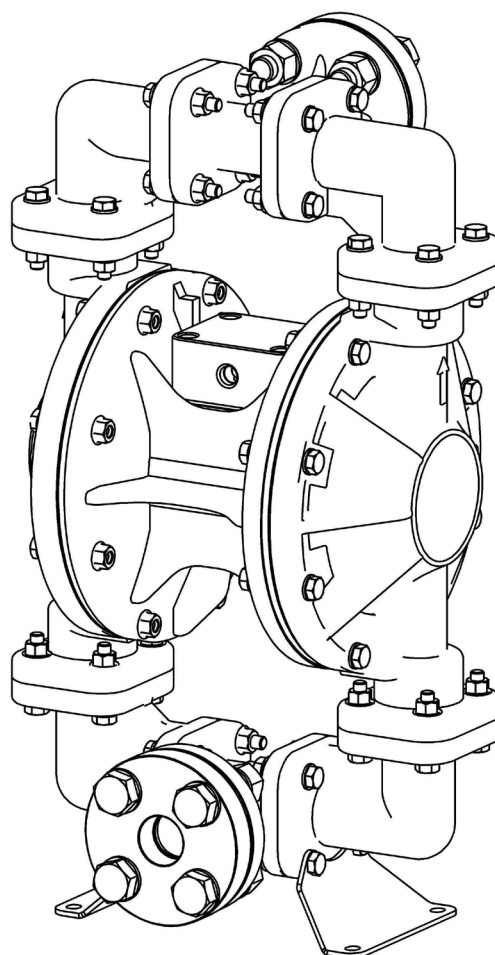




## Operation and Maintenance Guide



ADPB 25 PPX

Models	Descriptions
ADPB25PPT/R/P/G	Polypropylene with PTFE fitments
ADPB25PPS/R/P/G	Polypropylene with Santoprene fitments

Read this manual carefully before installing, operating or servicing this equipment. It's the responsibility of the employer to ensure this manual is read by the operator. Please preserve this manual.

This document is issued with Product Serial No

## Table of Contents

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## Pump Nomenclature

XX	XX	XX	X	X	X
Air Valve Type	Pump Size	Material of Construction	Material of Diaphragm	Bolted or Clamped	Threading on Inlet and Outlet
DP - Classic ADP - Advanced SDP - MaxFlo	06 - 1/4"	AL - Aluminium	B - Nitrile N - Neoprene S - Santoprene T - PTFE V - Viton H - Hytrel	B - Bolted  C - Clamped	R- NPT  G - BSPT  P - BSPP  F - Flanged
	12 - 1/2"				
	15 - 1/2"	SS - Stainless Steel 316L			
	25 - 1"				
	40 - 1 - 1/2"	PP - Polypropylene			
	50 - 2 "				
	75- 3"	CI - Ductile Iron			
100 - 4"					

## Operating and Safety

### Instructions



#### Warning: Static Electricity

Static sparks can cause explosion resulting in severe injury or death.

Ground the pump and the pump connections like hoses and containers into which or from the fluid is being transferred. Connect the grounding wire to any bolt on the pump.

Check continuity of electrical path to ground at regular intervals.

Consult local building and electrical codes for grounding requirements where needed.

Use hoses containing a grounding wire.



#### Warning: Pump Exhaust

In case of a diaphragm failure, fluid being pumped may spray out from the exhaust of the pump. This may cause severe injury depending on the fluid being pumped.

If the fluid is hazardous, pipe away the exhaust to a safe remote location using a generous diameter pipe preferably with a grounding arrangement, and refit the muffler at the end of this arrangement.

Always wear safety glasses while in the vicinity of an operating pump.



#### Warning: Over pressure / Hazardous Pressure

Do not exceed the max supply air pressure of 100 PSI.

Make sure all connected hoses and pipelines are rated to operate safely with the pressures generated by pump of 100 PSI.

Do not open or handle pump or hoses while pressurized.

Disconnect air supply line and relieve pressure from the system by carefully opening discharge and supply lines.



#### Warning: Hazardous Materials

Do not move a pump that contains hazardous fluids trapped inside it. Please observe prescribed handling and safety codes. Drain the pump safely, by turning it upside down and collecting the fluid safely, before moving the pump.



#### Warning :Explosion

Please check compatibility of fluids intended to be handled with the materials of construction of the pump. Severe reactions and explosions may occur if materials are incompatible. Caution: Chemical compatibility

Please check that the fluid being pumped is compatible with the wetted parts of the pump. Refer Cole Parmer compatibility (<http://www.coleparmer.in/Chemical-Resistance>) guide for details. Note that chemical compatibility may change with temperature; take this into account while selecting pump material.

**Caution: Structural support**

Please refer figure 1 and ensure that the piping system is independently supported and does not load the pump. The pumps are not designed to take the continuous and often pulsating load of a piping system. Important to use a flexible connection between rigid piping and pump casings.

**Caution: Running dry, disconnection of hoses when not in use**

Although these pumps can be run dry for long periods, it is advisable to avoid this as it causes unnecessary wear of wearing parts.

**Caution: Operator understanding**

Please ensure that all operators have read this manual and have the required understanding of safe working practices and are equipped with safety equipment when working on/ around the pump.

**Caution: Using genuine teryair fittings & spares**

Use genuine teryair parts to ensure correct pump operation and maximize life.

## Operating Instructions

The Teryair diaphragm pump generates an alternate stroking of the diaphragms against the fluid in the liquid chambers of the

Pump. This reciprocatory action is responsible for the fluid being pumped.

It is possible to control the output of the pump by controlling the supply air pressure.

It is also possible to control the output of the pump by throttling action on the fluid flowing in the outlet piping by means of a valve. If


such a valve is shut completely the pressure in the discharge piping increases to a point when the pressure at pump discharge

equals it and the pump comes to a stop. This causes no damage to the pump and the pump consumes no more energy.

Upon opening of the valve, the pump starts reciprocating once again and resumes fluid delivery.



### Caution: Temperature limitations and diaphragm options

<b>PTFE</b>		Excellent choice when pumping highly aggressive fluids such as aromatic or chlorinated hydrocarbons, acids, caustics, ketones and acetates. Temperature range +4°C to +104°C (+40°F to +220°F)
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## Suggested Lubricants

Brand	Above 27 Deg C (	From 5 Deg C to 27 Deg C	Below 5 Deg C
Shell	Toona R 72	Toona R 41	Toona R 27
Mobil	Almo 529	Almo 527	Almo 525
Esso	--- --	Arox EP 65	Arox EP 45
Caltex	Rando Oil 150	Rando Oil 100	Rando Oil 46
Texaco	Regal Oil F	Regal Oil PE	Regal Oil B
Daltron	Silkolene 881	Silkolene 548	Silkolene 773
Burmah Castrol	RD Oil 3	RD Oil Light	Megna SPX
BP	RD 220 HP60C	RD150 HP20C	RD80 HP10C
Duckham	Garnet 7	Garnet 6	Zero Flo 5
Sternol	Merlin 87	Merlin 71	Merlin 54
Petrofina	Purifoc 53	Purifoc 46	Purifoc 32
Chevron	Vistac Oil 18X	Vistac Oil 19X	Vistac Oil 9X

## Suggested site selection and installation recommendations

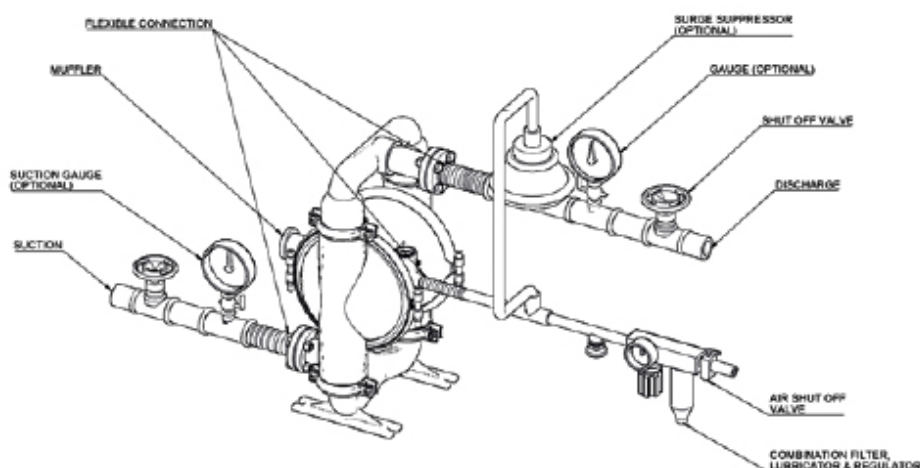


Figure 1

### Location selection

Pump location must be easily accessible with reasonable space around for maintenance operations.

Pump dimensional data for each variant is available in section showing exploded views

### Air supply

Compressed air at 90 PSI ( Stroke pumps can take a max of 100PSI), free from moisture and having an oil mist is essential. Use of a filter (50 microns), a lubricator and a regulator is highly recommended and should be installed as close as possible to the pump inlet.

Ensure correct grade of oil is used in the lubricator bowl. Too thick oil may slow down the valve shifting mechanism and affect pump performance. See suggested lubricants on page no 5.

### Piping

A minimum number of bends and fittings to be used.

A flexible connection between suction, delivery and air supply piping is highly recommended such that piping stresses and loads do not transfer to pump housing.

Select piping materials such that chemical compatibility is maintained with the fluid being pumped.

### Suction

Ensure that the suction head after installation is well within the pumps suction capabilities

### Muffler

Use of supplied muffler is recommended to bring pump operation sounds down to comfortable levels, in case of hazardous fluids handling, please read section of safety regarding piping away of exhaust see

Warning: Pump Exhaust) earlier in this manual.

## Troubleshooting

Serial No	Description	Causes	Remedial Action
1	Pump stops and will not start	Insufficient Air Pressure	Check air pressure is as recommended at the pump air inlet
		Air Filter Blocked	Check if debris has clogged the inlet filter on the FRL unit/pump inlet air valve ( some models have air filter on the air inlet valve ) and ensure clear passage of air
		Internal damage or excessive wear on components	Proceed to dismantle the pump, examine component for wear, replace any worn components, re assemble carefully as instructed in this manual and re start the pump.
2	Pumps runs slowly, poor delivery	Cavitation	Check if cavitation is occurring in the suction side, if so reduce suction vacuum by slowing down the pump.
		Worn Balls and Seats	Check proper sealing action of balls against seals, these components need to be replaced as a set if they are worn.
		Insufficient or wrong lubricant in the air supply.	Ensure that the lubricant is as per the recommended chart, a thicker lubricant often makes the air valve work sluggishly
		Internal damage or excessive wear on components	Proceed to dismantle the pump, examine component for wear, replace any worn components, re assemble carefully as instructed in this manual and re start the pump.
3	Pump air valve freezes	Excessive moisture in supply air line.	Ensure that the dew point of the supplied air is low enough. Install a air dryer or moisture separator on the supply line
4	Air bubbles in pump discharge or product sprays out of exhaust vent	Broken Diaphragm	Proceed to dismantle the pump, examine component for wear, replace any worn components, re assembly carefully as instructed in this manual and re start the pump
		Improper seal between inner pistons, outer pistons and shaft.	
		Air leakage into product from balls / seats area	
		Air sucked into suction pipeline due to insufficiently tight joints on suction pipeline.	

## Maintenance

Regular inspection and maintenance schedules will greatly enhance the life of the pump and will ensure a trouble free and safe working environment with little chance of breakdowns. Follow the instructions clearly in “Disassembly and Reassembly” of the pump and in the troubleshooting section.

Use genuine Teryair spares and if possible mention the serial number of the pump when ordering spares.

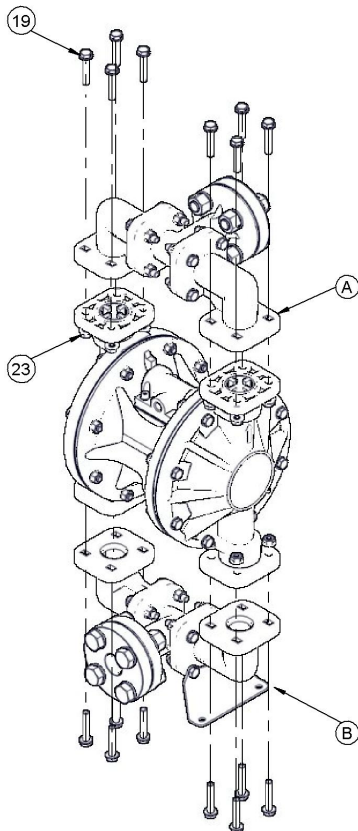
Always replace elastomers as a set, eg diaphragms, balls and seats.

## Disassembly and Re-assembly

Shut off air supply and allow residual Pressure to bleed off. Disconnect air supply, disconnect suction and discharge piping Turn pump upside down allow process fluid to drain away. If fluid is hazardous due care should be taken. Make a mark to indicate the positioning of each liquid chamber relative to the housing.

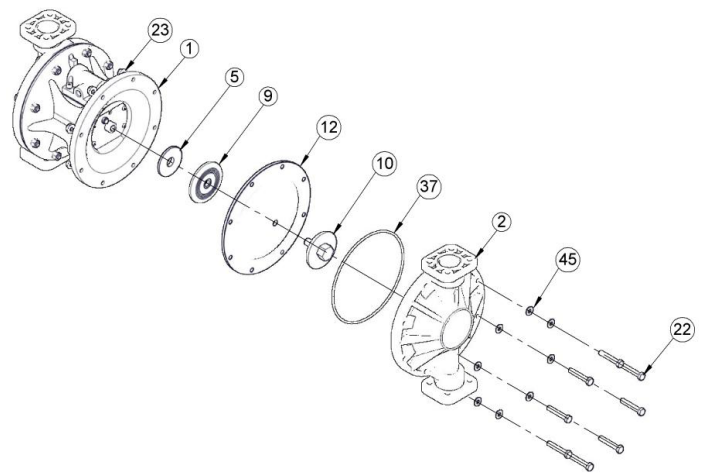
### 1) Replacement of Diaphragm

**a.** Unscrew both bolt (19) & nut (23) as shown in the exploded view and proceed to remove the outlet assembly (A) & inlet assembly (B) respectively.



**b.** Now unscrew hex socket head bolt (22), washer (45) & nut (23) of any one side and proceed to remove the outer chamber (2). Now repeat the same procedure to remove the second outer chamber (2). Make sure to remove the oring (37) from each side.

**c.** Now with the help of two spanner hold one of the across flat of one outer flange (10) and rotate the second outer flange (10) to disassemble it from the shaft assembly. Remove the diaphragm (12), inner flange (9) and spacer (8).



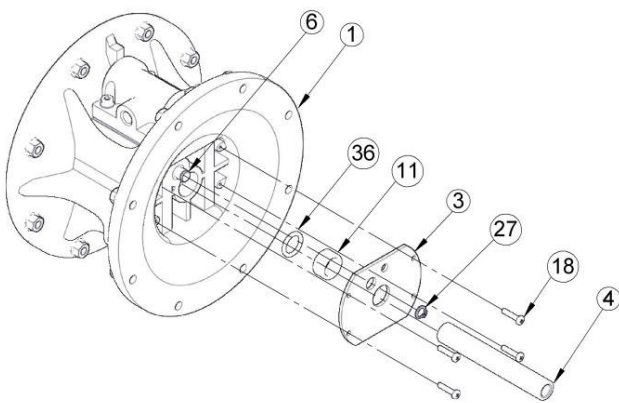
**d.** Now pull out the half shaft assembly out of the shaft housing (1). Now hold the shaft (4) in a vice with proper packing. Care must be taken not to damage the shaft outer surface. Now remove the outer flange (10) with spanner.

**e.** Now replace the diaphragms (12). Ensure that diaphragm orientation is correct. In case of PTFE, make sure PTFE side of diaphragm faces outer chamber (2). Make sure to put the oring (37) in outer chamber (2). \*In case of Santoprene, make sure the convex side Santoprene diaphragm faces outer chamber (2).



## 2) Replacement of Primary Shaft & seals

- Follow the procedure a,b & c of diaphragm replacement and thereafter we can pull out shaft (4) from the shaft assembly.
- Remove the circlip (27) of secondary shaft (6) from both sides.
- Now unscrew the self tapping screws (18) and remove the shaft cover (3).
- This will allow to remove the bush (11) and oring (36). Repeat the same procedure for the opposite side also.
- Now replace the orings (36) with new one and assemble in reverse manner.
- Make sure to put the circlip (27) in secondary shaft (6).



## 3) Replacement of Ball seat & Ball

- Follow the step (a) of diaphragm replacement. Replace the ball (14), oring (40) & seat (41) with new one (Refer figure page 9).

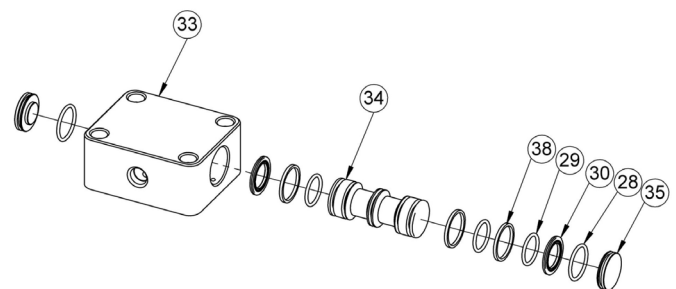
## 4) Replacement of seal of secondary shaft

- Follow the steps a,b & c of diaphragm replacement and thereafter step b & c of primary shaft replacement.
- Now pull the secondary shaft (6) out of the shaft housing (1).

- Now we can remove the end support (32), spacer (8) and orings (31). Examine for wear and replace the same.
- Now assemble in reverse manner as per exploded view.

## 5) Replacement of air valve and oring of end cap

- Unscrew bolt (17), washer (20) & nut (21). (Refer page 9)
- Remove the air valve assembly (C) along with the gasket (7).
- Now push any one side of the end cap (35) to remove the end cap assembly from one side from the air valve body (33).
- Now push the air valve (34) from other side to remove both end cap (35) along with air valve assembly.
- Remove seal (30) with the help of a flat screw driver from both sides of air valve (34) and replace with new one.
- Now replace the backup rings (38) and oring (29) from the air valve (34).
- Replace the oring (28) from both the end caps (35).
- While assembling apply lubricants in the bore of air valve body (33). Now push the air valve assembly with all the seals from any one side of air valve body (33). Care to be taken so that backup rings (38) move smoothly into the bore of air valve body (33).
- Now assemble the end caps with orings from both sides.



## Bill of Materials for ADPB 25 PPTR Pump

Illu No	Part Number	Description	ADPB 25PPTR	ADPB 25PPTG	ADPB 25PPTP
1	6124019	Combined Shaft Housing	1	1	1
2	6120805	Outer Chamber Side	2	2	2
3	6123009	Shaft Cover	2	2	2
4	6122105	Primary Shaft	1	1	1
5	6123611	Spacer For Primary Shaft	2	2	2
6	6122106	Guide Shaft	1	1	1
7	6124026	Gasket	1	1	1
8	6122507	Spacer For Guide Shaft	5	5	5
9	6122708	Inner Flange	2	2	2
10	1500805	Outer Flange	2	2	2
11	6124021	Bush For Primary Shaft	2	2	2
*12	2586050	Bonded Diaphragm	2	2	2
*13	6120803	Ball Seat	4	4	4
*14	1603615T	Valve Balls	4	4	4
15	6123617	Flange Manifold	2	2	2
16	6123616	Elbow Manifold	4	4	4
17	6129038S	Allen Bolt	4	4	4
18	6129035S	Self Tapping Screw	8	8	8
19	6129012S	Hex Head Bolt	32	32	32
20	6129011S	Plain Washer	8	8	8
21	6129010S	Hex Nut	4	4	4
22	6129009S	Hex Head Bolt	16	16	16
23	6129008S	Flanged Nut	48	48	48
24	6129005S	Plain Washer	16	16	16

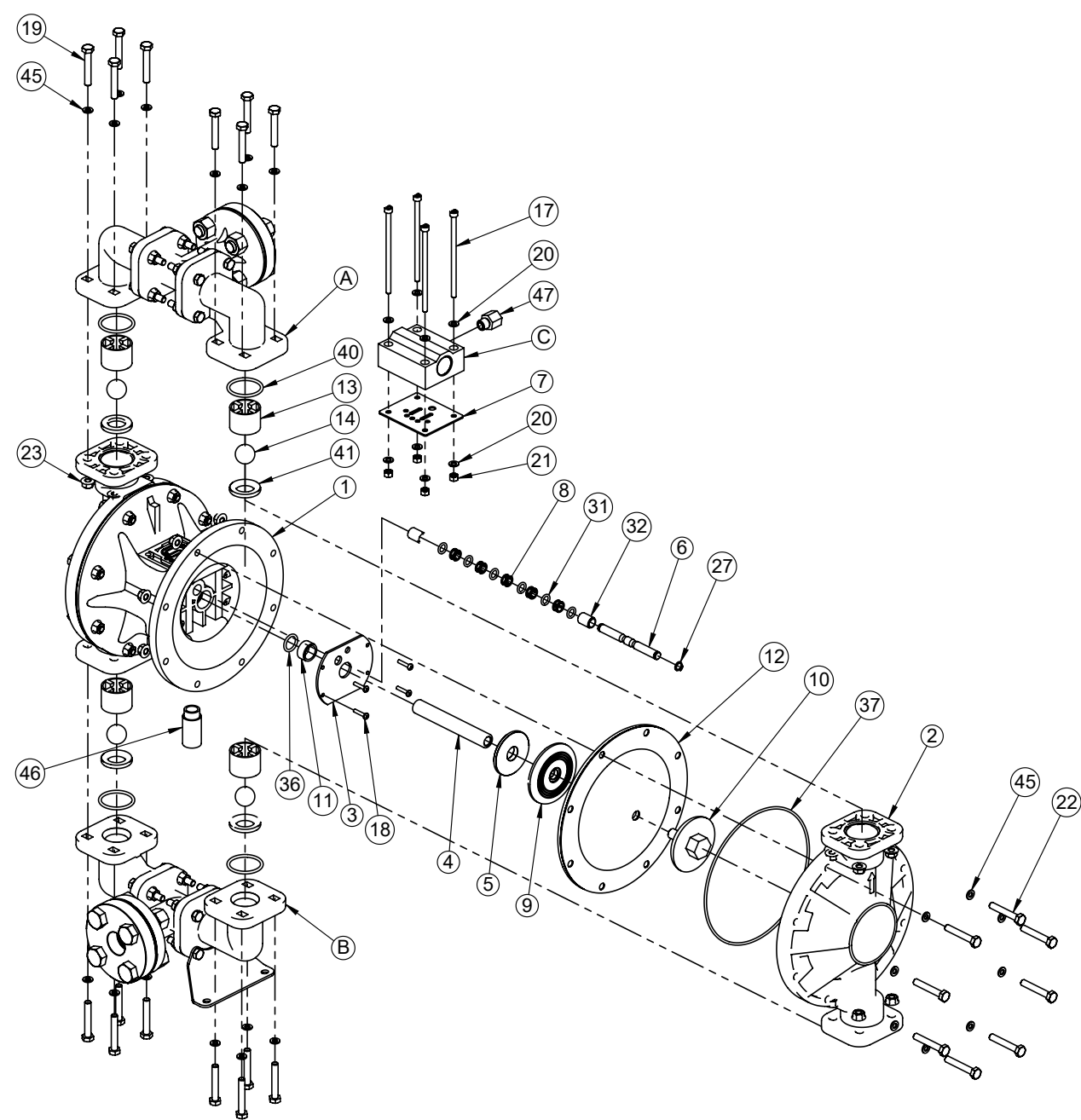
Illu No	Part Number	Description	ADPB 25PPTR	ADPB 25PPTG	ADPB 25PPTP
25	6129004S	Hex. Nut	8	8	8
26	6129003S	Hex Bolt	8	8	8
27	6125134	External Circlip	2	2	2
*28	6124032	O' Ring	2	2	2
*29	6124031	O' Ring	3	3	3
*30	6124030	Seals For Air Valve	2	2	2
*31	6124029	O' Ring	6	6	6
32	6124028	End Support	2	2	2
33	6120812	Air Valve Body - NPT	1	1	1
34	6124027	Air Valve	1	1	1
35	6124024	Valve End Cap	2	2	2
*36	6124020	O' Ring	2	2	2
37	6124001V	O' Ring	2	2	2
*38	6123619	PTFE Ring For Air Valve	3	3	3
39	6123618T	O' Ring	4	4	4
40	6123615T	O' Ring	4	4	4
41	6123613	Bottom Valve Ball Seat	4	4	4
42	6123010	Legs	2	2	2
43	2583627T	Gasket For Companion Flange	2	2	2
45	1712749S	Plain Washer	44	44	44
46	1509735	Muffler 1/2" BSP	1	1	1
47	1710406	Adaptor 1"BSPT (F)		1	
47	6120701	Adaptor 1"BSPP (F)			1
A	6129712	Outlet Assembly	1	1	1
B	6129713	Inlet Assembly	1	1	1
C	6129711	Air valve Assembly	1	1	1

## Bill of Materials for ADPB 25 PPSR Pump

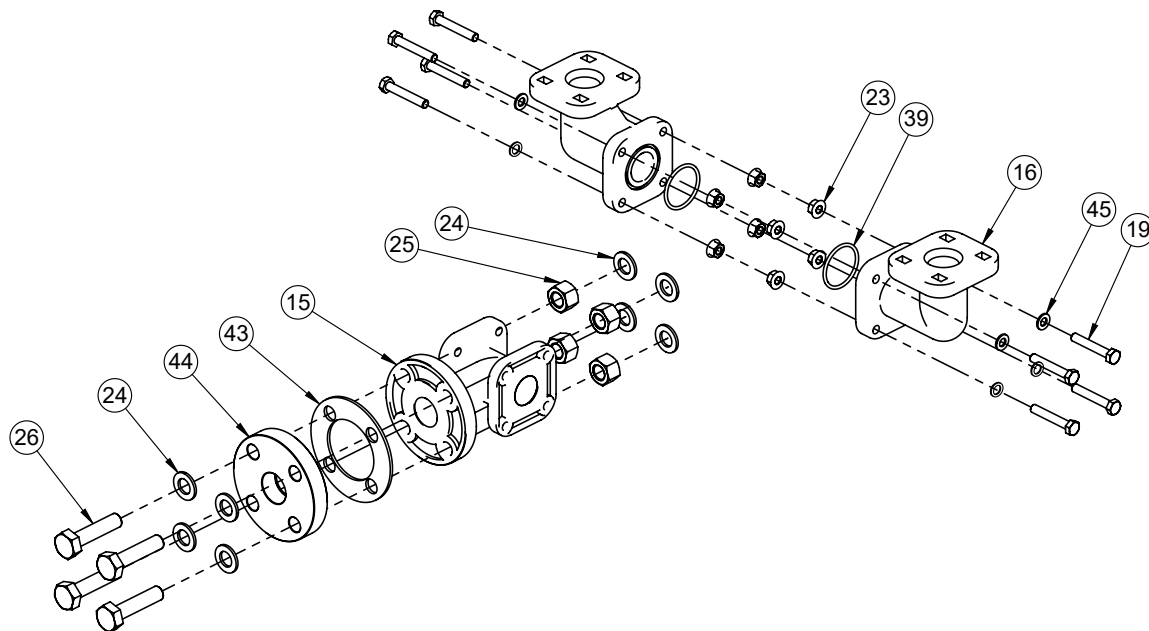
Illu No	Part Number	Description	ADPB 25PPSR	ADPB 25PPSG	ADPB 25PPSP
1	6124019	Combined Shaft Housing	1	1	1
2	6120805	Outer Chamber Side	2	2	2
3	6123009	Shaft Cover	2	2	2
4	6122105	Primary Shaft	1	1	1
5	6123611	Spacer For Primary Shaft	2	2	2
6	6122106	Guide Shaft	1	1	1
7	6124026	Gasket	1	1	1
8	6122507	Spacer For Guide Shaft	5	5	5
9	6122708	Inner Flange	2	2	2
10	1500805	Outer Flange	2	2	2
11	6124021	Bush For Primary Shaft	2	2	2
*12	2584150S	Diaphragm (Santoprene)	2	2	2
*13	6120803	Ball Seat	4	4	4
*14	1603615T	Valve Balls	4	4	4
15	6123617	Flange Manifold	2	2	2
16	6123616	Elbow Manifold	4	4	4
17	6129038S	Allen Bolt	4	4	4
18	6129035S	Self Tapping Screw	8	8	8
19	6129012S	Hex Head Bolt	32	32	32
20	6129011S	Plain Washer	8	8	8
21	6129010S	Hex Nut	4	4	4
22	6129009S	Hex Head Bolt	16	16	16
23	6129008S	Flanged Nut	48	48	48
24	6129005S	Plain Washer	16	16	16

Illu No	Part Number	Description	ADPB 25PPSR	ADPB 25PPSG	ADPB 25PPSP
25	6129004S	Hex. Nut	8	8	8
26	6129003S	Hex Bolt	8	8	8
27	6125134	External Circlip	2	2	2
*28	6124032	O' Ring	2	2	2
*29	6124031	O' Ring	3	3	3
*30	6124030	Seals For Air Valve	2	2	2
*31	6124029	O' Ring	6	6	6
32	6124028	End Support	2	2	2
33	6120812	Air Valve Body - NPT	1	1	1
34	6124027	Air Valve	1	1	1
35	6124024	Valve End Cap	2	2	2
*36	6124020	O' Ring	2	2	2
37	6124001V	O' Ring	2	2	2
*38	6123619	PTFE Ring For Air Valve	3	3	3
39	6123618T	O' Ring	4	4	4
40	6123615T	O' Ring	4	4	4
41	6123613	Bottom Valve Ball Seat	4	4	4
42	6123010	Legs	2	2	2
43	2583627T	Gasket For Companion Flange	2	2	2
45	1712749S	Plain Washer	44	44	44
46	1509735	Muffler 1/2" BSP	1	1	1
47	1710406	Adaptor 1"BSPT (F)		1	
47	6120701	Adaptor 1"BSPP (F)			1
A	6129712	Outlet Assembly	1	1	1
B	6129713	Inlet Assembly	1	1	1
C	6129711	Air valve Assembly	1	1	1

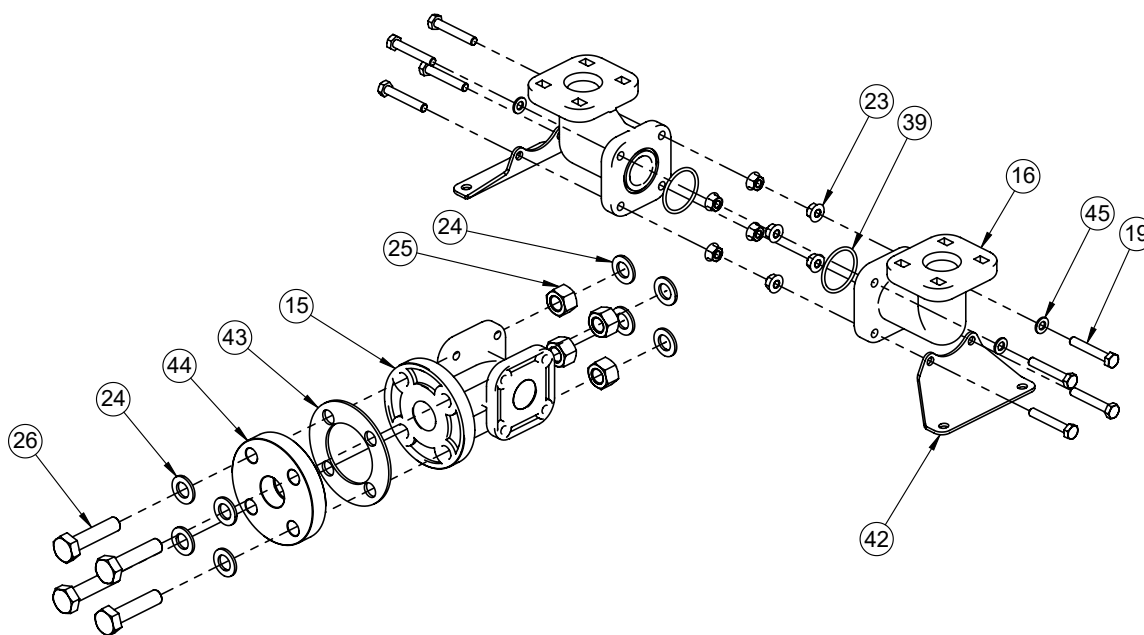
Exploded View for ADPB 25 Pumps



## Exploded View A & B for ADPB 25 Pumps

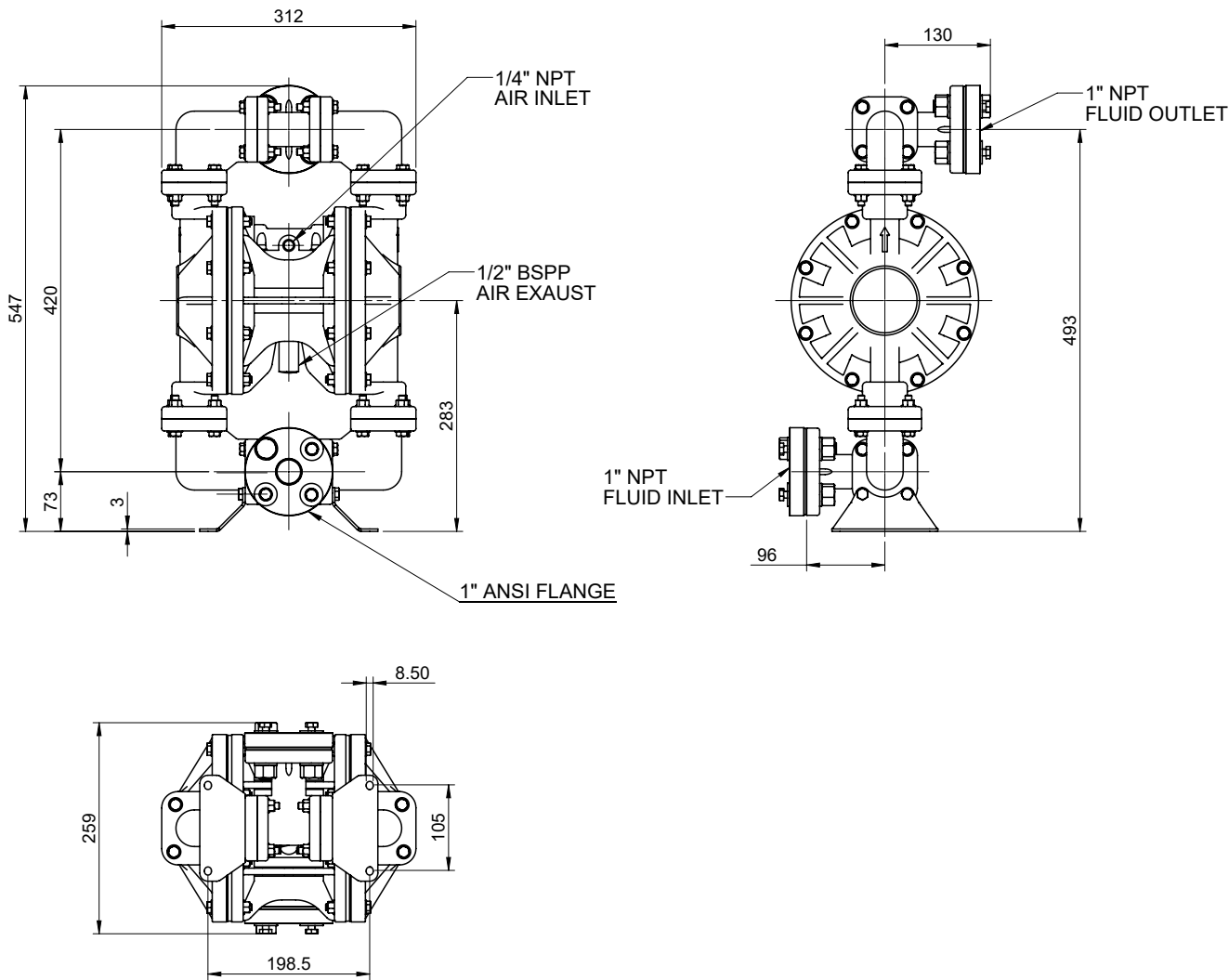


**A- OUTLET ASSEMBLY**



**B- INLET ASSEMBLY**

Dimensional Data



ADPB 25 PPT/S

## Repair and Replacement Kits

Illu. No.	Part No.	Description	ADPB25 Series				
			6129707 Repair Kit	6129707S Repair Kit	6129711 A V Kit	6129712 A V Kit	6129713 A V Kit
7	6124026	Gasket	1	1			
*12	2586050	Bonded Diaphragm	2				
*12	2584150S	Diaphragm (Santoprene)		2			
*13	6120803	Ball Seat	4	4			
*14	1603615T	Valve Balls	4	4			
*28	6124032	O' Ring	2	2	2	2	2
*29	6124031	O' Ring	3	3	3	3	3
*30	6124030	Seals For Air Valve	2	2	2	2	2
*31	6124029	O' Ring	6	6			
33	6120812	Air Valve Body - NPT	1	1	1	1	1
34	6124027	Air Valve			1	1	1
35	6124024	Valve End Cap	2	2	2	2	2
*36	6124020	O' Ring	2	2			
37	6124001V	O' Ring	2	2			
*38	6123619	PTFE Ring For Air Valve	3	3	3	3	3
39	6123618T	O' Ring	4	4			
40	6123615T	O' Ring	4	4			
41	6123613	Bottom Valve Ball Seat	4	4			
47	1710406	Adaptor 1"BSPT (F)				1	
47	6120701	Adaptor 1"BSPP (F)					1

## EU DECLARATION OF CONFORMITY

We hereby certify that the Listed Product stipulated below comply with all relevant provisions of the machinery directive (2006/42/EC) and the national laws and regulations adopting this directive.

Description : AIR OPERATED DOUBLE DIAPHRAGM PUMP

Model Number : ADP25 Series

Date :

Serial Number :

Is in conformity with the provisions of the following European Directives: (2006/42/EC) Machinery Safety and Harmonized standards

ISO 12100-1: 2010: Safety of Machinery –general Principles for Design –Risk Assessment and Risk Reduction.

Registered Office : 416 Gundecha Industrial Complex, Akuril Road,  
Kandivali East, Mumbai – 400101, Maharashtra, India.

Web site : [www.teryair.com](http://www.teryair.com)

Works : A-1, Tirupati Udyog Nagar, Sativali Road, Vasai East,  
Palghar – 401208, Maharashtra, India.

CE certification registration no – C E 16832

Issued by – BMQR Certifications Pvt Ltd.  
[www.cemarking-india.com](http://www.cemarking-india.com)

Valid Till – 03/11/2021

Signed for and on behalf of



TERYAIR EQUIPMENT PVT. LTD.

Place of Issue:  
Date:





# Warranty Certificate

Every product manufactured by Teryair  
is built to meet the highest standards of quality.

Teryair warrants that the Products, accessories and parts manufactured or supplied by the company be free from defects in material and workmanship for a period of six months from date of Teryair authorized dealer invoice to customer, or one year from date of Teryair invoice to dealer, whichever is earlier. Failure due to normal wear, misapplication, or abuse is, of course, excluded from this warranty.

Since the use of Teryair products and parts is beyond our control, Teryair cannot guarantee the suitability of any product or part for a particular application and Teryair shall not be liable for any consequential damage or expense arising from the use or misuse of its products on any application. Teryair does not warranty bought out products or components such as electric motors and hardware but will assist in directing warranty queries to the dealer/manufacturer responsible. Teryair responsibility is limited solely to replacement or repair of defective Teryair products or components.

Dealer/End User shall have no right or remedy and Teryair shall have no liability or obligation under the warranty, if: (i) a Product is altered, changed, modified or tampered with in any way; (ii) a Product is damaged after deposit with the transporter for shipment; (iii) a Product is not properly preserved, packaged, stored, processed or handled after receipt; (iv) a Product is not used and maintained in accordance with Teryair's recommended operating and maintenance manuals, instructions and procedures, if any; (v) a Product is not properly incorporated or installed in, or not properly combined with, an Other Product; (vi) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, a failure, substandard performance or other issue with another product, material, component or part not supplied by Teryair; (vii) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, compliance with any design, specification or other specific requirement of Dealer/End User; (viii) a Product is used in a manner, with a substance or for a purpose other than the normal manner, substance and purpose for which it is intended or is otherwise subjected to abnormal use or service; (ix) a Product is subjected to a power surge, brown out or other similar occurrence; (x) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, normal wear and tear of such Product (including, without limitation, things such as worn seals, diaphragms, balls, O rings, gaskets, chisels, cutters, hoses and other such wearing components; (xi) the issue with a Product is directly or indirectly.

Model Number : ADPB 25 Series

Serial Number :

Dated :

A handwritten signature in blue ink, appearing to read "Ajay", is enclosed within a circular blue ink stamp.

Ajay Bhagat, Q.A. Manager  
(Company Seal)

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