



# Pellicon<sup>®</sup> 2 and 3 Mini Holder

## User Guide

## Notice

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# Unpacking

The Pellicon 2 and 3 Mini Holder comes packed in a box and includes the following items:

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

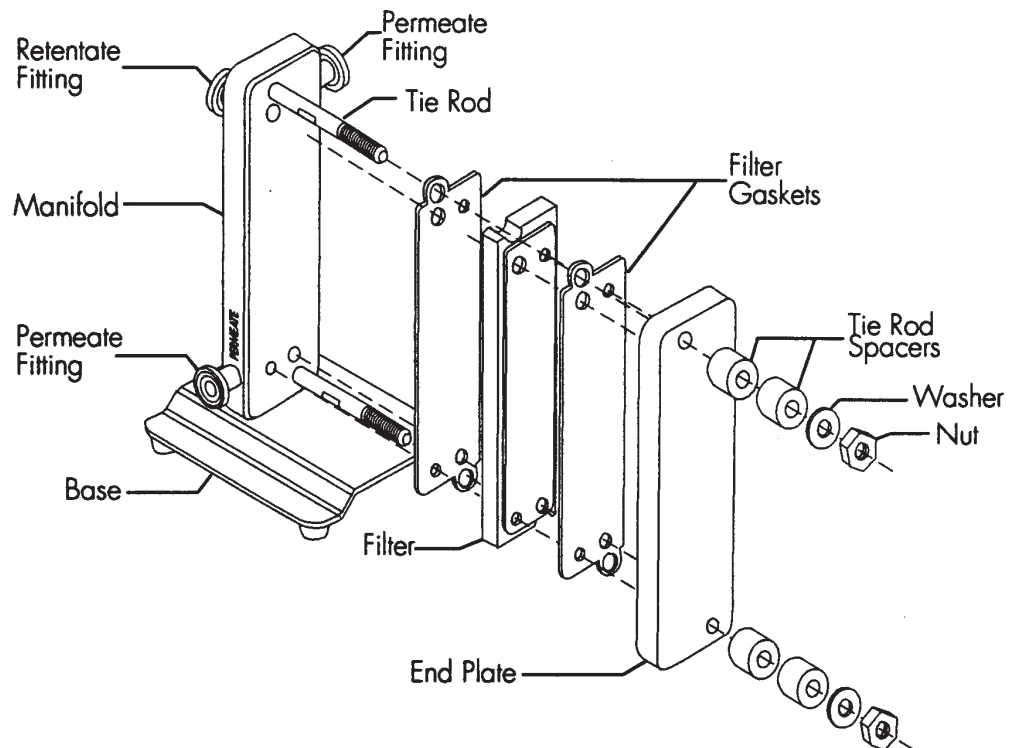


Figure 1: Exploded view of Pellicon 2 and 3 Mini Holder

# Plumbing and Instrumentation

The concentration mode is the most commonly used mode for the concentration of proteins and viruses and is shown in Figure 2 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 in Figure 2, 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.

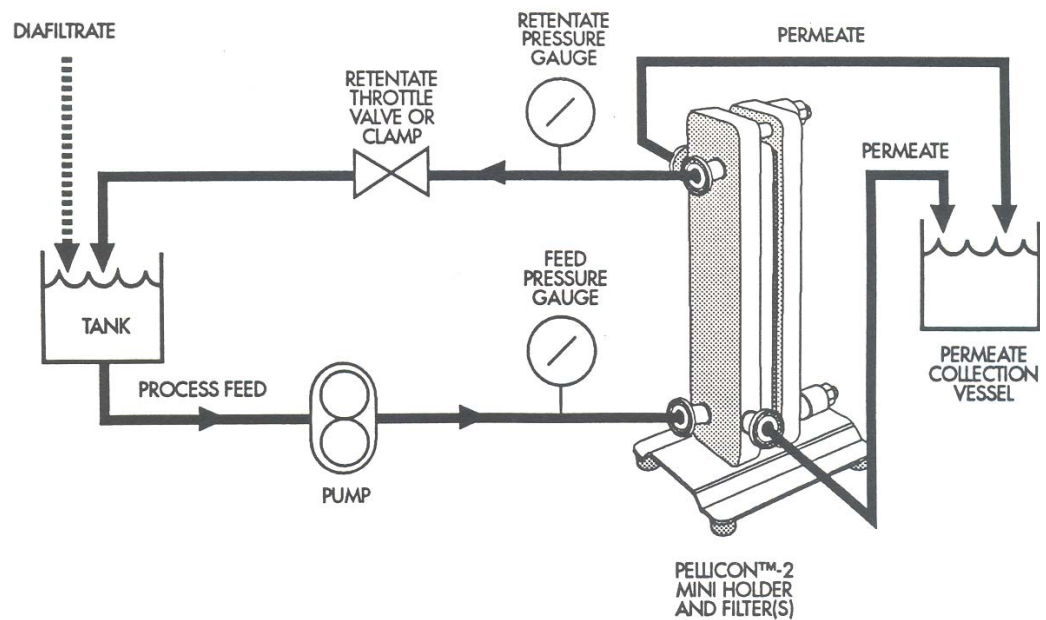


Figure 2: Plumbing and Instrumentation Diagram

# Assembling the Pellicon 2 and 3 Mini Holder

## Feed and Retentate Fitting Connections

Configurations for connecting fittings to the FEED and the RETENTATE fittings, shown in Figure 3, 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.

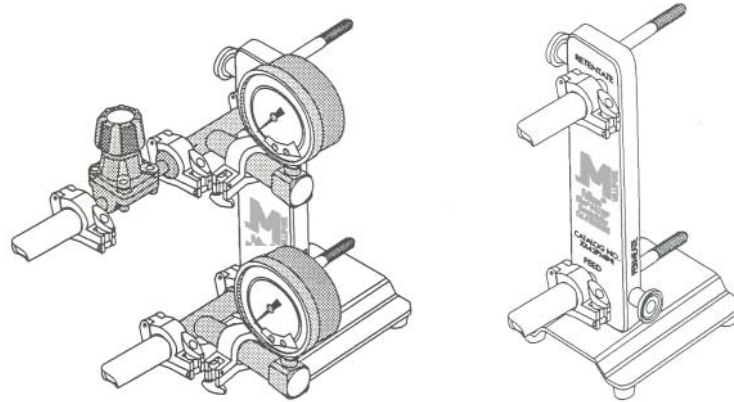


Figure 3: Feed and Retentate Fitting Connections

## Permeate Fitting Connections

Configurations for connecting fittings to the PERMEATE fittings, shown in Figure 4, 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.

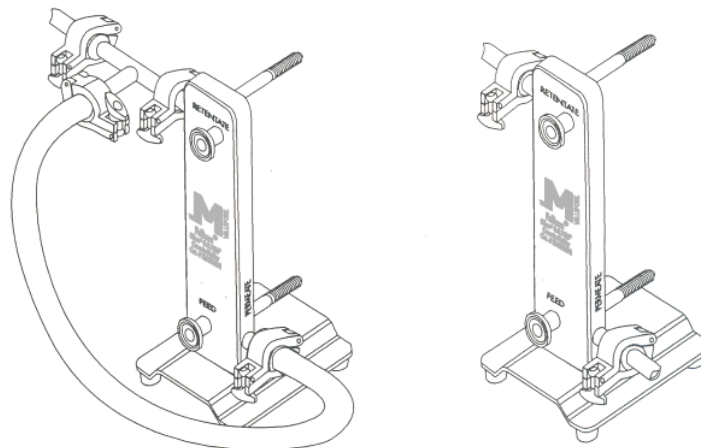


Figure 4: Permeate Fitting Connections

## Connecting Pressure Gauge Adapter Fittings to FEED and RETENTATE Fittings

The Pellicon 2 and 3 Mini 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  $\frac{3}{4}$ -inch sanitary gaskets and two sanitary fitting clamps are supplied with each pressure gauge adapter fitting.

1. Seat a  $\frac{3}{4}$ -inch sanitary gasket in the groove on the FEED fitting.
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 in Figure 5.

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

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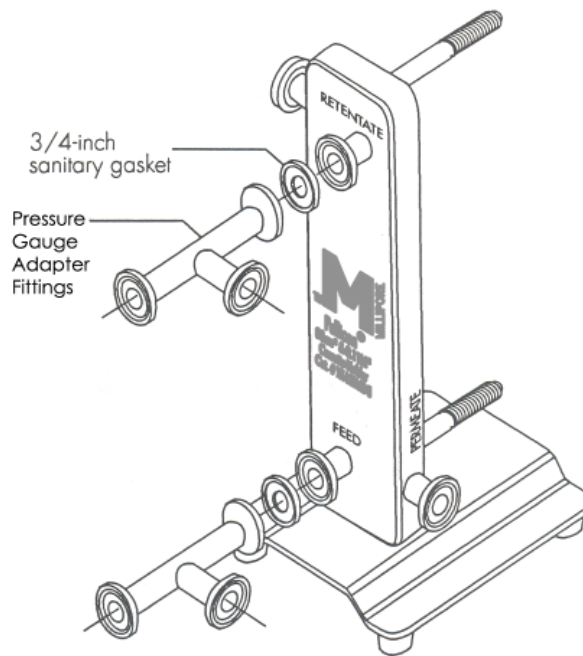


Figure 5: Installing the Gasket and Positioning the Pressure Gauge Adapter Fittings

3. Secure the Pressure Gauge Adapter Fittings to the FEED fitting with the sanitary clamp, as shown in Figure 6.
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.



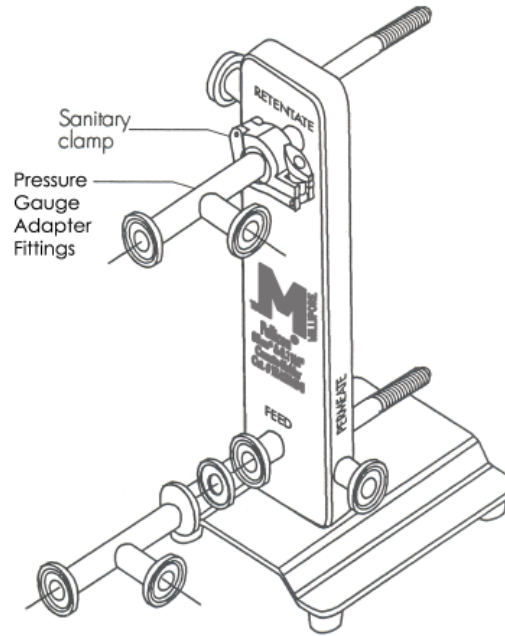


Figure 6: Clamping the Pressure Gauge Adapter Fittings to the Mini Holder Fitting

## Connecting the Pressure Gauge

Analog and digital pressure gauges are available from Millipore.

1. Seat the 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 3/4-inch side branch of the pressure gauge adapter fittings, as shown in Figure 7.

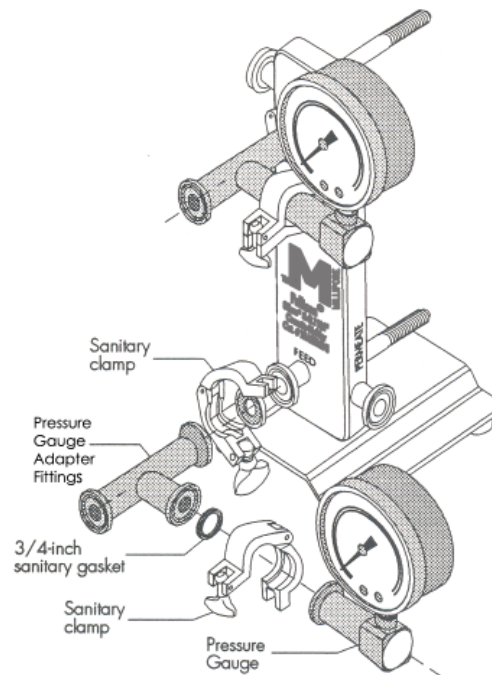


Figure 7: Attaching the Pressure Gauge to the Pressure Gauge Adapter Fittings

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.

## 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

Use one to three cassettes depending on the desired permeate flow rate. 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 in Figure 8.

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### 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. Millipore supplies two filter gaskets 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.

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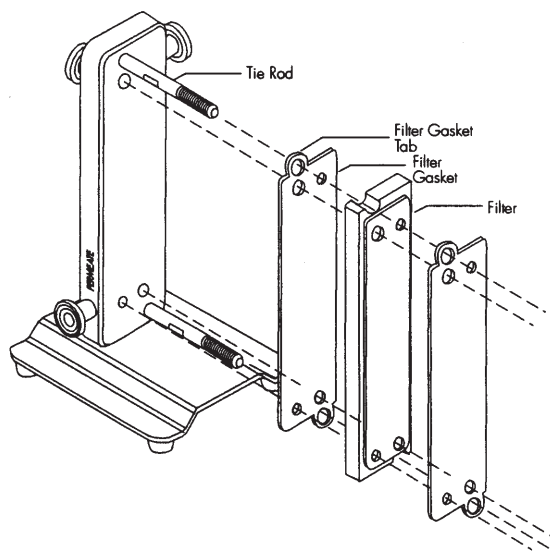


Figure 8: Inserting the Filter Gaskets and Filter

- Align the filter cut-outs with the tie rods, and insert the filter so it is parallel with the manifold as, shown in Figure 8.

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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.

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- 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 in Figure 8.
- Repeat steps 3–5 for additional cassettes.

## Attaching the End Plate

- 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, as shown in Figure 8, and press the end plate against the filter.

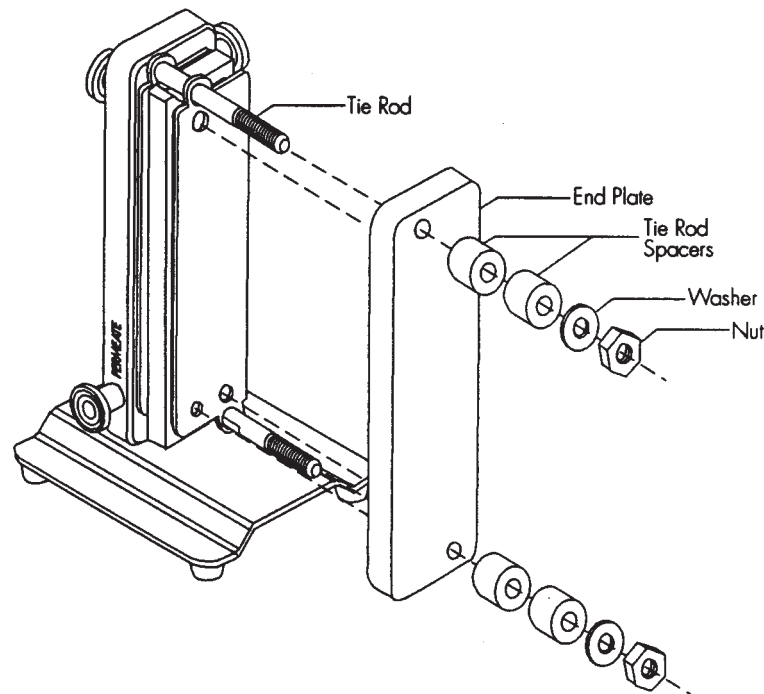


Figure 9: Attaching the end plate

- Place an equal number of spacers on each tie rod depending on the number of filters in use.
- Place one washer and one nut on each tie rod, as shown in Figure 8, and hand tighten.
- 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.

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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.

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### 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.

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

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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.

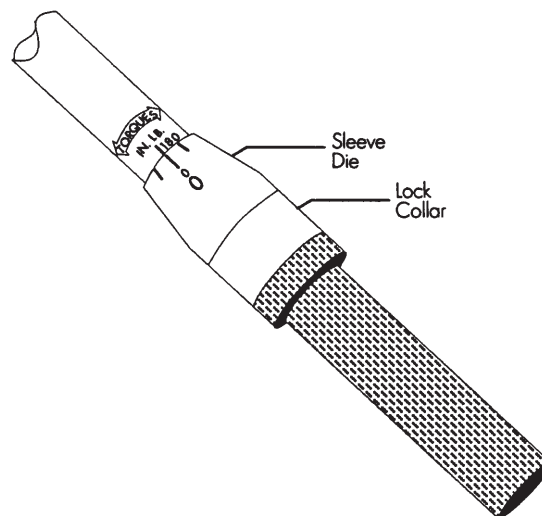


Figure 10: Setting the Torque Wrench

# Setup for Autoclaving

1. Remove all filters and filter gaskets from the Pellicon 2 and 3 Mini 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 2 and 3 Mini Holder at 121° C to 125° C for 30 minutes per cycle.

# Ordering Information

Description	Catalogue Number
Pellicon 2 and 3 Mini Holder Includes holder, 4 sanitary gaskets, 4 sanitary clamp fittings, and assembly instructions	XX42PMINI

## Spare Parts and Accessories

Description	Catalogue 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
Valve		
Stainless steel valve EPDM, diaphragm 3/4 in. TC	YFS7ETC34	1
Hoses and Blank Caps		
hose connector 12.5mm /TC	FTPF0251	3
hose with 3/4" TC fittings	XX42P60TC	1
TC blank cap 3/4 in.	FTPF02247	4
Torque Wrench and Accessory: Socket/Ratchet		
torque wrench	XX42PMITW	1
Socket 9/16 in.	XX42PMISR	1

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