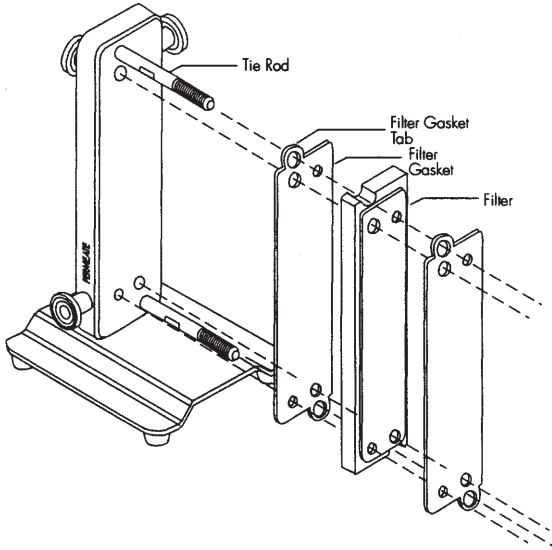
Inserting the Pellicon® Cassettes

Install the required number of cassettes. Permeate flow rate increases as filter area increases.

1. Inspect the tie rods and nuts for signs of burrs or stripped threads. Nuts should turn freely on the tie rods for proper tightening of the holder.
2. Holding the manifold with one hand, slide the filter gasket (Pellicon® 2 Cassettes only) tabs over the tie rods and press the filter gasket against the manifold, as shown below.

Note Pellicon® 2 Cassettes ONLY

The large feed and retentate holes on the filter gasket must align to the large feed and retentate holes on the manifold. Two filter gaskets are supplied with each filter. One filter gasket must be installed between each pair of filters, and one gasket must be installed between each end of the filter and the adjacent stainless steel plate.



Inserting the Filter Gaskets and Filter

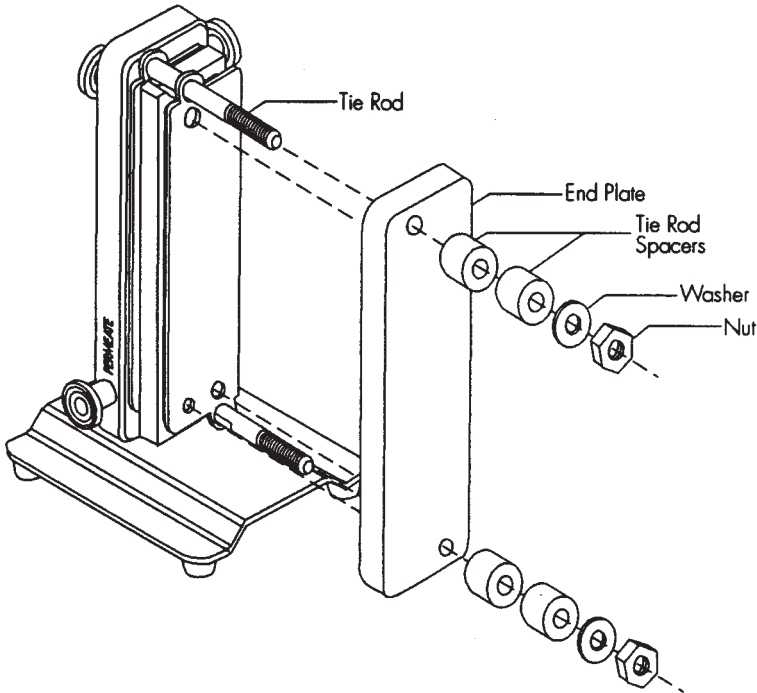
3. Align the filter cut-outs with the tie rods, and insert the filter so it is parallel with the manifold as shown.

Note The filter will extend beyond the edges of the manifold and end plate if the filter does not properly align to the feed, retentate, and permeate holes.

4. Holding the manifold with one hand, slide the filter gasket (Pellicon® 2 Cassettes only) tabs over the tie rods and press the filter gasket (Pellicon® 2 Cassettes only) against the filter, as shown.
5. Repeat steps 3–5 for additional cassettes.

Attaching the End Plate

1. Holding the manifold gaskets (Pellicon® 2 Cassettes only) and filter(s) in place with one hand, slide the end plate holes over the tie rods and press the end plate against the filter.



Attaching the end plate

2. Place an equal number of spacers on each tie rod depending on the number of filters in use.
3. Place one washer and one nut on each tie rod, as shown above, and hand tighten.
4. Tighten the holder with the torque wrench and socket. The torque wrench setting for 180-200 inch-pounds (20.3-22.6 Newton-meters). Check the torque wrench (not supplied with the holder) setting for 180-200 inch-pounds (20.3-22.6 Newton-meters) prior to use. Refer to the next section to set the torque wrench.
5. Attach the deep socket to the torque wrench by firmly pressing

the deep socket onto the torque wrench drive. Attaching the deep socket may require force.

6. Hand tighten the nuts evenly by alternating from one nut to the other.
7. Brace the holder with one hand. With a continuous motion, turn each nut $\frac{1}{4}$ turn with the torque wrench, alternating from one nut to the other until torque wrench "clicks" when it reaches 180-200 inch-pounds (20.3-22.6 Newton-meters).
8. Wait 5-10 minutes; re-torque to 180-200 inch-pounds (20.3-22.6 Newton-meters).
Waiting allows gasket(s) to relax before re-torquing.
9. Re-torque to a maximum of 200 inch-pounds (22.6 Newton-meters) as needed to create a liquid-tight seal. The torque wrench may have a fixed head or a ratchet-style head. If your wrench has a ratchet-style head, move lever to the right lock position to tighten nuts and move the lever to the left lock position to loosen the nuts.

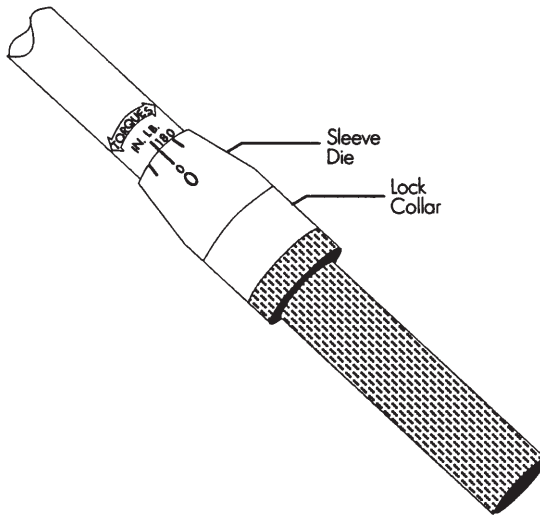
Note Non-uniform tightening of the nuts can damage the filter. Non-parallel plates or compression of the filter(s) at one end can cause leakage.

Setting the Torque Wrench

1. Pull down the spring-loaded lock collar to unlock the torque wrench.
2. Hold down the spring-loaded lock collar while turning the handle until the 180-200 inch-pound (20.3-22.6 Newton-meters) mark on the wrench handle aligns with the zero mark on the sleeve die.

Note One side of the torque wrench handle displays units as inch-pounds and the other side displays units as Newton-meters.

3. Rotate the handle slightly so the lock collar springs back and locks into place. When the lock collar locks into place the handle will not rotate.



Setting the Torque Wrench

Autoclave Setup

1. Remove all filters and filter gaskets from the Pellicon® Mini and MiniX Holder before autoclaving.
2. Rest the holder FEED and RETENTATE fittings and the end plate on a soft material to protect the fitting faces and end plate from being scratched in the autoclave.

Do not autoclave with the holder in an upright position, because the feet will compress and become loose.

3. Autoclave the Pellicon® Mini and MiniX Holder at 121° C to 125° C for 30 minutes per cycle.

Ordering Information

Description	Catalog Number
Pellicon® Mini Holder Includes holder, 4 spacers, 4 sanitary gaskets, 4 sanitary clamp fittings, and assembly instructions	XX42PMINI
Pellicon® MiniX Holder Includes holder, 6 spacers, 4 sanitary gaskets, 4 sanitary clamp fittings	XX42PMINIX

Spare Parts and Accessories

Description	Catalog Number	Qty (per kit)
Kits for short tie rods including 2 tie rods	XX42PMIST	2
Kits for long tie rods including 2 tie rods	XX42PMILG	2
Stainless Steel Spacer		
Stainless Steel spacers	XX42PMSP	4
Nuts and Washer		
4 washers 3/8 and 4 HEX silicone Bronze nuts 3/8-16	XX42MT073	4
Pressure Gauge		
Pressure gauge.(0-4 bars)	B26524	1
Pressure gauge (-1 / +6 bars)	YFS7PGV34	1
Pressure gauge (0-2 bars)	XX42PGM02	1
Stainless Steel TC Clamp		
Fitting kit for pressure gauge: 2 tees/4 gaskets/4 clamps	XX42PM001	N/A
TC Clamps 3/4 in. Stainless steel	XX42T1900	4
TC Gasket		
TC gasket silicone.	FTPF03342	10
TC gasket EPDM.	MSD1169W7	10

Description	Catalog Number	Qty (per kit)
Valve		
Stainless steel valve EPDM, dia- phragm 3/4 in. TC	YFS7ETC34	1
Hoses and Blank Caps		
hose connector 1/2 in./TC 3/4 in. Stainless steel	FTPF02651	5
TC blank cap 3/4 in.	FTPF02247	4
Torque Wrench and Accessory: Socket/Ratchet		
torque wrench	XX42PMITW	1
Socket 9/16 in.	XX42PMISR	1
Single-pass TFF Accessory		
Single-pass TFF mini diverter plate kit. Includes 4 diverter plates and 2 sili- cone gaskets.	XXSPTFF01	1

Standard Product Warranty

The applicable warranty for the products listed in this publication may be found at www.millipore.com/terms (within the “Terms and Conditions of Sale” applicable to your purchase transaction).

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