Millipore®

User Guide

Millistak+® P0D Holders

Process Scale and Expansion KIT

MilliporeSigma

Contents

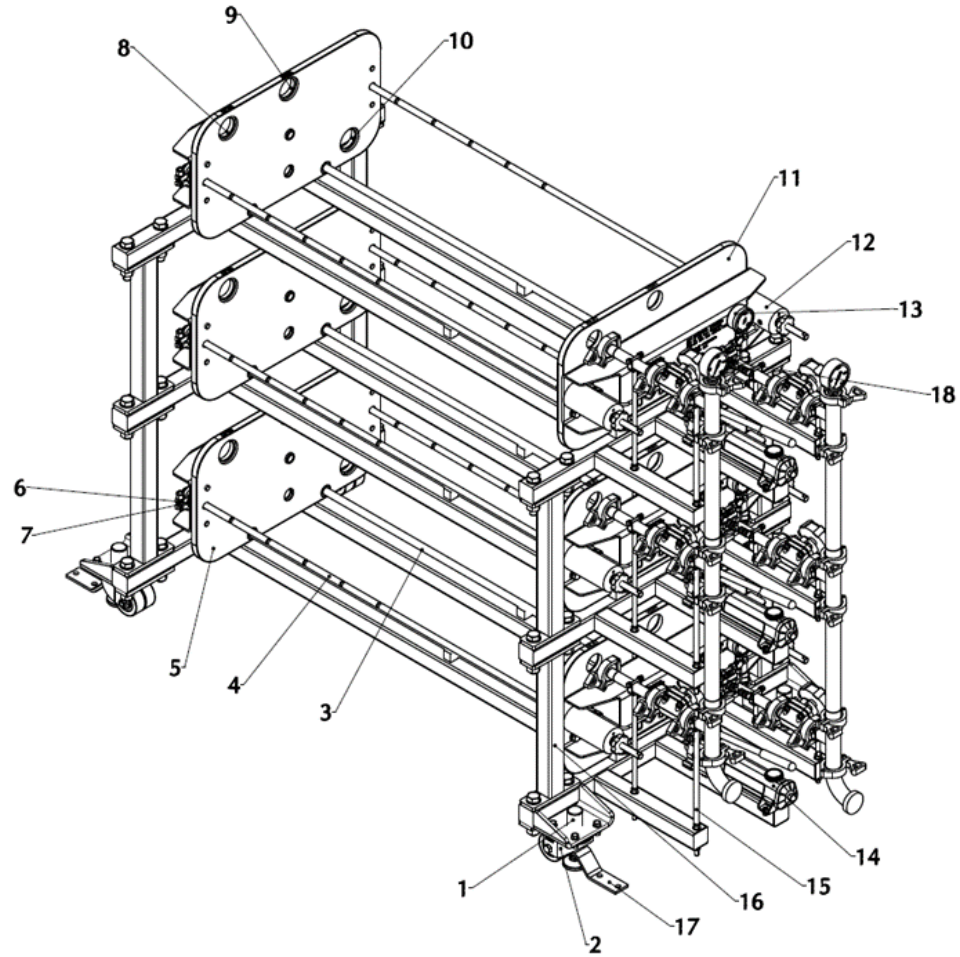
Catalog Numbers

This user guide includes instructions for the following catalog numbers:

Catalog Number	Description	Primary Use	Quantity per Package
Process Scale Holders			
MP0DSYS1A	Process Scale 1-rack, Gemü® valves	5 to 10 devices	1
MP0DSYS1B	Process Scale 1-rack, ITT valves	5 to 10 devices	1
MP0DSYS1N	Process Scale 1-rack, no valves	5 to 10 devices	1
MP0DSYS1X	Expansion Kit 1-rack, no valves	5 to 10 devices	1
MP0DSYS2A	Process Scale 2-rack, Gemü® valves	5 to 20 devices	1
MP0DSYS2B	Process Scale 2-rack, ITT valves	5 to 20 devices	1
MP0DSYS2N	Process Scale 2-rack, no valves	5 to 20 devices	1
MP0DSYS3A	Process Scale 3-rack, Gemü® valves	5 to 30 devices	1
MP0DSYS3B	Process Scale 3-rack, ITT valves	5 to 30 devices	1
MP0DSYS3N	Process Scale 3-rack, no valves	5 to 30 devices	1

Millistak+® P0D Holder Process Scale

Key	Description
1	Leveling Pad Cap
2	Caster
3	Alignment Rod
4	Clamp Rod
5	Moveable Endplate
6	Tri-Clover Clamp
7	Clamp Insert
8	Inlet Fitting Port
9	Vent Fitting Port
10	Outlet Fitting Port
11	Fixed Plate
12	Hydraulic Cylinder
13	Hydraulic Pressure Gauge
14	Hydraulic Pump
15	Manifold Bracket
16	Upright
17	Restraint Bracket
18	Quick Connector



Installation

Installing the Holder Process Scale

1. Locate the holder in its permanent installation location.
2. Remove the leveling pad adjuster cap (1) from each caster. Lower the leveling pads with a wrench until the casters are raised off the floor. Adjust the height to level the holder and to align the feed and filtrate ports with process piping. Replace the leveling pad adjuster cap.
3. Remove and discard any disposable fittings shipped with the holder.

Installing the Expansion KIT

1. Remove the outer bolt on the caster (2) for single rack holders) or upright (16) for two rack holders. Loosen the inner bolt closest to the plate.
2. Slide the flange of an upright under the loosened bolt. Tighten loose bolt. Install another bolt and tighten.
3. Repeat for remaining three corners.
4. Remove the outer bolt and loosen the inner bolt closest to the plate on the new rack.
5. Using a crane or hoist lift the additional rack onto the uprights. Put the straps of the hoist through the channels on the rack.
6. Position the new rack so that the loose bolt slides into the slot on the upright. Install the other bolt and tighten both. Rack must be positioned so that the uprights are in the correct location.
7. Install manifold brackets.
8. Assemble the manifold pieces. Place loosely onto manifold brackets.
9. Install disposable fittings into the fixed plate (11). Install at least five 1 m^2 pods into the rack, as described in the Pod Filter Installation section of this manual. Once the pods are installed and the hydraulic system is energized, attach the manifolds to the disposable fittings.
10. Adjust the manifold brackets after the manifold is installed by screwing one nut on top of the bracket and one below, tightening the lower one when the manifold is in the correct position.

Installing the Millistak+® P0D Filter

1. Load the pods into the racks from the bottom rack up. Repeat the following steps on each rack.
2. Remove the clamp rod (4) from the side that the pods will be loaded by removing the clamp rod knob from one end and the tri-clover clamp (6) and clamp insert (7) from the opposite end, then pulling the clamp rod through the hydraulic cylinder (12). The hole for the clamp rod in the moveable endplate (4) is slotted so that the clamp rod can be removed without pulling it out completely from the end of the holder.
3. Grasp the channel on the moveable endplate (5) with both hands and pull it open enough to install the pods.
4. Gaskets are installed on the disposable fittings and must be in place for proper operation.
5. Load disposable fittings by pushing them through the ports (8) (9) (10) in the plates (5) (11) from the inside. The flow-through fittings must be installed in the feed and filtrate ports on the stationary plate. The flow-through fitting for the vent port may be placed on either endplate. Connect the disposable fitting to the manifold, if one is being used. If a diverter plate is being used, flow-through fittings must be installed in all the ports.

6. Position the pods so that the alignment key of the pod faces the fixed plate (11) of the holder. **If the pods are installed backwards, the alignment key will prevent the pods from locking into each other or into the endplate and will cause damage to the pods when hydraulic pressure is applied**. Install pods from the side by gently lowering the pod into the holder. The pods will self-align on the alignment rods. If a diverter plate is being used, it should be installed and aligned with the alignment key of the pods in the same manner.
7. Push the first pod against the fixed plate.
8. Push each additional pod against the next, ensuring that the alignment keys engage.
9. When all pods are installed, push the moveable plate (5), in the center below the channel, against the last pod, ensuring that the alignment keys engage.
10. Replace the clamp rod.
11. Install the clamp inserts and Tri-Clover clamps into the clamp rod adjustment groove that is closest to the moveable plate.
12. Turn the clamp rod knobs until they contact the hydraulic cylinders. **If the piston is not retracted to within 5 mm, continue turning the knob until the piston is retracted**.
13. Close the hydraulic pump relief valve.
14. The hydraulic pump vent valve must be in the Vent position during operation.
15. Open the hydraulic valve.
16. Using the hydraulic pump (14), increase the hydraulic pressure until the hydraulic pressure gauge (13) on the holder reads 900 - 1100 psi (62 - 76 bar). **Do not increase the pressure if the hydraulic valve is closed**.
17. Once approximately 1000 psi (69 bar) is achieved on the gauge, close the hydraulic valve. To ensure that the moveable plate will compress properly, the piston of hydraulic cylinder (12) should not extend more than 35 mm (1.38 in.) beyond the hydraulic cylinder. If it does, relieve the pressure in the hydraulic system, retract the pistons manually and repeat steps 11 through 15.

    Note A loss in hydraulic pressure due to settling of pods may occur if an assembly is compressed and left unused for an extended period. The minimum hydraulic pressure required to maintain an integral assembly is 800 psi. Should the hydraulic pressure be observed below 800 psi, repeat steps 14 through 16.
18. Attach the user supplied vent valve to the vent port (9). If no manifold is installed, connect the feed line to the feed port (8) and the product line to the filtrate port (10).
19. Connect the process piping to the fluid manifold. The feed piping must be connected to the manifold which connects to the inlet port (8). The filtrate must be connected to the manifold which connects to the outlet port (10).

Operation

Refer to the user guide (document number: P88724) supplied with the pod filters for operating parameters and instructions.

Millistak+® P0D Filter Disassembly

1. On multi-rack systems, this process should be performed on each rack, from highest to lowest.
2. Depressurize hydraulic cylinders by opening the hydraulic valve and hydraulic pump relief valve.
3. Loosen the clamp rod knob on the clamp rods and pull the moveable plate away from the bank of pods. Moveable plate must be far enough away for alignment keys to disengage.
4. Remove the clamp rod from the side from which the pods will be unloaded by removing the clamp rod knob from one end and the Tri Clover clamp and clamp insert from the opposite end, then pulling the clamp rod through the hydraulic cylinder. The hole for the clamp rod in the moveable endplate is slightly slotted so that the clamp rod can be removed without pulling it out completely from the end of the holder.
5. Pull pods out of holder, keeping pod level to minimize dripping.
6. Install plugs supplied with the pod to prevent drips from the ports during disposal.
7. Remove and discard disposable fittings.

Manifold Cleaning (CIP)

1. For each rack, connect the feed and filtrate manifolds using the symmetric CIP spools provided (MP0DCIPSPLH and MP0DCIPSPLV).
2. Remove the pressure gauge at the top of the feed and filtrate manifolds and connect them with the asymmetric CIP spool. The diaphragm of the gauges should be cleaned by hand.
3. Pump CIP cleaning fluid through the manifolds at 100 Lpm or at a sufficient flow rate to ensure complete wetting of all internal surfaces. Drain fluid from system after flush is completed.
4. Remove cleaning fluid residue from system by flushing with WFI water at 100 Lpm or at a sufficient flow rate to ensure complete wetting of all internal surfaces. Drain fluid from system after flush is completed.
5. Remove the CIP spools.

   Note Retain these spools to perform future CIP.
6. Install the cleaned pressure gauges to the top of each manifold.

Hydraulic System Maintenance

Hydraulic Fluid Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Place a drip pan under the hydraulic pump (14) and loosen and remove the drain plug on the pump.
3. Loosen the compression fitting nuts closest to each hydraulic cylinder and pull the steel tubing out of the fitting.
4. Replace and tighten the drain plug on the hydraulic pump.
5. Loosen and remove the hydraulic pump vent valve.
6. Pour approximately 300 mL of hydraulic fluid into hydraulic pump reservoir.
7. Replace the hydraulic pump vent valve and leave in the OPEN position.
8. Close the hydraulic pump relief valve and ensure that the hydraulic valve is open. Operate the hydraulic pump until hydraulic fluid comes out of the steel tubing near the hydraulic cylinders.
9. Connect the steel tubing to each hydraulic cylinder.
10. Tighten each compression fitting approximately ¾ turn beyond finger tight.
11. Follow the procedures for Bleeding the System and Testing the System.

Hydraulic Gauge Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Close the hydraulic valve.
3. Place a drip pan under the pressure gauge and loosen the compression fittings attached to the cross fitting.
4. Disconnect the steel tubing from the cross and lift out the pressure gauge and cross fitting.
5. Place the cross in a vise and rotate off the gauge. Remove any tape left inside the cross.
6. Tape the threads on the new gauge and install on the cross fitting. The connection must be tight and the gauge should point in the correct direction.
7. Connect the steel tubing to each of the other three connections to the cross.
8. Tighten each compression fitting approximately ¾ turn beyond finger tight.
9. Follow the procedures for Bleeding the System and Testing the System.

Hydraulic Pump Replacement

1. Relieve the pressure in the hydraulic system by opening the hydraulic valve and hydraulic pump relief valve.
2. Turn the hydraulic pump vent valve to the CLOSED position.
3. Close the hydraulic valve.
4. Place a drip pan under the hydraulic pump and loosen the compression fitting nearest to the pump.
5. Disconnect the steel tubing from the pump.
6. Remove the mounting bolts from each side of the pump and slide the pump out of the mounting bracket.
7. Note the orientation of the elbow fitting attached to the outlet of the pump. Remove the elbow fitting and remove any tape on the threads.
8. Tape the elbow fitting and install on the new pump outlet. The elbow must be tight and pointing in the same orientation as on the old pump.
9. Slide the new pump onto the mounting bracket.
10. Reinstall the two mounting bolts which hold the pump in place.
11. Re-connect the steel tubing to the pump. Tighten the compression fitting approximately ¾ turn beyond finger tight.
12. Follow the procedures for Bleeding the System and Testing the System.

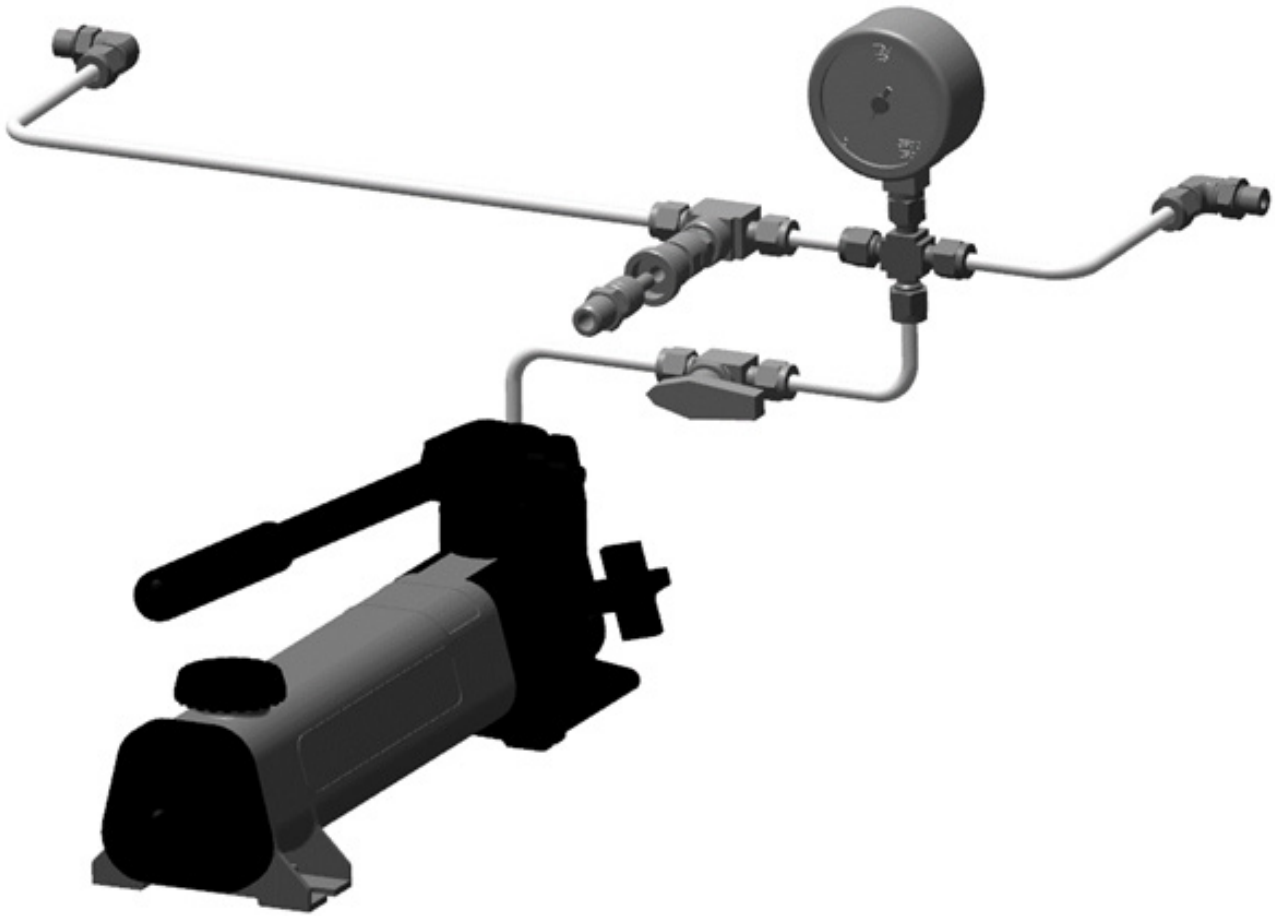
Bleeding the System

1. Turn the hydraulic pump vent valve to the VENT position.
2. Adjust the clamp rods to allow the hydraulic cylinder pistons to extend to their full length.
3. Open the hydraulic valve.
4. Close the hydraulic pump relief valve.
5. Using the hydraulic pump, increase the hydraulic pressure until the pressure gauge reads 900-1100 psi (62-76 bar).
6. Relieve the hydraulic system pressure by opening the hydraulic pump relief valve.
7. Repeat steps 4 through 6 two more times to allow any air in the system to be pushed back to pump reservoir.

Testing the System

1. With no Millistak+® P0D filters in place, adjust clamp rods so that the clamp inserts are snug against the hydraulic cylinder pistons.
2. Open hydraulic valve and close hydraulic pump relief valve.
3. Using the hydraulic pump, increase the hydraulic pressure until the pressure gauge reads 2200 psi (150 bar).
4. Momentarily close and open the hydraulic valve. If this causes a noticeable decrease in hydraulic system pressure, use the hydraulic pump to bring the system pressure back up to 2200 psi (150 bar).
5. Allow the system to sit for a minimum of 15 hours. The hydraulic system pressure should drop no more than 200 psi over the 15-hour period. No hydraulic connections should be wet. If any hydraulic connections are wet, or if the hydraulic system pressure has dropped more than 200 psi, the system is NOT ready for operation. Check all connections and repeat Bleeding the System and Testing the System until the hydraulic system is secure.

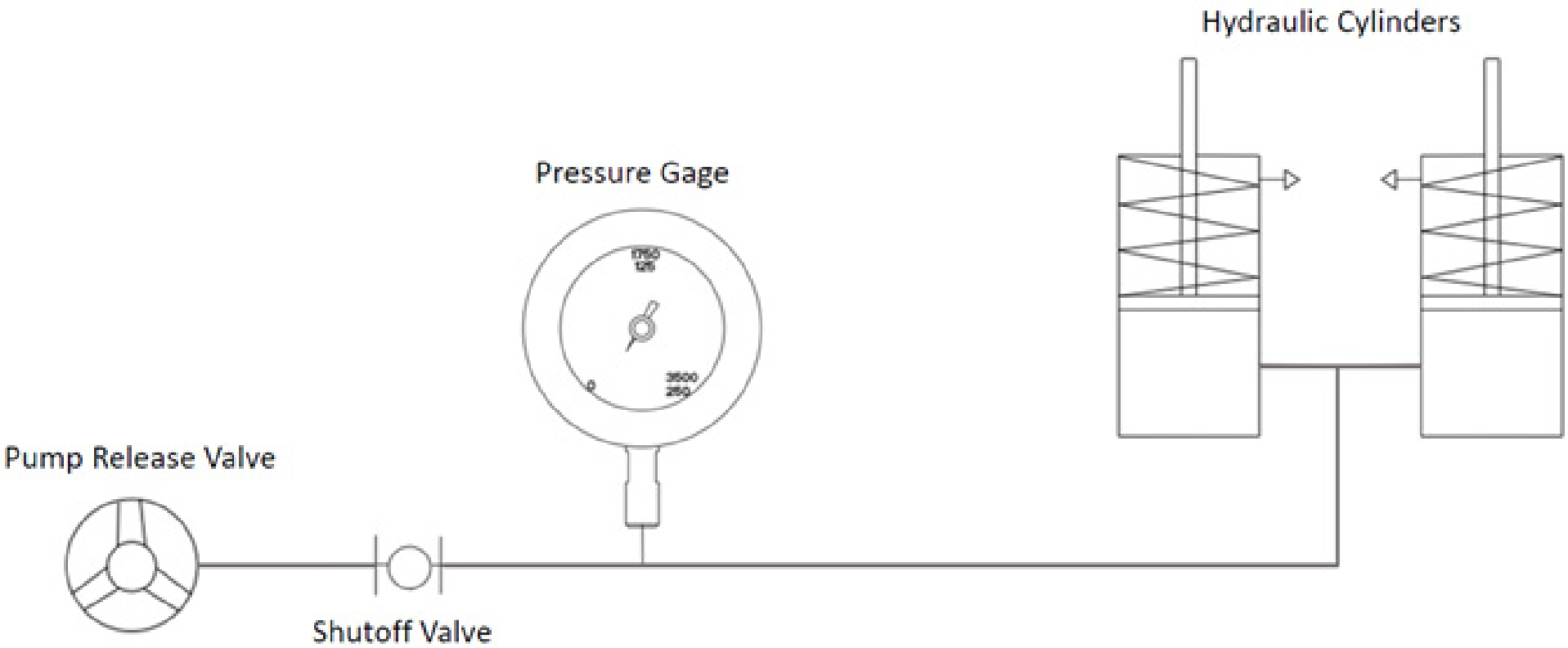
Hydraulic Gauge Calibration using the Quick Connector



Note The Quick Connector is composed by one Male Bulkhead Connection (MBC) and one Female Bulkhead Connection (FBC)

1. Open the hydraulic pump release valve and the hydraulic valve to release the pressure. Check the hydraulic pressure gauge (13) indicates 0 psi.
2. Check the pump vent valve is on Vent position.
3. Connect the reference pressure gauge (calibrated) at the MBC of the quick connector.
4. Plug the MBC assembly in the FBC of the quick connector.
5. Check all system fittings and connections to be sure they are tight and leak free.
6. Verify that the reference pressure gauge and the hydraulic pressure gauge (13) readings are 0.0 psi/0.0 bar when no pressure is applied.
7. Close the hydraulic pump release valve.
8. Using the hydraulic pump (14), increase the pressure and cross-check the gauge with the digital indicator on several pressure values.
9. Record all results
10. When the verification is completed, open the hydraulic pump release valve.
11. Unplug the MBC assembly.
12. Follow the procedures for Bleeding the System.

P&D - Millistak+® P0D Holder Process Scale



Spare Parts and Accessories

Catalog Number	Description	Quantity per Package
MP0DHYPUMP	Hydraulic pump	1
MP0DHFLUID	Hydraulic fluid (1 Liter)	1
MP0DHYGAGE	Hydraulic system pressure gauge (for design without quick connector)	1
MP0DINSERT	Clamp insert	1
YY2004045	1.5 in. TC stainless steel clamp for use with MP0DINSERT (for design without quick connector)	1
MP0DCRKN0B	Clamp rod knob	1
MP0DCR0D02	Clamp rod for 2 filters	1
MP0DCR0D05	Clamp rod for 5 filters	1
MP0DCR0D10	Clamp rod for 10 filters	1
MP0DSSELB0	Manifold elbow, 90°C, 1.5 in. 316 stainless steel	1
MP0DSSTEE	Manifold tee, 1.5 in. 316 stainless steel	1
MP0DMANSPH	Manifold spool, 1 in. x 6.60 in. L	1
MP0DMANSPV	Manifold spool, 1.5 in. x 13.16 in. L	1
MP0DMANBRK	Manifold bracket assembly	1
MP0DVLVADIA	Replacement diaphragm for 1 in. Gemü® MP0DVALVEA	2
MP0DVLVBDIA	Replacement diaphragm for 1 in. ITT MP0DVALVEB	2
VPMHFNPTVAL	¼ inch ball valve	1
VPMHS0VALVE	¼ inch ball valve (for design with quick connector)	1
VPMHHYGAGE	Hydraulic system pressure gauge (for design with quick connector)	1
MP0D60PSIG	1.5 in. TC sanitary gauge, 0–60 psi (0–4 bar)	1
MP0DVALVEA	Diaphragm valve, 1 in. Gemü®	1
MP0DVALVEB	Diaphragm valve, 1 in. ITT	1
MP0DSYSUPRT	MP0DSYS Upright kit	4
MP0DCIPSPLH	SS CIP Spool connecting horizontal manifold	1
MP0DCIPSPLV	SS CIP Spool connecting vertical manifold	1
MP0DSYSCAP	MP0DSYS caster cap and O-ring	1

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