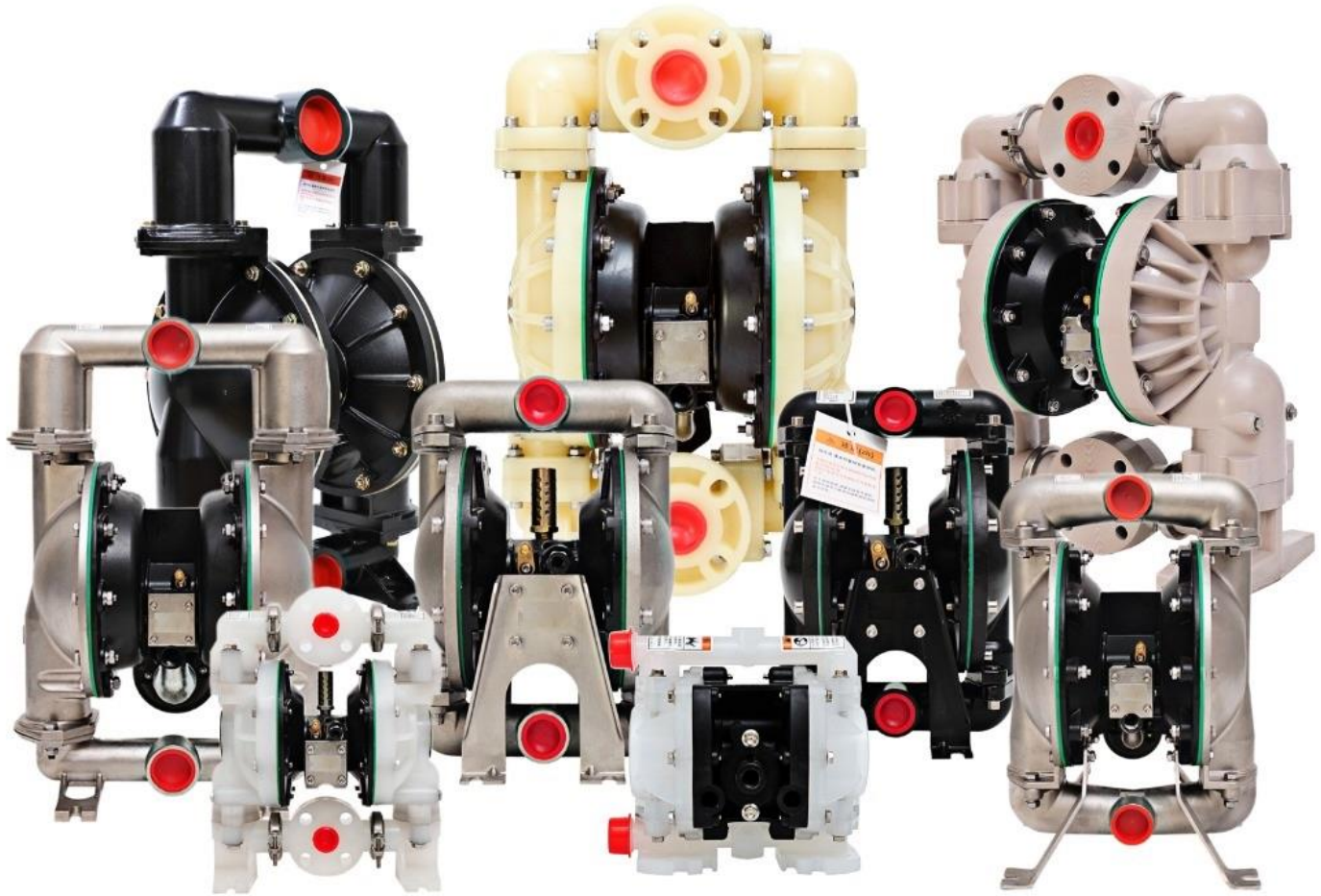

FOJI ENGINEERING

Air Operated Double Diaphragm (AODD) Pumps

FOJI ENGINEERING
1001, A-5, Shraddha Heights, Scenic Acers, Opp. V2 Signature, Vapi Daman Road, Chala, Vapi, Gujarat 396191
Mob. No. +91 8980280169, Mail ID : dharmin@fojiengineering.in

Working Principle:

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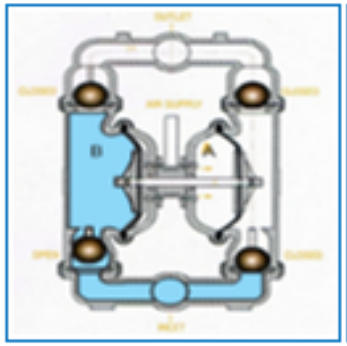
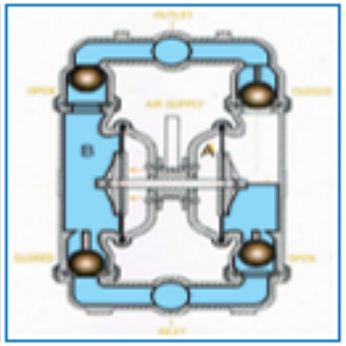


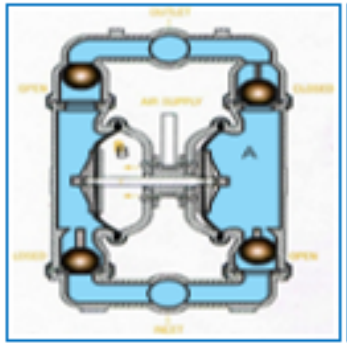
Left Stroke

The air valve directs pressurized air to the back side of diaphragm A. The Compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the Compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

Middle Stroke

When the pressurized diaphragm, diaphragm A, reaches the limit of its discharge stroke, the air valve redirect pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B force the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off its seat allowing the fluid being pumped to fill the liquid chamber





Right Stroke

Completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

AOD 150 Model (1/2” Size)

MOC: PP, SS 316, Aluminum, PVDF

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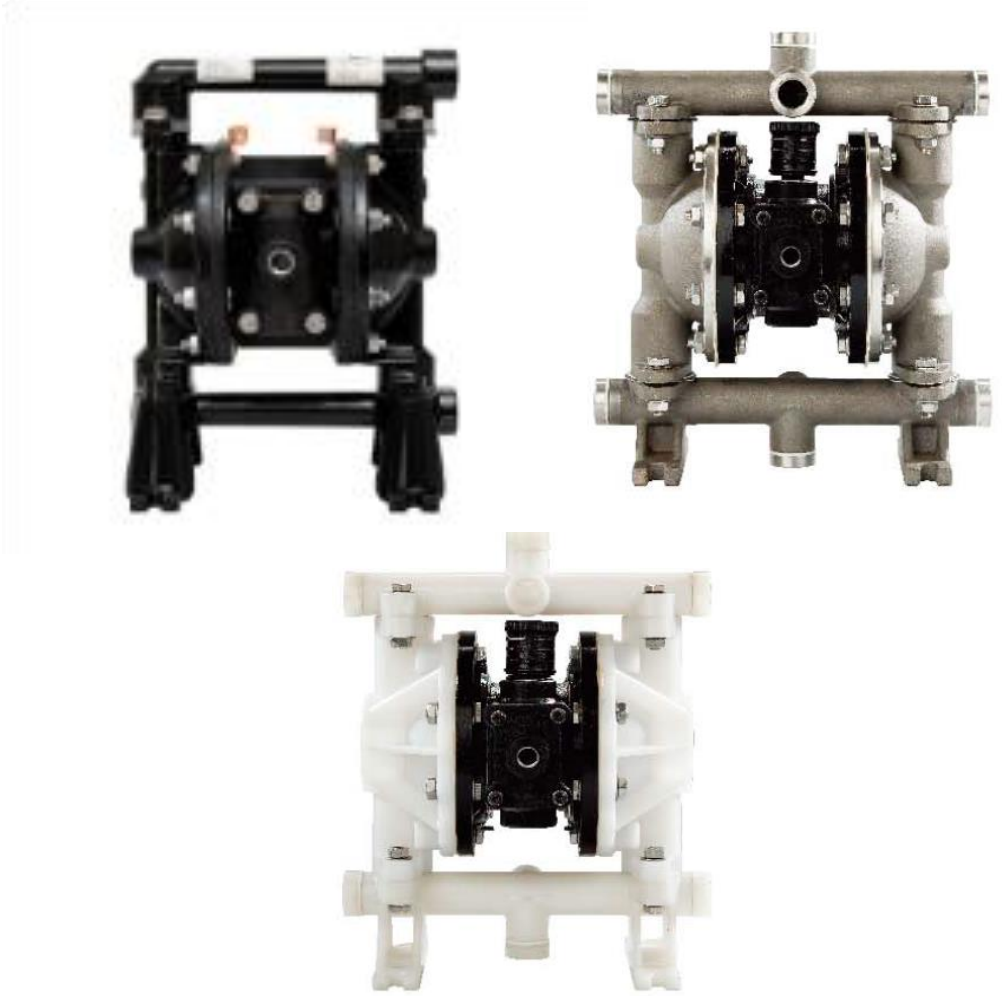
Max Flow rate	: 35Lpm
Port Size	: Inlet : 12.70mm (1/2" BSP) Discharge : 12.70mm (1/2" BSP) Air Inlet : 1/4" BSP Air Exhaust : 12.70mm (1/2 " BSP)
Suction Lift	: Dry : 1.45m (4.75') Wet : 2.83m (9.28')
Teflon	: Dry : 0.50m (1.64') Wet : 0.90m (2.95')
Max Particle Size (Dia)	: 2mm (0.078")
Diaphragm	: Teflon, Santoprene, Buna



AOD 300 Model (1” Size)

MOC: PP, SS 316, Aluminum, PVDF

FOJI ENGINEERING

Max Flow rate	:	135Lpm
Port Size	:	Inlet : 25.40mm (1" BSP) Discharge : 25.40mm (1" BSP) Air Inlet : 1/4" BSP Air Exhaust : 12.70mm (1/2" BSP)
Suction Lift	:	Dry : 3.05m (10') Wet : 4.89m (16')
Teflon	:	Dry : 2.14m (7') Wet : 3.98m (13')
Max Particle Size (Dia)	:	3.17mm (0.125")
Diaphragm	:	Teflon, Santoprene, Buna

AOD 400 Model (1 1/2” Size)

MOC: PP, SS 316, Aluminum, PVDF

FOJI ENGINEERING

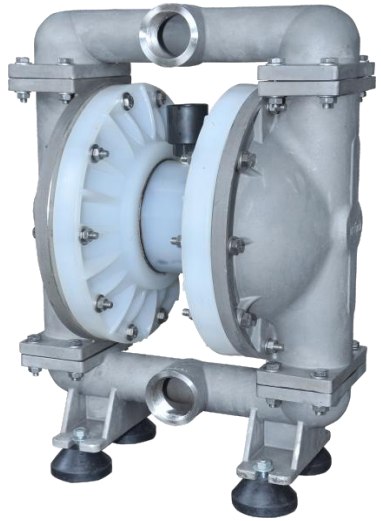
Max Flow rate	:	270Lpm
Port Size	:	Inlet : 38.10mm (11/2" BSP) Discharge : 38.10mm (11/2" BSP) Air Inlet : 1/2" BSP Air Exhaust : 12.70mm (1/2" BSP)
Suction Lift	:	Dry : 4.57m (15') Wet : 7.62m (25')
Teflon	:	Dry : 3.05m (10') Wet : 6.09m (20')
Max Particle Size (Dia)	:	4.76mm (0.188")
Diaphragm	:	Teflon, Santoprene, Buna

AOD 500 Model (2” Size)

MOC: PP, SS 316, Aluminum, PVDF

FOJI ENGINEERING

Max Flow rate	:	586Lpm
Port Size	:	Inlet : 50.80mm (2" BSP)
		Discharge : 50.80mm (2" BSP)
		Air Inlet : 1/2" BSP
		Air Exhaust : 19.05mm (3/4" BSP)
Suction Lift	:	Dry : 4.57m (15')
		Wet : 7.62m (25')
Teflon	:	Dry : 3.05m (10')
		Wet : 6.09m (20')
Max Particle Size (Dia)	:	6.35mm (0.250")
Diaphragm	:	Teflon, Santoprene, Buna



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