

AIR OPERATED DIAPHRAGM PUMP **AP05**

(metal design)



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IMPORTANT INFORMATION

Export Information

U.S. Export Administration Regulations, pursuant to ECCN 2B350, prohibit the export or re-export to certain enumerated countries of air operated double diaphragm pumps in which all wetted materials are constructed from fluoropolymers without first applying for and obtaining a license from the U.S. Bureau of Industry and Security(BIS). This affects all sera airPUMP pumps constructed from PVDF with PTFE balls and diaphragms. Please

Chemical Reaction Disclaimer

The user must exercise primary responsibility in selecting the product's materials of construction which are compatible with the fluid(s) that come(s) in contact with the product. The user may consult a manufacturer's representative/distributor agent to seek a recommendation of the product's material of construction that offers the optimum available chemical compatibility. However neither manufacturer nor agent shall be liable for product damage or failure, injuries, or any other damage or loss arising out of a reaction, interaction or any chemical effect that occurs between the materials of the product's construction and fluids that come into contact with the product's components.

Unpacking & Inspection

Unpack the pump and examine for any signs of shipping damage. If damage is detected, save the packaging and notify the carrier immediately. To install the pump, follow the installation instructions provided.

SAFETY PRECAUTIONS



EXPLOSION HAZARD

sera airPUMP with standard materials of construction should not be used with halogenated hydrocarbons. Halogenated hydrocarbon solvents can cause explosion when used with aluminum components in a closed (pressurized) system. sera airPUMPs with standard materials of construction contain aluminum components and will be affected by halogenated hydrocarbon solvents.

1-1-1 Trichloroethane and Methylene Chloride are the most common halogenated hydrocarbons. However, other halogenated hydrocarbon solvents are suspect if used either as part of paint or adhesive formulation, or for clean-up flushing. For applications that may involve halogenated hydrocarbons, contact sera to discuss the availability of alternative pump materials of construction.



WARNING

sera airPUMPs maximum temperature limits are based upon the material's mechanical stress only. Maximum temperature is application dependent. Consult a chemical resistance guide or the chemical manufacturer for chemical compatibility and temperature limits.



WARNING

Chemical Hazard. This pump is used for transferring many types of potentially dangerous chemicals. Always wear protective clothing, eye protection and follow standard safety procedures when handling corrosive or personally harmful materials. Proper procedures should be followed for draining and decontaminating the pump before disassembly and inspection of the pump. There may be small quantities of chemicals present during inspection.

 **WARNING**

Hot surfaces. **sera** airPUMPs are capable of handling liquids with temperatures as high as 104°C (220°F). This may cause the outer areas of the pump to become hot as well and could cause burns.

 **WARNING**

If a diaphragm rupture occurs, material being pumped may be forced out of the air exhaust. Proper care should be taken, always wear protective clothing, eye protection & follow standard safety procedures.

 **WARNING**

For polypropylene or PVDF pumps do not exceed 6.9 bar (100 psig) air supply and 8.3 bar (120 psig) for aluminum and stainless steel.

 **WARNING**

When pumping hazardous liquids, or operating the pump in an enclosed room, it is important to pipe the exhaust air to a safe area.

 **WARNING**

The surface temperature of the pump depends upon the temperature of the fluid that is being pumped. The chart below lists different fluid temperatures and the corresponding pump surface temperatures, which determine the Temperature Class when used in a hazardous area.

Fluid temperature	Max. Surface temperatur	Temperature Class	Max. permissible Surface temperature
78°C (172°F)	78°C (172°F)	T6	85°C (185°F)
95°C (203°F)	78°C (172°F)	T5	100°C (212°F)
130°C (266°F)	78°C (172°F)	T4	135°C (275°F)
195°C (383°F)	78°C (172°F)	T3	200°C (392°F)

 CAUTION

Before attaching air supply to pump to make sure all airline debris is clear. It is recommended to use a minimum 5µ (micron) air filter before the air valve.

 CAUTION

Do not over-tighten the air inlet fitting or muffler. Too much torque could damage the air valve or muffler plate.

 CAUTION

Before maintenance or repair, close the compressed air line supply valve, bleed the pressure and disconnect air line from the pump. Discharge line may also be pressurized. Any pressure must be relieved prior to servicing. Remove suction / discharge lines & drain the pump.

 CAUTION

If pump is used with materials that tend to solidify or settle, the pump should be flushed after each use to prevent damage.

 CAUTION

Use only genuine **sera** replacement parts to assure compatibility and longest service life.

 CAUTION

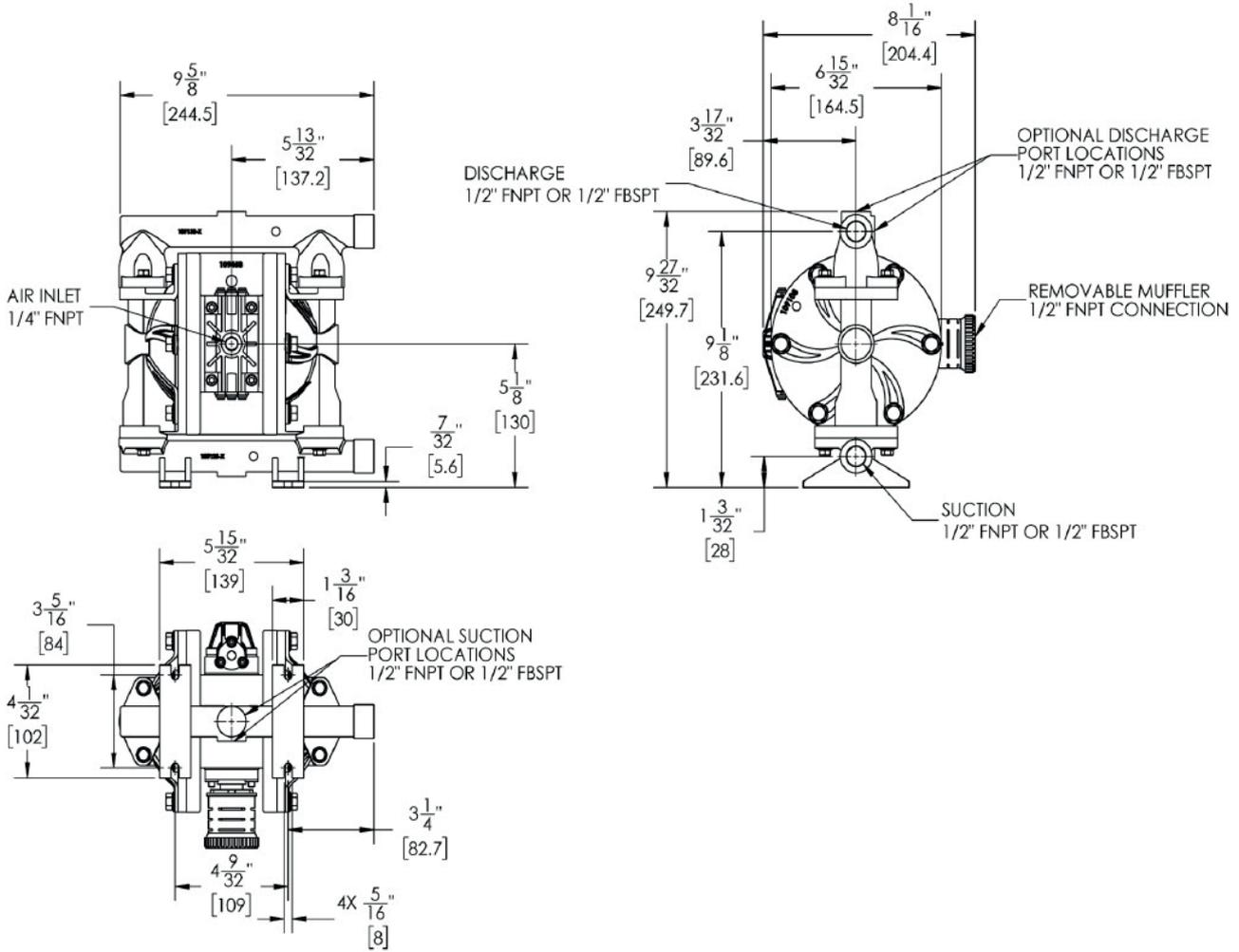
Check the temperature limits for all wetted components when choosing pump materials. See table below.

MATERIAL SPECIFICATION

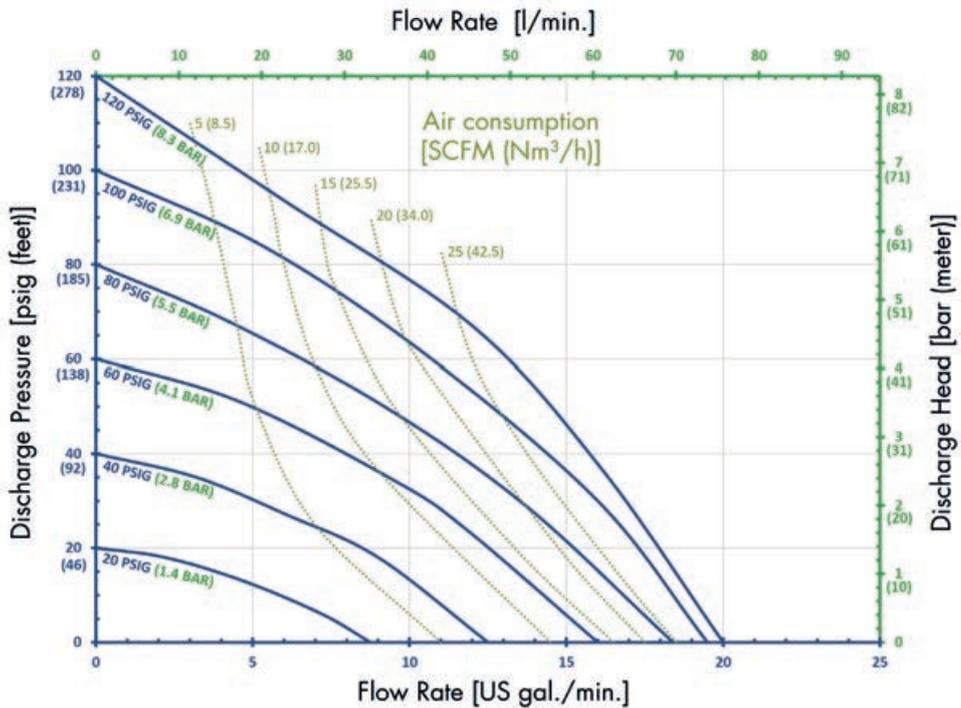
MATERIAL PROFILES

Material	Chemical composition	Description	Operating temperature	
			min.	max.
PP	Pure Polypropylene	Thermoplastic that is resistant to alkali and strong acids.	0°C (32°F)	70°C (158°F)
PVDF	Pure Polyvinylidene Fluoride	Strong fluoropolymer with excellent chemical resistance.	-12°C (10°F)	104°C (220°F)
Stainless Steel	316 Stainless Steel	Excellent chemical resistance, high tensile and impact strength, abrasion resistant.	Limited by other materials used	
Aluminium	ADC 12, LM24, LM25	Moderate chemical resistance with good impact strength and abrasion resistance.	Limited by other materials used	
Buna	Acrylonitrile-butadiene Rubber	General purpose elastomer. Resistant to oil, water, solvent, and hydraulic fluid.	-12°C (10°F)	88°C (190°F)
EPDM	Ethylene Propylene Diene Rubber	Good resistance to mild acids, detergents, alkalis, ketones, and alcohols.	-40°C (-40°F)	121°C (250°F)
FKM	Fluorocarbon Rubber	Good chemical resistance and high temperature properties. Resistant to most acids, aliphatic, aromatic, and halogenated hydrocarbons, oils, grease, and fuels.	-40°C (-40°F)	177°C (350°F)
Neopren	Chloroprene Rubber	General purpose elastomer with good resistance to moderate chemicals, oils, grease, solvents, and some refrigerants.	-18°C (0°F)	100°C (212°F)
Santopren	Fully cured EPDM rubber particles encapsulated in a polypropylene (PP) matrix	Thermoplastic elastomer with good abrasion resistance with chemical resistance to a wide range of solvents and chemicals. Injection molded with no fabric layer.	-40°C (-40°F)	107°C (225°F)
Hytrel	Thermoplastic polyester elastomer	Combines resistance and flexibility of elastomers with the strength of plastics. Resistant to acids, bases, amines, and glycols. Injection molded with no fabric layer.	-29°C (-20°F)	104°C (220°F)
PU	Polyester Urethane	Thermoplastic that exhibits excellent abrasion resistance. Injection molded with no fabric layer.	0°C (32°F)	66°C (150°F)
PTFE	Polytetrafluoroethylene	Chemically inert. Resistant to a wide range of chemicals.	4°C (40°F)	107°C (225°F)
FEP	Fluorinated Ethylene Propylene	Similar to PTFE in composition and chemical resistance. Used to encapsulate FKM o-rings for superior chemical resistance.	-40°C (-40°F)	107°C (225°F)

DIMENSIONS



CHARACTERISTIC CURVES



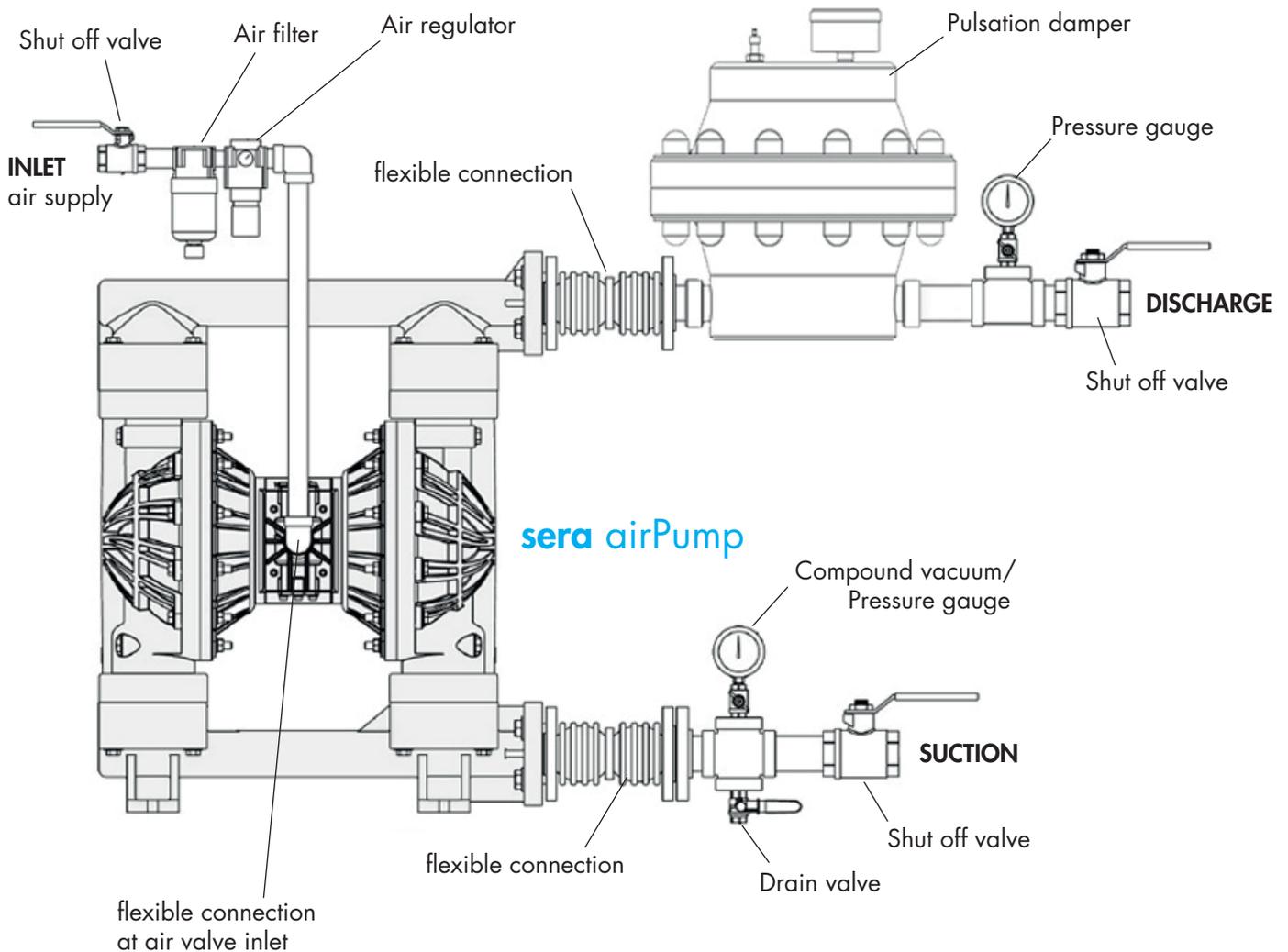
PERFORMANCE DATA

Air operated diaphragm pump **AP05** (Aluminium or Stainless steel)

Max Flow Rate:	77 Litre/min. (20 gal/m)	Suction/Discharge Size:	½" FBSP or FNPT
Displacement Per Stroke:	0,08 Litre (0.020 gal)	Air Inlet/Exhaust Size:	¼" FNPT / ½" FNPT
Max Outlet Pressure:	8,3 bar (120 psig)	Air Consumption @ 6,9 bar:	51 Nm ³ /h (30 sfc _m)
Max Particle Size:	0,7 bar (10 psig)	Max Material Inlet Pressure:	8,3 bar (120 psig)
Noise Level:	4,7 mm (0.19")	Max Air Inlet Pressure:	72,1 dB(A)
Max Suction Lift (Water)	dry: 2,7 mWC (9 ft.) wet: 8,8 mWC (29 ft.)	Weight:	Aluminium: 5,3 kg (11,7 lbs) Stainless st.: 7,0 kg (15,5 lbs)

INSTALLATION/OPERATION

INSTALLATION DRAWING



INSTALLATION / START UP

Installation and Start up

Install the pump in a vertical position or it may not prime properly. Pump should be located as close to the product being pumped as possible. Suction line length should be as short as possible and limit the number of fittings. Suction line diameter should not be reduced smaller than the suction diameter of the pump. When using rigid pipe run short sections of flexible hose or flexible connections between the pump & piping. Secure the pump to a suitable surface.

Air Supply

Connect the pump air inlet to an air supply with sufficient capacity to achieve desired performance. A pressure regulating valve should be installed to insure air supply pressure does not exceed recommended limits.

Air Valve Lubrication

No lubrication is required for the air distribution system.

Fasteners

Re-torque all fasteners before operation. Creep of housing and gasket materials may cause fasteners to loosen. Re-torque all fasteners to the torque specifications listed on the exploded view drawing in this manual.

Air Inlet & Priming

Pump will start to operate as soon as the shut-off valve is opened. It is recommended to open the shut-off valve slowly at first. Once the pump primes; the shut-off valve can be opened additionally to increase the pump's flow. If the pump is operating but not pumping any liquid see the troubleshooting section for tips & suggestions.

Accessories

Surge suppressors, spill stops & filter regulators are available and should be used with **sera airPUMP**.

TROUBLESHOOTING TIPS AND SUGGESTIONS

PUMP WILL NOT START OR CYCLE:

- Blocked liquid pipe or hose - Clean out or replace
- Clogged liquid chamber - Remove debris
- Diaphragm shaft bushing / o-ring leak - Replace o-rings
- Air valve carrier not shifting - Inspect, clean, re-oil with 10 wt. air tool oil. (aluminum air valve)
- Air valve carrier not shifting - Inspect, replace seals (polypropylene air valve)

ERRATIC CYCLING:

- Diaphragm failure - Replace diaphragm
- Valve ball not seating properly, worn or damaged – Inspect, remove debris or replace
- Leak in suction line - Inspect, repair or replace
- Diaphragm shaft bushing / o-ring leak - Replace o-rings
- Air valve carrier not shifting - Inspect, clean, re-oil with 10 wt. air tool oil. (aluminum air valve)
- Air valve carrier not shifting - Inspect, replace seals (polypropylene air valve)
- Over lubrication in air valve - Inspect, degrease, reuse. Adjust lubrication
- Excess moisture in air valve – Inspect, dry, reuse. Consider installing an air dryer
- For aluminum air valves, worn carrier or valve bore – measure carrier and valve bore, diametrical clearance should be between 0,05 - 0,088mm. Replace worn components as needed
- For plastic air valves, worn carrier seals – replace carrier seals if there is no longer interference between seals and valve bore

PUMP CYCLES BUT WILL NOT PUMP:

- Too much suction lift - Reduce suction lift or fill liquid chambers with liquid
- Leak in suction line - Inspect, repair or replace
- Valve ball not seating properly, worn or damaged - Inspect, remove debris or replace
- Clogged suction pipe or hose - Inspect & clear
- Clogged strainer if used - Inspect & clear
- Diaphragm failure - Replace diaphragm

PUMPED LIQUID RELEASED FROM AIR EXHAUST:

- Diaphragm failure - Replace diaphragm
- Outer plate unthreading - Tighten & re-torque

MAINTENANCE

Recommended tools for servicing pump

- Box wrench (10mm and 13mm)
- Socket wrenches (20mm (2x))
- Snap ring pliers
- Hex wrenches (3mm, 5mm and 6mm)
- O-Ring pick
- Torque wrench

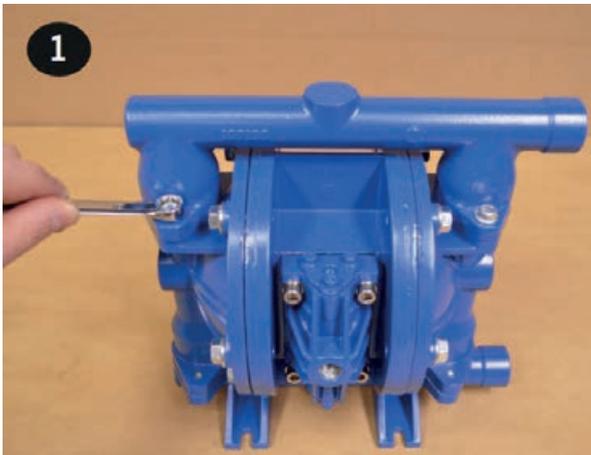
Wet End Servicing (Installing Wet End Kit)

- Relieve airline pressure and fluid line pressures before conducting maintenance.
- The pump can be drained by turning it upside down and allowing fluid to drain into an appropriate container. Use proper safety equipment when conducting maintenance as internal components may still contain the pumped media.
- Lubricate all stainless steel to stainless steel fasteners to prevent galling.
- Torque values listed in the back of this manual (see page 23).

DISASSEMBLY

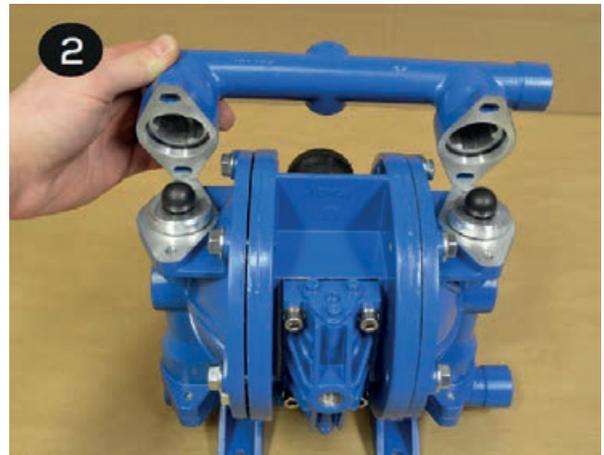
1)

Remove the four discharge manifold bolts (item 11) from the discharge manifold (item 32) using a 10mm wrench.



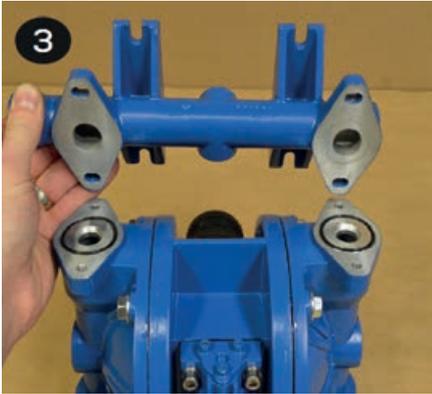
2)

The discharge seat o-rings, valve seats and valve balls (items 13, 14, & 15) can now be accessed and replaced if needed.



3)

Repeat the above steps for the suction manifold (item 12). The seat o-rings, valve seats and valve balls (items 13, 14, & 15) are located in the liquid chambers (item 18).



4)

Remove both liquid chambers by removing the (6) bolts (items 16) on each liquid chamber using a 13mm (or ½") wrench. Inspect and replace diaphragms if needed.



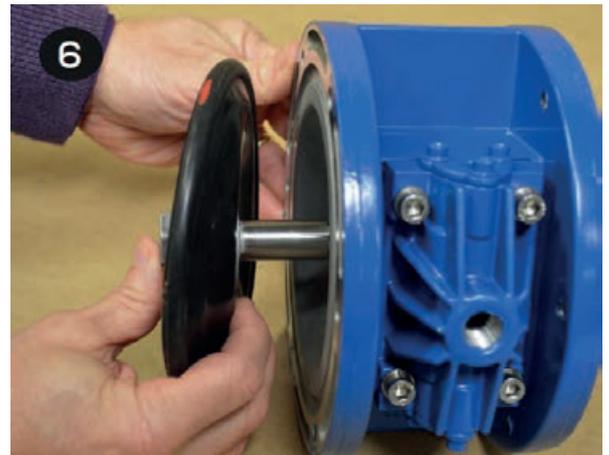
5)

To remove the diaphragms (items 20/ 21), begin by loosening the (2) outer plates (item 18) using 2-20mm wrenches. Use 6-sided sockets or wrenches to prevent damage to the hex portion of the outer plate.



6)

Remove the outer plate, diaphragm(s), and inner plate (items 18, 20/21 & 22) from the side that is loosened. Pull or push the shaft (item 27) and remaining plates and diaphragms out of the center section. If pulling, it may be easier to grip the diaphragm if it is inverted.



7)

To remove the remaining diaphragm(s) (items 20/21) and plates (items 18 & 22) from the shaft (item 27), place the shaft in a vise fitted with soft jaws. Using a 6-sided 20mm wrench, remove the remaining diaphragm(s) and plates. Soft jaws are required to prevent damaging the shaft. A damaged shaft will result in accelerated o-ring wear. Jaws can be fitted with wood, plastic, rubber, or other soft material to prevent shaft damage.



After performing required maintenance, the pump can be reassembled. The pump can also be reassembled using the disassembly instructions in the reverse order as listed above. For detailed assembly instructions, follow the steps in the Wet End Reassembly section beginning on the following page.

MOUNTING

1)
Slide the center hole of one diaphragm (item 21) over the cast/ threaded bolt of an outer plate (item 18). The air side of the diaphragm is labeled and should face away from the outer plate. If the pump is fitted with PTFE diaphragms (item 20), first place a PTFE diaphragm over the bolt of the outer plate (item 18). Then place the backup diaphragm (item 21) on the outer plate. The shape of the PTFE diaphragm and back up diaphragm should roughly conform to one another. See the exploded view drawing for proper orientation.



2)
Place the inner plate (item 22) over the bolt. Ensure the round recess in the plate faces the diaphragm (item 21). Diaphragms in this image are inverted for ease of assembly in step 6.

3)
Apply a couple drops of a medium strength thread locker, such as Loctite® 246, to the outer plate bolt (item 19). Thread the shaft (item 27) onto the bolt until it is snug to the flat back side of the inner plate (item 22).



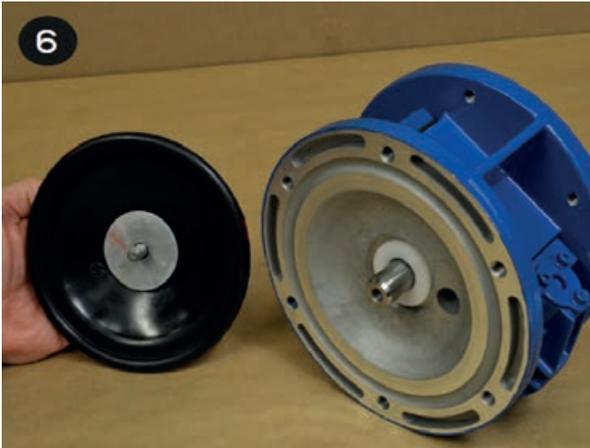
2)
The shaft (item 27) and shaft o-rings (item 26) should retain the lubricant that was factory applied. If they appear dry, apply a light coat of lithium thickened grease. Avoid over lubrication as it can cause decreased performance of the air distribution system.

3)
Push the shaft (item 27) through the center of the shaft bushing (24). It is normal for this to be a tight fit, especially if the shaft and shaft o-rings (item 26) are in good condition.



6)

The other diaphragm(s) (items 20/21) and inner/ outer plates (items 18 & 22) can be installed onto the opposite end of the shaft (item 27). It may be easier to thread the molded in bolt into the shaft if the diaphragm(s) is inverted on one or both sides. This can be done by hand.



7)

Tighten and torque the outer plates (item 18). If the pump is fitted with PTFE diaphragms (item 20), it is necessary to restrict their ability to rotate when tightening the outer plates. This can be done by threading the liquid chamber bolts (item 16) through the PTFE diaphragm holes and into the center section (item 28) on each side. This will ensure that the PTFE diaphragm does not obstruct the bolts ability to thread into the center section when the liquid chambers are installed. Remove these bolts once the outer plates are torqued.



8)

Install the liquid chambers (item 17) by placing one side over the diaphragm. Start all bolts (item 16) before tightening and torquing. Torque all fasteners in a star pattern. Repeat to install the second liquid chamber. Ensure both chambers are orientated the same and that the inlet and outlet ports are vertical when facing the front of the pump as shown.



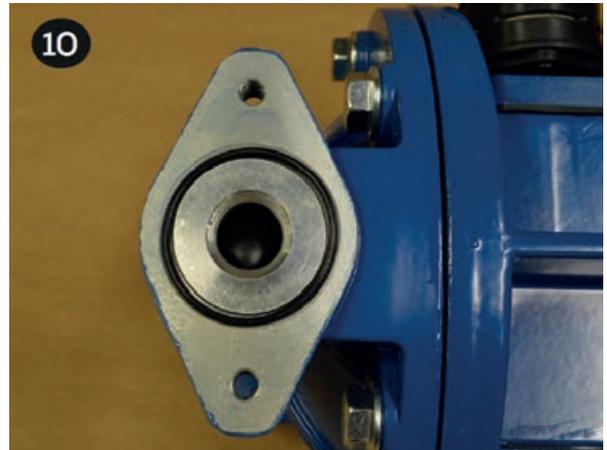
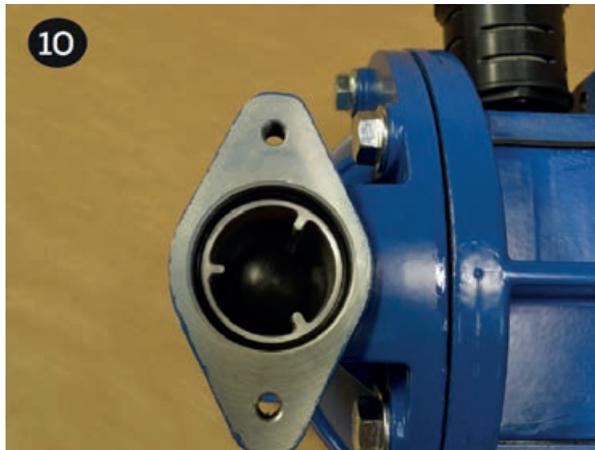
9)

Flip the pump upside down and drop the suction valve balls (item 15) into the liquid chamber (item 17) ball cages.



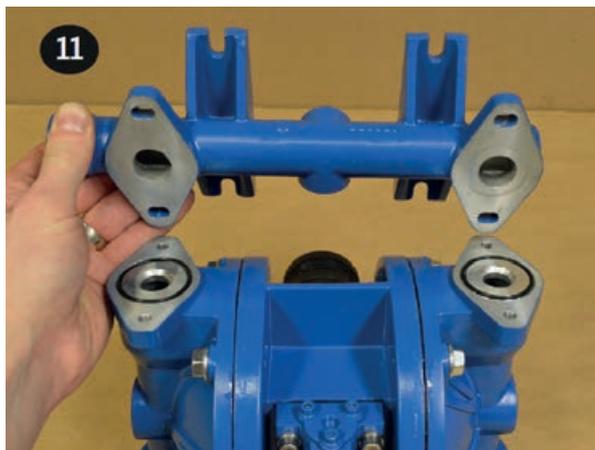
10)

Install (1) of the valve seat o-rings (item 13) into the liquid chamber (item 17) followed by the valve seat (item 14) and then another valve seat o-ring (item 13). The o-ring will fit into the groove created by the valve seat and liquid chamber.



11)

Check that the top of the seat (item 14) is about flush with the liquid chamber. Place the suction manifold (item 12) atop the pump. Tighten and torque the four suction manifold bolts (item 11) in an "X" pattern.



12)

Stand the pump upright onto the suction manifold feet (item 12). Place the valve seat o-rings (item 13) on the flat faces of the liquid chambers (item 18) followed by the valve seats (item 14) on the o-rings. Place the valve balls (item 15) onto the valve seats. The other valve seat o-rings (item 13) can be installed into the discharge manifold (item 32). Place the manifold atop the pump, over the components that are on top of the liquid chambers. Tighten and torque the four discharge manifold bolts (item 11) in an "X" pattern.



AIR END SERVICING (INSTALLING AIR END KIT)

- Follow steps 1 – 7 in the Wet End Servicing disassembly section to access the shaft bushing (item 24) and o-rings (items 23 & 26), then follow steps below.

SHAFT, BUSHING AND O-RING REPLACEMENT

1)

Remove the shaft bushing retaining ring (item 25) and push the shaft bushing out of the center section.



2)

Use the supplied grease packets to lightly grease the OD and ID o-rings (items 23 & 26) that come preinstalled in the new shaft bushing (item 24) supplied in air end kits.

Insert the shaft bushing into the center section (item 28) and reinstall the retaining ring.



3)

Inspect the shaft (item 27) for damage. It is common for shafts to become grooved during service. Grooving is normally caused by carbonized oil and/or abrasive foreign material getting trapped between the seal and the shaft. Over time, deep grooves can form in the shaft. When that occurs, it is recommended that the shaft be replaced.

After determining if the condition of the shaft is acceptable, follow steps 5 – 12 in the Wet End Servicing – Wet End Reassembly section to rebuild the rest of the pump.



AIR VALVE O-RING REPLACEMENT

1)
Plastic Air Valve
To replace the valve cap o-ring remove the retaining ring (item 8), then pull straight up. The use of an M6 bolt, vice grip, and pry bars may be necessary.



2)
Plastic Air Valve
Remove and replace o-ring (item 5). Insert cap (item 6) and push down until groove for the retaining ring is visible.



1)
Aluminium Air Valve
To replace the valve cap o-rings (item 5), remove the (3) button head cap screws (item 7) using a 3mm hex wrench.



2)
Aluminium Air Valve
Remove and replace o-ring (item 5). Install cap (item 6), tighten, and torque the valve cap screws (item 7). Repeat for the remaining cap.



VALVE AND MUFFLER GASKET REPLACEMENT

1)

Remove the valve body (item 3) by removing the four socket head cap screws (item 1) that attach the valve body to the muffler plate (item 31) with a 5mm hex wrench.



2)

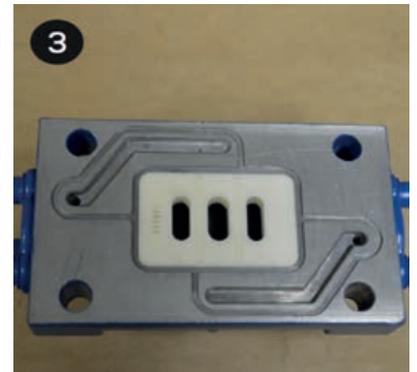
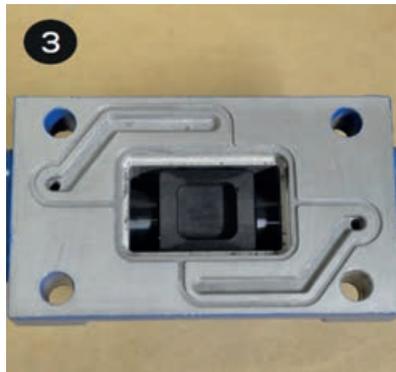
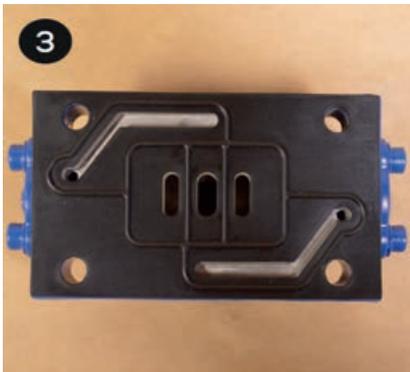
Pull the valve body and gasket (items 3 & 30) off the front of the center section (item 28) and the muffler plate gasket, muffler plate and muffler (items 29, 31 & 33) off the back.



3)

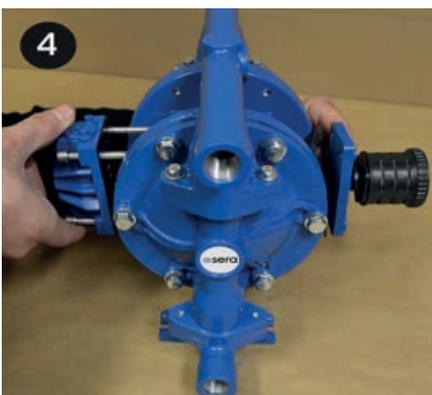
Place the new gasket (item 30) on the air valve (item 3) and ensure the slots in the gasket align with the slots in the air valve and valve plate (item 10).

Air Valve Slide, Plate & Gasket Orientation: If the valve plate (item 10) and slide valve (item 9) are removed, ensure they are installed in the proper orientation. The flat face of the slide valve sits in the pocket of the valve carrier (item 4) so that the square cut out on the slide valve faces the smooth polished side of the valve plate



4)

Insert the four cap screws & washers (items 1 & 2) through the valve body and gasket (items 3 & 30) and place onto the center section (item 28). Ensure the slide valve and valve plate (items 9 & 10) are in place and the valve sits flat on the center section.



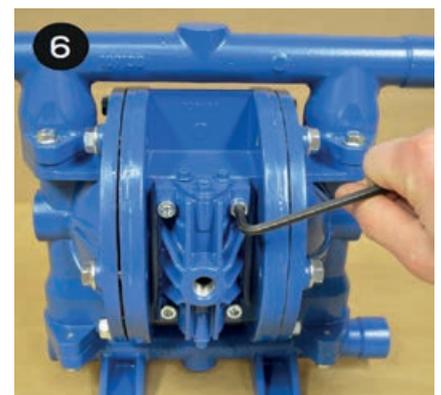
5)

Place the muffler gasket (item 29) over the (4) cap screws (item 1) on the back side of the center section (item 28) followed by the muffler plate and muffler (items 31 & 33).



6)

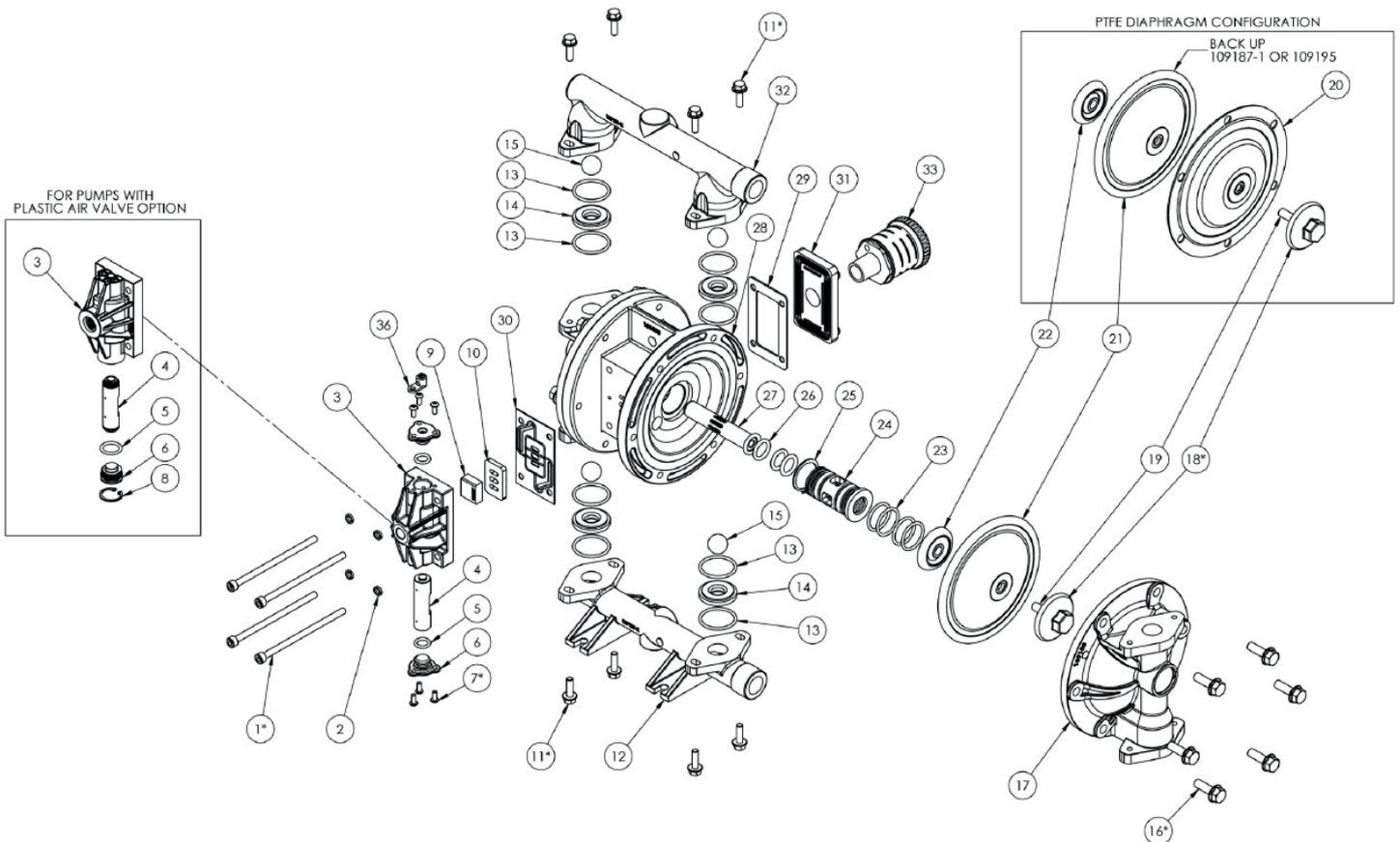
Tighten and torque the four cap screws into the muffler plate.



REPLACEMENT AIR VALVE KIT INSTALLATION

- 1) Remove the valve that is to be replaced by removing the (4) socket head cap screws with a 5mm hex wrench that attaches the valve body to the muffler plate.
- 2) Save the four (4) cap screws, (4) lock washers, muffler plate, and muffler. All other valve components can be discarded.
- 3) Remove the packing tape that holds the air valve components in place during shipping.
- Follow steps 3 – 6 in the Valve and Muffler Gaskets section of Air End Servicing above.

EXPLODED VIEW AND SPARE PARTS LIST



Pos.	Description	Material	Part-No.	Qty.	Set
3	VALVE BODY		SEE AIR VALVE TABLES		V1/V2
4	VALVE CARRIER		SEE AIR VALVE TABLES		V1/V2
5	VALVE CAP O-RING		SEE AIR VALVE TABLES		A1/A2/V1/V2
6	VALVE CAP		SEE AIR VALVE TABLES		V1/V2
9	SLIDE VALVE		109257	1	V1/V2
10	VALVE PLATE		109261	1	V1/V2
12	MANIFOLD, SUCTION	Aluminium	SEE MANIFOLD TABLES		
		Stainless steel			

Pos.	Description	Material	Part-No.	Qty.	Set
13	O-RING, VALVE SEAT	Buna-N	109580	8	W
		EPDM	109581		
		Neoprene	109582		
		FKM	109583		
		PTFE	109584		
		FEP-covered	109586		
14	VALVE SEAT	Aluminium	109236	4	W
		Stainless steel	109240		
		PTFE	109224		
15	VALVE BALL	Buna-N	109203	4	W
		FKM	109207		
		PU	109211		
		Santoprene	109215		
		FEP-covered	109219		
		PTFE (white ball)	109199		
17	LIQUID CHAMBER	Aluminium	109767-5	2	-
		Stainless steel	109767-6		
18	OUTER PLATE	Aluminium (incl. Bolt)	109159	2	-
		Stainless steel (requires Pos.19)	109163		
20	DIAPHRAGM	PTFE (requires Pos. 21)	109182	2	-
21	DIAPHRAGM	Neoprene (green dot)	109186-1	2	W
		Buna-N (red dot)	109186-2		
		EPDM (blue dot)	109186-2		
		FKM (white or silver dot)	109186-2		
		Santoprene (red)	109194		
		Hytrel (creme)	109190		
		PU (beige)	109435		
22	INNER PLATE	Aluminium	109168	2	-
		Stainless steel	109717		
23	O-RING, BUSHING OD		109418	4	A1/A2
24	SHAFT BUSHING W/ O-RINGS (ITEMS 23 & 26)		109178	1	A1/A2
25	RETAINING RING		109467	1	A1/A2
26	O-RING, SHAFT		109422	4	A1/A2
27	SHAFT		109173	1	-
28	CENTER SECTION	Aluminium	109458	1	-
		PP-FRP	109149		
29	GASKET, MUFFLER		109426	1	
30	GASKET, AIR VALVE		109265	1	
31	MUFFLER PLATE	Standard	109269	1	-
		ATEX	109269-1	1	-
32	MANIFOLD, DISCHARGE	Aluminium	SEE MANIFOLD TABLES		-
		Stainless steel			-
33	MUFFLER	Standard	109561	1	-
		ATEX	109699	1	-
35	PIPE PLUG	Stainless steel			-
36	GROUNDING LUG		109698	1	-

airPUMP AP05 (metal)

KIT COLUMN KEY:

- W** PARTS SUPPLIED IN A WET SIDE KITS
- A1** PARTS SUPPLIED IN PLASTIC VALVE AIR END KIT 109672
- A2** PARTS SUPPLIED IN ALUMINUM VALVE AIR END KIT 109594
- V1** PARTS SUPPLIED IN PLASTIC REPLACEMENT VALVE KIT 111244
- V2** PARTS SUPPLIED IN ALUMINUM REPLACEMENT VALVE KIT 109588

AP05 with air valve PP-GFK				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY, GFRPP	109249	1	V1
4	VALVE CARRIER WITH SEALS	109653	1	V1
5	VALVE CAP O-RING	109648	1	A1/V1
6	VALVE CAP, DELRIN	109273	1	V1
8	RETAINING RING, HO-81SSTL	109649	1	V1

AP05 with air valve Aluminium				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY, ALUMINUM	s.Pos. 34	1	V2
4	VALVE CARRIER, ALUMINUM	109450	1	V2
5	VALVE CAP O-RING	J101380	2	A2/V2
6	VALVE CAP, ALUMINUM	s.Pos. 34	2	V2
7	CAP SCREW, M4X0.7X10	109511	6	V2
34	CONTAINS Pos. 3,4,5,6 & 7	109591	1	V2

Connection / Porting location (N1-4, B1-4):

- | | | | |
|----------------------------|--|----------------------------|--|
| N1 Connection: FNPT | Position: side (Standard) | B1 Connection: FBSP | Position: end (Standard) |
| N2 Connection: FNPT | Position: center, horizontal | B2 Connection: FBSP | Position: center, horizontal |
| N3 Connection: FNPT | Position: center, vertical | B3 Connection: FBSP | Position: center, vertical |
| N4 Connection: FNPT | Position: center, vertical suction & end discharge | B4 Connection: FBSP | Position: center, vertical suction & end discharge |

SUCTION MANIFOLD (POS. 12)																
	N1		N2		N3		N4		B1		B2		B3		B4	
	Part-No.	Qty.														
AP05 Aluminium	109123	1	109612	1	109612-1	1	109612-1	1	109123-1	1	109612-2	1	109612-3	1	109612-3	1
Pos. 35 (not shown)	N/A	0	109572	1	109572	1	109572	1	N/A	0	109573	1	109573	1	109573	1
AP05 Edelstahl	109127	1	109127	1	109612-4	1	109612-4	1	109127-1	1	109127-1	1	109612-5	1	109612-5	1
Pos. 35 (not shown)	109572	1	109572	1	109572	2	109572	2	109573	1	109573	1	109573	2	109573	2

DISCHARGE MANIFOLD (POS. 32)																
	N1		N2		N3		N4		B1		B2		B3		B4	
	Part-No.	Qty.														
AP05 Aluminium	109138	1	109611-1	1	109611-1	1	109138	1	109138-1	1	109611-1	1	109611-3	1	109138-1	1
Pos. 35 (not shown)	N/A	0	109572	1	109572	1	N/A	0	N/A	0	109573	1	109573	1	N/A	0
AP05 Edelstahl	109142	1	109142	1	109611-4	1	109142	1	109142-1	1	109142-1	1	109611-5	1	109142-1	1
Pos. 35 (not shown)	109572	1	109572	1	109572	2	109572	1	109573	1	109573	1	109573	2	109573	1

Note: Open, unused ports must be sealed with pipe plugs (item 35). Order if not reusing existing plugs.

Maximum Torque Settings AP05 (metal design)

Asterisk (*) from the exploded view diagram indicates fasteners to be torqued. Stainless Steel to Stainless Steel fasteners should be lubricated to prevent galling. A Plus sign (+) on the above torque values indicates a lubricated fastener.

design: Aluminium		design: Stainless Steel	
Pos.	Torque	Pos.	Torque
1	8 Nm (72 in-lbs)	1 +	7 Nm (60 in-lbs)
7	4 Nm (35 in-lbs)	7	4 Nm (35 in-lbs)
11	9,5 Nm (84 in-lbs)	11 +	8 Nm (72 in-lbs)
16	20 Nm (240 in-lbs)	16 +	18 Nm (156 in-lbs)
18	24 Nm (216 in-lbs)	18	24 Nm (216 in-lbs)

Hardware: AP05 Aluminium				
Pos.	Material	Description	Part-No.	Qty.
1	Aluminium	CAP SCREW, SOCKET HD M6X1.0 X 110MM	109494	4
	PP-FRP			
2	Aluminium	WASHER, LOCK M6 HIGH-COLLAR	109492	4
	PP-FRP			
11	Aluminium	CAP SCREW, HEX HD FLNG M6X1.0 X 20MM	109482	8
	PP-FRP			
16	Aluminium	CAP SCREW, HEX HD FLNG M8X1.25 X 25MM	109483	12
	PP-FRP	CAP SCREW, HEX HD FLNG M8X1.25 X 30MM	109484	

Hardware: AP05 Stainless Steel				
Pos.	Material	Description	Part-No.	Qty.
1	Aluminium	CAP SCREW, SOCKET HD M6X1.0 X 110MM SS	109519	4
	PP-FRP			
2	Aluminium	WASHER, LOCK M6 HIGH-COLLAR SS	109517	4
	PP-FRP			
11	Aluminium	CAP SCREW, HEX HD FLNG M6X1.0 X 16MM SS	109504	8
	PP-FRP			
16	Aluminium	CAP SCREW, HEX HD FLNG M8X1.25 X 20MM SS	109506	12
	PP-FRP	CAP SCREW, HEX HD FLNG M8X1.25 X 25MM SS	109507	
19	Aluminium	DOUBLE END STUD M8X1.25X30	109524	2
	PP-FRP			

CLEARANCE CERTIFICATE

i NOTE
 Inspection / repair of machines and machine parts is only carried out after the clearance certificate was filled in correctly and completely by authorized and qualified personnel.

i NOTE
 Acceptance will be refused if parts are returned to the manufacturer without a proper clearance certificate.

All industrial companies are obligated by the legal provisions for occupational health, e.g. the workplaces ordinances, the Ordinance on Hazardous Substances, the regulations for prevention of accidents and the environmental protection regulations such as the Waste Management Act and the German Household Water Act to protect their employees or man and the environment from detrimental effects when handling hazardous substances.

Should special safety precautions be necessary despite careful draining and cleaning of the product the necessary information are to be provided.

Machines which are operated with radioactive media shall only be inspected and/or repaired in the safety area of the owner by a **sera** specialized fitter.

The clearance certificate is part of the inspection-/repair order.
sera reserves the right to refuse acceptance of the order for other reasons.

DOWNLOAD

Clearance certificate

Or directly scan the QR code opposite:



Clearance Certificate

RECIPIENT

sera ProDos GmbH
 Wareneingang z. Hd. Abt. Service
 sera Straße 1
 D-34376 Immenhausen/Hessen

SENDER

Company:	<input style="width: 90%;" type="text"/>	Phone:	<input style="width: 90%;" type="text"/>
Contact partner:	<input style="width: 90%;" type="text"/>	Fax:	<input style="width: 90%;" type="text"/>
Street address:	<input style="width: 90%;" type="text"/>	E-Mail:	<input style="width: 90%;" type="text"/>
Postcode, City:	<input style="width: 90%;" type="text"/>	Your order number:	<input style="width: 90%;" type="text"/>

We confirm that we have entered the information in this clearance certificate (decontamination certificate) correctly and completely and that the returned parts have been carefully cleaned.
 The parts sent in are therefore free of residues in dangerous quantities.

<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>
Place, Date	Department	Signature (and company stamp)

www.sera-web.com

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Original

Business name and full address of the manufacturer:

sera GmbH, sera-Straße 1, D - 34376 Immenhausen

Name and address of the person authorised to compile the technical file:

Sabine Morell, sera-Straße 1, D – 34376 Immenhausen

Description and identification of the machinery:

Air-operated diaphragm pump for dosing fluids for industrial applications.

airPUMP 1/2" AP05 AI Santo
airPUMP 1/2" AP05 316SS Santo

airPUMP 1/2" AP05 AL PTFE
airPUMP 1/2" AP05 316SS PTFE

airPUMP 1" AP10 AI Santo
airPUMP 1" AP10 316SS Santo

airPUMP 1" AP10 AL PTFE
airPUMP 1" AP10 316SS PTFE

airPUMP 1 1/2" AP15 AI Santo
airPUMP 1 1/2" AP15 SS Santo

airPUMP 1 1/2" AP15 AL PTFE
airPUMP 1 1/2" AP15 SS PTFE

airPUMP 2" AP20 AI Santo
airPUMP 2" AP20 316SS Santo

airPUMP 2" AP20 AI PTFE
airPUMP 2" AP20 PTFE

airPUMP 3" AP30 AI Santo
airPUMP 3" AP30 316SS

airPUMP 3" AP30 AI PTFE
airPUMP 3" 316SS PTFE

The machinery fulfils all the relevant provisions of this Directive:

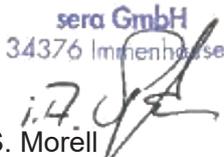
2006/42/EC Machinery

Where appropriate, harmonised standards used:

EN ISO 12100:2010

Place and date of the declaration: Immenhausen, 23.06.2021

Identity and signature of the person empowered to draw up the declaration on behalf of the manufacturer or his authorised representative:


sera GmbH
34376 Immenhausen
S. Morell
Quality Management

NOTES

NOTES

FOLLOW US



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