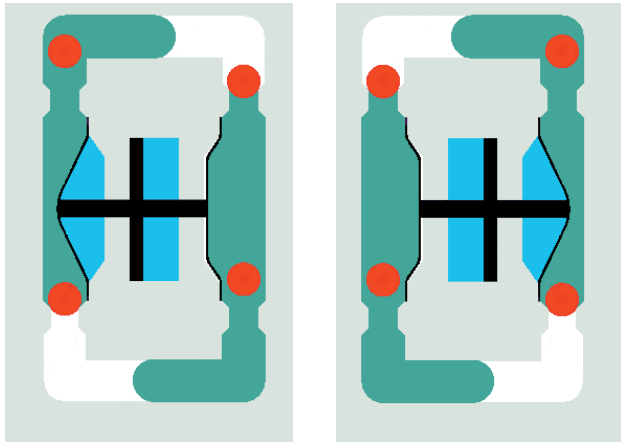


**Series
AH**

High Pressure Diaphragm Pumps



Functional principle

The ALMATEC high pressure diaphragm pump series AH is based on the functional principle of double diaphragm pumps. The basic configuration consists of two external side housings with a center block between them. Each of the side housings contains a product chamber which is separated from the center block by a diaphragm. The two diaphragms are interconnected by a piston rod. Controlled by an air control system, they are alternately subjected to compressed air so that they move back and forth. The pressure booster centered between the diaphragms boosts the drive air pressure to more than twice its original value in the two product chambers.

In the first diagram, 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 diagram, liquid is drawn in by the left-hand diaphragm and displaced by the right-hand diaphragm.

Filter presses and ALMATEC high pressure diaphragm pumps: the ideal combination

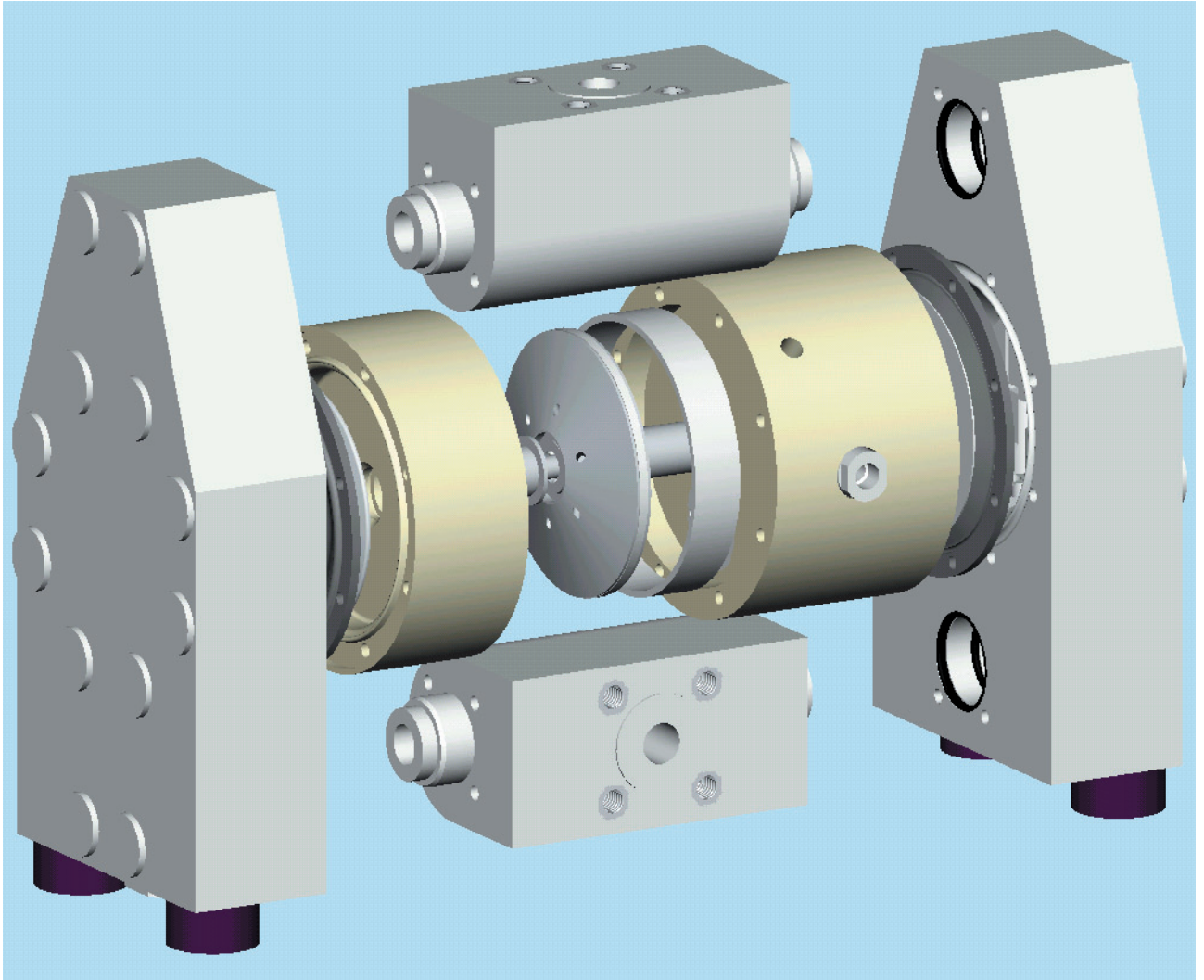
The series AH has been specially developed for feeding filter presses with chemical wastes and special sludge. With a maximum drive pressure of 7 bar, they can build up discharge pressures of up to 16 bar as a result of the internal booster. This yields a ratio of drive pressure/discharge pressure of more than 1:2. As genuine double-acting air-driven diaphragm pumps, the three sizes achieve maximum capacities of 4 m³/h (AH 15), 10 m³/h (AH 25), and 20 m³/h (AH 40). The following values can be quoted as a rough guide to the filter area of the press: AH 15 up to 12 m², AH 25 up to 30 m², and AH 40 up to 60 m².



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 protection against running dry, 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 progressive cavity pumps.

ALMATEC high-pressure diaphragm pumps of series AH can be ideally combined with filter presses, as the automatic pressure/volume adjustment clearly

shows. At the beginning the low filter resistance causes delivery of a large volume, so that the empty filter press is rapidly filled. The rising filling level causes the volume to reduce automatically until the required standstill is reached (= volume 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 AH pumps then stop and do not consume any more energy. This built-in control feature permits operation over the complete range of delivery volumes without any risk of excess pressure.

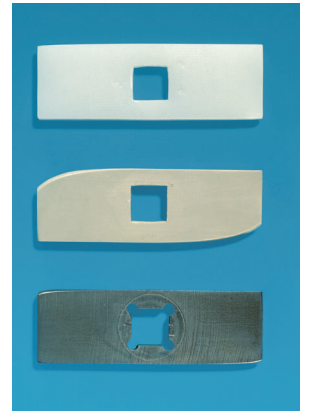


The AH series at a glance

- double-acting principle of operation
- discharge pressure up to 16 bar
- max. capacities 4, 10 and 20 m³/h
- automatic pressure/volume adjustment for filter press feeding
- no control or safety elements required for
 - dry running
 - over pressure
 - speed control
- safe operation over the entire range of capacity without over pressure risk
- no drives, no rotating parts, and no shaft seals
- running dry capability
- self-priming
- easy start up
- gentle displacement by compressible drive medium
- very compact dimensions
- specially developed heavy-duty diaphragms for long service life
- corrosion-proof and abrasion-proof housings made of PE UHMW
- recessed housing bolts with spring washers
- integrated muffler
- shock absorbers with female thread on the underside for simple direct installation
- horizontal or vertical position for suction and discharge ports
- ball valves with insensitivity to solids
- changeable ball valves and ball retainers
- maintenance-free *PERSWING P*[®] air control system without dead center
- optional features meeting requirements

Wear-resistant housing material

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.



Other special features

The cheek construction with twelve housing bolts as the sole fastening elements form a solid basic unit with the fewest possible seals and joins. Recessed housing bolts with PE caps and spring washers on large stainless steel discs reduce the surface pressure. The suction and discharge ports are made in solid design and equipped with flanges to DIN standards, PN 16. Their position can be varied, depending on the application in question, thus permitting both horizontal and vertical connection.

ALMATEC high-pressure diaphragm pumps are equipped with specially developed heavy-duty diaphragms with integrated metal core guaranteeing a long service life. The service life is extended once more by a supporting disc on the air side. The diaphragms are made of either EPDM, NBR, or PTFE/EPDM-compound.

The metal-free, pneumatically pilot-operated air control system *PERSWING P*[®] ensures accurate reversal of the main piston and is characterized by low noise levels. Only two moving parts ensure that there is absolutely no dead center in the *PERSWING P*[®] air control system. The system does not require maintenance, operates without any lubrication whatsoever and is made up of no more than four different parts. The complete cartridge can be replaced easily. *PERSWING P*[®] is a precision air control system and therefore requires clean, dry, and oil-free compressed air to ensure that it functions optimally.

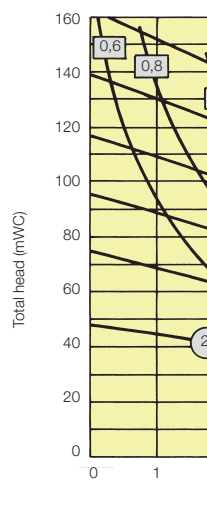
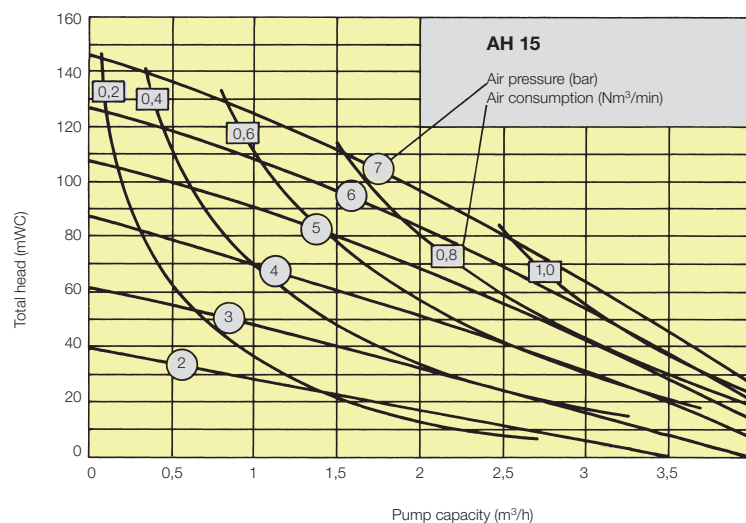


The easy changeable ball valves and ball retainers have been specially designed to make them particularly suitable for high pressures. They are insensitive to solids. The ball valves are available in the materials EPDM, NBR, and PTFE. The heavy-duty muffler in the center block is made of expanded PE. Noise is absorbed in two cascaded stages.

Performance range

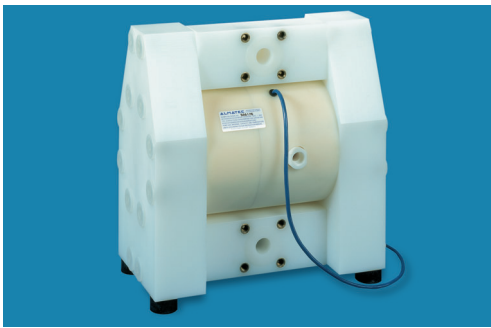
The specified performance data are warranted by ALMATEC in accordance with DIN 1944, Stage III as far as applicable.

The data refer to water.



Technical data	AH 15	AH 25	AH 40
Dimensions (mm): length width height	282 179 320	382 256 400	490 296 534
Port size Air connection	DN 15/PN 16 R 1/4	DN 25/PN 16 R 1/2	DN 40/PN 16 R 1/2
Weight (kg)	11	30	58
Max. size of solids (mm)	4	5	8
Suction lift, dry (mWC): EPDM/NBR ball valves PTFE ball valves	3 1,5	5 2	5 2
Suction lift, wet (mWC)	9,5	9,5	9,5
Max. drive pressure (bar)	7	7	7
Max. operating temperature (°C)	70	70	70

Optional equipment



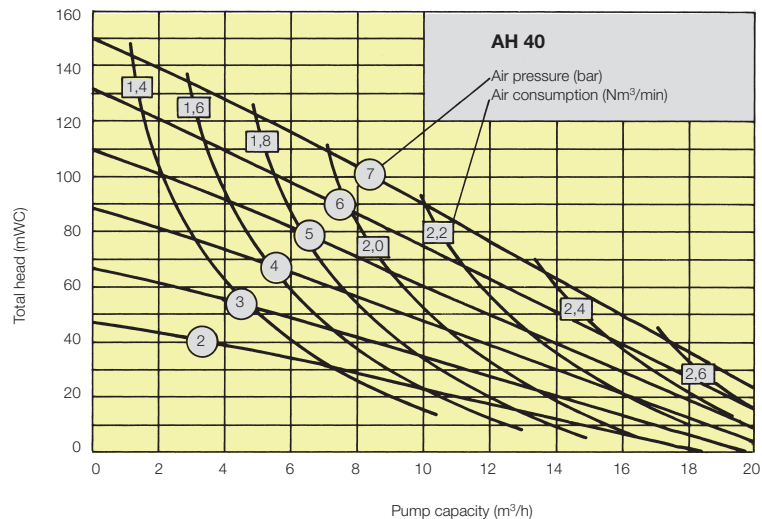
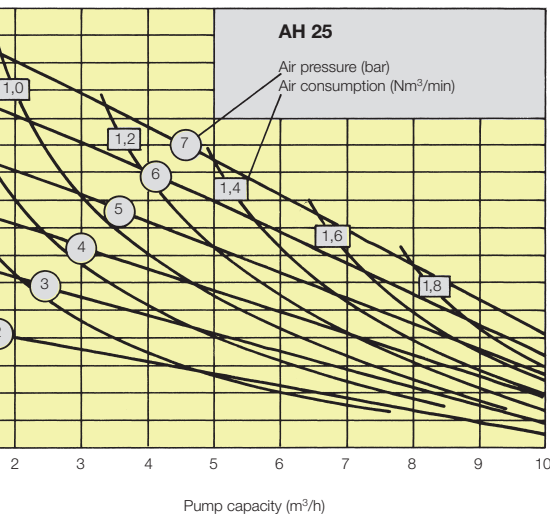
Stroke counting (code C): A sensor is installed in the center block to count the strokes. The diaphragm movement is scanned without contact by this sensor. The issued sensor pulses can be output to existing detectors or to a stroke counter (can also be supplied). When the preset value is reached, the 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 a diaphragm damage.

Pumpcode:

AH 25 E T T - C

Optional equipment: C=stroke counting, D=diaphragm monitoring
 Ball valve material: E=EPDM, N=NBR, T=PTFE
 Diaphragm material: E=EPDM, N=NBR, T=PTFE/EPDM compound
 Housing material: E=PE UHMW
 Size, port size
 ALMATEC high pressure diaphragm pump



ALMATEC – the specialists for
pneumatic diaphragm pumps



ALMATEC
Maschinenbau GmbH
Carl-Friedrich-Gauss-Straße 5
D-47475 Kamp-Lintfort
Postfach 10 11 48
D-47456 Kamp-Lintfort
Telephone ++49/28 42/961-0
Telefax ++49/28 42/961-40
<http://www.almatec.de>
e-mail: info@almatec.de