

AIR OPERATED DIAPHRAGM PUMP **AP30**  
*(metal design)*





## TABLE OF CONTENT

<b>IMPORTANT INFORMATION</b> .....	<b>4</b>
Export Information .....	4
Chemical Reaction Disclaimer .....	4
Unpacking & Inspection .....	4
<b>SAFETY PRECAUTIONS for ATEX-pumps</b> .....	<b>4</b>
<b>SAFETY PRECAUTIONS (general)</b> .....	<b>6</b>
<b>MATERIAL SPECIFICATION</b> .....	<b>8</b>
Material Profiles .....	8
Performance data .....	9
Characteristic curves .....	9
Dimensions .....	10
Stainless steel .....	10
Aluminium .....	11
<b>INSTALLATION/OPERATION</b> .....	<b>12</b>
Installation Drawing .....	12
installation / Start up .....	12
Troubleshooting Tips and Suggestions .....	13
<b>MAINTENANCE</b> .....	<b>14</b>
Recommended tools for servicing pump .....	14
Wet End Servicing (Installing Wet End Kit) .....	14
Disassembly .....	14
Mounting .....	16
Air End Servicing (Installing Air End Kit) .....	19
Shaft, Bushing and O-ring Replacement .....	19
Air Valve O-Ring Replacement .....	21
Valve and Muffler Gasket Replacement .....	22
Replacement Air Valve Kit Installation .....	23
Exploded View and Spare Parts List .....	24
<b>CLEARANCE CERTIFICATE</b> .....	<b>29</b>
<b>EC DECLARATION OF CONFORMITY</b> .....	<b>30</b>

## 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 for ATEX-pumps



### WARNING

**READ THIS SUPPLEMENTAL INSERT COMPLETELY BEFORE INSTALLING AND OPERATING THIS PUMP. FAILURE TO FOLLOW THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.**



### WARNING

Static sparking can cause explosion. When operating in a hazardous area or pumping a hazardous fluid, the pump's grounding screw and entire pump system must be grounded to earth to prevent static discharge. This includes but is not limited to pipes, hoses, tanks, containers, valves, etc. Before operating the pump, ensure the electrical continuity throughout the pumping system and earth ground is 1 Ohm or less. If it is greater than 1 Ohm, re-check all grounding connections.



### WARNING

Static sparking can cause explosion. Excessive fluid flow rates and improper tank filling methods can produce static electricity causing an explosion. Ensure safe fluid velocities and tank filling procedures in compliance with EN 13463-1 and CLC/TR 50404.



### WARNING

Vibrations from operation may cause mounting surfaces and connections to loosen and generate a spark. Ensure the pump and connections are securely mounted and fastened prior to each operation.

**WARNING**

Do not exceed minimum and maximum temperature limits of pump components. A table of temperature limits is provided in the "Pump Data" section of the manual.

**WARNING**

Prior to operating, check pump for any worn o-rings, gaskets, or seals. Any leaking or damaged o-rings, gaskets, or seals must be repaired or replaced immediately.

**WARNING**

Do not exceed maximum pressure stated on the pump serial number sticker.

**WARNING**

Pump exhaust may be loud and contain particles. Wear appropriate ear and eye protection. In the event of a diaphragm rupture material can be forced out of the air exhaust muffler. If product is hazardous or toxic, pipe exhaust to appropriate safe area.

**WARNING**

Pump must be cleaned on a regular basis to avoid dust buildup greater than 5mm.

**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	Maximum Surface Temperature	Temperature Class	Maximum Allowable Surface Temperature
78°C (172°F)	78°C (172°F)	T6	85°C (185°F)
95°C (203°F)	95°C (203°F)	T5	100°C (212°F)
130°C (266°F)	130°C (266°F)	T4	135°C (275°F)
195°C (383°F)	195°C (383°F)	T3	200°C (392°F)

**SAFETY PRECAUTIONS (general)**



**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 air outlet from the pump can be noisy and contain particles. Wear appropriate protection for your ears and eyes. Should a seal tear, the conveyed material can escape with the exhaust air. If the conveyed material is a dangerous or poisonous product, the exhaust air must be routed to a safe zone.

**CAUTION**

Before attaching air supply to pump to make sure all airline debris is clear. It is recommended to use a minimum 5 $\mu$  (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 & longest service life.

**CAUTION**

Check the temperature limits for all wetted components when choosing pump materials. See Materials Profiles table on page 8.

**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)

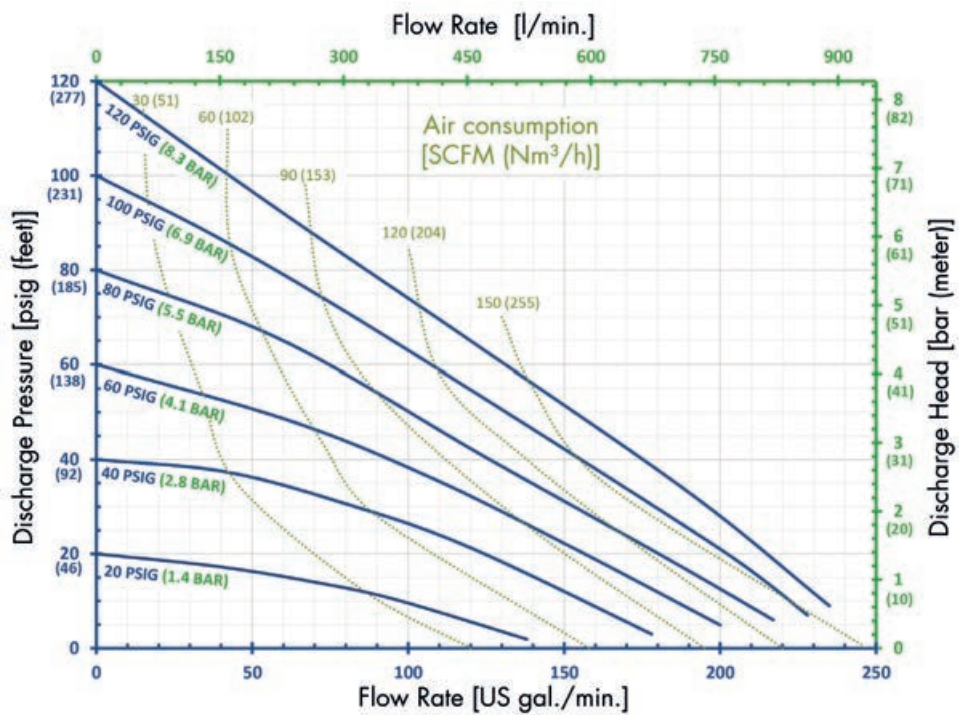


PERFORMANCE DATA

Air operated diaphragm pump AP30 (metal)

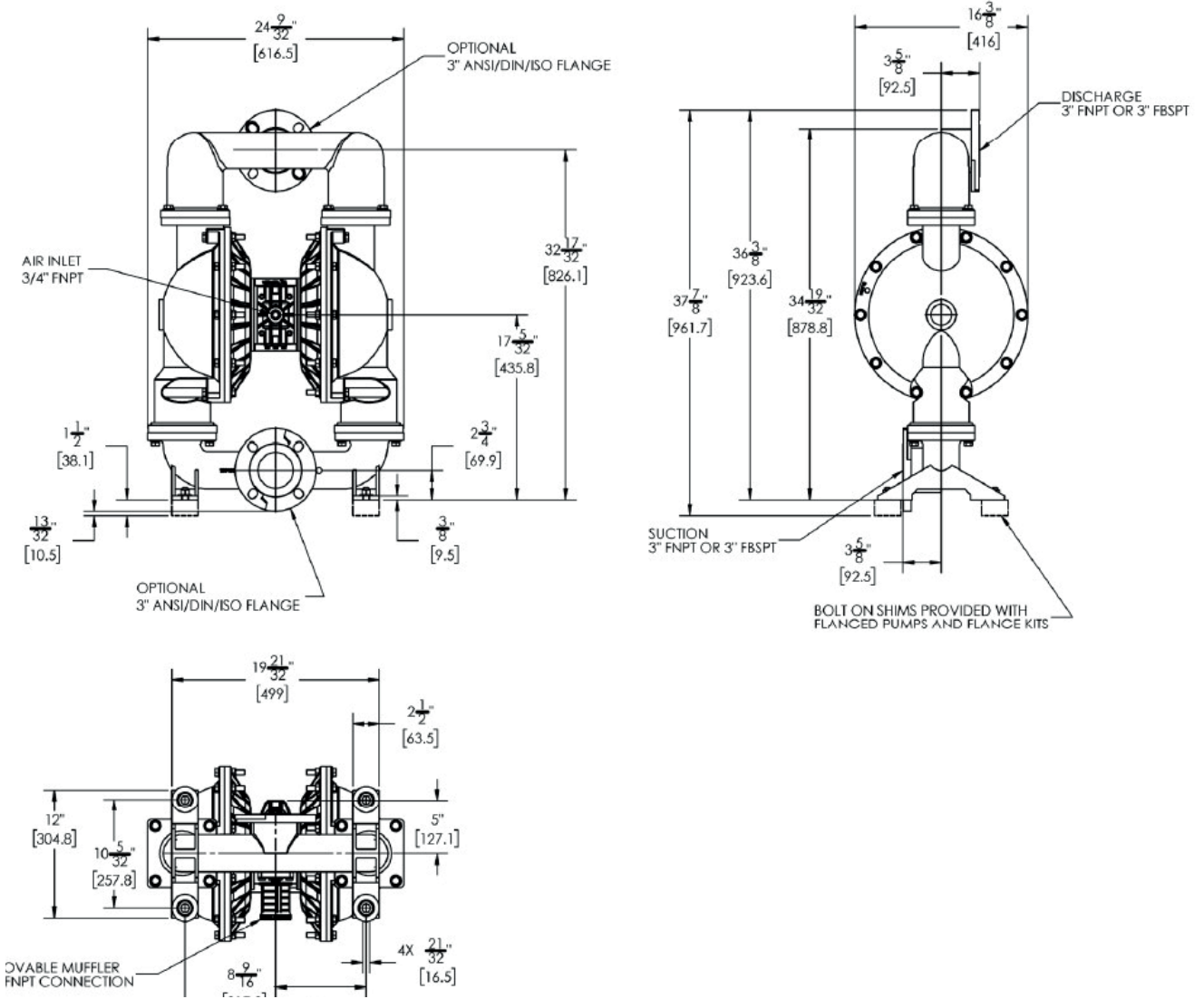
Max Flow Rate:	908 Litre/min. (240 gal/m)	Suction/Discharge Size:	3" NPT(i)/BSB(i)
Displacement Per Stroke:	3,7 Litre (0.98 gal)	Air Inlet/Exhaust Size:	¾" NPT(i)
Max Outlet Pressure:	8,3 bar (120 psig)	Air Consumption @ 6,9 bar:	255 Nm <sup>3</sup> /h (150 scfm)
Max Particle Size:	0,7 bar (10 psig)	Max Material Inlet Pressure:	8,3 bar (120 psig)
Noise Level:	12,7 mm (0.50")	Max Air Inlet Pressure:	77 dB(A)
Max Suction Lift (Water)	dry: 5,6 mWS (18,5 ft.) wet: 8,8 mWS (29 ft.)	Weight:	Aluminium: 70,3 kg (155 lbs) Stainless st.: 107 kg (235 lbs)

CHARACTERISTIC CURVES

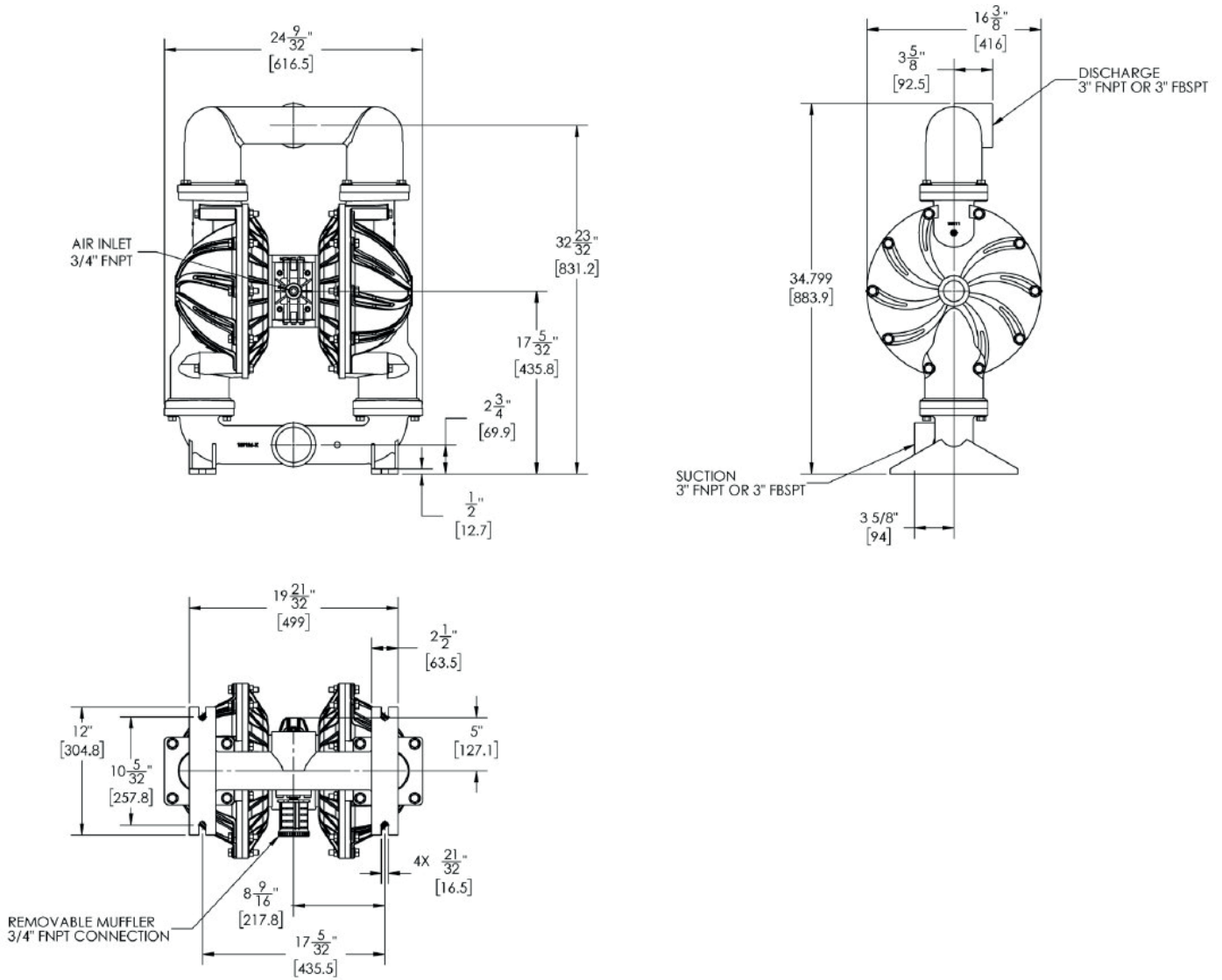


**DIMENSIONS**

**Stainless steel**

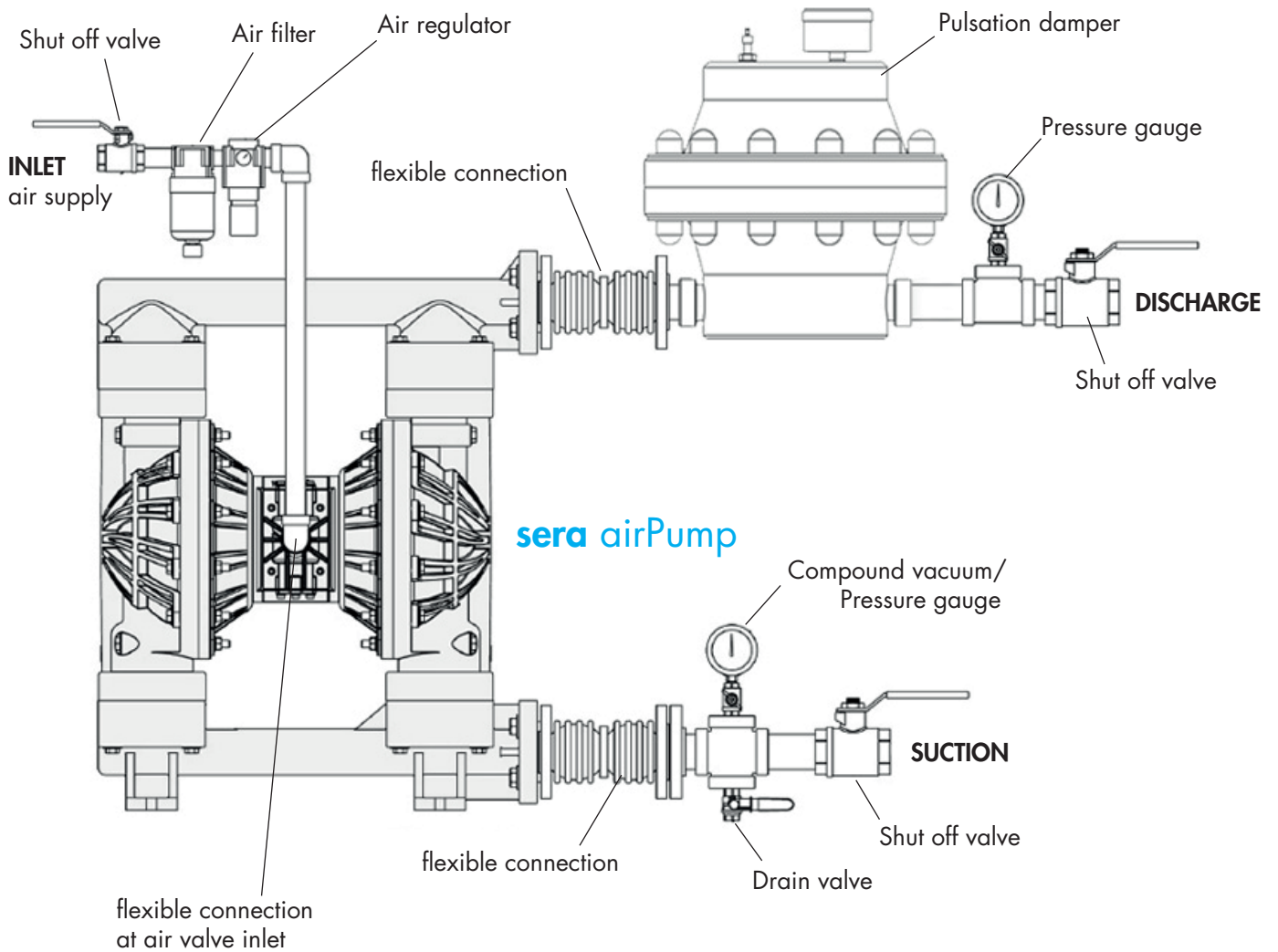


Aluminium



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 di-iameter 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 (13mm, 16mm and 18mm)
- Socket wrenches (32mm (2x))
- Snap ring pliers
- Hex wrenches (5mm, 6mm and 8mm)
- O-Ring pick
- Torque wrench

**Wet End Servicing (Installing Wet End Kit)**

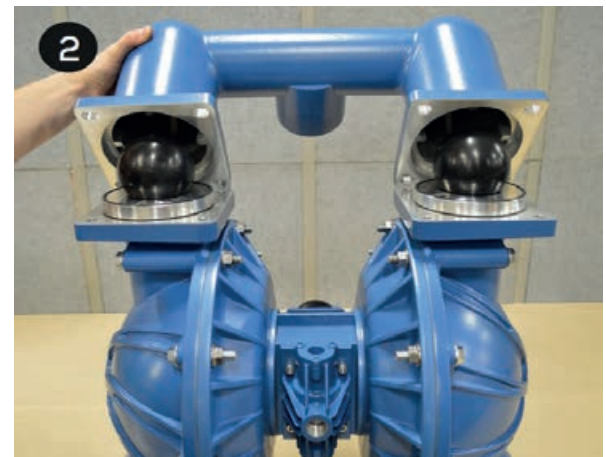
- Relieve airline pressure and fluid line pressures before conducting maintenance.
- The pump can be drained by turning it upside down and allowing fluid to drain into an appropriate container. Use proper safety equipment when conducting maintenance as internal components may still contain the pumped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

**DISASSEMBLY**

**1)**  
Remove the eight discharge manifold bolts (item 11) from the discharge manifold (item 40) using a 16 mm wrench.



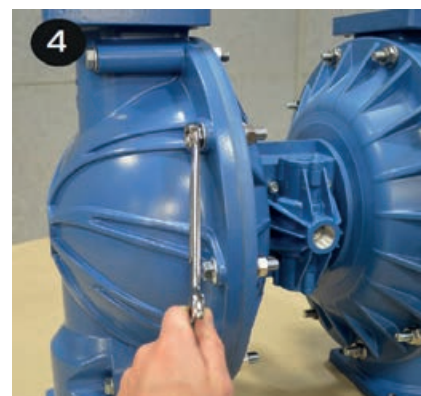
**2)**  
The discharge seat o-rings, valve seats and valve balls (items 13, 14, & 15) can now be accessed and replaced if needed.



**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 19).



**4)**  
Remove both liquid chambers (item 19) by removing the (10) bolts & nuts (item 16, 18, & 28) on each liquid chamber using a 16 mm wrench. Inspect and replace diaphragms if needed.



**5)**  
To remove the diaphragms (items 21/22), begin by loosening the two outer plates (item 20) using two 32 mm wrenches.



6)

Remove the outer plate, diaphragm(s), and inner plate (items 20, 21/22 & 23) from the side that is loosened. Pull or push the shaft (item 33) 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 21/22) and plates (items 20 & 23) from the shaft (item 33), place the shaft in a vise. Using a 6-sided 32 mm wrench, remove the remaining diaphragm(s) and plates.



8)

To remove diaphragms from inner & outer plates, remove the (6) bolts and washers (items 24, 25, & 26) that connect the inner plates to the outer plates using a 13 mm wrench.



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 steps in Wet End Reassembly section „MOUNTING“ beginning on page 16.

**MOUNTING**

**1)**  
Place the diaphragm (item 22) on the outer plate (item 20).  
If the pump is fitted with PTFE diaphragms (item 21), first place a PTFE diaphragm on the outer plate (item 20). Then place the backup diaphragm (item 22) on the PTFE diaphragm.

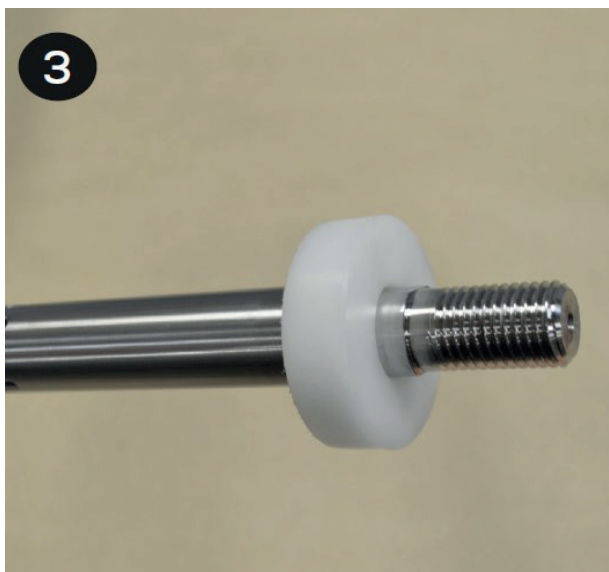
The shape of the PTFE diaphragm and back up diaphragm should roughly conform to one another. See the exploded view drawing for proper orientation.



**2)**  
Place the inner plate (item 23) on the diaphragm. Ensure the round recess in the plate faces the diaphragm (item 22). Tighten the (6) bolts (items 24, 25, & 26) in a star pattern using a 13 mm wrench.



**3)**  
Place the bump stop (item 32) onto one end of the shaft (item 33).



**4)**  
Apply a couple drops of a medium strength thread locker, such as Loctite® 246, to the threads on end of shaft. Thread the shaft (item 33) into the outer plate (item 20) until it is snug.





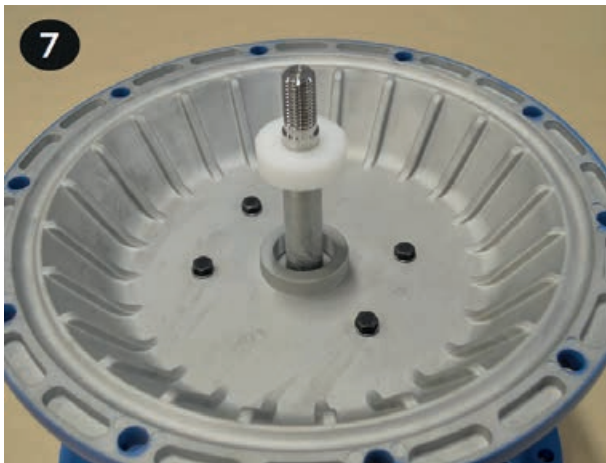
5)

The shaft (item 33) and shaft o-rings (item 31) 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.



7)

Place the remaining bump stop (item 32) on the other end of the shaft (item 33).



9)

The other diaphragm(s) (items 21/22) and inner/outer plates (items 20 & 23) can be installed onto the opposite end of the shaft (item 30).



6)

Push the shaft (item 33) through the center of the shaft bushing (item 30). It is normal for this to be a tight fit, especially if the shaft and shaft o-rings (item 31) are in good condition.



8)

It may be easier to thread the outer plate (item 20) onto the shaft (item 33) if the diaphragm(s) is inverted on one or both sides. This can be done by hand.



10)

Tighten and torque the outer plates (item 20).



11)

Install the liquid chambers (item 19) by placing one side over the diaphragm. Start all bolts & nuts (items 16, 18, 28) before tightening and torqueing. 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.



12)

Flip the pump upside down and drop the suction valve balls (item 15) into the liquid chamber (item 19) ball cages.



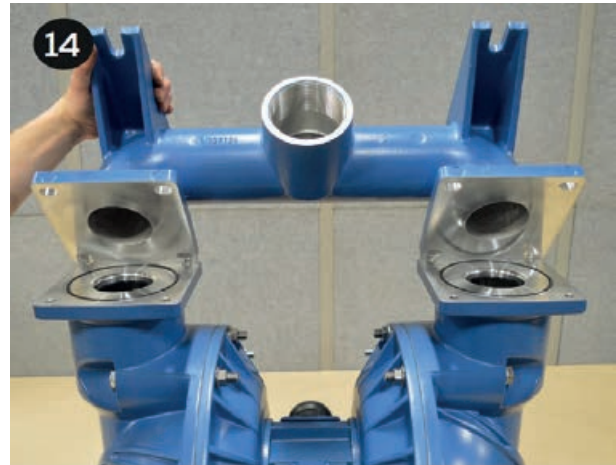
13)

For pumps fitted with metal or PTFE valve seats (item 14), place the valve seat o-rings (item 13) into the glands on both sides of the valve seat. Pumps fitted with rubber or TPE seats do not require valve seat o-rings. All seats are symmetrical, i.e. there is no top or bottom.



14)

Place the valve seats (item 14) into the seat bore in the liquid chamber (item 19). Place the suction manifold (item 12) atop the pump, install, tighten and torque the (8) manifold bolts (item 11).



15)

Stand the pump upright onto the suction manifold feet. Place the valve seat o-rings (item 13) into both sides of the valve seat. Place the seat on the liquid chamber (item 19). Place the valve balls (item 15) on the seats and discharge manifold (item 40) atop the components that are stacked on top of the liquid chambers. Install, tighten and torque the (8) manifold bolts (item 11).



## AIR END SERVICING (INSTALLING AIR END KIT)

- Follow steps 1 – 7 in the Wet End Servicing disassembly section to access the shaft bushing (item 30) and o-rings (items 29 & 31), then follow steps below.

## SHAFT, BUSHING AND O-RING REPLACEMENT

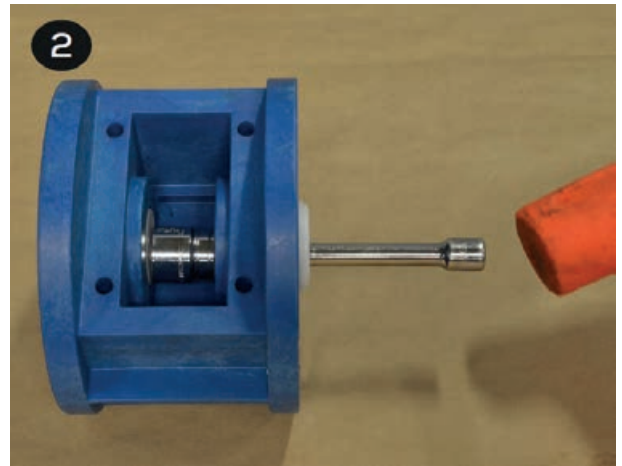
1)

Remove both air chambers by removing the (4) bolts & washers (items 24 & 26) on each side of the pump with a 13mm wrench.



2)

Remove and set aside the air valve (item 3) using a 6mm hex wrench (see Valve and Muffler Gasket Replacement section for more details). The shaft bushings can be removed by placing a large socket between the two bushings. Place an extension into the socket from one side of the center section (item 36). Tap with a rubber mallet to remove the bushing. Repeat for the remaining bushing.



3)

Use the supplied grease packets to lightly grease the OD and ID o-rings (items 29 & 31) that come preinstalled in the new shaft bushings supplied in air end kits.



4)

Insert both bushings into the center section. Ensure the bushing is fully installed and the large rib on the outside of the bushing is flat against the center section.



5)

Inspect the shaft (item 33) 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.



6)

After determining if the condition of the shaft is acceptable, ensure both center section o-rings (items 34 & 35) are in place on both sides of the center section.



7)

Install air chambers (item 27) by placing one side on top of the center section (item 36). Ensure the air path hole of the center section lines up with the through hole in the air chamber.



8)

Tighten and torque the (4) fasteners (items 24 & 26) that connect the air chamber (item 27) to the center section (item 36). Repeat for the second air chamber.



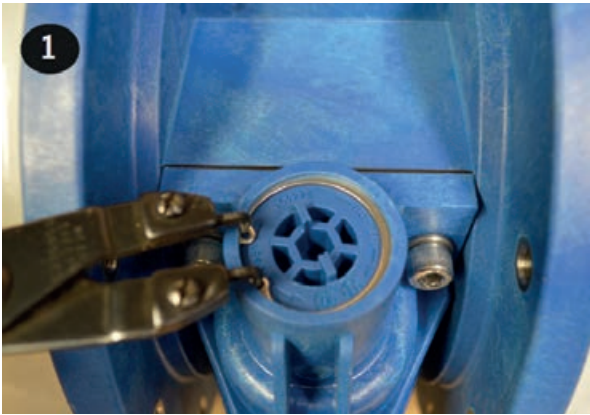
To rebuild the rest of the pump, follow steps 5 – 15 in the Wet End Servicing – Wet End Reassembly section.

## AIR VALVE O-RING REPLACEMENT

1)

**Plastic Air Valve**

To replace the valve cap o-ring remove the retaining ring (item 8), then unthread the valve cap (item 6) using a 8 mm hex wrench.



1)

**Aluminium Air Valve**

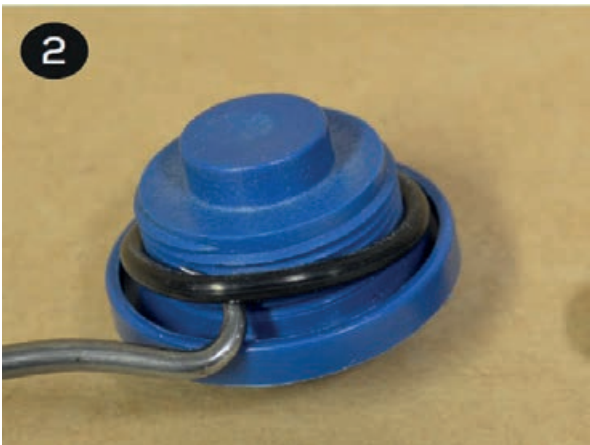
To replace the valve cap o-rings (item 5), remove the (3) button head cap screws (item 7) using a 5 mm hex wrench.



2)

**Plastic Air Valve**

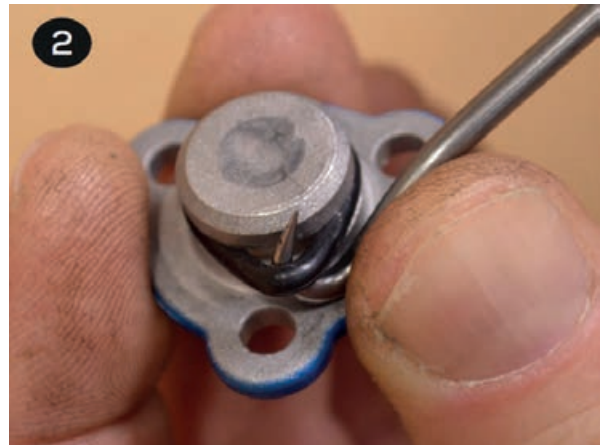
Remove and replace o-ring (item 5). Install cap (item 6) and tighten until groove for the retaining ring is visible. Install retaining ring.



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 (4) socket head cap screws and washers (items 1 & 2) that attach the valve body to the muffler plate (item 38) with a 6 mm hex wrench

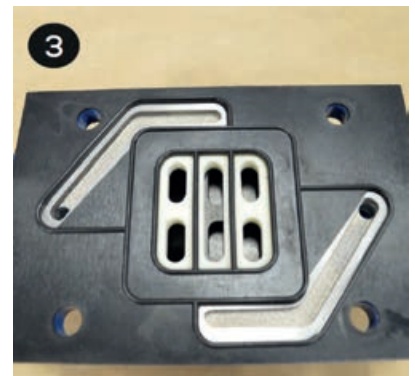
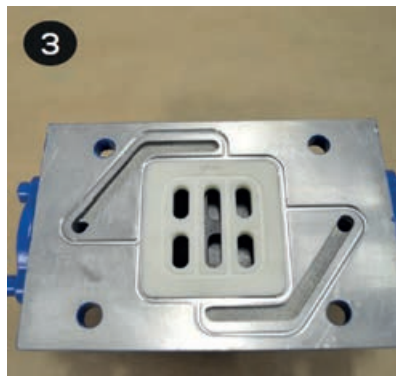
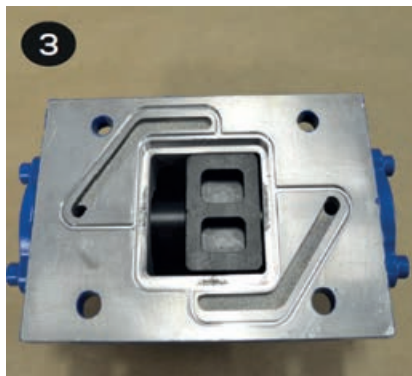


**2)**  
Pull the valve body and gasket (items 3 & 37) off the front of the center section (item 36) and the muffler plate gasket, muffler plate and muffler (items 38, 39, & 41) off the back.



**3)**  
Place the new gasket (item 37) 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.



**3)**  
Insert the (4) cap screws & washers (items 1 & 2) through the valve body and gasket (items 3 & 37) and place onto the center section (item 36). Ensure the slide valve and valve plate (items 9 & 10) are in place and the valve sits flat on the center section.

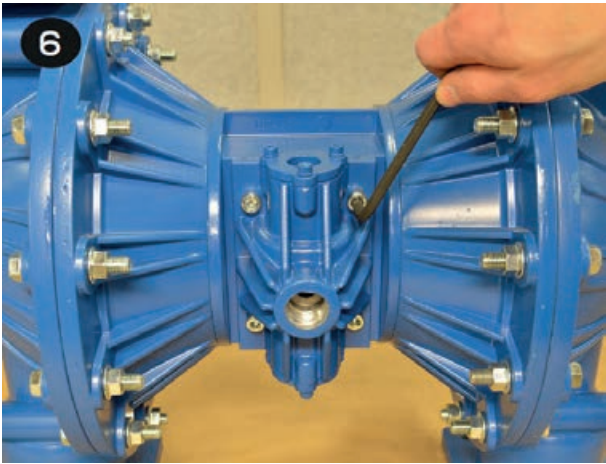


**5)**  
Place the muffler gasket (item 38) over the (4) cap screws (item 1) on the back side of the center section (item 36) followed by the muffler plate and muffler (items 39 & 41).



3)

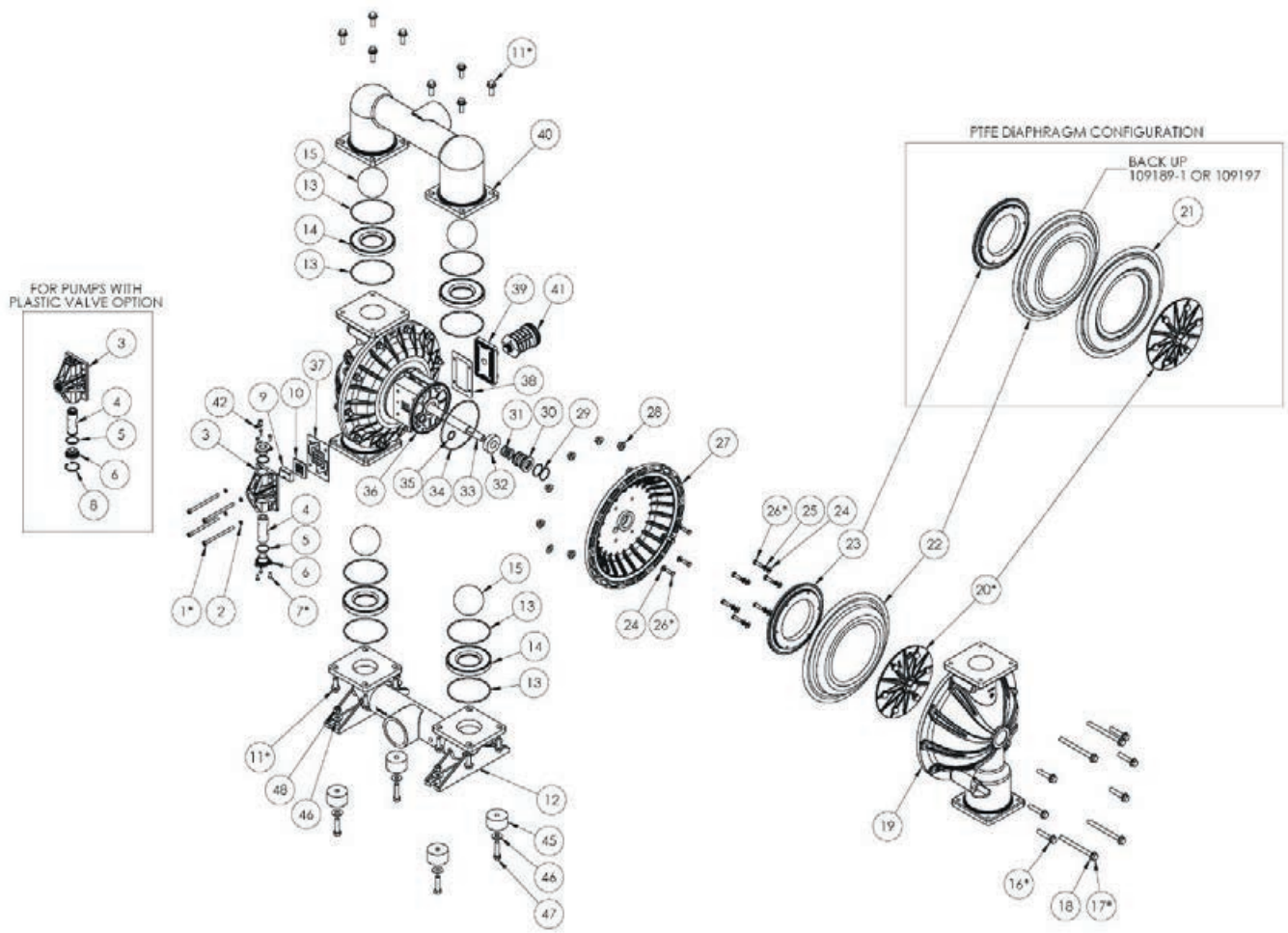
Tighten and torque the (4) cap screws & wash-ers (items 1 & 2) into the muffler plate.



#### REPLACEMENT AIR VALVE KIT INSTALLATION

- 1. Remove the valve that is to be replaced by removing the (4) socket head cap screws with a 6 mm hex wrench that attaches the valve body to the muffler plate.
- 2) Save the (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		109697	1	V1/V2
10	VALVE PLATE		109628	1	V1/V2
12	MANIFOLD, SUCTION	Aluminium Stainless Steel, FDA	SEE MANIFOLD TABLES		



Pos.	Description	Material	Part-No.	Qty.	Set
13	O-RING, VALVE SEAT	Neoprene	109314	8	W
		Buna	109309		
		EPDM	J103003		
		FKM	J102960		
		PTFE, FDA	109319		
		FEP-covered, FDA	109599		
14	VALVE SEAT	Aluminium	109239	4	W
		Stainless Steel	109243		
		PFTE	109598		
		Neoprene	109231		
		Buna	109235		
		EPDM	109443		
		FKM	109289		
		Santoprene	109247		
		Santoprene, FDA	109247-1		
		Hytrel	109227		
		Hytrel, FDA	109227-1		
		PU	109304		
		15	VALVE BALL		
Buna	109210				
EPDM	109214				
FKM	109218				
Santoprene	109222				
Santoprene, FDA	109222-1				
PTFE, FDA	109202				
Stainless Steel, FDA	109371				
PTFE (weighted), FDA	109380				
19	LIQUID CHAMBER	Aluminium	109767-15	2	
		Stainless Steel	109767-16		
20	OUTER PLATE	Aluminium	109162	2	
		Stainless Steel	109166		
21	DIAPHRAGM	PTFE, FDA	109185-1	2	W
22	DIAPHRAGM	Santoprene	109189-1	2	W
		Buna	109189-2		
		EPDM	109189-3		
		FKM	109189-4		
		Santoprene	109197		
		Santoprene, FDA	109197-1		
		Hytrel	109193		
		Hytrel, FDA	109193-1		
		PU	109438		
23	INNER PLATE		109171	2	
27	AIR CHAMBER	Aluminium	109147	2	
29	O-RING, BUSHING OD		109420	4	A1/A2
30	SHAFT BUSHING		109705	2	A1/A2
31	O-RING, BUSHING ID		109424	6	A1/A2

## airPUMP AP30 (metal)

Pos.	Description	Material	Part-No.	Qty.	Set
32	BUMP STOP		109430	2	–
33	SHAFT		109176	1	–
34	O-RING, CENTER SECTION	LARGE	109434	2	A1/A2
35	O-RING, CENTER SECTION	SMALL	109418	2	A1/A2
36	CENTER SECTION	Aluminium	109460-1	1	–
37	GASKET, AIR VALVE		109267	1	A1/A2/V1/V2
38	GASKET, MUFFLER		109428	1	A1/A2/V1/V2
39	MUFFLER PLATE	Standard	109271	1	–
		ATEX	109271-1	1	–
40	MANIFOLD, DISCHARGE	Aluminium	SEE MANIFOLD TABLES		–
		Stainless steel			
41	MUFFLER	Standard	109562	1	–
		ATEX	109700	1	–
42	GROUNDING LUG	only ATEX-pumps	108091	1	–
43	SPLIT FLANGE HALF		SEE MANIFOLD TABLES		–
45	SHIM	PE	109765	4	–

### KIT COLUMN KEY:

- W** PARTS SUPPLIED IN A WET SIDE KITS
- A1** PARTS SUPPLIED IN PLASTIC VALVE AIR END KIT 109708
- A2** PARTS SUPPLIED IN ALUMINUM VALVE AIR END KIT 109706
- V1** PARTS SUPPLIED IN PLASTIC REPLACEMENT VALVE KIT 109709
- V2** PARTS SUPPLIED IN ALUMINUM REPLACEMENT VALVE KIT 109707

AP30 with air valve PP-FRP				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY, GFRPP	109251	1	V1
4	VALVE CARRIER WITH SEALS	109655	1	V1
5	VALVE CAP O-RING	109644	1	A1/V1
6	VALVE CAP, GFRPP	109275	1	V1
8	RETAINING RING, HO-165 SS	109645	1	V1

AP30 with air valve Aluminium				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY, ALUMINUM	s.Pos. 44	1	V2
4	VALVE CARRIER, ALUMINUM	109456	1	V2
5	VALVE CAP O-RING	109416	2	A2/V2
6	VALVE CAP, ALUMINUM	s.Pos. 44	2	V2
7	CAP SCREW, M6x1 L=16	109513	6	V2
44	CONTAINS Pos. 3, 7, 8, 9, 10	109593	1	V2

**Connection / Porting location:**

<b>N2</b>	Connection: FNPT	Position: center, horizontal
<b>B2</b>	Connection: FBSP	Position: center, horizontal
<b>F2</b>	Connection: Flanges	Position: center, horizontal
<b>T2</b>	Connection: 2" Tri-Clamp	Position: center, horizontal

SUCTION MANIFOLD (POS. 12)								
	N2		B2		F2		T2	
	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.
<b>AP30 Aluminium</b>	109126	1	109126-1	1	–	–	–	–
<b>AP30 Stainless Steel</b>	109130	1	109130-1	1	109130	1	109130-10	1
Pos. 43 (not shown)	N/A	–	N/A	–	109634	–	N/A	–

DISCHARGE MANIFOLD (POS. 40)								
	N2		B2		F2		T2	
	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.
<b>AP30 Aluminium</b>	109141	1	109141-1	1	–	–	–	–
<b>AP30 Stainless Steel</b>	109145	1	109145-1	1	109145	1	109145-10	1
Pos. 43 (not shown)	N/A	–	N/A	–	N/A	–	N/A	–

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

AP30 Aluminium „HARDWARE“			
Pos.	Description	Part-No.	Qty.
1	CAP SCREW, SOCKET HD M8X1.25X120MM	109495	4
2	WASHER, LOCK M8 HIGH-COLLAR	109493	4
11	CAP SCREW, HEX HD FLNG M12X1.75X35MM	109480	16
16	CAP SCREW, HEX HD FLNG M12X1.75X60MM	109481	12
17	CAP SCREW, HEX HD M12X1.75X140MM	109491	8
18	WASHER, FLAT M12	109490	8
24	WASHER, FLAT M8	109469	20
25	WASHER, LOCK M8	109475	12
26	CAP SCREW, HEX HD M8X1.25X30MM	109471	20
28	NUT, HEX HD FLNG M12X1.75	109486	20

AP30 Stainless Steel „HARDWARE“			
Pos.	Description	Part-No.	Qty.
1	CAP SCREW, SOCKET HD M8X1.25 X 120MM SS	109520	4
2	WASHER, LOCK M8 HIGH-COLLAR SS	109518	4
11	CAP SCREW, HEX HD FLNG M12X1.75 X 35MM SS	109501	16
16	CAP SCREW, HEX HD FLNG M12X1.75 X 50MM SS	109502	12
17	CAP SCREW, HEX HD M12X1.75X80MM SS	109503	8
24	WASHER, FLAT M8	109469	20
25	WASHER, LOCK M8	109475	12
26	CAP SCREW, HEX HD M8X1.25X30MM	109471	20
28	NUT, HEX HD FLNG M12X1.75 SS	109510	20
46	WASHER, FLAT 1/2" SS	J103851	8
47	CAP SCREW, HEX HD 1/2" S13"X2" SS	J104032	4
48	NUT, HEX 1/2"X13 SS	107534	4

**Maximum Torque Settings AP30 (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.

Aluminium	
Pos.	Torque
1	8,5 Nm (75 in-lbs) +
7	8 Nm (72 in-lbs)
11	63 Nm (552 in-lbs) +
16	63 Nm (552 in-lbs) +
17	63 Nm (552 in-lbs) +
20	108 Nm (960 in-lbs) +
26	24 Nm (216 in-lbs)

Stainless Steel	
Pos.	Torque
1	10 Nm (90 in-lbs)
7	8 Nm (72 in-lbs)
11	75 Nm (660 in-lbs)
16	75 Nm (660 in-lbs)
17	75 Nm (660 in-lbs)
20	108 Nm (960 in-lbs) +
26	24 Nm (216 in-lbs)

## CLEARENCE 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:



**sera**

**Clearance Certificate**

**RECIPIENT**

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

**SENDER**

Company:	<input type="text"/>	Phone:	<input type="text"/>
Contact partner:	<input type="text"/>	Fax:	<input type="text"/>
Street address:	<input type="text"/>	E-Mail:	<input type="text"/>
Postcode, City:	<input type="text"/>	Your order number:	<input 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 type="text"/>	<input type="text"/>	<input type="text"/>
Place, Date	Department	Signature (and company stamp)

www.sera-web.com

© 2018/2019 sera ProDes GmbH. Alle Rechte vorbehalten. www.sera-web.com

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 ½" AP05 AI Santo	airPUMP ½" AP05 AL PTFE
airPUMP ½" AP05 316SS Santo	airPUMP ½" AP05 316SS PTFE
airPUMP 1" AP10 AI Santo	airPUMP 1" AP10 AL PTFE
airPUMP 1" AP10 316SS Santo	airPUMP 1" AP10 316SS PTFE
airPUMP 1½" AP15 AI Santo	airPUMP 1½" AP15 AL PTFE
airPUMP 1½" AP15 SS Santo	airPUMP 1½" AP15 SS PTFE
airPUMP 2" AP20 AI Santo	airPUMP 2" AP20 AI PTFE
airPUMP 2" AP20 316SS Santo	airPUMP 2" AP20 PTFE
airPUMP 3" AP30 AI Santo	airPUMP 3" AP30 AI PTFE
airPUMP 3" AP30 316SS	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:

The signature is a handwritten name in blue ink, appearing to read 'S. Morell', written over a blue stamp.  
**sera GmbH**  
34376 Immenhausen  
S. Morell  
Quality Management

NOTES

FOLLOW US



**sera GmbH**

sera-Str. 1  
34376 Immenhausen  
Germany  
Tel. +49 5673 999 00  
Fax +49 5673 999 01  
info@sera-web.com  
www.sera-web.com