



SANITARY PNEUMATIC DIAPHRAGM PUMPS

Installation, Operation & Maintenance Manual

- PMP6600 | 1.5" Tri-Clamp
- PMP6601 | 2" Tri-Clamp
- PMP6602 | 3" Tri-Clamp

IMPORTANT SAFETY INFORMATION

Please read this entire manual for important safety information prior to the use of your pump.

- ⚠ WARNING** Always depressurize both air and liquid lines before servicing.
- ⚠ WARNING** Never exceed the pump's maximum operating pressure.
- ⚠ WARNING** Verify all clamps, fittings, and connections are secure before operation.
- ⚠ WARNING** Use only clean, dry compressed air.
- ⚠ WARNING** Properly ground the pump and associated piping when required by local codes.
- ⚠ WARNING** Do not allow piping weight to be supported by the pump body.
- ⚠ WARNING** Use only compatible cleaning chemicals and sanitizers.

Pressure Relief Procedure

Before performing maintenance, cleaning, or disassembly:

1. Shut off the compressed air supply.
2. Close the main air shutoff valve.
3. Open the discharge valve or downstream process connection.
4. Allow all liquid pressure to dissipate.
5. Verify both air and liquid pressure have been relieved before loosening clamps or fittings.

- ⚠ WARNING** Product and cleaning solutions may remain under pressure even after the pump has stopped cycling. Always relieve system.

CAUTION

- ⚠ CAUTION** Do not allow piping weight to be supported by the pump body.
- ⚠ CAUTION** Support all hoses and piping independently.
- ⚠ CAUTION** Use only compatible cleaning chemicals and sanitizers.

1. INTRODUCTION

MB Stainless sanitary pneumatic diaphragm pumps are designed for sanitary transfer of wine, cider, mead, juice, kombucha, beer, and other beverage products. Their air-operated double diaphragm (AODD) design provides gentle product handling, self-priming capability, dry-run protection, and excellent solids-handling performance.

These pumps are commonly used for:

- Tank-to-tank transfers
- Juice transfer
- Harvest operations
- Barrel filling and emptying
- Pump-overs
- Fermented beverage production
- Filtration feed systems
- Lees transfer

2. PRODUCT SPECIFICATIONS

Model	Connection	Max Flow	Air Consumption	Max Solids	Max Temperature
PMP6600	1.5" TC	39.6 GPM	23.7 CFM	0.10" (2.5 mm)	248°F
PMP6601	2" TC	99.9 GPM	31.8 CFM	0.20" (4.8 mm)	248°F
PMP6602	3" TC	150.0 GPM	53.0-70.6 CFM	0.30" (6.4 mm)	248°F

Additional Specifications

- Maximum suction lift: 18 ft (5.48 m)
- Maximum discharge pressure: 120 psi (0.84 MPa)
- Maximum fluid viscosity: 10,000 cps
- Self-priming
- Dry-run capable
- Dead-head capable
- Low shear product handling

3. HOW THE PUMP WORKS

The MB Stainless sanitary diaphragm pump uses two flexible diaphragms connected by a common rod.

Compressed air alternately fills each air chamber, causing one diaphragm to pull product into the pump while the opposite diaphragm simultaneously discharges product.

Four internal check valves ensure product flows in only one direction.

This design provides:

- Gentle product handling
- Low shear transfer
- Self-priming capability
- Dry-run protection
- Excellent solids handling
- No rotating seals

4. AIR PRESSURE & FLOW CONTROL

The most common question is: *"What pressure should I set my compressor to?"*

The pump does not operate based on compressor tank pressure.

The pump operates based on regulator pressure.

Example:

Compressor Tank = 120 psi

Air Regulator = 20 psi

Pump Operating Pressure = 20 psi

Startup Procedure

1. Set the regulator to 0 psi.
2. Open the main air valve.
3. Open any discharge valve.
4. Slowly increase regulator pressure.
5. Allow the pump to self-prime.
6. Continue increasing pressure until the desired flow is achieved.

Always use the lowest pressure that provides adequate flow.

Recommended Starting Pressures

- Wine Transfer: 15–20 psi
- Cider Transfer: 15–20 psi
- Mead Transfer: 15–20 psi
- Barrel Filling: 10–20 psi
- Filtration: 15–25 psi
- Pump-Overs: 20–40 psi
- Juice Transfer: 20–40 psi
- Must Transfer: 40–80 psi

5. COMPRESSOR SIZING & AIR CONSUMPTION

Pressure moves product.

CFM determines how fast the pump can move product.

A larger pump does not necessarily require higher pressure, but it does require more air volume.

Model	Air Consumption
PMP6600	Up to 23.7 CFM
PMP6601	Up to 31.8 CFM
PMP6602	Up to 70.6 CFM

If the compressor cannot provide sufficient air volume, pressure will drop during operation, causing:

- Reduced flow
- Erratic cycling
- Pump stalling

6. WINERY, CIDER & MEAD APPLICATIONS

For delicate products:

- Start at the lowest practical pressure.
- Increase pressure only as needed.
- Avoid excessive flow velocities.

Benefits include:

- Reduced foaming
- Reduced oxygen pickup
- Lower shear stress
- Better aroma retention

The 3" model (PMP6602) is recommended for harvest operations involving:

- Grape skins
- Seeds
- Pomace
- Heavy lees

7. FILTRATION & PULSE DAMPENERS

Air-operated diaphragm pumps naturally create pulsating flow.

For filtration applications, an MB Stainless Pulse Damper is strongly recommended.

Benefits include:

- Smoother flow
- Reduced pressure spikes
- Improved filter performance
- Longer filter life

Install the pulse dampener on the discharge side of the pump as close to the pump outlet as practical.

Initial Charge Settings

- 20 psi liquid pressure → 14-16 psi dampener charge
- 30 psi liquid pressure → 21-24 psi dampener charge
- 40 psi liquid pressure → 28-32 psi dampener charge

8. EXAMPLE FILTRATION SET UP

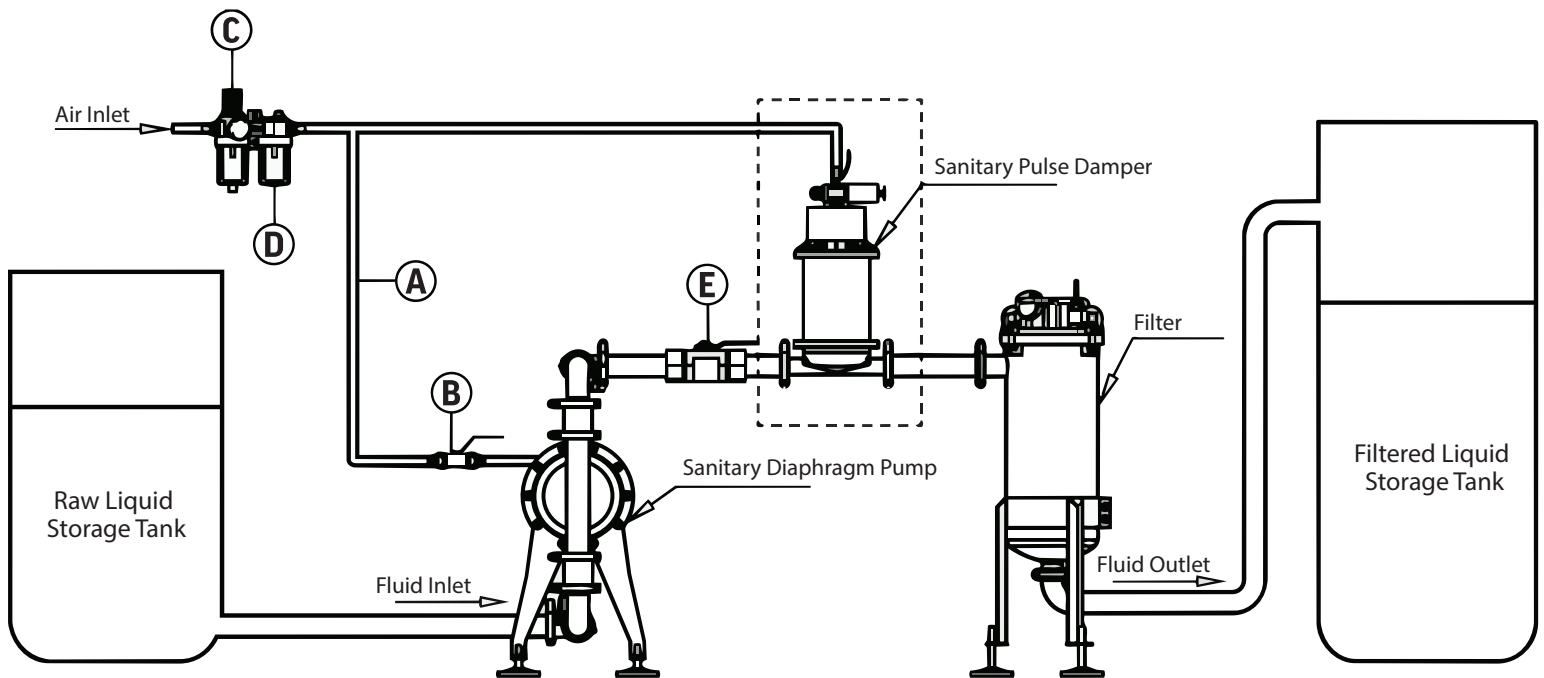


Diagram Legend

- **A** = Air Supply Line
- **B** = Main Air Shutoff Valve
- **C** = Air Pressure Regulator
- **D** = Air Filter
- **E** = Isolation Valve

Installation Guidelines

- Place the pump as close to the product source as possible.
- Use a wire-reinforced suction hose on the inlet side.
- Keep suction lines short and straight.
- Support all piping independently.
- Install an air filter and regulator upstream of the pump.
- Install the pulse dampener before the filtration equipment when used.

Tri-Clamp Connections & Air Leaks

Air-operated diaphragm pumps rely on a vacuum on the suction side to draw product into the pump. Even a small air leak can significantly reduce priming performance.

Before Operation:

- Verify all Tri-Clamp gaskets are properly centered and fully seated.
- Tighten all clamps evenly.
- Inspect gaskets for cuts, cracks, flattening, or damage.
- Verify hose connections are airtight.

Symptoms of a suction-side air leak may include:

- Poor priming
- Reduced flow rate
- Excessive cycling
- Intermittent product flow
- Pump runs but does not move product

If priming problems occur, first inspect all suction-side clamps, gaskets, and hose connections before disassembling pump.

9. CLEANING & SANITATION

Immediately after use:

1. Flush with warm water.
2. Recirculate PBW or approved alkaline cleaner.
3. Rinse thoroughly.
4. Circulate sanitizer if required.
5. Drain completely.

Never allow product residue, skins, seeds, or lees to dry inside the pump.

Seasonal Storage

Before long-term storage:

- Thoroughly clean and sanitize the pump.
- Drain all liquid from the pump body and manifolds.

- Inspect valve cavities for solids buildup.
- Store in a clean, dry environment.

Product residue left inside the pump during storage can harden and prevent proper valve sealing during startup.

10. HEAVY SOLIDS & CHECK VALVE MAINTENANCE

IMPORTANT: CIP cleaning may not remove heavy solids trapped behind the check valves.

After Pumping:

- Grape skins
- Seeds
- Pomace
- Heavy lees
- Fruit solids

Periodically remove the manifolds and inspect the valve cavities.

Accumulated solids can prevent proper valve sealing and cause:

- Poor priming
- Reduced flow
- Erratic cycling
- Pump stalling

11. MAINTENANCE

Routine Inspection

- Check clamps and gaskets
- Inspect air fittings
- Verify smooth cycling
- Inspect muffler for blockage

Periodic Maintenance

- Inspect diaphragms
- Inspect valve balls
- Inspect valve seats
- Inspect air valve seals

Lubrication

The air valve system is designed to operate oil-free.

If lubrication is desired under severe-duty applications, add only a few drops of light mechanical oil every 500 operating hours.

12. TROUBLESHOOTING GUIDE

Pump Will Not Start

Check the following:

- Verify compressed air is connected and turned on.
- Verify regulator pressure is set above 10 psi.
- Verify compressor can supply adequate air volume (CFM).
- Inspect air filter and air valve for contamination.
- Check for debris preventing check balls from moving freely.

Pump Cycles But Does Not Move Product

Check the following:

- Verify the suction hose is submerged and not drawing air.
- Tighten all clamps and hose connections.
- Inspect check balls and valve seats for debris or buildup.
- Verify the discharge valve is open.
- Inspect diaphragms for damage.

Low Flow or Reduced Performance

Check the following:

- Increase regulator pressure gradually.
- Verify the compressor can maintain adequate CFM.
- Inspect the suction hose for restrictions or collapse.
- Inspect filtration equipment for plugging.
- Clean valve cavities and check balls.
- Inspect diaphragms for wear.

Erratic Cycling or Stalling

Check the following:

- Clean air valve assembly.
- Verify clean, dry compressed air is being used.
- Inspect check balls and valve seats for contamination.
- Remove any discharge-side restrictions.
- Verify the regulator is operating properly.

Air Leaking From Muffler

Check the following:

- Inspect diaphragms for rupture.
- Inspect air valve seals and O-rings.
- Inspect internal air valve components for wear.

If product is present in the muffler exhaust, stop operation immediately and inspect the diaphragms.

Product Leaking From Pump

Check the following:

- Inspect diaphragms for damage.
- Verify all clamps are properly tightened.
- Inspect gaskets and seals for wear.
- Check manifold connections.

Poor Priming

Check the following:

- Verify suction hose connections are airtight.
- Keep the suction hose as short as possible.
- Inspect valve balls and seats for debris.
- Verify product level is adequate.
- Remove accumulated solids from valve cavities.

Excessive Pulsation During Filtration

Check the following:

- Install a pulse dampener if not already equipped.
- Verify the pulse dampener is properly charged.
- Check filter media for restrictions.
- Reduce pump speed if necessary.

Routine Maintenance

Check the following:

- Flushing immediately after use.
- Cleaning valve cavities after pumping solids.
- Inspecting diaphragms periodically.
- Using clean, dry compressed air.
- Operating at the lowest practical air pressure.

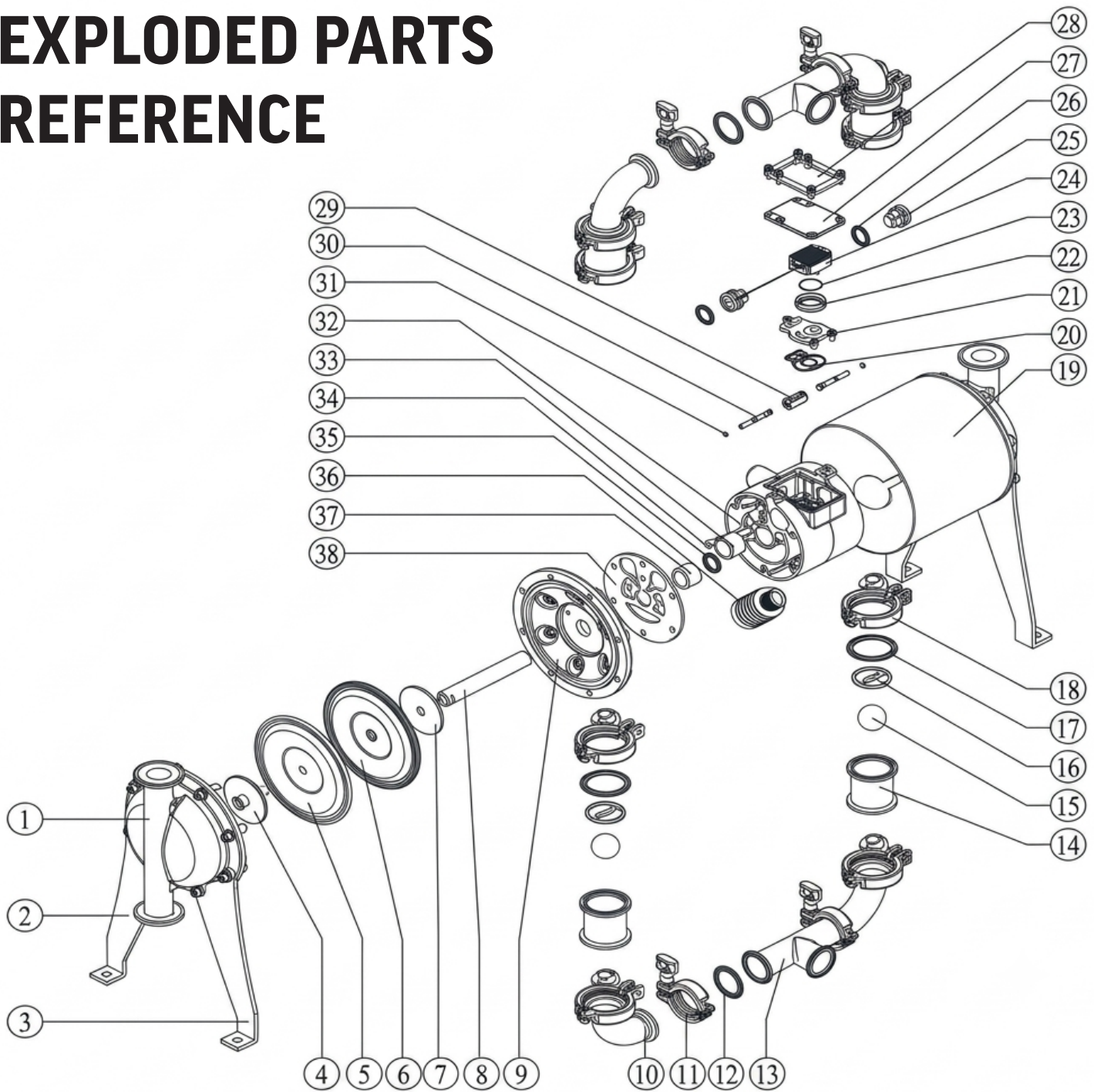
13. EXPLODED PARTS REFERENCE

The exploded diagram is provided as a reference for maintenance and service.

Replacement diaphragms, valve balls, valve seats, seals, and service components are available from MB Stainless via special order.



EXPLODED PARTS REFERENCE



- | | | |
|-------------------------------------|-------------------------------------|--------------------------------------|
| 01 - Stand Column | 14 - Valve Seat | 27 - Air Valve Cover Washer |
| 02 - Left Foot | 15 - Check Ball | 28 - Air Valve Chamber Cover |
| 03 - Right Foot | 16 - Valve Seat Washer | 29 - Small Air Slider |
| 04 - Outer Diaphragm Plate | 17 - Large Tri-Clamp Gasket | 30 - Air Valve Lever |
| 05 - Outer Diaphragm | 18 - Large Tri-Clamp | 31 - Air Valve Lever O-Ring |
| 06 - Inner Diaphragm | 19 - Protective Cover | 32 - Air Valve Chamber |
| 07 - Inner Diaphragm Plate | 20 - Air Valve Block Washer | 33 - Piston Sleeve |
| 08 - Connecting Rod Assembly | 21 - Air Valve Block | 34 - Air Valve Lever Sleeve |
| 09 - Divider Plate | 22 - Large Air Slider Seat | 35 - V-Ring |
| 10 - Tri-Clamp Elbow | 23 - Large Air Slider O-Ring | 36 - Exhaust Muffler |
| 11 - Small Tri-Clamp | 24 - Large Air Slider | 37 - Connecting Rod Sleeve |
| 12 - Small Tri-Clamp Gasket | 25 - Piston | 38 - Air Valve Chamber Washer |
| 13 - Inlet / Outlet Manifold | 26 - Piston V-Ring | |

14. WARRANTY

MB Stainless sanitary diaphragm pumps are warranted to be free from defects in materials and workmanship for one (1) year from the date of purchase.

- Normal wear items
- Diaphragms
- Valve balls
- Valve seats
- Gaskets
- Damage caused by misuse
- Improper installation
- Operation outside published specifications

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