

ADB AIR OPERATED DIAPHRAGM PUMPS





CERTIFICATE

The TÜV CERT Certification body
of TÜV Austria
certifies in accordance with TÜV CERT procedures that



ALPHADYNAMIC Co.
BAKOU E. – N. PRODROMIDIS & Co. G.P.
36, Methonis str.
GR-185 45 PIRAEUS

has established and applies a quality system for
**DESIGNING, MANUFACTURING, TRADING & SERVICE
OF PUMPS, BAG IN BOX FILLERS & FLOWMETERS.**

An audit was performed, Report No. 2010082003090
Proof has been furnished that the requirements according to

EN ISO 9001:2000

are fulfilled. The certificate is valid until **19.08.2011**
Certificate Registration No. **20 100 8200 3090**



Athens, 20-08-2008

TÜV CERT Certification body
of TÜV Austria
53-59, Delgoerg Str. 104-104 37 Athens



ATEX COMPLIANCE

ALPHADYNAMIC has filed with the TUV NORD certification body the documentation certifying ATEX compliance pursuant to Directive 94/9/EC for its ranges of ADB BOXER pneumatic diaphragm pumps.

They are manufactured in a STANDARD, class 3/3 GD c IIB T135°C version or - upon request - with special construction materials in a CONDUCT, class 2/2 GD c IIB T 135°C version. The equipment user is responsible for classifying it's area of use. On the other hand, the manufacturer shall identify and affix the certification class of the manufactured equipment.

pharmaceutical



ceramic industry



chemical industry

mechanical industry



textile industry



biodiesel production
and storage



painting industry

paper industry



... naval and petrochemical industry, graphic, food, ecological, galvanic, tanning and more...

Benefits at a glance:

- Available in PP, PVDF/ECTFE ,ALUMINIUM , AISI316 STAINLESS STEEL
- Use in potentially-explosive atmospheres (ATEX zone 1-2 certification)
- Gentle conveyance of liquid
- Ideal for abrasive, viscous, and shear sensitive media
- Can handle media with entrained solids
- Tolerant of dry running
- No dynamic or pressure loaded seals
- Mobile, easy to transport units
- Infinite regulation of pumping capacity and of pressure
- Dry self-priming
- Can run against closed valves
- Modern compressed air control unit, low main maintenance cost
- Submersible designs
- Actuated using non-lubricated air
- High tolerance to air with intense presence of humidity
- Coaxial shaft motor in tolerant synthetic material
- Pumping capability for both low viscous and high viscous up to 50.000 cPs
- Twin manifold option (two suction and two delivery)
- Bench or ceiling installation
- Three suction and delivery positions
- User-friendly maintenance and parts replacement
- Excellent performance and value for money

Description of the pump

A = Pumping chamber

B = Ball valves

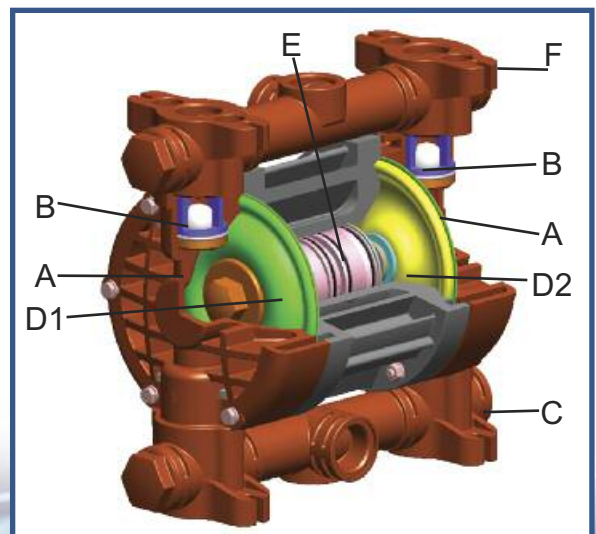
C = Suction manifold

D1 = Product-side diaphragm

D2 = Air-side diaphragm

E = Air control unit

F = Delivery manifold



Operation

ADB BOXER air operated diaphragm pumps are oscillating positive displacement pumps with two back to back pump chambers. These are each divided by a diaphragm into an air and a fluid area. Both diaphragms are connected by a common shaft with the effect that during one pumping stroke medium is pressed out of the one pump chamber, while medium is being drawn into the other pump chamber.

The two adjacent drawings describe the sequence of a complete cycle consisting of a suction and pressure strokes of an air operated diaphragm pump.

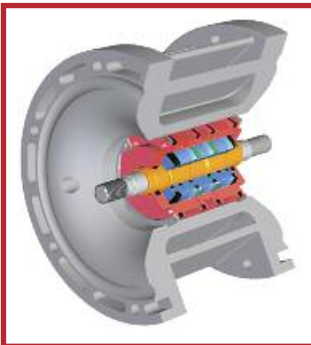
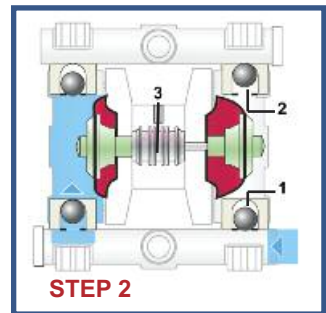
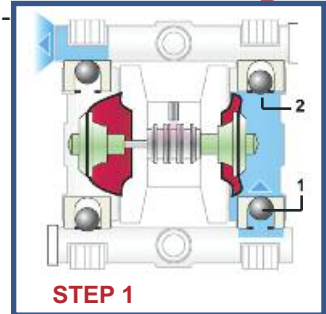
In the drawings the medium is colored in blue while the air in red.

STEP 1

By filling the left hand air chamber with air (red) the left hand diaphragm is pushed outwards. This pulls the inner cap on the right hand diaphragm to the initial position carrying the diaphragm along. The valve ball (1) is drawn out of its position, the medium (blue) flows into the right hand pump chamber. At the same time valve ball (2) is seated in a closed position by the vacuum. The right hand pump chamber fills up with medium (blue).

STEP 2

The control valve (3) switches over the air flow into the right hand air chamber (red). The left hand air chamber is exhausted. The suction process (see step 1) now takes place in the left hand pump chamber. Medium (blue) is pressed out of the right hand pump chamber, valve ball (1) is pressed down and closes while valve ball (2) opens allowing the medium to flow to the outlet.



Air control unit

For trouble free operation of an air operated diaphragm pump the control valve is of major significance. The control valve is responsible for the distribution of air in the individual chambers and thereby determines the operation of the pump

Around the world **ADB BOXER** air operated diaphragm pumps are subjected to a vast variety of temperatures, pressure fluctuations, full load and intermittent operating conditions. This places high demands on the air control unit.

In order to meet the requirements of industry, intensive research and development work has been performed. Functional safety and low maintenance requirements were major objectives.

ADB BOXER air operated diaphragm pumps generally are equipped with internal coaxial air control unit.

Benefits at glance:

- Freezing virtually eliminated
- Oil free operation
- Insensitive against contaminated compressed air and humidity
- No dead centre
- Low maintenance cost
- Suitable for outside applications
- Economical
- Durable



Diaphragm materials

Diaphragms are the components subjected to greatest stress during suction and pumping when they must also withstand the liquid's chemical attack and temperature. Correct assessment and selection is therefore crucial for diaphragm service life, investment decisions and maintenance costs.

A modern process of design, destructive testing and careful analysis of results has enabled **ALPHADYNAMIC** to develop LONG LIFE new generation diaphragms. The shape and profile of these products provides a greater working surface and improved load redistribution, thus reducing material stress and yield to a minimum.

LONG LIFE



NBR

Versatile multi-purpose diaphragm for oil containing slurries
Applications: good chemical resistance against mineral oils, grease and fuels.
Application temperature range: -15°C - +90°C



EPDM

Versatile multi-purpose diaphragm for highly aggressive chemicals, good acid, alkaline and abrasion resistance as well as good flexibility even at low temperatures.
Additional application: chemicals, hot water, solvents and alcohols.
Application Temperature range: -25°C - +90°C



HYTREL®

Good abrasion resistance. Ideally suited for food processing where USDA and 3A standards are not required.
The HYTREL® meets the FDA standards for food processing and food service industries.
Application temperature range: -40°C - +130°C



SANTOPRENE®

Versatile multi purpose diaphragm with very good wear characteristics.
Applications: Water, acid, bases, oily liquids and greases.
Application temperature range: -40°C - +120°C



PTFE

Versatile multi-purpose diaphragm subjected to a double heat treatment in order to increase elasticity and service life.
Applications: Chemicals and corrosive agents showing excellent resistance to high temperatures.
Application temperature range: +4°C - +260°C

Housing Materials

Polypropylene

Is characterized by its high resistance against acids and many water soluble, inorganic acids and alkaline. Also available as electrically conductive housing material.

Application temperature range: 0°C - +60°C

PVDF / ECTFE

Excellent chemical and temperature resistance with aggressive media and chemicals, also available as electrically conductive housing material.

Application temperature range: -20°C - +95°C

Aluminium

Versatile housing material with good allround properties

Application temperature range: -10°C - +95°C

Stainless steel 316L

High level of chemical resistance, preferably used in chemical industry.

Applications temperature range: -25°C - +95°C



Pump coding

ADB100 - P - ST - S - S

pump size	body material	diaphragms	valve seat	valve ball
ADB005 1/4"	P=PP	HT=PTFE+Hytrek (Back up)	P=PP	P=PP
ADB017 3/8"	X=ECTFE	ST=PTFE+Santoprene (Back up)	S=AISI 316L	S=AISI 316L
ADB030 1/2"	V=PVDF	N=NBR	V=PVDF	Y=PYREX
ADB050 1/2"	A=ALUMINIUM	E=EPDM	X=ECTFE	
ADB090 1"	S=AISI 316L	H=HYTREL	F=PPS-V	
ADB100 1"		S=SANTOPRENE		
ADB150 1"				
ADB220 1 1/4"				
ADB340 1 1/2"				
ADB650 2"				
ADB900 3"				

Installation

Diaphragm pumps must be located vertically to an horizontal installation surface , so that on the same time the exchanger shaft to be positioned horizontally.

Installations:

Recommended viscosity per application:

drum transfer (with max viscosity 10000 cps)

serf-priming (with max viscosity 10000 cps)

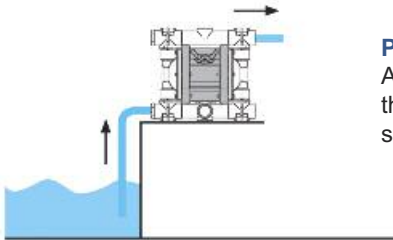
under head (with max viscosity 50000 cps)

immersed (wrth max viscosity 50000 cps)

twin suction and delivery manifold (with max viscosity 50000 cps)

twin delivery manifold (with max. viscosity 50000 cps)

Self-priming

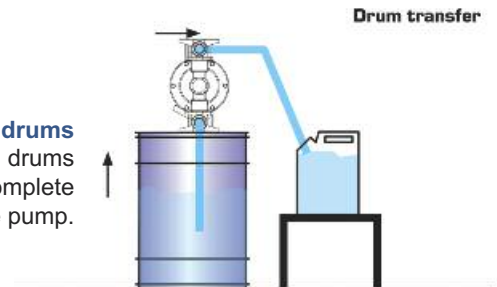


Pump, self –priming

ADB BOXER air operated diaphragm pumps are dry self priming. Depending on the pump specification a suction lift of up to 9 mWC can be achieved with a filled suction pipe

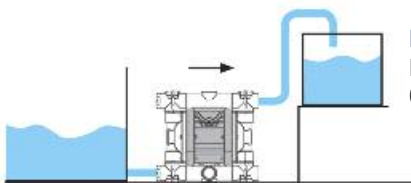
Pumps for drums

ADB BOXER air operated diaphragm pumps can be directly mounted on drums or containers . For ease of use the pump is mounted on the container complete with adaptor. The suction pipe is supplied with the pump.



Drum transfer

Positive suction head

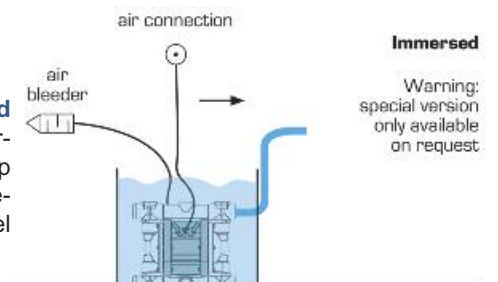


Pump with positive suction

Depending on the pump type the suction side inlet pressure must be limited to max 0.7 bar . In this case a valve is required to isolate the suction pipe

Pump, Submerged

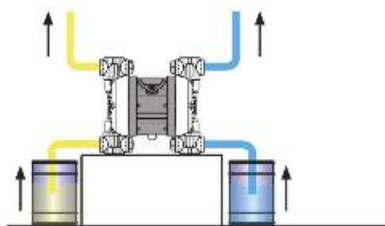
ADB BOXER air operated diaphragm pumps can be totally submerged in the pumped medium. The chemical compatibility of the pump material must be checked beforehand. The exhaust outlet must remain above the fluid level



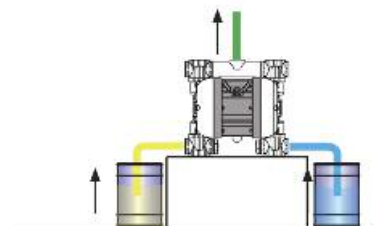
Immersed

Warning:
special version
only available
on request

Twin suction and delivery manifold



Twin suction manifold

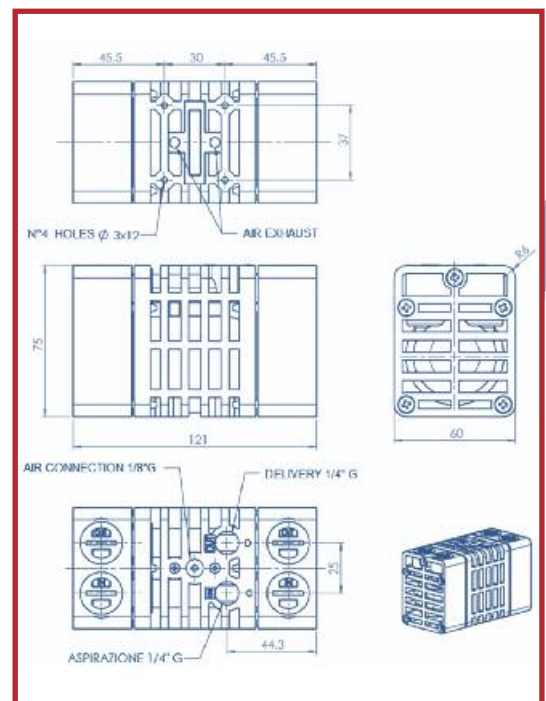
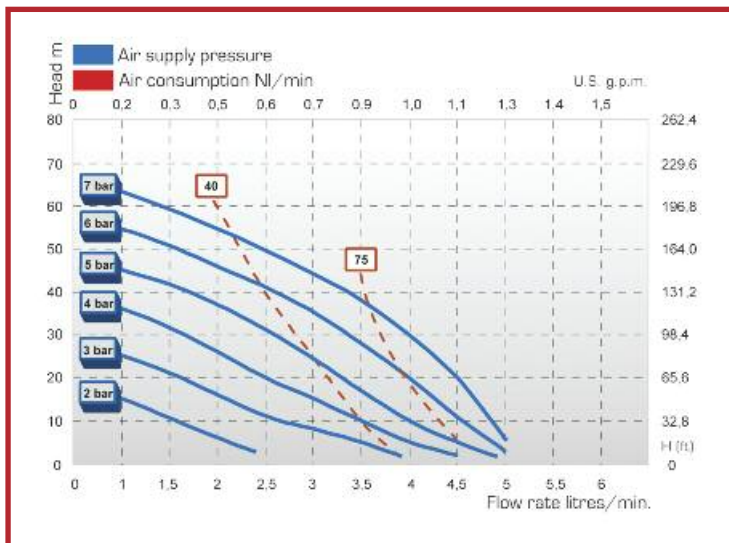




II 3 / 3GD IIB T135 C (for zone 2)
 II2 / 2GD C IIB T 135 (For zone 1)
Construction materials : PP

Intake/delivery connections	G 1/4"
Air connection	G 1/8"
Max.self-priming capacity*	3m
Max. flow rate*	5 l/min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	0mm
Net weight PP 0,5 kg (zone 2)	60°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADB030 1/2"



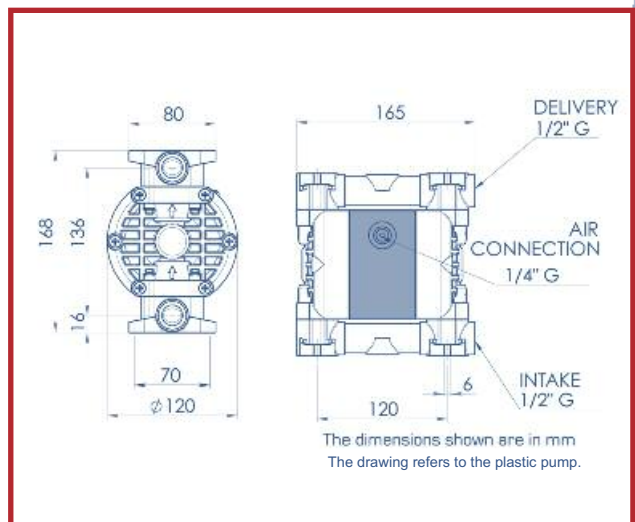
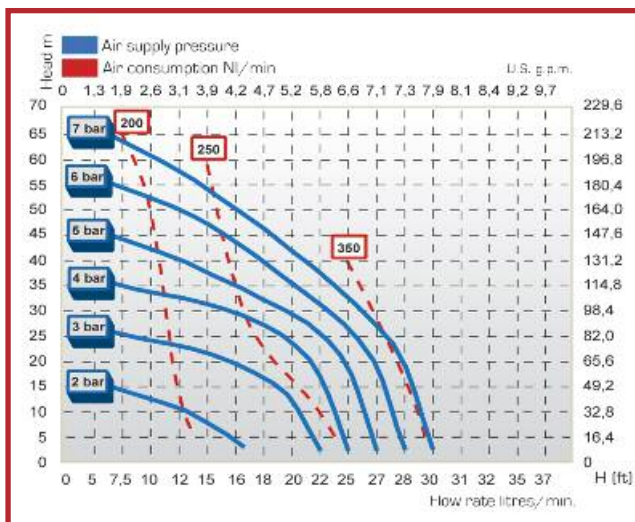
II 3 / 3GD IIB T135 C (for zone 2)

II2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF – ALU – AISI316

Intake/delivery connections	G 1/2"
Air connection	G 1/4"
Max.self-priming capacity*	6 m
Max. flow rate*	30 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	2mm
Net weight	PP 1,6 Kg (zone 2)
	PVDF 1,9 Kg (zone 2)
	ALU 2,0 Kg (zone 2)
	AISI3163,8 Kg (zone 2)
	60°C max temp
	95°C max temp
	95°C max temp
	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material





II 3 / 3GD IIB T135 C (for zone 2)

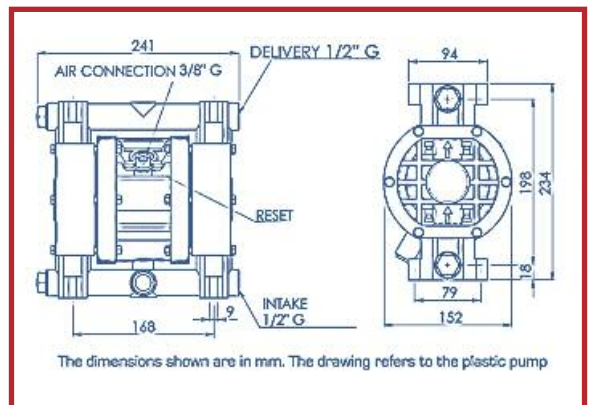
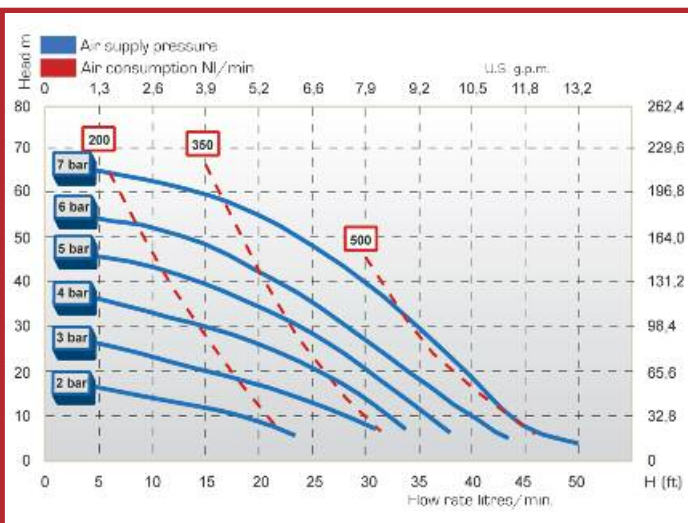
II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF – ALU – AISI316

Intake/delivery connections	G 1/2"
Air connection	G 3/8"
Max.self-priming capacity*	5 m
Max. flow rate*	50 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	3mm
Net weight	PP 3,6 Kg (zone 2) 60°C max temp
	PVDF 4,2 Kg (zone 2) 95°C max temp
	ALU 4,0 Kg (zone 2) 95°C max temp
	AISI316 6.5 Kg (zone 2) 95°C max temp



*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADB090 1"



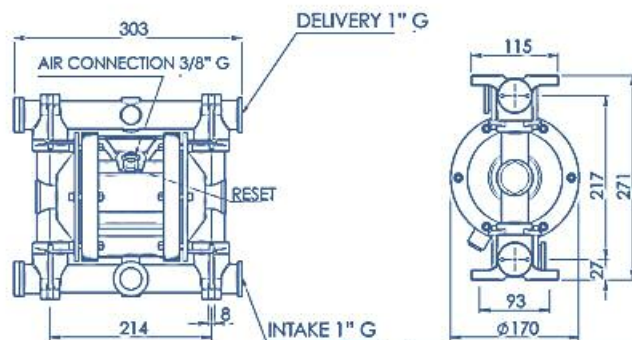
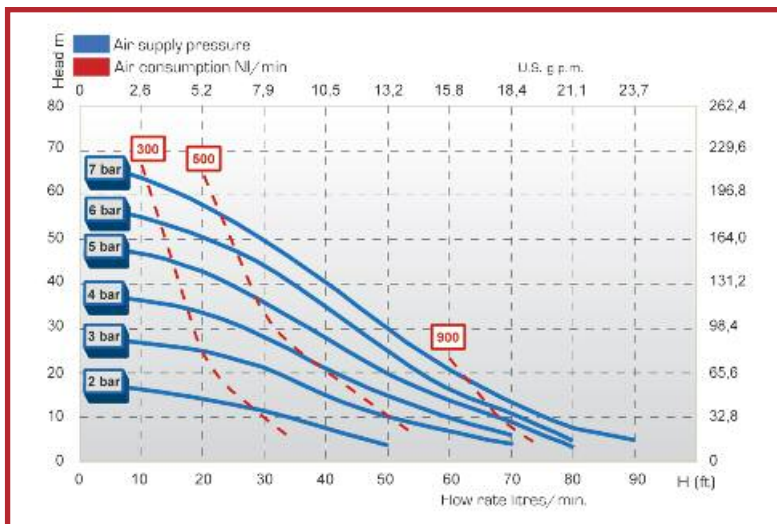
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : AISI 316

Intake/delivery connections	G 1"
Air connection	G 3/8"
Max.self-priming capacity*	5 m
Max. flow rate*	90 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	4mm
Net weight AISI 316 10,5 Kg (zone 2)	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



The dimensions shown are in mm



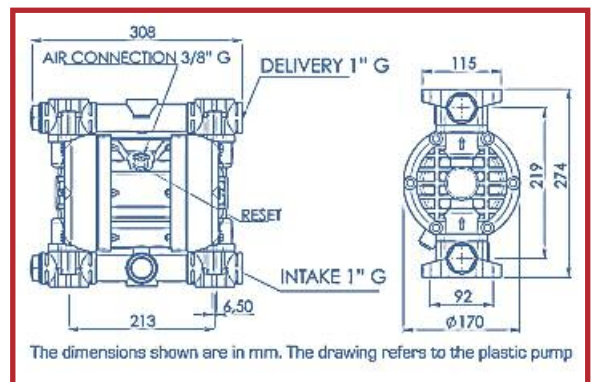
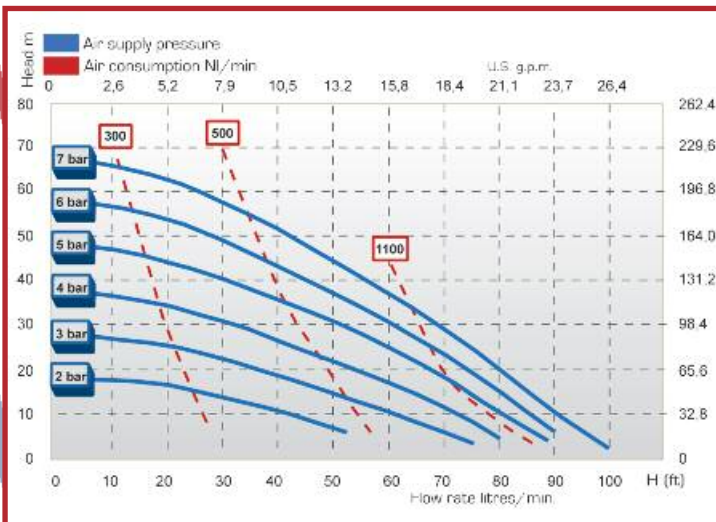
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF – ALU

Intake/delivery connections			G 1"
Air connection			G 3/8"
Max.self-priming capacity*			6 m
Max. flow rate*			100 l/min
Max head *			70m
Max. air supply pressure			7 bar
Max. diameter of passing solids (spherical particles)			4mm
Net weight	PP	5,0 Kg (zone 2)	60°C max temp
	PVDF	6,5 Kg (zone 2)	95°C max temp
	ALU	6,5 Kg (zone 2)	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADB150 1"



II 3 / 3GD IIB T135 C (for zone 2)

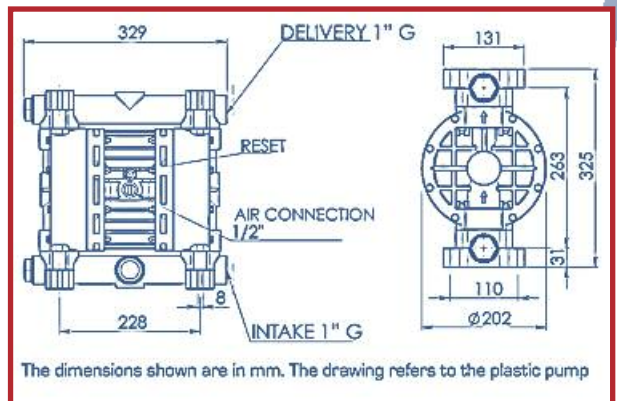
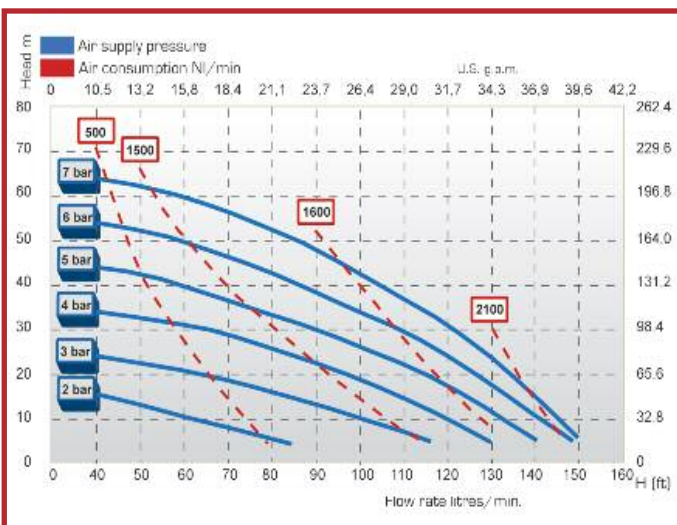
II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF – ALU – AISI316



Intake/delivery connections	G 1"
Air connection	G 1/2"
Max.self-priming capacity*	5 m
Max. flow rate*	150 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	4mm
Net weight	PP 7,5 Kg (zone 2)
	PVDF 8,5 Kg (zone 2)
	ALU 8,2 Kg (zone 2)
	AISI316 11,0 Kg (zone 2)
	60°C max temp
	95°C max temp
	95°C max temp
	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material





II 3 / 3GD IIB T135 C (for zone 2)

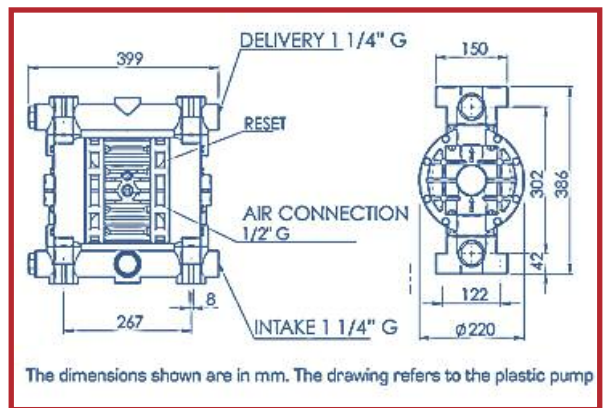
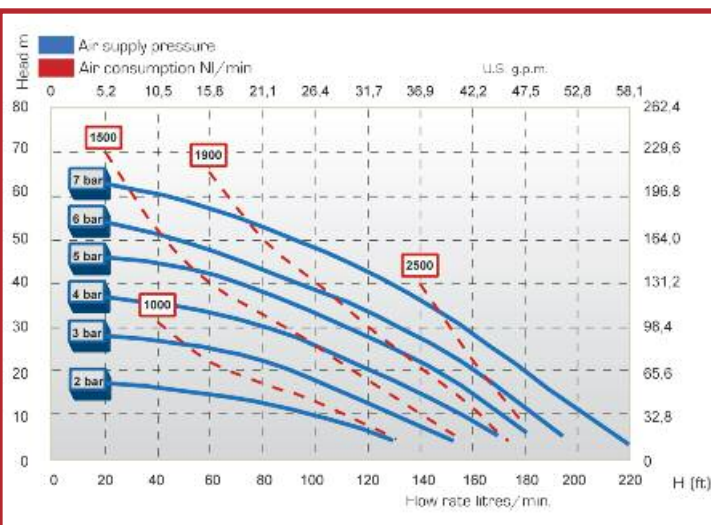
II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF – ALU – AISI316



Intake/delivery connections	G 1 1/4"
Air connection	G 1/2"
Max.self-priming capacity*	5 m
Max. flow rate*	220 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	5mm
Net weight	PP 12,0 Kg (zone 2)
	PVDF 14,0 Kg (zone 2)
	ALU 16,0 Kg (zone 2)
	AISI 316 21,0 Kg (zone 2)
	60°C max temp
	95°C max temp
	95°C max temp
	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADB340 1 1/2"



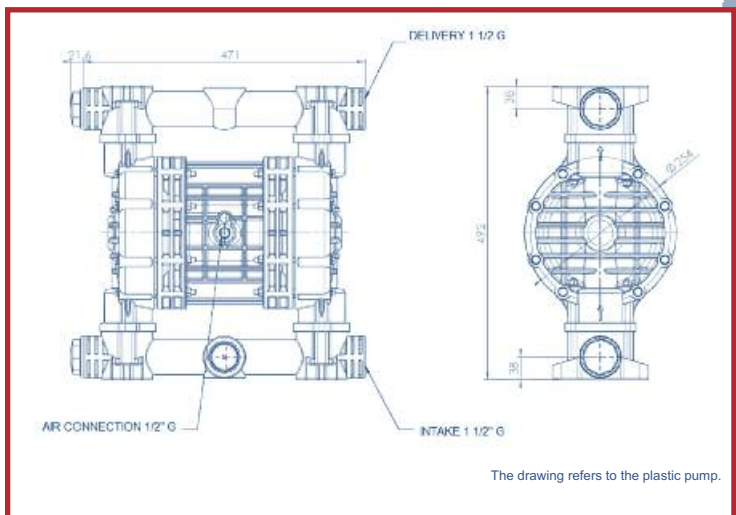
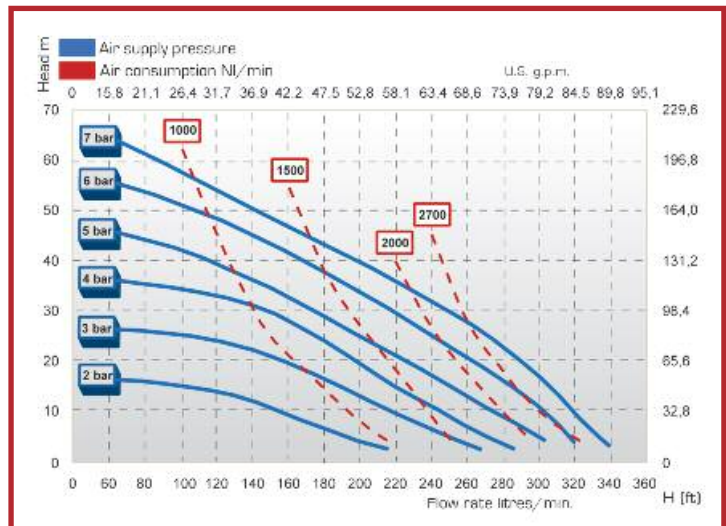
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF - ALU - AISI316

Intake/delivery connections	G 1 1/2"	
Air connection	G 1/2"	
Max.self-priming capacity*	5 m	
Max. flow rate*	340 l /min	
Max head *	70m	
Max. air supply pressure	7 bar	
Max. diameter of passing solids (spherical particles)	6mm	
Net weight ALU	21,0 Kg (zone 2)	95°C max temp
AIS316	32,0 Kg (zone 2)	95°C max temp
PP	16,0 Kg (zone 2)	60°C max temp
PVDF	20,0 Kg (zone 2)	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



The drawing refers to the plastic pump.



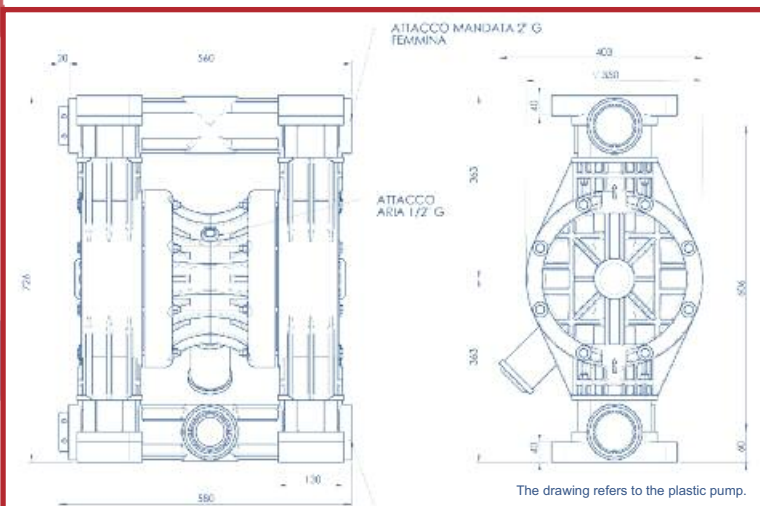
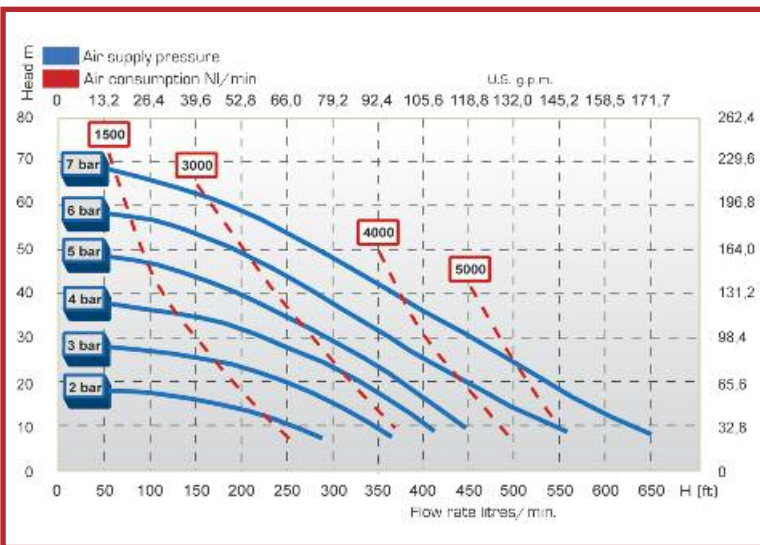
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP- PVDF-ALU-AISI316

Intake/delivery connections	G 2"
Air connection	G 1/2"
Max.self-priming capacity*	4 m
Max. flow rate*	650 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	8mm
Net weight	PP 54,0 Kg (zone 2) 60°C max temp
	PVDF 65,0 Kg (zone 2) 95°C max temp
	AISI316 49,0 Kg (zone 2) 95°C max temp
	ALU 42,0 Kg (zone 2) 95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADB900 3"



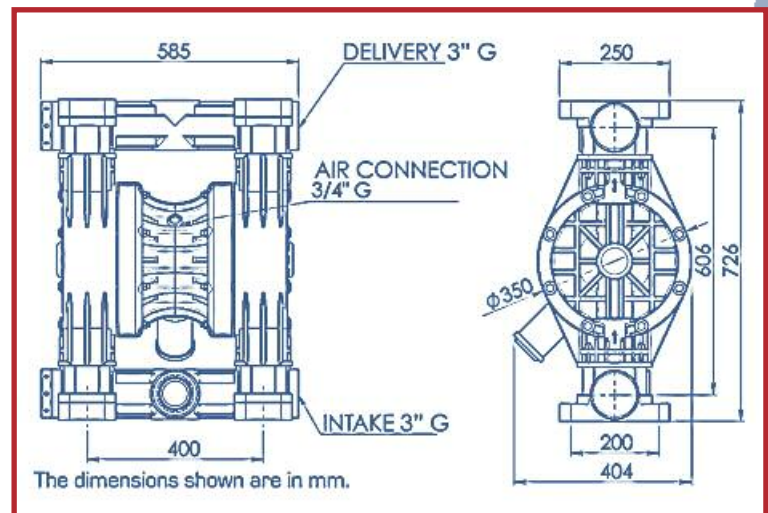
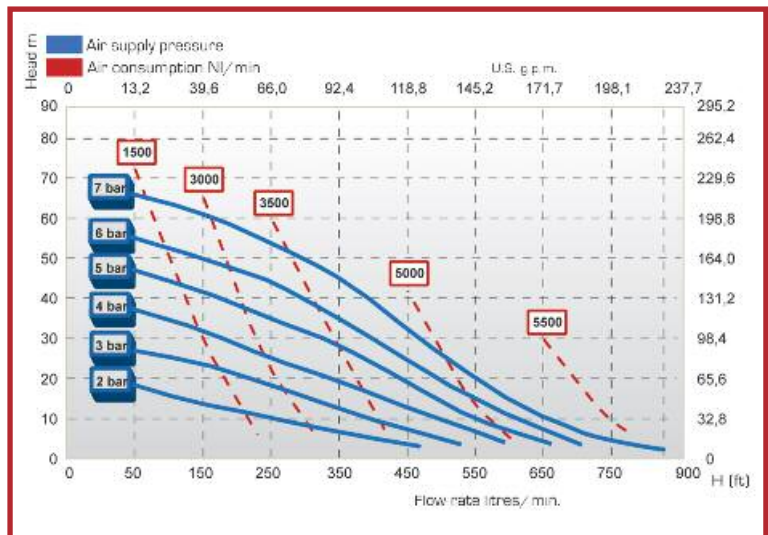
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials : PP – PVDF

Intake/delivery connections	G 3"
Air connection	G 3/4"
Max.self-priming capacity*	5 m
Max. flow rate*	900 l /min
Max head *	70m
Max. air supply pressure	7 bar
Max. diameter of passing solids (spherical particles)	10mm
Net weight PP	56,0 Kg (zone 2)
PVDF	67,0 Kg (zone 2)
	60°C max temp
	95°C max temp

*the curves and performance values refer to pumps with submerged suction and a free delivery outlet with water 20°C and vary according to the construction material



ADPD - PULSATION DAMPENERS

ADPD automatic diaphragm pulsation dampeners feature solid build and high performance. They are fitted to the discharge line of diaphragm pumps in order to smooth pulsating flows and can be used with liquids having apparent viscosity of up to 50000 cps, even if containing suspended solids of considerable size.

ADPD dampeners automatically adapt to system conditions without the need for manual adjustment or calibration. The ability to minimise pulsations, vibrations and water hammer means that this component provides excellent protection and smooth system flow. The huge choice of construction materials allows selection of optimum chemical compatibility with the fluid and/or environment without neglecting the temperature range.

Dampeners are also available for use in potentially explosive atmospheres [ATEX certification].

DESCRIPTION OF THE DAMPENER

Diaphragm pulsation dampeners consist of a pneumatic actuator connected to the new generation diaphragm [Long Life profile]

The sturdy outer body forms the actuator's compressed-air chamber for suppressing pressure surges on one side of the diaphragm and the chamber through which the fluid flows on the other.

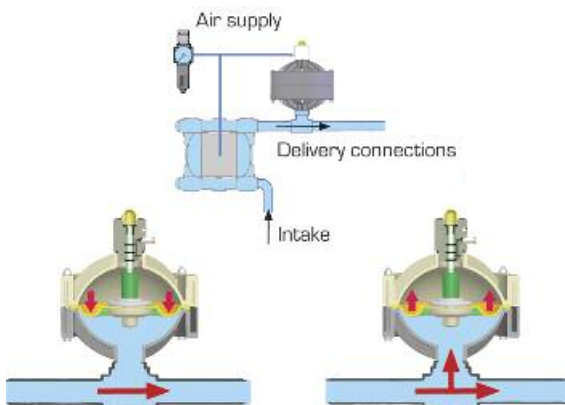
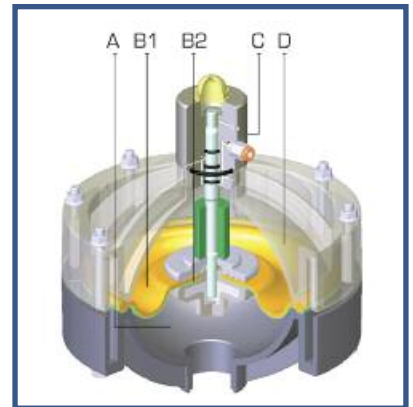
A = expansion opening

B1 = air-side diaphragm

B2 = fluid-side diaphragm

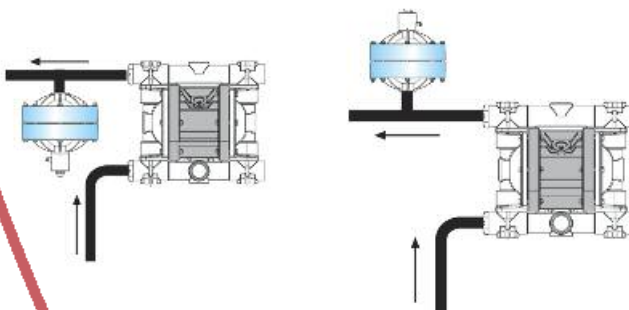
C = automatic pneumatic valve

D = compressed-air chamber



Description of the pulsation dampener

The compressed air entering the back-pressure chamber behind the diaphragm creates a pneumatic cushion that adjusts automatically to compensate the shock produced by the pressure pulse of the fluid generated by the pump.



Installation

Diaphragm dampeners should be installed on the discharge side of pneumatic pumps or where pressure surges in the fluid occur.

ADPD100



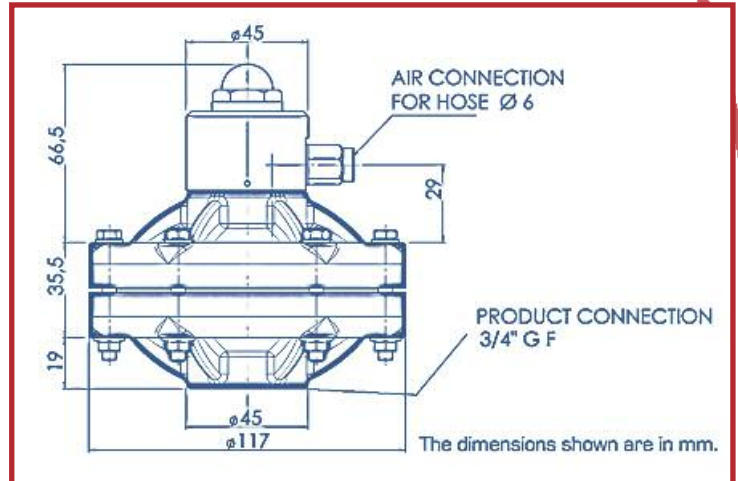
Product connection	G 3/4"	
Air connection	Φ 6mm	
Max air supply pressure	7 bar	
For pumps:		
ADB005, ADB017, ADB030		
Net weight : PP	0,5 Kg (zone 2)	60°C max temp
PVDF	0,5 Kg (zone 2)	95°C max temp
PPS-V	0,6 Kg (zone 2)	95°C max temp

The values shown depend on the construction materials

II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials:PP-PVDF-PPS-V



ADPD200

Product connection	G 1"	
Air connection	Φ 6mm	
Max air supply pressure	7 bar	
For pumps:		
ADB050, ADB090, ADB100		
Net weight : PP	1,5 Kg (zone 2)	60°C max temp
PVDF	1,7 Kg (zone 2)	95°C max temp
PPS-V	1,7 Kg (zone 2)	95°C max temp

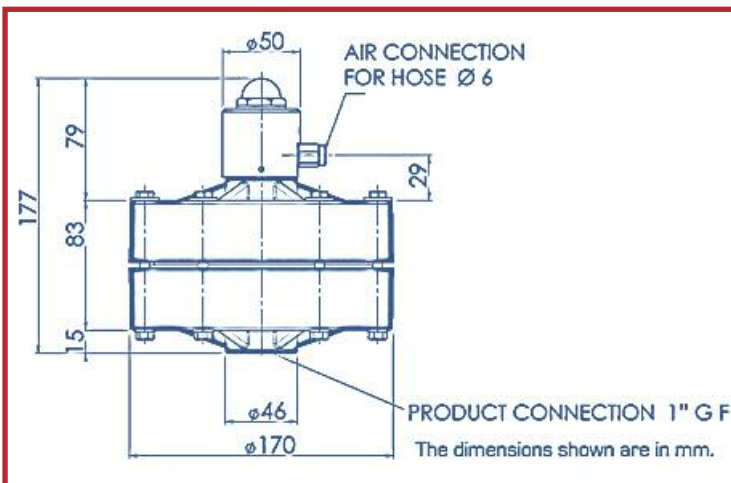
The values shown depend on the construction materials

II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials:

PP – PVDF – PPS-V



ADPD300



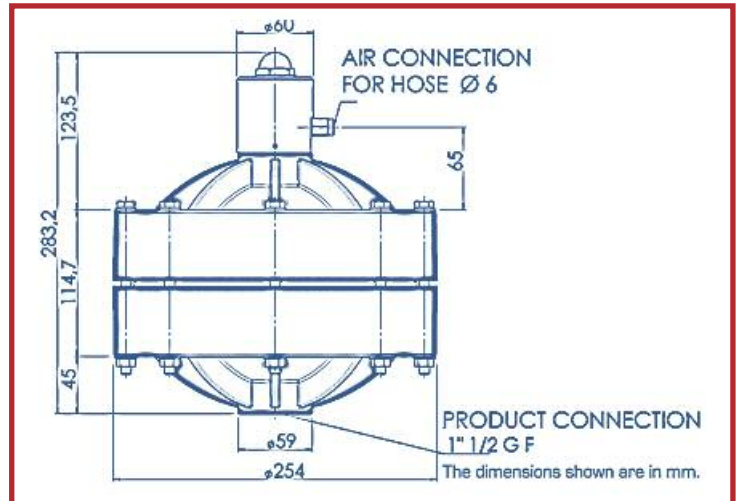
Product connection	G 1 1/2"	
Air connection	Φ 6mm	
Max air supply pressure	7 bar	
For pumps:		
ADB150, ADB220, ADB340		
Net weight : PP	3,8 Kg (zone 2)	60C max temp
PVDF	4,5 Kg (zone 2)	95C max temp
PPS-V	4,5 Kg (zone 2)	95C max temp

The values shown depend on the construction materials

II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials: PP – PVDF – PPS-V



ADPD400

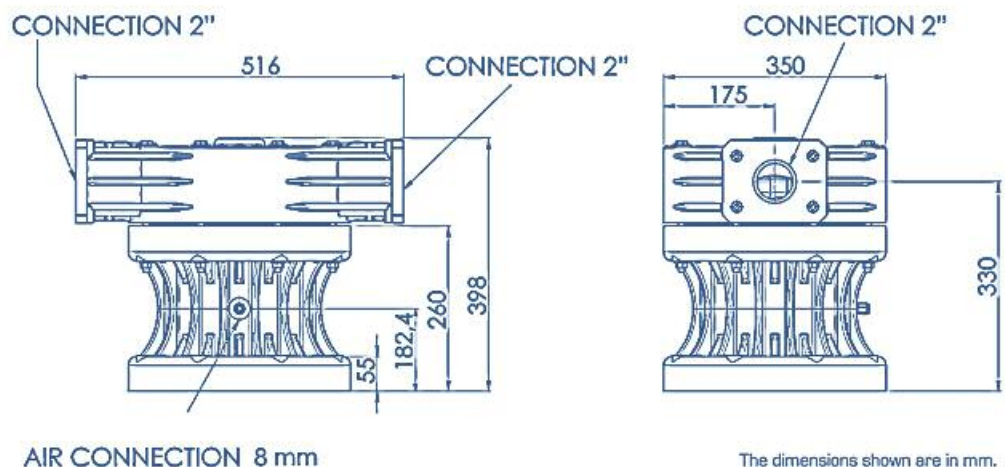
Product connection	G 2"	
Air connection	Φ 8mm	
Max air supply pressure	7 bar	
For pumps:		
ADB650		
Net weight : PP	23,0 Kg (zone 2)	60C max temp
PVDF	28,5 Kg (zone 2)	95C max temp
AISI 316	26,0 Kg (zone 2)	95C max temp

The values shown depend on the construction materials

II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials:
PP – PVDF – AISI316



The dimensions shown are in mm.



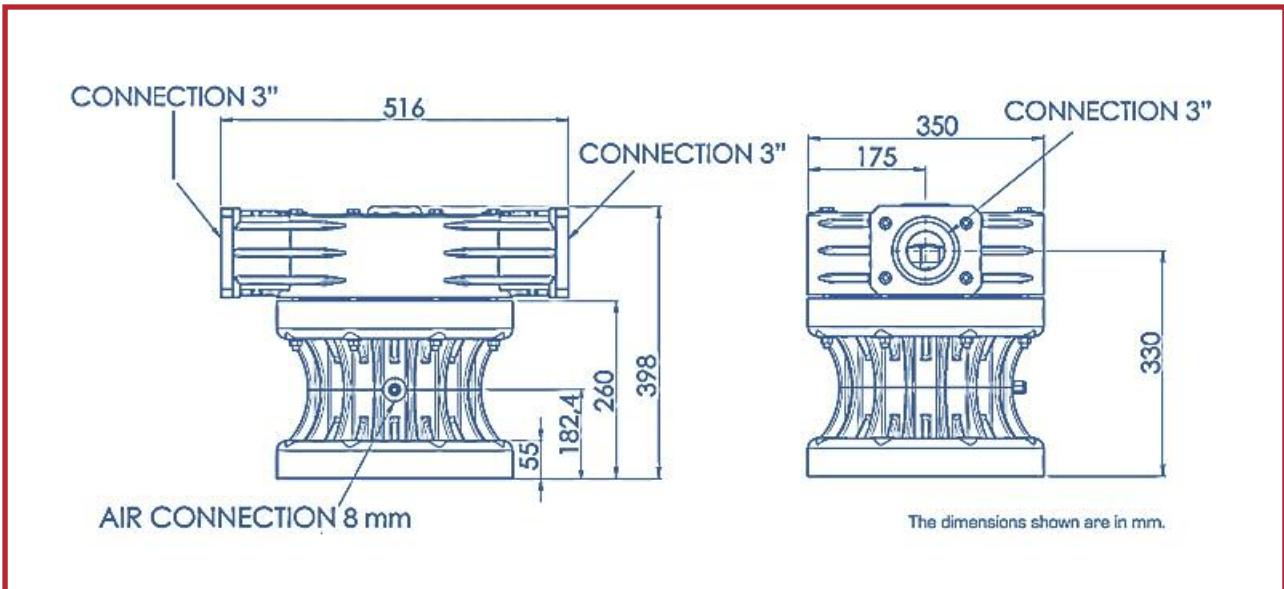
II 3 / 3GD IIB T135 C (for zone 2)

II 2 / 2GD C IIB T 135 (For zone 1)

Construction materials: PP – PVDF

Product connection	G 3"
Air connection	Φ 8mm
Max air supply pressure	7 bar
For pumps:	
ADB900	
Net weight : PP 23,5 Kg (zone 2)	60°C max temp
PVDF 28,5 Kg (zone 2)	95°C max temp

The values shown depend on the construction materials



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