

AIR OPERATED DIAPHRAGM PUMP **AP15**
(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 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	Maxium 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 μ (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

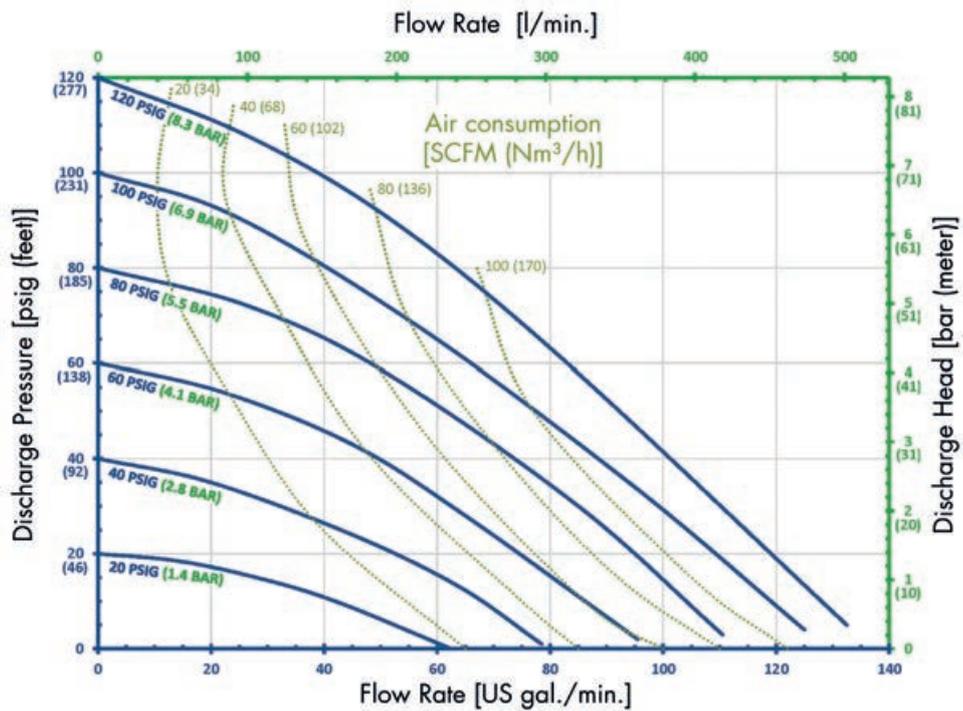
Material	Chemical composition	Description	Operating temperature	
			min.	max.
PP	Pure Polypropylene	Thermoplastic that is resistant to alkali and strong acids.	0°C (32°F)	70°C (158°F)
PVDF	Pure Polyvinylidene Fluoride	Strong fluoropolymer with excellent chemical resistance.	-12°C (10°F)	104°C (220°F)
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)
Hytrell	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 **AP15** (metal)

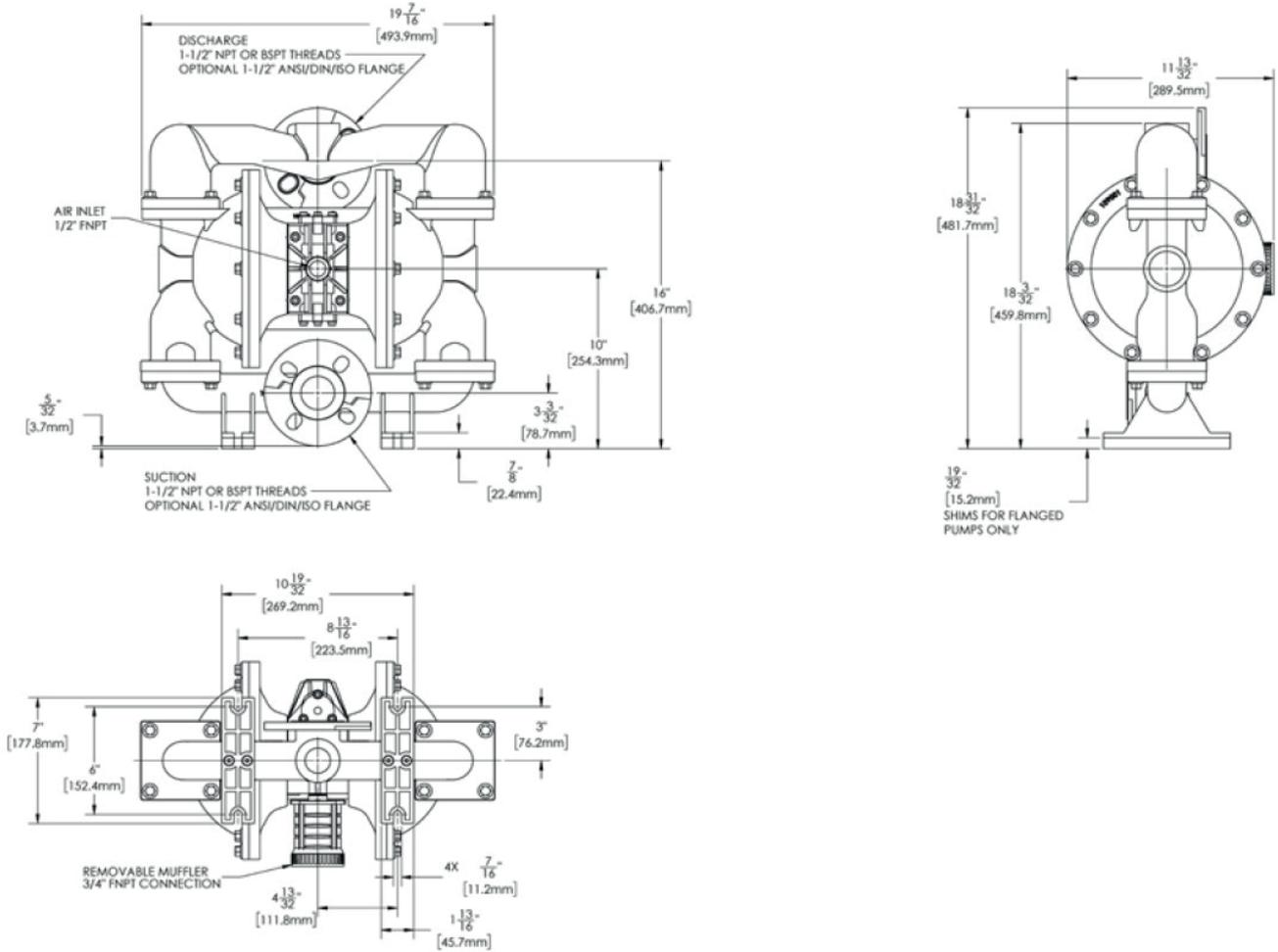
Max Flow Rate:	503 Litre/min. (133 gal/m)	Suction/Discharge Size:	1 1/2" ANSI/DIN/ISO-Flanges
Displacement Per Stroke:	0,91 Litre (0.24 gal)	Air Inlet/Exhaust Size:	1/2" FNPT / 3/4" FNPT
Max Outlet Pressure:	8,3 bar (120 psig)	Air Consumption @ 6,9 bar:	170 Nm ³ /h (100 scfm)
Max Particle Size:	0,7 bar (10 psig)	Max Material Inlet Pressure:	8,3 bar (120 psig)
Noise Level:	9,7 mm (0.38")	Max Air Inlet Pressure:	77 dB(A)
Max Suction Lift (Water)	dry: 5,5 mWS (18 ft.) wet: 8,5 mWS (28 ft.)	Weight:	Aluminium: 23,6 kg (52 lbs) Stainless st.: 44,5 kg (98 lbs)

CHARACTERISTIC CURVES

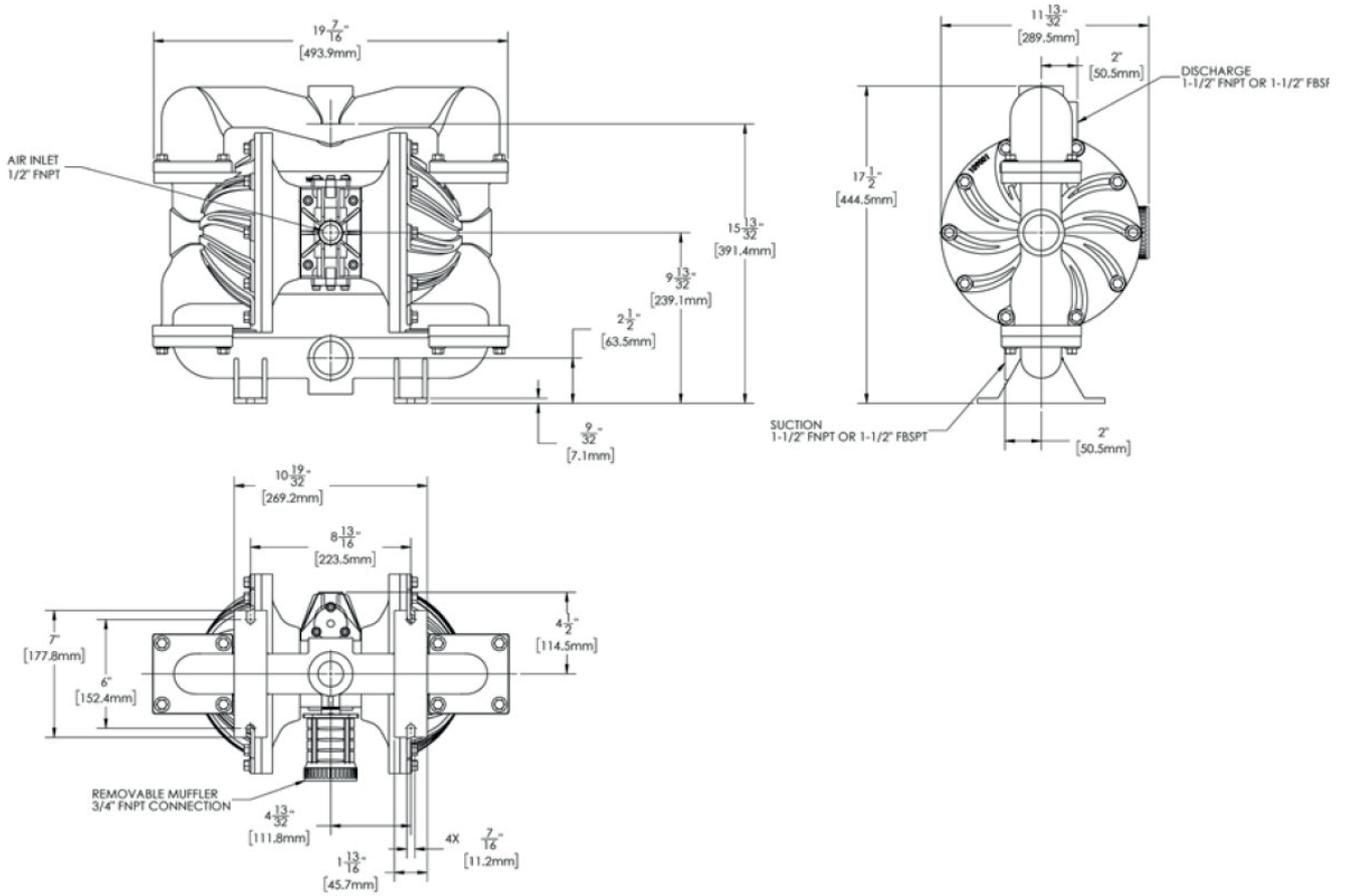


DIMENSIONS

Stainless steel

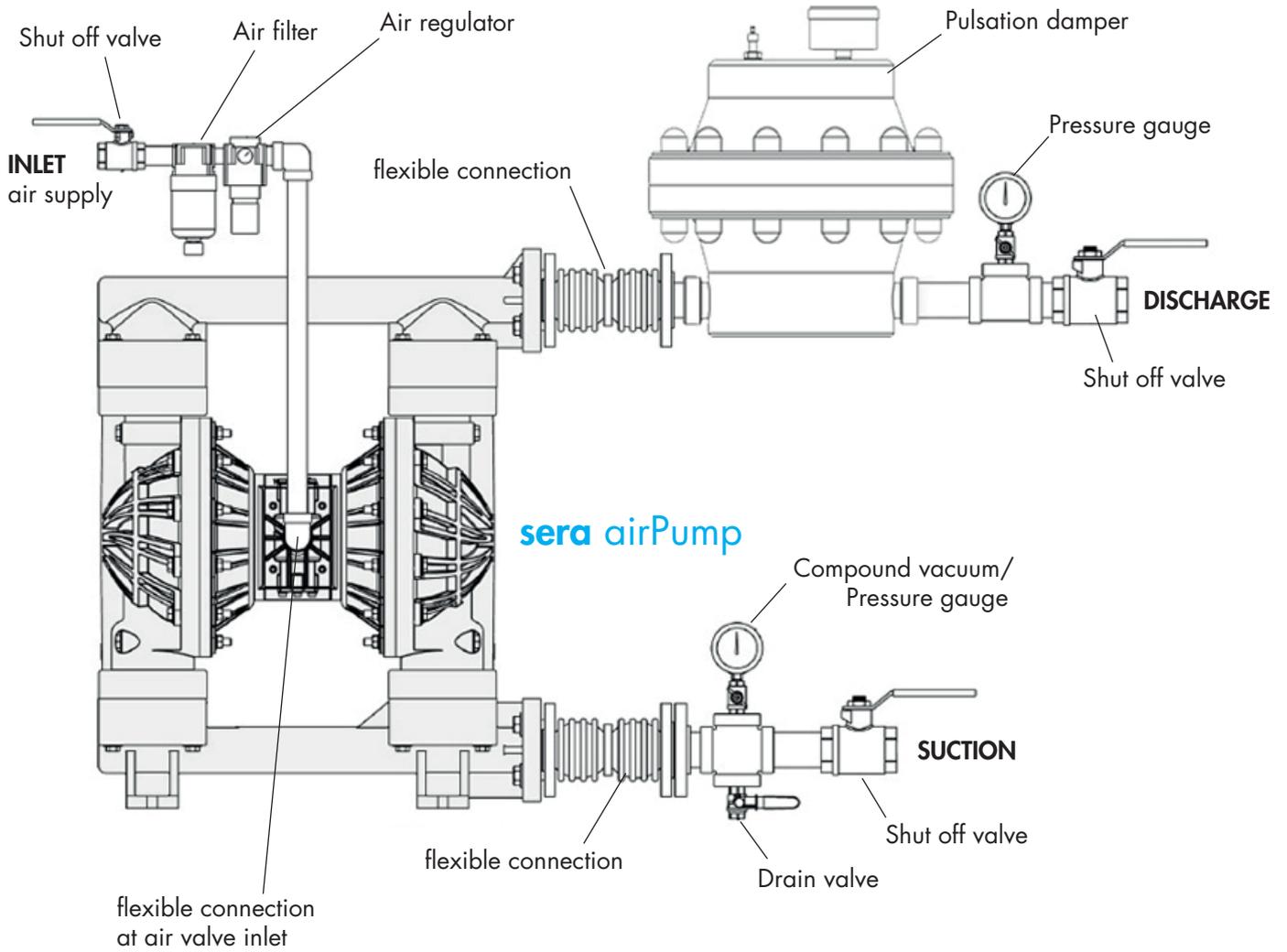


Aluminium



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 (15mm)
- Socket wrenches (30mm (2x))
- Snap ring pliers
- Hex wrenches (4mm, 6mm and 8mm)
- O-Ring pick
- Torque wrench

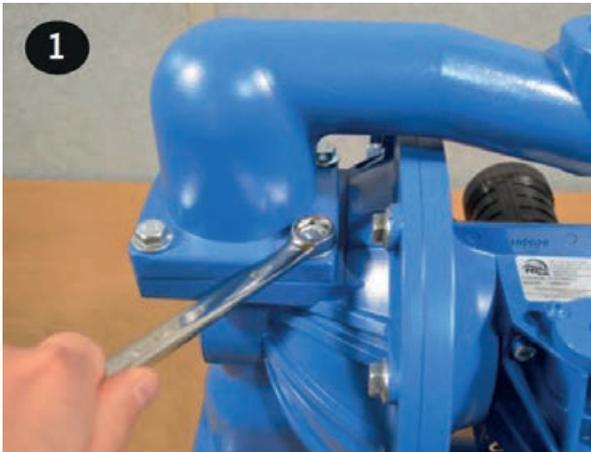
Wet End Servicing (Installing Wet End Kit)

- 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

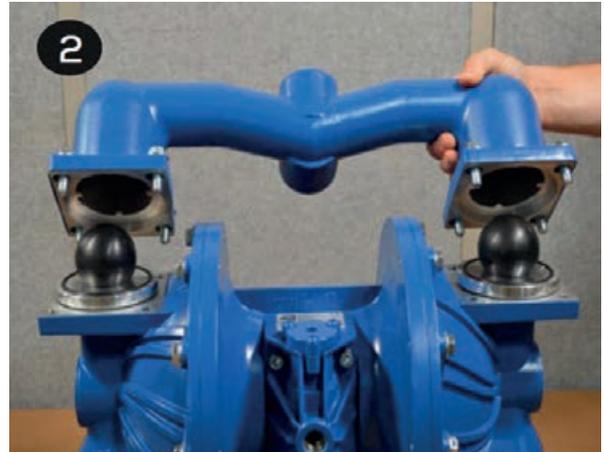
1)

Remove the eight discharge manifold bolts (item 12) from the discharge manifold (item 32) using a 15 mm wrench.



2)

The discharge seat o-rings, valve seats and valve balls (items 14, 15, & 16) can now be accessed and replaced if needed.



3)

Repeat the above steps for the suction manifold (item 13). The seat o-rings, valve seats and valve balls (items 14, 15, & 16) are located in the liquid chambers (item 18).



4)

Remove both liquid chambers (item 18) by removing the (10) bolts (item 17) on each liquid chamber using a 15 mm wrench. Inspect and replace diaphragms if needed.



5)

To remove the diaphragms (items 20/ 21), begin by loosening the two outer plates (item 19) using 2-30mm 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 19, 20/21 & 22) from the side that is loosened. Pull or push the shaft (item 29) 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 19 & 22) from the shaft (item 29), place the shaft in a vise fitted with soft jaws. Using a 6-sided 30mm 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 „MONTING“ beginning on page 16.

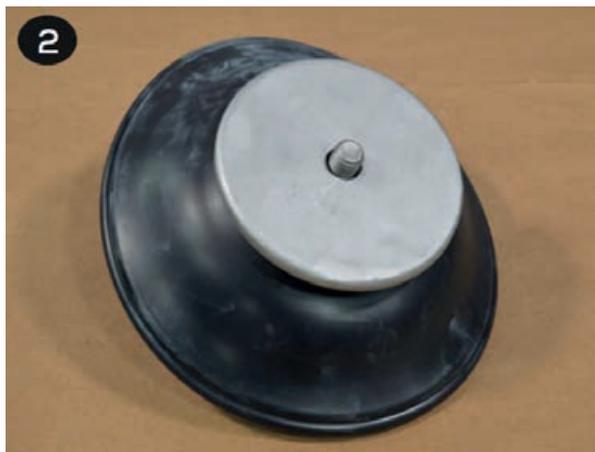
MOUNTING

1)
Slide the center hole of one diaphragm (item 21) over the cast/threaded bolt of an outer plate (item 19). 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 cast/threaded bolt of the outer plate (item 19). 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.

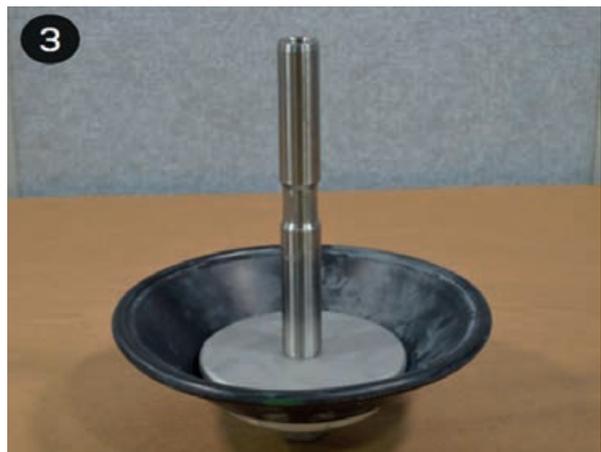
See the exploded view drawing for proper orientation.



2)
Place the inner plate (item 22) over the cast/threaded bolt. Ensure the round recess in the plate faces the diaphragm (item 21).
Note: 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 cast/threaded outer plate bolt (item 19). Thread the shaft (item 29) onto the bolt until it is snug to the flat back side of the inner plate (item 22).



4)
The shaft (item 29) and shaft o-rings (item 25) 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.



5)
Push the shaft (item 29) through the center of the shaft bushing (item 24). It is normal for this to be a tight fit, especially if the shaft and shaft o-rings (item 25) are in good condition.



6)

The other diaphragm(s) (items 20/21) and inner/outer plates (items 19 & 22) can be installed onto the opposite end of the shaft (item 29). It may be easier to thread the bolt into the shaft if the diaphragm(s) is inverted on one or both sides. This can be done by hand.



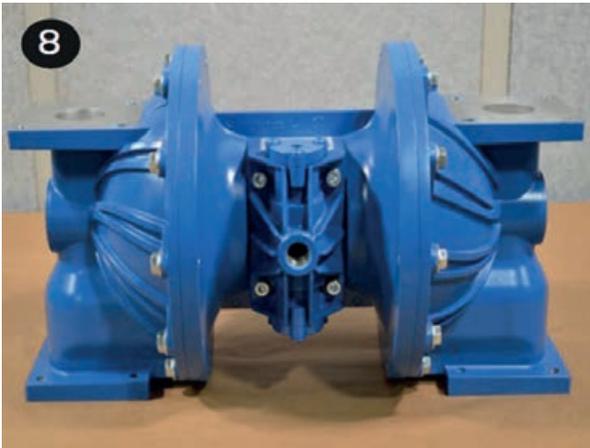
7)

Tighten and torque the outer plates (item 19).



8)

Install the liquid chambers (item 18) by placing one side over the diaphragm. Start all bolts (item 17) before tightening and torquing. Torque all fasteners in a star pattern. Repeat to install the second liquid chamber. Ensure both chambers are oriented in the same direction 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 16) into the liquid chamber (item 18) ball cages.



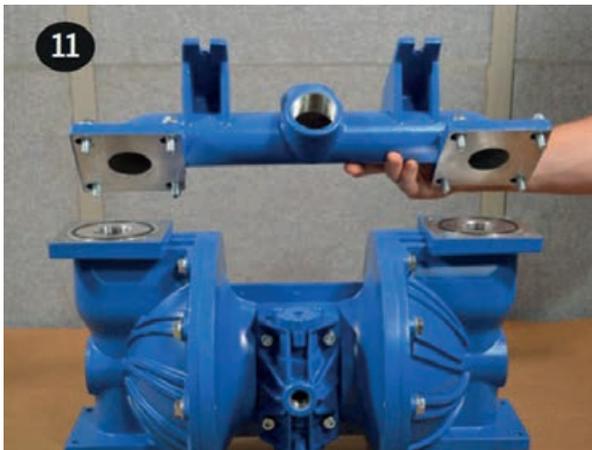
10)

Install the valve seat o-rings (item 14) into both sides of the valve seat (item 15). Install the valve seats into the liquid chambers. Valve seats are symmetrical.



11)

Place the suction manifold atop the pump. Install, tighten, and torque the (8) manifold bolts (item 12).



12)

Stand the pump upright onto the suction manifold feet (item 13). Install the valve seat o-rings (item 14) into both sides of the valve seats (item 15). Place the valve seats on top of the liquid chambers (item 18), followed by the valve balls (item 16) on top of the valve seats. The valve seats are symmetrical. Place the manifold atop the pump, over the components that are stacked on top of the liquid chambers. Install, tighten and torque the manifold bolts (item 12).



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 & 25), then follow steps below.

SHAFT, BUSHING AND O-RING REPLACEMENT

1)

Remove the shaft bushing retaining ring (item 26) 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 & 25) that come preinstalled in the new shaft bushing supplied in air end kits. Insert the shaft bushing into the center section (item 32) and reinstall the retaining ring.



3)

Inspect the shaft (item 29) 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 „MOUNTING“ 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 11), then unthread the valve cap (item 9) using a 8mm hex wrench.



1)
Aluminium Air Valve
To replace the valve cap o-rings (item 8), remove the (3) button head cap screws (item 10) using a 4 mm hex wrench.



2)
Plastic Air Valve
Remove and replace o-ring (item 8). Install cap (item 9) and tighten until groove for the retaining ring is visible. Install retaining ring.



2)
Aluminium Air Valve
Remove and replace o-ring (item 8). Install cap (item 9), tighten, and torque the valve cap screws (item 10). 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 (item 1) that attach the valve body to the center section (item 31) with a 6mm hex wrench.



2)

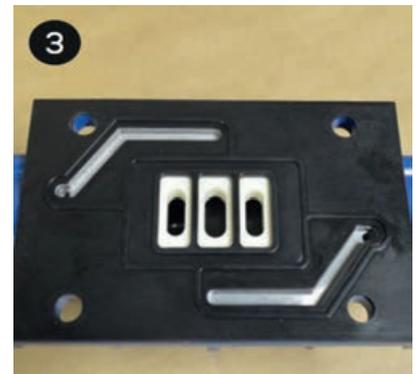
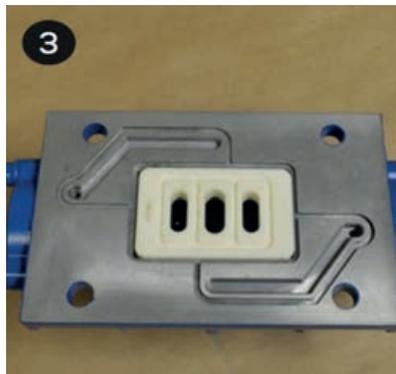
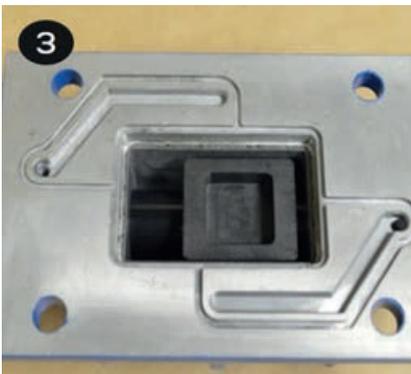
Pull the valve body off the front of the center section (item 31).



3)

Place the new gasket (item 6) 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 5).

Air Valve Slide, Plate & Gasket Orientation: If the valve plate (item 5) and slide valve (item 4) 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 7) 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 & 6) and bolt to the center section (item 31). Ensure the slide valve and valve plate (items 4 & 5) are in place and the valve sits flat on the center section.



5)

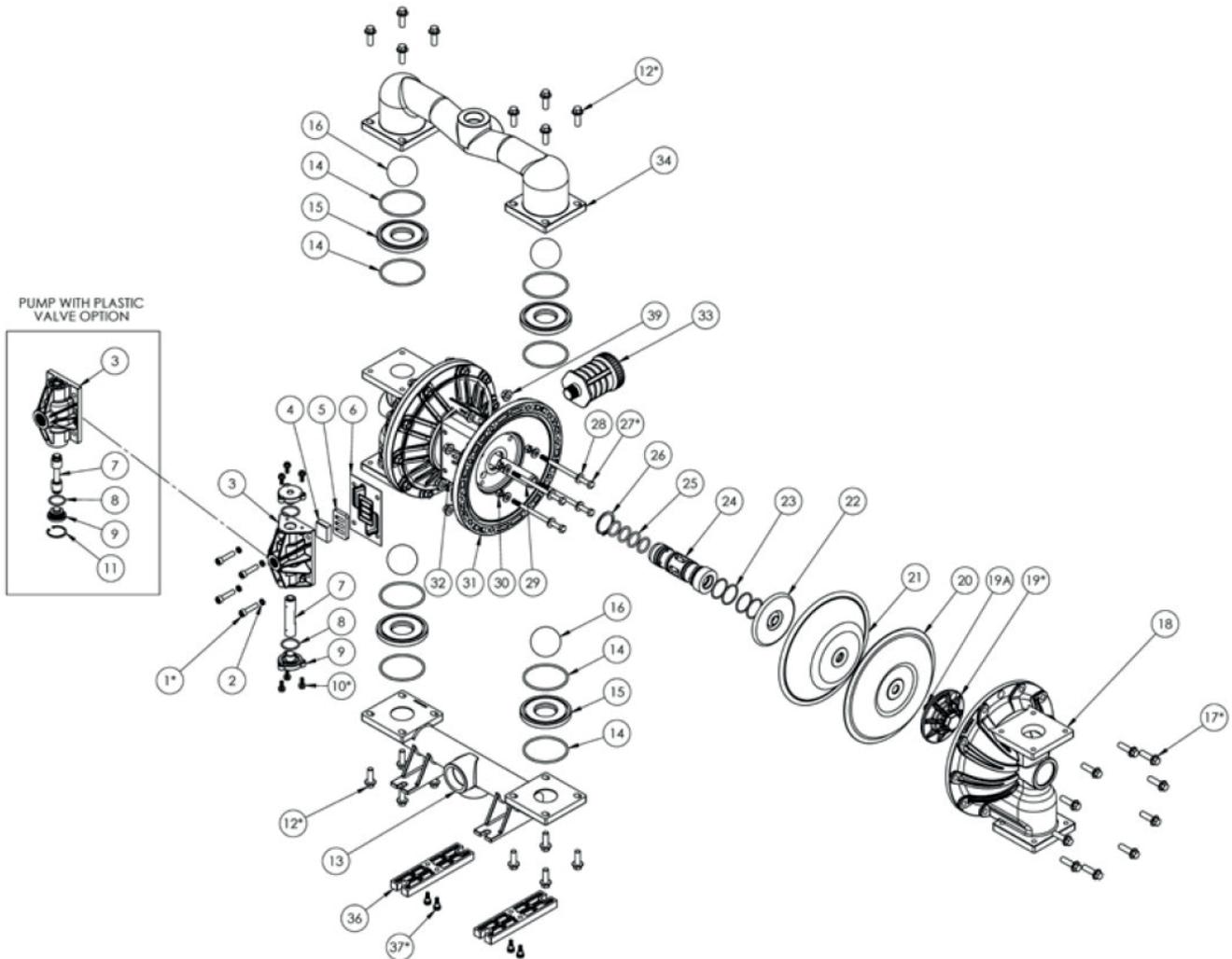
Tighten and torque the (4) cap screws into the muffler plate.



REPLACEMENT AIR VALVE KIT INSTALLATION

- 1) Remove the valve that is to be replaced by removing the (4) socket head cap screws with a 6 mm hex wrench that attaches the valve body to the center section.
- 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 Gasket Replacement section of Air End Servicing above.

EXPLODED VIEW AND SPARE PARTS LIST



Pos.	Description	Material	Part-No.	Qty.	Set
1	CAP SCREW, VALVE BODY			SEE HARDWARE TABLE	
2	WASHER, VALVE BODY			SEE HARDWARE TABLE	
3	VALVE BODY			SEE HARDWARE TABLE	
4	SLIDE VALVE		109843	1	V1/V2
5	VALVE PLATE		109845	1	V1/V2
6	GASKET, AIR VALVE		109266	1	A1/A2/A3/A4/V1/V2
7	VALVE CARRIER			SEE AIR VALVE TABLES	
8	O-RING, VALVE CAP			SEE AIR VALVE TABLES	

Pos.	Description	Material	Part-No.	Qty.	Set
9	VALVE CAP				SEE AIR VALVE TABLES
10	CAP SCREW, VALVE CAP				SEE AIR VALVE TABLES
11	RETAINING RING, VALVE CAP				SEE AIR VALVE TABLES
12	CAP SCREW, MANIFOLD				SEE HARDWARE TABLE
13	MANIFOLD, SUCTION				SEE MANIFOLD TABLES
14	O-RING, VALVE SEAT	Neoprene	109036	8	W
		Buna	109308		
		EPDM	109037		
		PTFE	109038		
		FKM	109323		
		FEP-covered	109536		
		PU	109537		
		Santoprene	109538		
15	VALVE SEAT	PTFE	109018	4	W
		Aluminium	109019		
		Stainless steel	109020		
		Neoprene	109021-1		
		Buna	109021-2		
		EPDM	109021-3		
		FKM	109021-4		
		Santoprene	109022-1		
		Hytrel	109022-2		
		PU	109022-3		
		FDA - Santoprene	109022-4		
		FDA - Hytrel	109022-5		
		PU	109030		
		PVDF	109030-1		
16	VALVE BALL	Neoprene	109025-1	4	W
		Buna	109025-2		
		EPDM	109025-3		
		FKM	109025-4		
		Santoprene	109026-1		
		FDA - Santoprene	109026-4		
		PTFE	109027		
		PTFE (weighted)	109031		
		Stainless steel	109032		
17	CAP SCREW, LIQUID CHAMBER				SEE HARDWARE TABLE
18	LIQUID CHAMBER	Aluminium	109767-20	2	
		Stainless steel	109767-21		
19	OUTER PLATE,	Aluminium	109012	2	
		Stainless steel	109013		
20	DIAPHRAGM	PTFE	109017	2	W

Pos.	Description	Material	Part-No.	Qty.	Set
21	DIAPHRAGM	Neoprene	109023-1	2	W
		Buna	109023-2		
		EPDM	109023-3		
		FKM	109023-4		
		Santoprene	109023-5		
		Hytrel	109023-6		
		PU	109023-7		
		FDA Santoprene	109023-8		
		FDA Hytrel	109023-9		
22	INNER PLATE	Aluminium	109169-1	2	-
		Stainless steel	109716-1		
23	O-RING, BUSHING OD		209021	4	-
24	BUSHING, SHAFT	ALUMINUM CENTER SECTION	109420	2	
		PLASTIC CENTER SECTION	109016-1	1	
25	O-RING, SHAFT		109424	4	A1/A2/A3/A4
26	RING, RETAINING, SHAFT BUSHING		209024	1	A2/A4
27	CAP SCREW, PLASTIC CENTER SECTION		SEE HARDWARE TABLE		
28	WASHER, PLASTIC CENTER SECTION		SEE HARDWARE TABLE		
29	SHAFT		109015	1	
30	NUT, CENTER SECTION		SEE HARDWARE TABLE		
31	AIR CHAMBER	PP-FRP	109010	2	
32	CENTER SECTION,	Aluminium	109028	1	
		PP-FRP	109009		
33	MUFFLER	PP-FRP	109562	1	
		Steel	109700		
		Steel, large	109794		
34	MANIFOLD, DISCHARGE		SEE MANIFOLD TABLES		
35	GROUND LUG (NOT SHOWN)	Standard in ATEX Models	108091	1	
36	SHIM, FOOT		SEE MANIFOLD TABLES		
37	SHOULDER BOLT, SHIM				
38	SPLIT FLANGE HALF (NOT SHOWN)				
39	NUT, LIQUID CHAMBER		SEE HARDWARE TABLE		
41	PLUG, PIPE	Stainless steel	SEE MANIFOLD TABLES		
42	O-RING, CENTER SECTION TO AIR CHAMBER, LARGE (NOT SHOWN)		108588	2	A1/A3
43	O-RING, CENTER SECTION TO AIR CHAMBER, SMALL (NOT SHOWN)		109039	2	A1/A3

KIT COLUMN KEY:

- | | |
|---|--|
| A1 PARTS SUPPLIED IN AIR END KIT 109055.
PLASTIC VALVE WITH PLASTIC CENTER SECTION. | W PARTS SUPPLIED IN A WET SIDE KITS |
| A2 PARTS SUPPLIED IN AIR END KIT 109055-1.
PLASTIC VALVE WITH ALUMINUM CENTER SECTION. | |
| A3 PARTS SUPPLIED IN AIR END KIT 109055-2.
ALUMINUM VALVE WITH PLASTIC CENTER SECTION. | V1 PARTS SUPPLIED IN PLASTIC REPLACEMENT VALVE KIT 109051. |
| A4 PARTS SUPPLIES IN AIR END KIT 109055-3.
ALUMINUM VALVE WITH ALUMINUM CENTER SECTION. | V2 PARTS SUPPLIED IN ALUMINUM REPLACEMENT VALVE KIT 109050. |

AP15 with air valve PP-FRP				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY	109249	1	V1
7	VALVE CARRIER WITH SEALS	109653	1	V1
8	O-RING, VALVE CAP	109648	1	A1/A2/V1
9	VALVE CAP	109273	1	V1
11	RETAINING RING, VALVE CAP	109647	1	V1

AP15 with air valve Aluminium				
Pos.	Description	Part-No.	Qty.	Set
3	VALVE BODY, ALUMINUM	s.Pos. 34	1	
7	VALVE CARRIER, ALUMINUM	109844	1	
8	O-RING, VALVE CAP	109415	2	A3/A4
9	VALVE CAP, ALUMINUM	s.Pos. 40	2	
10	CAP SCREW, M6x1 L=16	109513	6	
40	CONTAINS Pos. 3, 7, 8, 9, 10	109049	1	V2

Connection / Porting location:

N2 Connection: FNPT Position: center, horizontal
N3 Connection: FNPT Position: center, vertical

B2 Connection: FBSP Position: center, horizontal
B3 Connection: FBSP Position: center, vertical

T2 Connection: 2" Tri-Clamp Position: center, horizontal

F2 Connection: Flanges Position: center, horizontal

SUCTION MANIFOLD (POS. 13)												
	N2		N3		B2		B3		T2		F2	
	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.
AP15 Aluminium	109004	1	109059	1	109004-1	1	109059-1	1	N/A	-	N/A	-
Pos.41 (not shown)	N/A	-	209031	1	N/A	-	209032	1				
AP15 Stainless St.	109005	1	109059-2	1	109005-1	1	109059	1	109005-10	1	109005	1
Pos.41 (not shown)	N/A	-	209031	1	N/A	-	209032	1	N/A	-	N/A	-
Pos. 36	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	109033	2
Pos. 37	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	209030	4
Pos. 38	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	109578-1	2

DISCHARGE MANIFOLD (POS. 34)												
	N2		N3		B2		B3		T2		F2	
	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.	Part-No.	Qty.
AP15 Aluminium	109007	1	109058	1	109007-1	1	109058-1	1	N/A	-	N/A	-
Pos.41 (not shown)	N/A	-	209031	1	N/A	-	209032	1				
AP15 Stainless St.	109008	1	109058-2	1	109008-1	1	109058-3	1	109008-10	1	109008	1
Pos.41 (not shown)	N/A	-	209031	1	N/A	-	209032	1	N/A	-	N/A	-
Pos. 36	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	109033	2
Pos. 38	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A	2

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

AP15 Aluminium „HARDWARE“			
Pos.	Description	Part-No.	Qty.
1	CAP SCREW, SOCKET HEAD, M8-1.25 X 35MM	209020	4
2	WASHER, LOCK HIGH COLLAR, M8	109493	4
12	CAP SCREW, HEX HEAD FLANGED, M10-1.5 X 30MM	209019	16
17	CAP SCREW, HEX HEAD FLANGED, M10-1.5 X 30MM (Aluminium)	209019	20
	CAP SCREW, HEX HEAD FLANGED, M10-1.5 X 50MM (Stainless Steel)	209029	20
27	CAP SCREW, HEX HEAD, M8-1.25 X 130MM BLACK	209021	4
28	WASHER, FLAT M8 BLACK	109469	8
30	NUT, HEX, M8-1.25 BLACK	109474	4
39	NUT, HEX M10-1.5 FLANGED	109485	20

AP15 Stainless Steel „HARDWARE“			
Pos.	Description	Part-No.	Qty.
1	CAP SCREW, SOCKET HEAD, M8-1.25 X 35MM SSTL	105589	4
2	WASHER, LOCK HIGH COLLAR, M8 SSTL	109518	4
12	CAP SCREW, HEX HEAD FLANGED M10-1.5 X 30MM	109497	16
17	CAP SCREW, HEX HEAD FLANGED M10-1.5 X 30MM (Aluminium)	109497	20
	SCAP SCREW, HEX HEAD FLANGED M10-1.5 X 50MM (Stainless Steel)	109498	20
19A	STUD, OUTER PLATE (STAINLESS STEEL ONLY)	109523	2
27	CAP SCREW, HEX HEAD, M8-1.25 X 130MM BLACK	209021	4
28	WASHER, FLAT M8 BLACK	109469	8
30	NUT, HEX, M8-1.25 BLACK	109474	4
39	NUT, HEX M10-1.5 FLANGED	109485	20

Maximum Torque Settings AP15 (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) +
10	8 Nm (72 in-lbs)
12	38 Nm (336 in-lbs) +
17	38 Nm (336 in-lbs) +
19	91 Nm (800 in-lbs) +
27	20 Nm (180 in-lbs)
37	8 Nm (72 in-lbs) +

Stainless Steel	
Pos.	Torque
1	10 Nm (90 in-lbs)
10	8 Nm (72 in-lbs)
12	46 Nm (408 in-lbs)
17	46 Nm (408 in-lbs)
19	91 Nm (800 in-lbs) +
27	20 Nm (180 in-lbs)

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:



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)

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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 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 block contains the 'sera GmbH' logo and address '34376 Immenhausen' in blue. Below this is a handwritten signature in black ink. Underneath the signature, the name 'S. Morell' and the title 'Quality Management' are printed in black.

sera GmbH
34376 Immenhausen
S. Morell
Quality Management

NOTES

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