

AHD/AHS Series

AODD PUMPS FOR HIGH PRESSURE APPLICATIONS | PRODUCT BROCHURE



ALMATEC®

Where Innovation Flows



Almatec® AHD and AHS Series Air-Operated Double-Diaphragm (AODD) Pumps have been developed for applications where a discharge pressure up to 15 bar (218 psig) is needed. To achieve this high pressure, pumps of the AHD series are designed with an internal pressure booster, which amplifies a maximum drive of 7 bar (100 psig) to a discharge pressure of 15 bar (218 psig). AHS Series pumps do not have an internal booster. Due to the 1:1 ratio of drive/discharge pressure the corresponding air pressure has to be supplied, e.g. from the compressor itself or an external pressure booster. User who need such high discharge pressure can do so safely, because AHD/AHS pumps are designed for such pressure and does not have to be held together by external reinforcements.

DESIGNED FOR SAFE OPERATION IN HIGH-PRESSURE APPLICATIONS

Almatec® AHD and AHS Series Pumps Solid Under Pressure

- Air-operated double-diaphragm pumps designed for a discharge pressure up to 15 bar (218 psig)
- AHD Series ("D" stands for Duplex) with internal pressure booster
- AHS Series ("S" stands for Simplex) without internal pressure booster, for using with an external booster
- Corrosion-proof and wear-resistant housing in solid design made of polyethylene for heavy-duty applications
- Double-acting principle of operation
- Maximum capacities of 4, 10 and 20 m³/h (17, 44 and 87 gpm) for AHD pumps resp. 4 and 8 m³/h (17 and 35 gpm) for AHS pumps
- High pump safety due to innovative ring-tightening structure
- Due to automatic pressure/volume adjustment ideal for filter press feeding
- No control or safety elements required for dry running, over pressure and speed control
- Safe operation over the entire range of capacity without over pressure risk
- No drives, no rotating parts, no shaft seals inside the fluid
- Dry running capability



- Self-priming
- Easy start-up
- Gentle displacement by compressible drive medium
- Compact dimensions
- Specially developed heavy-duty diaphragms for long service life
- Shock absorbers with female thread on the underside for simple direct installation
- Horizontal or vertical position for suction and discharge ports
- Ball valves insensitively to solids
- Maintenance-free PERSWING P® air control system without dead center
- Special equipment meeting requirements (diaphragm monitoring, stroke counting, ANSI flange connections, pressure booster for AHS)

AHD and AHS Series | Special Features



Wear Resistant Housing Material and Solid Design

All wetted housing parts are made of ultra-high-molecular-weight low pressure polyethylene (PE UHMW) in heavy solid design. PE 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 (upper material sample) is 7 times higher than that of PP (middle material sample) and even 1.6 times higher than that of steel (lower material sample). It is certainly also more wear-resistant than, for example, cast iron or aluminium. Polyamide (PA) is used for the center blocks. It is characterized by its exceptionally high mechanical strength.

Special Development for Filter Press Feeding

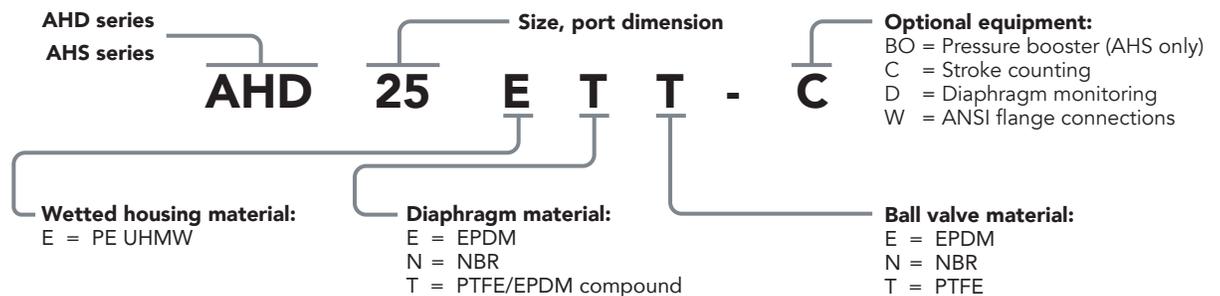
In many industrial processes, substances occur in aqueous muddy form, where the liquid portion must be removed. This can be in production processes, for example in the filtration of edible oils or yeast solutions, but more frequently at the end of a process in waste sludge from various industries from surface finishes to wastewater treatment. The disposal of such sludge is frequently done by compression and drying in a filter press. The AHD Series has been specially developed for feeding filter presses with chemical waste and special sludge. With a maximum drive pressure of 7 bar (100 psig), they can build up discharge pressures of up to 15 bar (218 psig). This yields a ratio of drive pressure/discharge pressure of more than 1:2. Pumps of the AHS series achieve similar results by using an external pressure booster.



Air driven diaphragm pumps have a number of characteristic advantages for filter press feeding. Conventional displacement pumps with electric drive and control elements do not have these properties which are specific to the design of the pumps and which include run dry capability, good controllability and a gasketless mechanical design, to mention but a few. Operating against closed discharge is possible. There are no drives, no rotating parts, and no rotary shaft seals. The compressible drive medium permits gentle delivery with attenuated pressure peaks. Start-up is simple and the space required is considerably less than in the case of piston-actuated diaphragm pumps or eccentric screw pumps.

Almatec high-pressure diaphragm pumps of series AHD can be ideally combined with filter presses, as the automatic pressure/volume adjustment clearly shows. At the beginning, the low filter resistance enable the pump to deliver a large flow, so that the empty filter press is rapidly filled. The rising filling level and pressure cause the volume to reduce automatically until the required standstill is reached (= flow 0) at the maximum permitted pressure without any control elements or safety elements protecting against dry running and excess pressure or speed control. Unlike mechanically driven diaphragm pumps, the AHD pumps then stop and do not consume any further energy. This built-in control feature permits operation over the complete range of delivery volumes without any risk of excess pressure.

Code System



Components of the Almatec® AHD Series Pump

PUMP HOUSING

- Solid construction
- Wetted housing part
- Material: PE UHMW, abrasion resistant

CENTER BLOCK

- Solid construction
- Non-wetted housing part
- Material: Polyamide

TENSION RING

- Tightening of the pump housings via housing bolts
- No punctual load from bolts but collective pressing via a diaphragm-sized ring on both sides
- Consistent flow of forces and increased bolt torque
- High level of pump safety

SUCTION AND DISCHARGE PORTS

- Solid construction in PE UHMW
- Wetted housing part
- Flange connection in DIN PN16 or ANSI 300lbs

Almatec® AHD Series Pump with internal pressure booster

The AHD series pumps are available in three sizes with maximum capacities of 4, 10 and 20 m³/h (17, 44 and 87 gpm). With a maximum drive pressure of 7 bar (100 psig), they can build up discharge pressures of up to 15 bar (218 psig). This yields a ratio of drive pressure/discharge pressure of more than 1:2. The typical application field of these pumps is filter press feeding.



The Almatec® Advantage

BALL VALVES (located in the pump housing)

- Robust and insensitive to solids
- Available materials: EPDM, PTFE, NBR

DIAPHRAGMS

- Integrated metal core
- Designed for long service life
- Available materials: EPDM, PTFE/EPDM compound, NBR

PERSWING P® AIR CONTROL SYSTEM

- Accurate reversal of the main piston
- Metal-free, low noise level
- No dead center
- Easy replacement of the complete cartridge



Almatec® AHS Series

Pump without internal pressure booster

The two sizes of the AHS series feature an extremely rugged housing that is suitable for higher discharge pressures. Basically, the AHS series can be used for every application under heavy load conditions, from low discharge pressure (e.g. highly abrasive fluids) variable up to high pressure applications up to 15 bar (218 psig). Due to the 1:1 ratio of drive pressure/discharge pressure the corresponding air pressure has to be supplied, e.g. from the compressor itself or an external pressure booster, also offered by Almatec.



AHD and AHS Series | Technical Data

			AHD Series			AHS Series	
Pump size			AHD 15	AHD 25	AHD 40	AHS 15	AHS 25
Dimensions:	Width	mm (in.)	312 (12.3)	422 (16.6)	539 (21.2)	266 (10.5)	336 (13.2)
	Depth		177 (7.0)	256 (10.1)	291 (11.5)	177 (7.0)	256 (10.1)
	Height		336 (13.2)	412 (16.2)	544 (21.4)	336 (13.2)	412 (16.2)
Flange connections	DIN or ANSI BSP	15 (1/2")	25 (1")	40 (1-1/2")	15 (1/2")	25 (1")	
Air connection		1/4"	1/2"	1/2"	1/4"	1/4"	
Weight:	kg (lb)	11 (24)	24 (53)	53 (117)	9 (20)	19 (42)	
Max. particle size of solids	mm (in.)	4 (0.16)	5 (0.20)	8 (0.31)	4 (0.16)	5 (0.20)	
Suction lift, dry:	mWC (ft)	- EPDM/NBR ball valves	2 (6.6)	3.5 (11.5)	3.5 (11.5)	2 (6.6)	2.5 (8.2)
- PTFE ball valves		1.5 (4.9)	2 (6.6)	2 (6.6)	1.5 (4.9)	1.5 (4.9)	
Suction lift, wet		9.5 (31.2)	9.5 (31.2)	9.5 (31.2)	9.5 (31.2)	9.5 (31.2)	
Max. driving and operating pressure	bar (psig)	7 (100)	7 (100)	7 (100)	15 (218)	15 (218)	
Max. operating temperature	°C (F)	70 (158)	70 (158)	70 (158)	70 (158)	70 (158)	
Max. capacities	m ³ /h	4	10	20	4	8	
	l/min	67	165	330	67	130	
	gpm	17	44	88	17	35	

Optional Equipment

Stroke counting (code C): A sensor is installed in the center block to count the strokes. The diaphragm movement is scanned without contact by this sensor. The issued sensor pulses can be output to existing detectors or to a stroke counter (can also be supplied). When the preset value is reached, the stroke counter outputs a signal which can then be processed further, for instance in order to shut down the pump via a solenoid valve.

Diaphragm monitoring (code D): A sensor installed in the pump muffler detects all liquids which occur because of diaphragm damage.

Pressure booster (code BO): The booster for the AHS series is available in two sizes. Pump and booster will be shipped as one unit.

Spare Part Kits

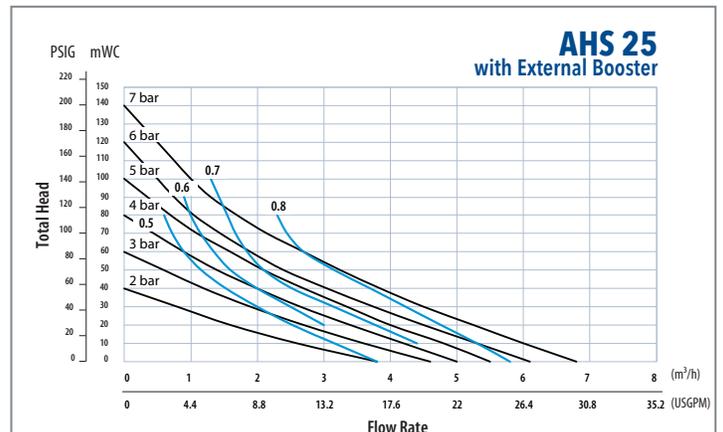
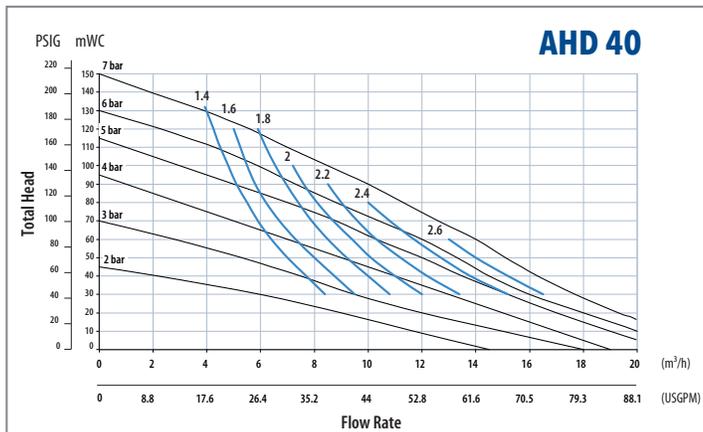
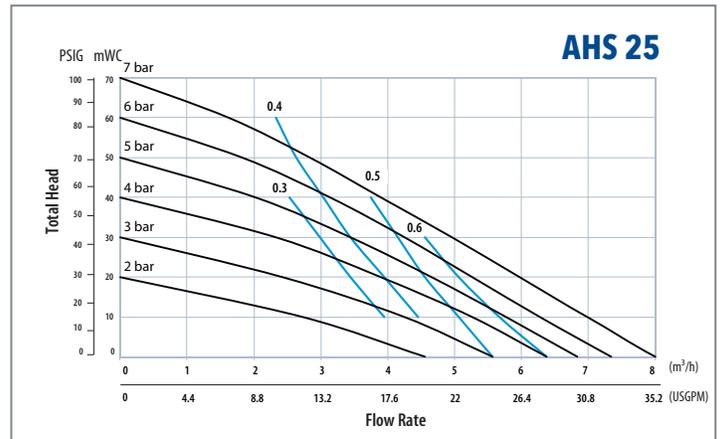
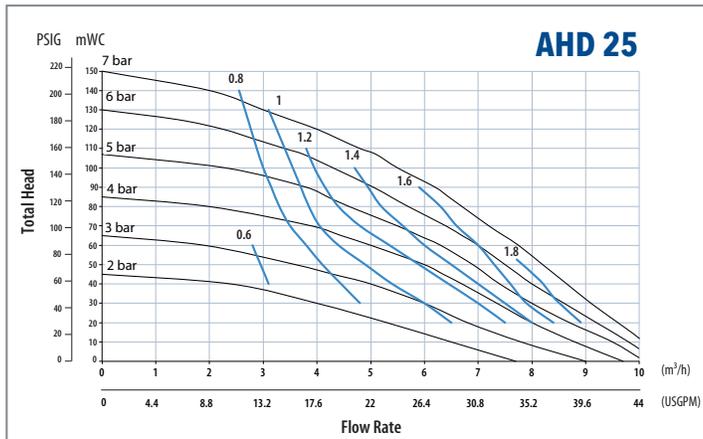
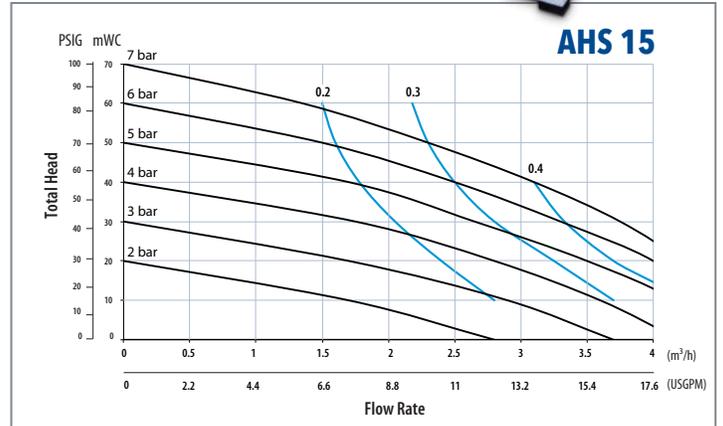
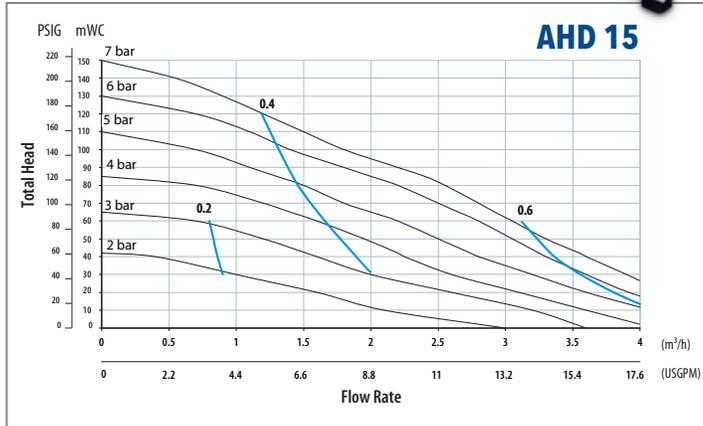
Spare parts kits ensure that the correct replacement parts are always available in the required quantities. This helps to avoid production stoppages and ensures that the Almatec air-operated double diaphragm pumps are always ready for action. We strongly recommend not to install non-genuine spare parts into your Almatec pumps and pulsation dampers. Any certificates for our products or materials are invalid when using when using spare parts of non-genuine origin.



AHD and AHS Series | Performance Charts

Performance Range

The following data refer to water at 20°C (68°F) (referring DIN EN ISO 9906). The blue lines state the air consumption in Nm³/min (independent from the pressure).



The characteristics of the AHD series with internal pressure booster are displayed on the left side. The maximum total head at an air supply pressure of 7 bar (100 psig) is 150 mWC. The upper two curves on the right side refer to the AHS series, which operates without internal pressure booster. Their maximum total head depends on the selected drive air pressure. In these charts a maximum air pressure of 7 bar (100 psig) is assumed. The lower curve is an example of the performance range of a AHS 25 with an external booster (special equipment code BO2). By using of another booster model a changed performance can be expected.



PSG Germany GmbH
Hochstraße 150-152
47228 Duisburg, Germany
P: +49 (2065) 89205-0
info@almatec.de
almatec.de



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