

The E-Series at a Glance



- Air-operated diaphragm pumps in solid design
- Housing made of PE or PTFE, both also available in a conductive version
- Interchangeability to the A-Series
- Seven sizes from DN 8 to DN 80
- Max. capacities of 0.9 to 48 m³/h
- Increased pump security due to innovative ring-tightening structure
- Compared to the A-Series, increased capacity and decreased air consumption thanks to the optimized flow pattern, decreased noise level
- ATEX conformity
- Exterior free of metal
- Optimized diaphragm fixing
- Different possible port configurations
- Ball or cylinder check valves with identical interior design
- Maintenance and lubrication-free air control system PERSWING P® without dead center
- Composite diaphragms with integrated metal core, no diaphragm discs
- Proof against dry running and overloading, self-priming, insensitive to solids
- Gentle displacement

- Can be infinitely controlled via the air volume
- No drives, no rotating parts, no shaft seals
- Unattended operation with long service life
- Easy to start up
- Integrated muffler
- Recessed tie rods
- Vibration dampers with female thread on the underside for simple direct installation
- Low noise levels
- Optional features meeting requirements, such as:
 - Screw-on or flanged pulsation damper
 - Draining system
 - Barrier chamber system
 - Diaphragm monitoring
 - Stroke counter
 - Flange connection
 - Transport cart



Certifications

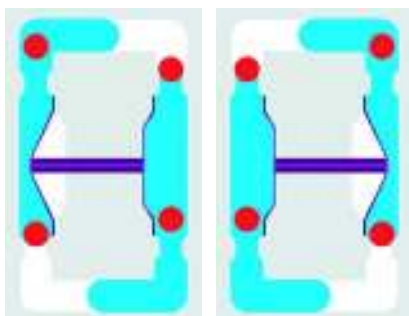
We are certified according to DIN EN ISO 9001:2008 and to DIN ISO 14001:2004. The requirements of the DIN EN ISO 9001 are fixed as minimum standard, with the endeavour to obtain a maximum of internal/external customer and supplier satisfaction by constant improvement, advancement and fault prevention in all phases of the value-added chain. In order to underline the relevance of the environmental policy the certification to DIN ISO 14001:2004 took place in the year 2006. Each enterprise in business world has a special responsibility to preserve the natural bases of life. Conscious usage and consumption of any resources, energy, raw as well as auxiliary and operational materials is a substantial component of our corporate culture.

All wetted materials of the E-Series meet the requirements of the FDA and on request the non-conductive versions USP class VI also. Furthermore a conformity declaration according to the European Directive EC 1935/2004, that handles the applicability of the pump materials for food contact, can be submitted.





Functional Principle



The ALMATEC E-Series is based on the functional principle of double diaphragm pumps. The basic configuration consists of two external side housing with a center housing between them. Each of the side housings contains a product chamber which is separated from the center housing by a diaphragm. The two diaphragms are interconnected by a piston rod. Directed by an air control system, they are alternately subjected to compressed air so that they move back and forth. In the first figure, the compressed air has forced the left-hand diaphragm towards the product chamber and displaced the liquid from that chamber through the open valve at the top to the discharge port. Liquid is simultaneously drawn in by the right-hand diaphragm, thus refilling the second product chamber. When the end of the stroke is reached, it reverses automatically and the cycle is repeated in the

opposite direction. In the second figure, liquid is drawn in by the left-hand diaphragm and displaced by the right-hand diaphragm. The liquid is displaced – and thus conveyed – by the compressed air. The diaphragms merely serve as barriers and are not pressurized. This is a fact of decisive importance for the service life of the diaphragms.

Solid Construction and Materials

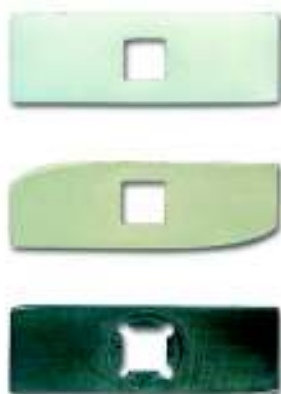
NBR	EPDM	PTFE	PE	summary of chemical resistance	
+	+	+	+	water	
+	-	+	+	mineral oil	
+	-	+	+	veget., anim. fats	
-	-	+	+	aliphatic	hydrocarbons
-	-	+	0	aromatic	
-	-	+	-	halogenated	
-	-	+	0	chlorinated	
0/-	0	+	+	alcohols	
-	+	+	+	ketones	
-	+	+	+	esters	
-	+	+	+	acids, diluted	
-	+	+	0	acids, concentrated	
-	+	+	+	alkalis, diluted	
-	+	+	+	alkalis, concentrated	
0	+	+	+	salts	

+ = resistant 0 = fairly resistant
 - = not resistant
 all entries are merely intended for guidance!

An important construction element is the solid design. Only a solid plastic body can support the necessary weight for an oscillating pump. The individual components can be designed, so that the required wall thicknesses are arranged where they are needed. The mechanical machining of a solid plastic block is economical thanks to modern CNC technology, enabling tight tolerances to be achieved. The high static mass leads to a smooth operation and external metal parts for reinforcement are not necessary. For ALMATEC pumps only virgin PE and PTFE without additives are used, which are produced in Germany.

The pumps of the E-Series are available in different materials:

- **Housing:** PE, PE conductive, PTFE, PTFE conductive
- **Diaphragms:** EPDM, PTFE/EPDM compound, PTFE modified, NBR, ATEX variations
- **Ball valves:** EPDM, PTFE, NBR, stainless steel
- **Cylinder valves:** PTFE



PE (polyethylene) competes with PP (polypropylene) which is frequently used in the manufacture of pumps. Thermally and chemically speaking, there are virtually no differences between these two. However, the similarity ends where the mechanical properties are concerned. Trials based on the sand-slurry method have shown that the abrasion resistance of the PE (material sample on top) is 7 times higher than that of PP (middle) and even 1.6 times higher than that of steel (bottom). It is certainly also more wear-resistant than, for example, cast iron or aluminum. This high resistance to abrasion plays a vital role in many applications (e.g. silicon carbide slurry in the solar cell production, pickling baths in the electroplating industry, printing inks, lime slurry for wet desulphurization, ceramic mass and glazes in the ceramics industry).