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TECHNOLOGY: DIAPHRAGM

## E-Series AODD Pumps

The E-Series plastic air-operated double diaphragm (AODD) pump is made of PE, PTFE, PE conductive and PTFE conductive. The conductive models meet the ATEX requirement of the 94/9/EG directive. E-Series pumps are very well suited for use with hazardous chemicals such as acids, caustics and solvents.

### Applications

- Abrasive Slurries
- Solar Cell
- Biopharmaceutical
- Chemicals
- Etching Agents
- Ceramic
- Sludge Transfer
- Glazes Transfer
- Paints
- Varnish
- High Concentrated Acids and Bases
- Grinding and Drilling Emulsions
- Paper and Printing
- Glue Transport
- Printing Inks Transport
- Industrial Water Treatment
- Sample Analysis
- Wastewater Neutralization
- Feeding Filter Presses with Sludge
- Chemical Treatment of Wafers
- Corrosive, Hazardous or Toxic Chemicals

### Features and Benefits:

- Machined plastic design
- Increased capacity
- Increased safety
- Decreased air consumption
- Easy cleanability
- Reduced noise level
- Decreased downtime
- Optimized flow pattern
- Increased quality
- Long service life
- Increased reliability
- Used in demanding process applications
- Robust plastic design with reinforcement ring for enhanced sealing and torque retention
- Maintenance-free air distribution system (ADS) PERSWING P<sup>®</sup>
- Integrated pulsation dampener available—threaded or flanged versions

### Technical Data:

- Polyethylene (PE) and PTFE models with conductive versions available
- Seven sizes: 6mm (1/4 in.) to 76mm (3 in.)
- NPT liquid outlet, DIN or ANSI flange connections
- Max. temperature: 120°C (248°F)
- Ball or cylinder check valves—interchangeable configuration

### Performance Data:

- Max. flow: 800 L/min (210 gpm)
- Max. suction lift: 5m (16.4 ft) dry, 9.5m (31.2 ft) wet
- Max. solids size: 15mm (9/16 in.)

### Certifications & Associations:



E-Series  
AODD Pump

## Inside the E-Series

The housing parts are tightened to each other via housing bolts. Instead of single bolts pressing punctually against the housing, all housing bolts are tightened against a diaphragm-sized containment ring on each side. This structure results in a more even spreading of the housing bolt force and increased permissible bolt torque.

The flow resistance is reduced via an optimized flow pattern to increase the efficiency factor of the pump. Compared to its predecessor, the A Series, the same air flow achieves a high fluid flow, while less air flow is required from the same fluid flow.

## Machined for Precision

Almatec's solid plastic block increases the pump's strength and life cycle while eliminating many maintenance concerns. The E-Series' CNC machined solid block of PTFE or PE allows Almatec to deal with the harshest environments. The E-Series solid plastic block construction is mechanically machined rather than injection molded, as is the case with many of its competitors. The CNC technology enables tight tolerances, along with reduced vibration, less risk of leakage, and greater stability and durability. The high static mass leads to smooth operation with reduced vibration.

### Materials

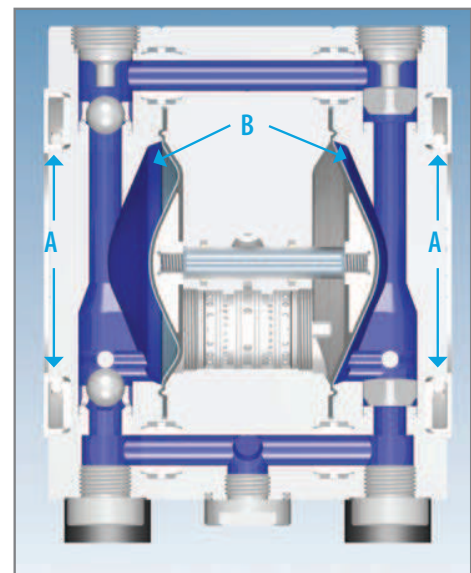
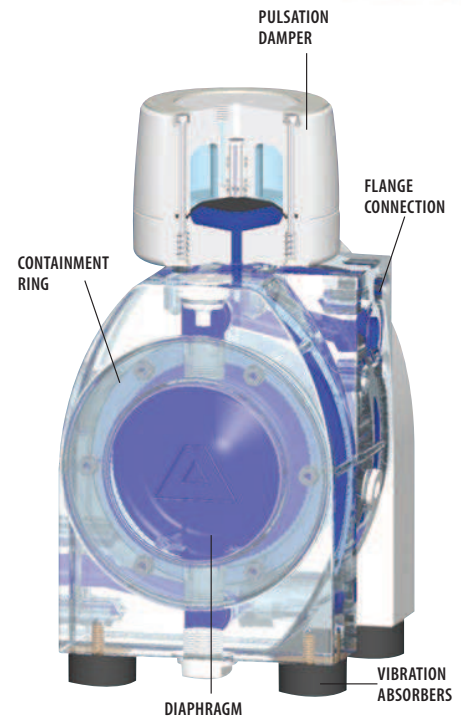
For the E-Series pumps, the following materials are available:

- **Housing:** PE, PE conductive, PTFE, and PTFE conductive
- **Diaphragms:** EPDM, PTFE/EPDM, NBR
- **Ball valves:** EPDM, PTFE, NBR, stainless steel
- **Cylinder valves:** PTFE

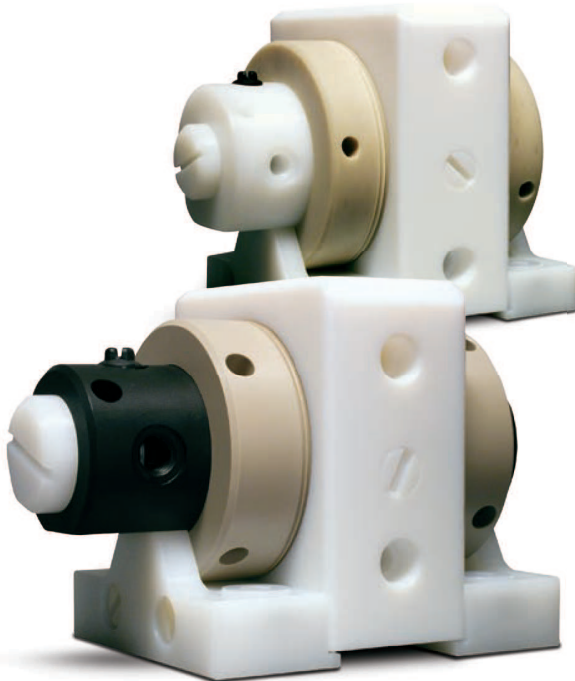
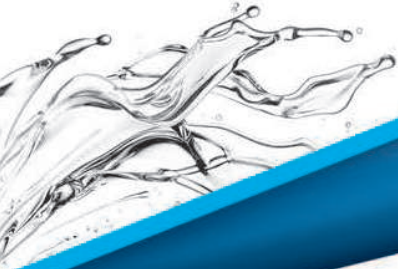
### Sizes

The E-Series is available in seven pump sizes to achieve the maximum capacities:

- **E08:** 0.9 m<sup>3</sup>/h, 15 L/min, 4 gpm
- **E10:** 1.4 m<sup>3</sup>/h, 23 L/min, 6 gpm
- **E15:** 3.4 m<sup>3</sup>/h, 55 L/min, 15 gpm
- **E25:** 8 m<sup>3</sup>/h, 130 L/min, 35 gpm
- **E40:** 20 m<sup>3</sup>/h, 330 L/min, 88 gpm
- **E50:** 36 m<sup>3</sup>/h, 600 L/min, 160 gpm
- **E80:** 48 m<sup>3</sup>/h, 800 L/min, 210 gpm



AODD pumps offer superior containment due to the fact that they don't use mechanical seals and packing. In the Almatec pump illustration shown above, the stainless steel Containment Ring (A) clamps tightly on two sides of the pump housing, pulling it together over the smooth, integrated metal core diaphragm (B), which further increases safety and ensures a tight seal.



FUTUR Series  
AODD Pump

TECHNOLOGY: DIAPHRAGM

## FUTUR Series AODD Pumps

Since 1991, Almatec has manufactured FUTUR pneumatic diaphragm pumps, which are designed specifically for chemical supply and circulation in the semiconductor industry. The liquids handled in the semiconductor industry have different demands, requiring a unique pump to meet those demands.

### Applications

- Semiconductor
- High-temperature applications
- High-purity chemicals

### Features and Benefits:

- Designed especially for the semiconductor industry
- 100% metal free plastic pumps
- No O-ring sealing in wetted areas
- Flow-through design
- No metal fixing elements, such as tie rods or clamps
- Integrated pulsation dampener available
- Assembled in Class 100 Cleanroom
- Low noise levels
- Easy to assemble and disassemble
- Compact
- No metal fixing elements, such as tie rods or clamp

### Technical Data:

- Machined plastic design, polyethylene (PE) and PTFE
- Optimized PTFE diaphragm technology
- Five sizes: 10mm (3/8 in.) to 38mm (1-1/2 in.)
- NPT ports
- Max. temperature: 200° C (390° F)
- Accurate fluid transfer

### Performance Data:

- Max. flow: 200 L/min (52 gpm)
- Max. suction lift: 4m (13.1 ft) dry, 9m (29.5 ft) wet

### Certifications & Associations:





## Inside the FUTUR Series

In order to meet the strict demands of the semiconductor industry, the FUTUR Series is available in four materials:

- Four sizes made of PTFE/UPPE for acids and caustics up to 130°C/266°F (FUTUR T Model)
- Two sizes made of PTFE for hot applications with acids and caustics up to 200°C/390°F (FUTUR H Model)
- Four sizes made of UPPE for slurries (FUTUR E Model)
- Two sizes made of stainless steel for solvents (FUTUR SLS Model)



The pump sizes achieve maximum capacities between 10 and 200 L/min (2.5 to 52 gpm).

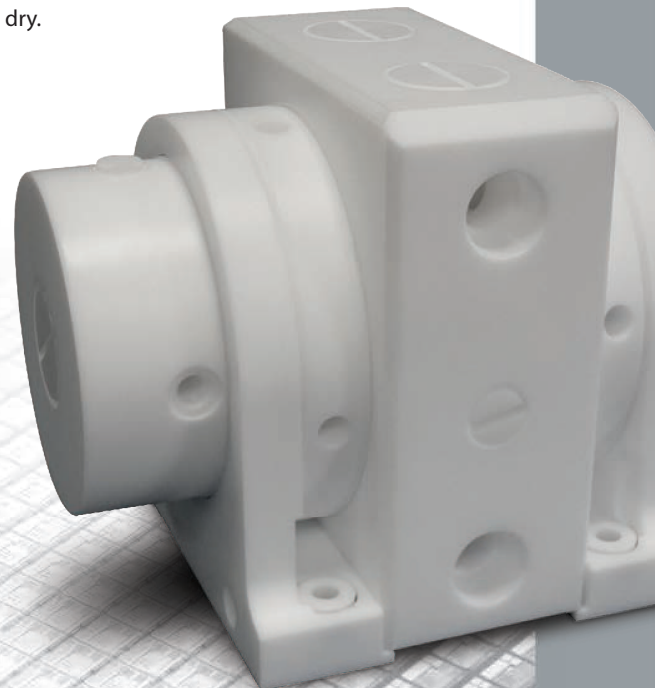
For every pump size and material, an appropriate pulsation dampener is available.

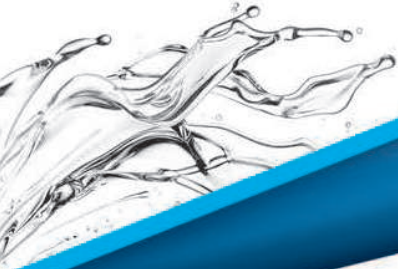
All FUTUR pumps are self-priming pneumatic diaphragm pumps which can run dry.

They have a compact, simple design with few parts only. The housing parts are machined from solid blocks. FUTUR pumps are cleaned, assembled and tested in a Class 100 cleanroom line.

### The latest generation of FUTUR pumps is the FUTUR-Omega Series:

- Entirely made of PTFE
- New construction with  $\Omega$ -shaped base frame
- Diaphragm and center housing with rotation prevention
- New PTFE material for the diaphragms
- Three sizes with maximum capacities of 20, 50 and 100 L/min (5.3, 13 and 26 gpm)
- Depending on the application, also available made entirely of polyethylene and stainless steel





BIOCOR Series  
AODD Pump

TECHNOLOGY: DIAPHRAGM

## BIOCOR Series AODD Pumps

BIOCOR pumps are specially designed for sterile applications within the pharmaceutical, biotechnical and food industry. The air-operated double diaphragm pumps are built in compliance with the corresponding hygienics standards (EHEDG, 3A, FDA, USP Class VI). The pump's special design with an integrated cleaning system enables CIP and SIP capability.

### Applications

- Chemicals
- Cosmetics
- Perishable products requiring cleanability
- Live cultures
- Active pharmaceutical and biotechnical ingredients

### Features and Benefits:

- Designed for high-end sanitary / hygienic applications
- Sterile design for maximum cleanability
- Can be drained without disassembly
- Designed for superior product containment
- Clean in Place (CIP) and Sterilize in Place (SIP) capabilities
- Improved safety
- Increased reliability
- High surface quality
- High traceability

### Technical Data:

- Wetted components: 316L (Based Standard II) center housing polyethylene conductive
- Surface finish: Ra 0.4 µm (15 µ-in.)
- Three sizes: 25mm (1 in.) to 51 mm (2 in.)
- Liquid connections compatible with different sanitary threads
- Valve balls with metal cores

### Performance Data:

- Max. flow: 280 L/min (73 gpm)
- Max. suction lift: 3m (9.8 ft) dry, 9m (29.5 ft) wet
- Max. solids size: 9mm (3/8 in.)

### Certifications & Associations:



## Inside the BIOCOR Series

The AODD pumps are EHEDG certified and conform to the ATEX 94/9/EG directive. There aren't any horizontal areas in the housing parts – an important demand for sterile applications. The pump sizes B20 and B32 come with four ball lifting magnets, which can be attached to the pump housing from the outside at the location of the four ball valves. The ball valves rise up magnetically out of their seats and the pump is drained entirely without having to be dismantled therefore, there are no mechanical ball lifters with parts and seals in the wetted areas.

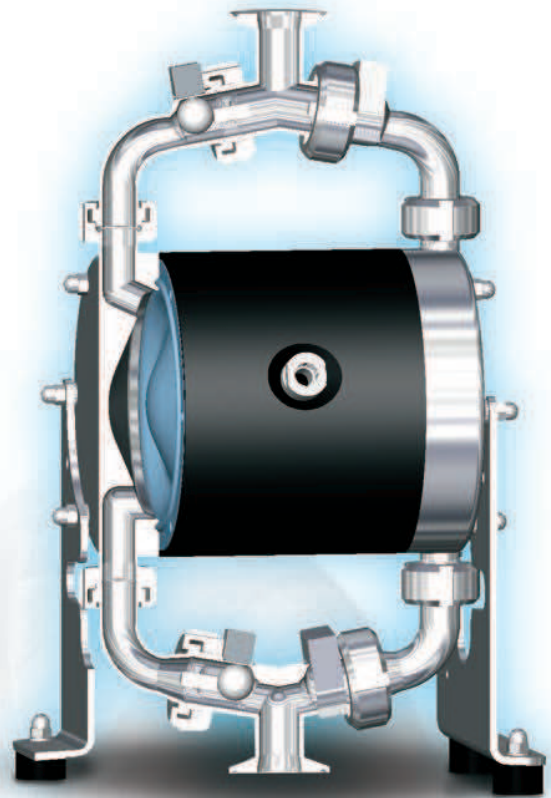
The BIOCOR series is available in three pump sizes B20, B32 and B40. The material for the wetted housing parts is electropolished SS 316 L (Basel Standard II, ferrite content < 1%) with a surface roughness of  $\leq 0.4 \mu\text{m}$ . The center block is made of polyethylene conductive and the suction and discharge ports are suitable for Tri-clamp or different sanitary threads (Naue, Neumo, DIN 11851, DIN 11864). Diaphragms, ball valves and O-rings are made of PTFE or EPDM (FDA); other materials on request.

### Pump Models:

**B20:** Max capacities of  $3.5 \text{ m}^3/\text{h}$  (15.4 gpm)

**B32:** Max capacities of  $7.5 \text{ m}^3/\text{h}$  (33 gpm)

**B40:** Max capacities of  $17 \text{ m}^3/\text{h}$  (75 gpm)





CHEMICOR Series  
AODD Pump

TECHNOLOGY: DIAPHRAGM

## CHEMICOR Series AODD Pumps

The metal pneumatic diaphragm pumps feature soft contours, smooth flow channels and no dead spaces. CHEMICOR pumps contain a center block made of nylon or PE conductive material which meets the ATEX requirements of the 94/9/EG directive.

### Applications

- Chemicals
- Industrial water treatment
- Corrosive, hazardous or toxic chemicals
- Sample analysis
- Paints
- Wastewater neutralization
- Varnish
- Paper and printing
- Glue transport
- Printing inks transport
- Food Processing

### Features and Benefits:

- Designed for heavy-duty process applications
- Soft contours, smooth flow channels, no dead spaces
- Rotating inlet and discharge parts
- Available in multiple surface finishes
- Insensitive to solids
- Decreased downtime
- Easy start-up
- Improved safety
- Increased reliability
- Easy cleanability

### Technical Data:

- Stainless steel precision castings
- Non-wetted center section – Nylon or conductive polyethylene (PE)
- Three sizes: 19mm (3/4 in.) to 51mm (2 in.)
- BSP or NPT liquid outlet connections
- Max. temperature: 130°C (266°F)
- Valve balls for handling solids

### Performance Data:

- Max. flow: 400 L/min (105 gpm)
- Max. suction lift: 3m (9.8 ft) dry, 9m (29.5 ft) wet
- Max. solids size: 14mm (9/16 in.)

### Certifications & Associations:





TECHNOLOGY: DIAPHRAGM

## AH Series AODD Pumps

High-pressure plastic diaphragm pumps are designed for charging filter presses with chemical wastes and special sludge. All housing parts in contact with the product are made of PE UHMW, which is seven times more resistant to abrasion than PP, and is more resistant to wear than aluminum, iron or steel. The self-priming pump does not possess any drives, rotating parts or shaft seals.

### Applications

- Feeding filter presses with sludge
- High-pressure chemical feed
- Grinding and drilling emulsions
- Pressure boost
- Paints
- Coating facilities

### Features and Benefits:

- Eliminates risk of overpressure
- Running dry capability
- Self-priming
- Automatically adjusts pressure/quantity
- Decreased downtime

### Technical Data:

- Wetted housing parts in solid design made of polyethylene
- Non-wetted center section made of Nylon
- Max. temperature: 70°C (158°F)
- Interchangeable ball valves and valve stops
- Heavy duty diaphragms for long service life
- 3 sizes with discharge pressure up to 15 bar (218 psig)

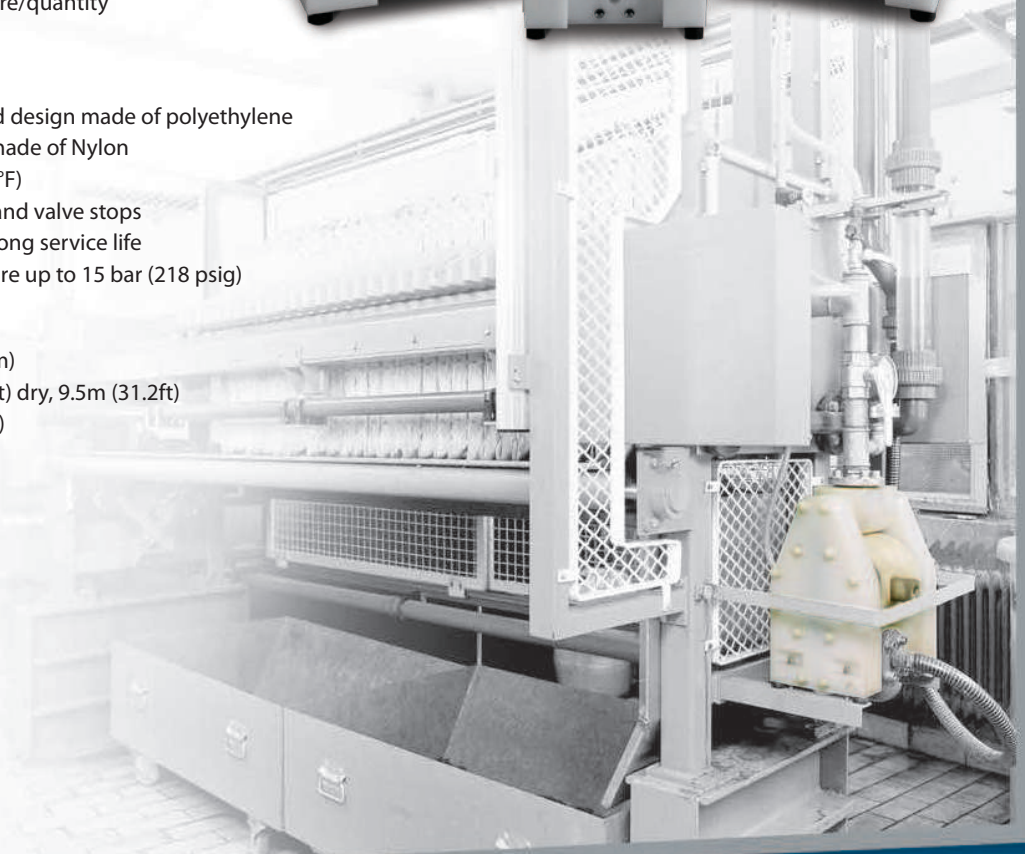
### Performance Data:

- Max. flow: 330 L/min (87 gpm)
- Max. suction lift: 3.5m (11.5 ft) dry, 9.5m (31.2ft)
- Max. solids size: 8mm (0.3 in.)

### Certifications & Associations:



AH Series  
AODD Pump





CX Series  
AODD Pump

TECHNOLOGY: DIAPHRAGM

## CX Series AODD Pumps

CX Series pneumatic diaphragm pumps are general-purpose pumps designed for low-to medium-duty applications. Self-priming and protected against dry running, the pumps are used to empty containers down to the very last drop, allowing them to be used for complete and unattended transfer of liquids from one container to another.

### Applications

- Used to empty containers
- Neutralization
- Glue transport
- Cleaning agents

### Features & Benefits

- Self-priming
- Can be infinitely controlled
- Protected against dry running
- Easy to start
- Easily maintained

### Technical Data

- Housings made of solid PE conductive for use in explosion-protected areas
- Composite diaphragms with integrated metal discs
- Max. temperature: 70°C (158°F)
- Ball or cylinder valves

### Performance Data

- Max. flow: 130 L/min (34 gpm)
- Max. suction lift: 4m (13.1 ft) dry, 9m (29.5 ft) wet
- Max. solids size: 4mm (0.16 in.)

### Certifications & Associations:





## Options



### Barrier Chamber System

With the barrier chamber system, the individual diaphragm is replaced by two diaphragms arranged in tandem with a barrier chamber of conductive PE between them and filled with non-conductive liquid. A change in conductivity of the barrier liquid is detected by sensors and signaled to a controller, which triggers an alarm or disconnects the pump, meeting high safety requirements.

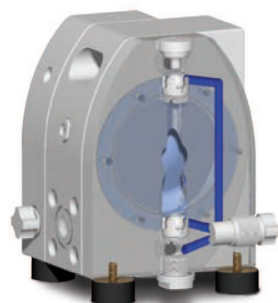
### Diaphragm Monitoring

A capacitive sensor installed in the pump muffler detects the presence of all liquids. If the diaphragm ruptures, it outputs a corresponding signal to a controller which triggers an alarm or disconnects the pump via a connected solenoid valve.



### Pulsation Dampers

Pulsation dampers are available if a virtually uniform flow is needed. The E-Series pumps can be equipped with screwed-on or flanged pulsations dampers, while the CHEMICOR and BIOCOR pump series are available with an inline pulsation damper.

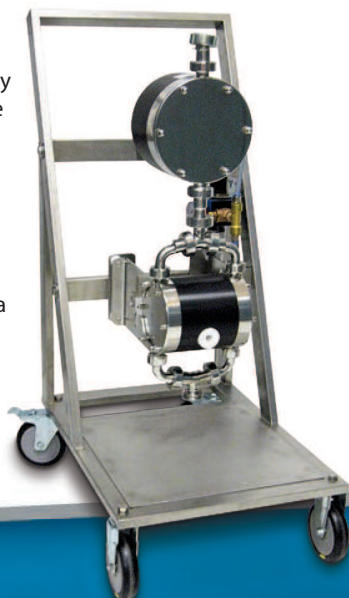


### Draining System

The E-Series pumps, available in sizes 15 to 50, are available with Almatec's special draining system. This unit consists of a by-pass system in the side housings that can be activated easily either via hand-operated valves or pneumatically. The pump and piping can then be drained without having to be dismantled. The amount of cleaning agent and solvent required when changing products is reduced considerably, greatly reducing environmental pollution. For the metal series CHEMICOR pumps, offer another solution. Ball lifters, which are turnable by hand, are fitted to the four ball valves. By turning the handles the ball valves are lifted out of their seats.

### Transport Carts

Many industrial applications not only need stationary air-operated double diaphragm pumps, but mobile pumping units as well. This includes pumps that are designed for use as emergency pump, as short-dated replacement for a pump to be repaired or for decanting between two containers. For these purposes a transport cart is available.



### Stroke Counting

Almatec air-operated double diaphragm pumps can be used continuously or intermittently for hours, minutes or for an exact defined number of strokes. A sensor can be installed in the pump's center housing to accurately count the strokes. This is available in a pneumatic version as well.

### Flange Connection

All E-Series pump sizes—from E 15 to E 80 – can be equipped with thread bushings and flange O-rings for flange connections to DIN or ANSI / PN 10. For the AH Series, a flange connection to DIN or ANSI/PN 16 is standard.

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