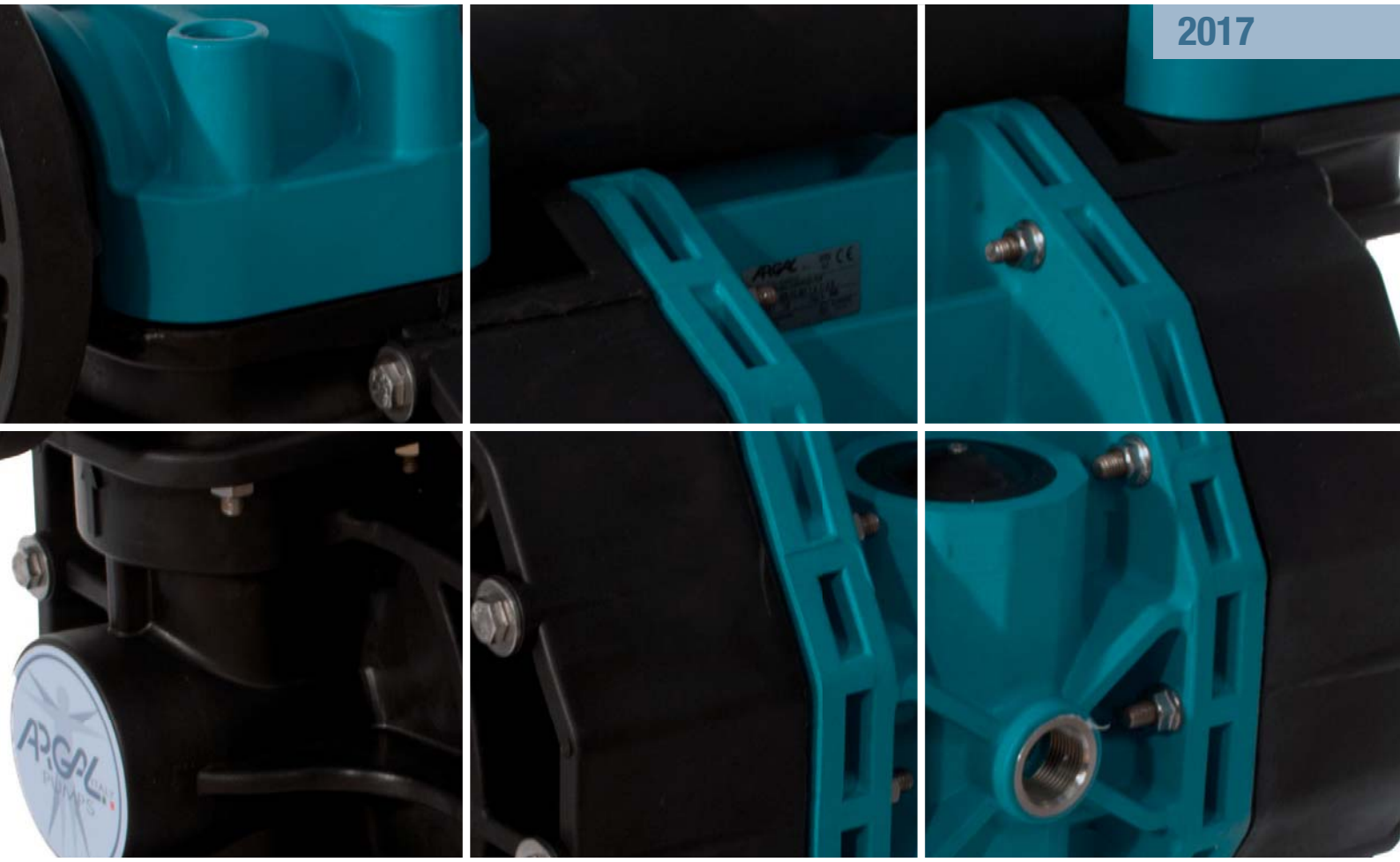
ARGAL AIR

EU product
Made in Italy

2017



AODD PUMPS

PNEUMATIC METERING PUMPS

PULSATION DAMPENERS

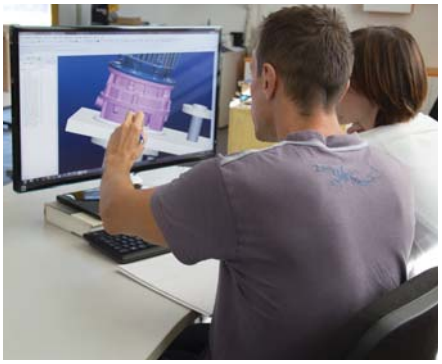
ARGAL ITALY PUMPS

SINCE 1975

ENG

...there's something new in the air...

INDEX



QUALITY EXPERIENCE INNOVATION SINCE 1975

ARGAL® boasts forty years of activity in the **invention and production of pumps** made of thermoplastic material, **compounds and corrosion-resistant metal alloys**. During the past decade significant efforts were directed to research and development on the entire production and such an effort resulted in pump ranges completely new or renovated both regarding mechanical and hydraulic systems.

The mission of **ARGAL®** is continuous and constant technological improvement, along the path of innovation instead of emulation.
Our aim is to offer the best technical performance and engineering obtaining the leadership in performance while providing appropriate responses to the needs of market dynamics by realizing a "State-of-the-art quality.

Today the company has a wide range of pumps in various constructions for industrial applications requiring temperatures ranging from -40° C to +130°C, with load capacities up to 1700 m^3/h-head over the 100 m. **ARGAL®** also offers the most complete italian range of AODD pumps (from ¼" to 4") with metallic or plastic solutions to satisfy the most various market demand.

All are **certified ISO 9001:2008 according to Vision ISO 9001:2008 rule**. We strongly want to offer a wide production program with high quality pumps ranges and really competitive prices.


IQNet
THE INTERNATIONAL CERTIFICATION NETWORK
CERTIFICATE
Argal S.r.l.
Via Labirinto, 159
25125 Brescia (BS)
Italia
Tutto il sito
Progettazione e produzione di pompe chimiche
Management System
ISO 9001:2008


Certificato
Argal S.r.l.
Via Labirinto, 159
25125 Brescia (BS)
Italia
Tutto il sito
Progettazione e produzione di pompe chimiche
ISO 9001:2008
Sistema di gestione per la qualità

Why an AODD pump?

Safe
ARGALAIR pump is operated by compressed air and are intrinsically safe.

Able to run dry

Self-priming
The pump design allows high suction lift even at dry-start and with heavier fluids.

Shear Sensitive
The gentle pneumatic movement makes the ARGALAIR an excellent choice for shear sensitive fluids.

Portable and simple installation
ARGALAIR pump can be easily transported to the application site. Simply connect your air supply line and liquid lines and the pump is ready to perform. There is no complex control for installing and operating.

Submersible
If external material are compatible, then the pump can run submerged in the liquid by simply running the exhaust line above the liquid level.

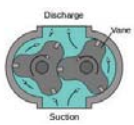
Variable flow rate and discharge pressure
ARGALAIR offers the ability too vary flow and discharge pressure up to 120 psi with a simple adjustment of the air supply.

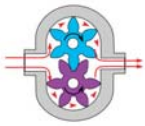
Handles a wide variety of fluids with high solids content
No close fitting or rotating parts so liquids with high solids content can be easily pumped, actually any liquids with max of 90% solids.

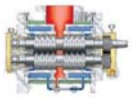
Dead-head
Because the discharge pressure can never exceed air inlet pressure, the discharge line can be closed with no damage or wear. The pump will simply slow down and stop.

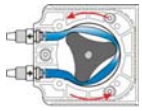
ARGAL AIR

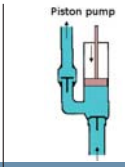
AODD ARGAL VS OTHERS







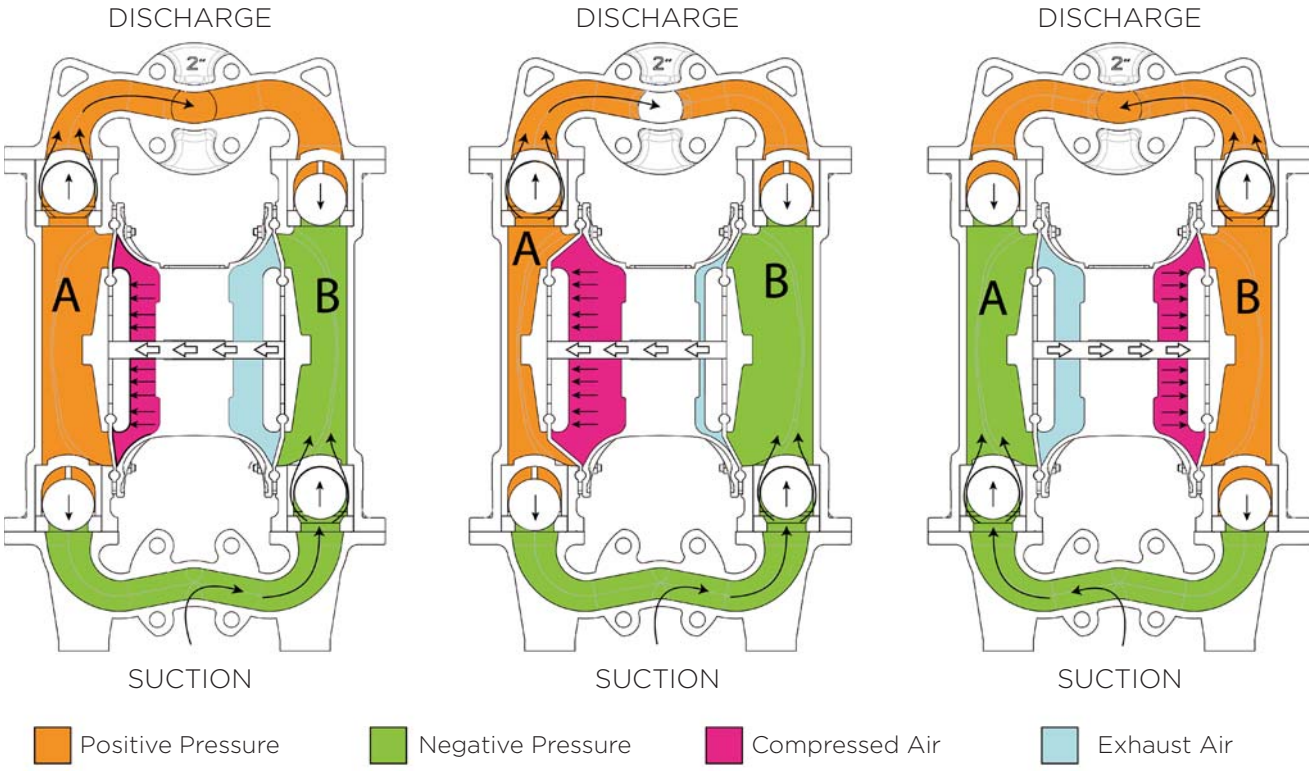




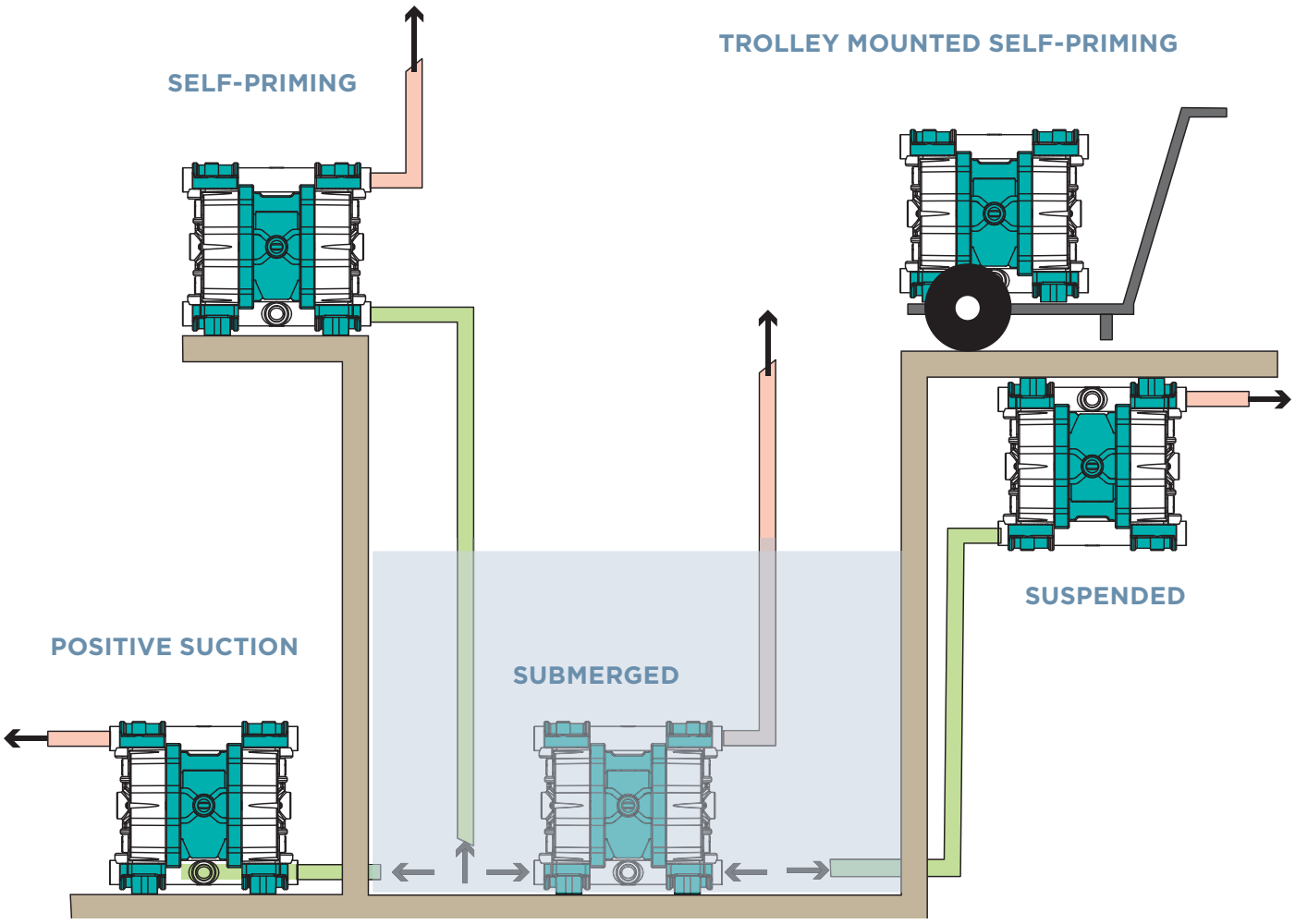
	AODD	Centrifugal	Lobe	Gear	Progressive (Screw)	Peristaltic (Hose)	Piston/ Plunger
Variable Flow & Head Control (inherently adjustable)	●	●	●	●	◒	◒	●
Deadheads Safely (at zero energy consumption)	●	●	◒	◒	◒	◒	◒
Dry-Running	●	○	○	○	○	○	○
Dry-Priming (lift installations)	●	○	○	○	○	●	◒
No Mechanical Installation Alignment Required	●	○	○	○	○	○	○
No Electrical Installation Required	●	○	○	○	○	○	○
Portability	●	◒	◒	◒	◒	◒	◒
Submersible	●	◒	○	○	○	○	◒
Sealless (no packing or mechanical seals)	●	◒	◒	◒	◒	◒	◒
Cavitation Tolerance (low NPSHr)	●	○	◒	◒	●	◒	◒
Low Shear & Degradation	●	○	●	◒	◒	◒	◒

● = Suitable ◒ = Limitations ○ = Not Recommended

... operating principles



The pneumatic distribution system sends compressed air behind one of the two diaphragms **(A)**, which pushes the fluid towards the delivery circuit. Simultaneously, the opposite diaphragm **(B)** is in the intake phase as it is dragged by the shaft that connects it to diaphragm **(A)**, under pressure; air presents behind diaphragm **(B)** is discharged into the environment through the flow rate regulator on the pump, while a pressure drop is created in the fluid chamber which 'sucks' the fluid from the suction circuit. When the diaphragm **(A)**, under pressure, reaches the stroke limit, the distributor switches the two inputs to the chamber on the diaphragms air side, putting diaphragm **(B)** under pressure and diaphragm **(A)**, in discharge. When the pump reaches its original starting point, each diaphragm has carried out one air discharge stroke and one fluid delivery stroke. This sequence of movements makes up a complete pumping cycle.



... easy to apply

Thanks to its multiple and simple installations, the pumps are convenient for every operation, from transfer to supply, circulation, injection, evacuation or liquid metering.

Why choosing an ARGALAIR AODD pump?

... high-quality materials

Our AODD pumps are obtained using **the best thermoplastic polymers of Italy.**
Moulded with injected polymers reinforced with composite fiber, AOOD pumps guarantee an optimal mechanical seal as well as a notable corrosive resistance.

Solutions are in fiberglass polypropylene **(GRF/PP)** and in polyvinylidene fluoride reinforced with carbon fiber **(CFF+PVDF)** and are also available in ATEX ZONE 1 - application version, for strict and dangerous areas.

The metallic variations can be distinguished for their reliability and low-costs versions in **aluminum and AISI 316** of the ASTRA range.
Whereas the **AISI 316L** and exotic alloys **(bronze, duplex)** versions of the MISTRAL range are focused on robustness and chemical resistance.

... a complete range

A "custom-made production series" cover the entire market requirements but not only: ASTRA and MISTRAL ranges offer various alternatives for the most requested dimensions.

For the compact sizes **from ¼" to ½"**, Argal submits six models corresponding to the different materials.
Four other models are available for the medium sizes until 1". Two versions are realised for the **1 ½" as well as for the 2".**
Moreover, we are part of the ring of few world designers to offer large sizes **from 3" to 4".**

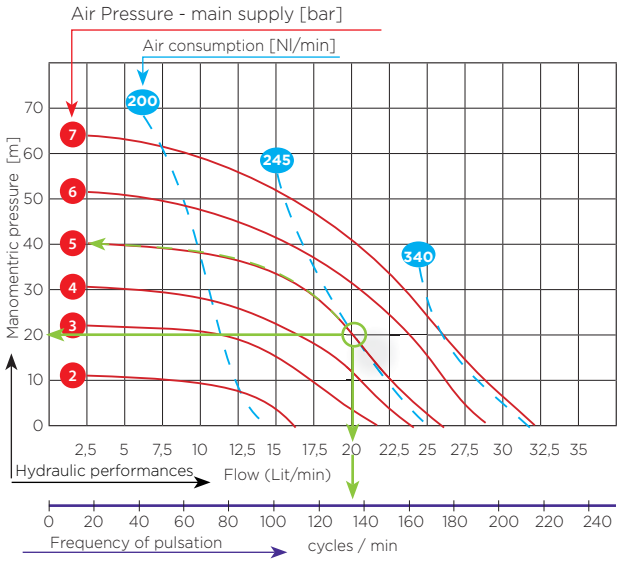
Last but not least, Argal designed and produced a range of economically and energetically advantageous pumps capable of sensible air consumption savings with same dimensions but different performances at an affordable price.

... Our experience into the corrosive and abrasive world

With our forty-year experience in corrosive and abrasive applications, we are specialists in design and problem-solving. Our goal is to offer a wide production program with high-quality and competitive prices solutions.

WETTED PARTS 1	DIAPHRAGM 2	VALVE BALLS 3	VALVE SEAT 4	APPLICATIONS
GRF/PP	**TEFLON®**	**TEFLON®**	**PP**	Great chemical resistance. Optimal aspiration dry and silent. Adapted to paintings
GRF/PP	**TEFLON®**	**AISI 316**	**AISI 316**	High viscosity products. Glues and resins
GRF/PP	**Santoprene®**	**EPDM**	**UPPE**	High abrasion resistance
Aluminum	**Hytrel®**	**TEFLON®**	**Aluminum**	Economic solution adapted for pumping hydrocarbons
Aluminum	**TEFLON®**	**TEFLON®**	**Aluminum**	Solvents. Inks. Painting
CFF/PVDF	**TEFLON®**	**TEFLON®**	**PVDF**	Aggressive acids. High temperatures >=80°C
AISI 316	**TEFLON®**	**TEFLON®**	**AISI 316**	Aggressive acids. High temperatures <=110°C
AISI 316	**TEFLON®**	**AISI 316**	**AISI 316**	Very high-viscosity and high temperatures
AISI 316 Polished	**TEFLON®**	**TEFLON®**	**AISI 316 Polished**	Food. Cosmetic (spheres version and polished AISI 316 polished seats for high viscosity products)
AISI 316 Polished	**TEFLON®**	**AISI 316 Polished**	**AISI 316 Polished**	Food. Cosmetic. High viscosity.

INSTRUCTION FOR CHOOSING
PNEUMATIC PUMPS



Duty point – example: Flow 20 l/min - Manometric pressure 20 m.

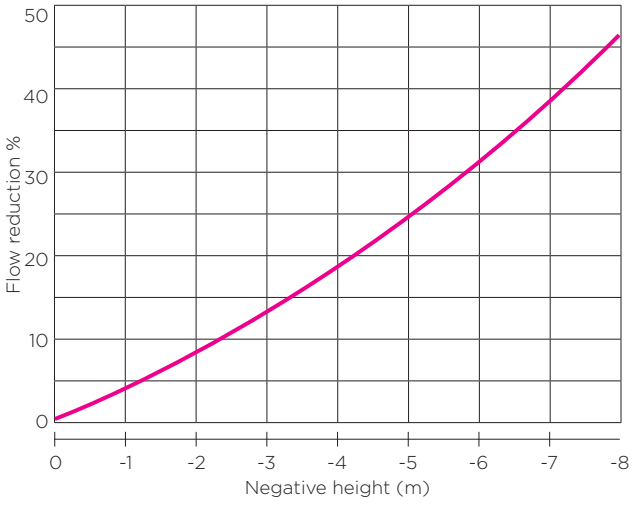
- Air pressure - main supply: 5 bar
- Air consumption: 245 Nl/min
- Frequency of cycles: 135 cycles/min

Air supply

Air consumption	Pump intake air pipe external Ø	Air compressor absorbed power (approx.)
Nl / min	mm	HP
50	6	0.5
100	6	1
200	6	2
250	8	2.5
350	8	3.5
450	8	4.5
550	8	5.5
850	10	8.5
1000	10	10
1500	12	15
2000	12	20
3500	12	30
4000	15	40

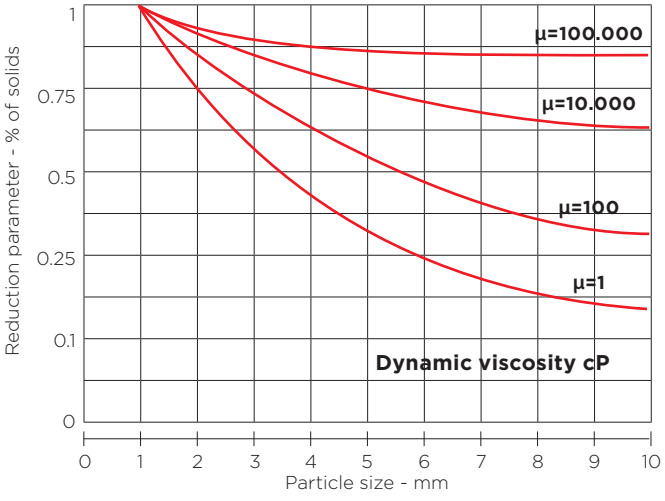
The power truly absorbed by the air compressor is around 70% of the value indicated in the table.

Self-Priming



Lifting the liquid from a negative height reduces the flow of the pump as in standard circumstances (flooded suction).
The maximum negative head is a function of the plant characteristics (hydraulic losses), the fluid's physical characteristics (density, viscosity, boiling point) and of the different pressure exerted on both diaphragms; between the fluid-side diaphragm and the air-side diaphragm.

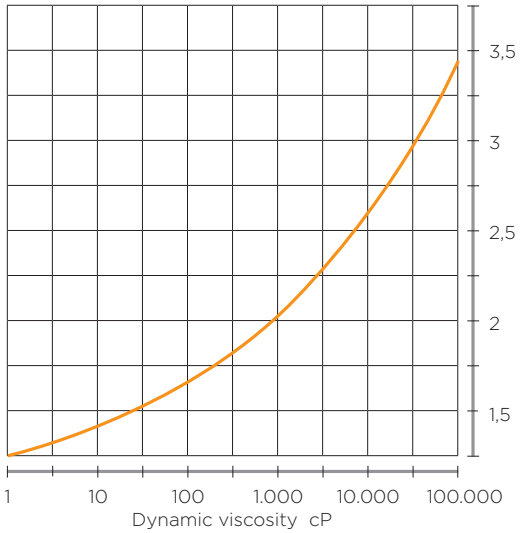
Relation: % solids – solids dimension



The admissible dimension of solids in suspension depends on:
- DN of the pump (max. valve passage),
- Viscosity of the fluid.

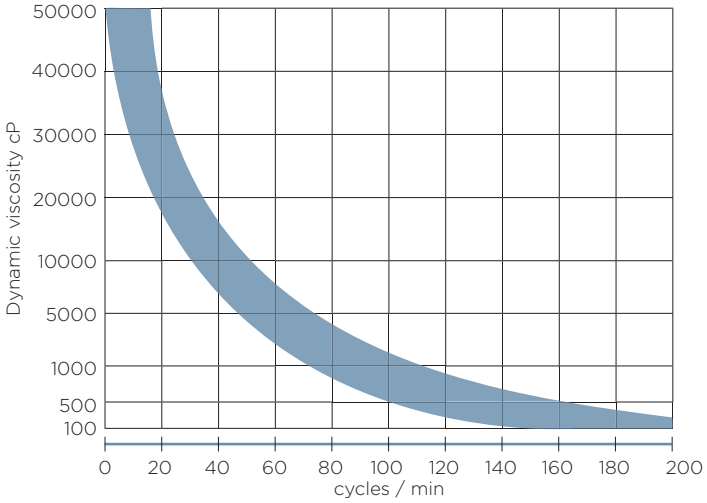
Dimension limits the admissible % concentration of solids in suspension.
Solid particles of larger dimension reduce significantly the max admissible % of solids in suspension if the liquid is low viscosity but do not reduce it much if the liquid is of high viscosity.

If the fluid is viscous, it increases the diameter of the pipelines by multiplying the coefficient reported below.



Multiply coefficient for pipeline diameter referred to a non viscous fluid and constant hydraulic losses.

Viscosity per cycle per minute



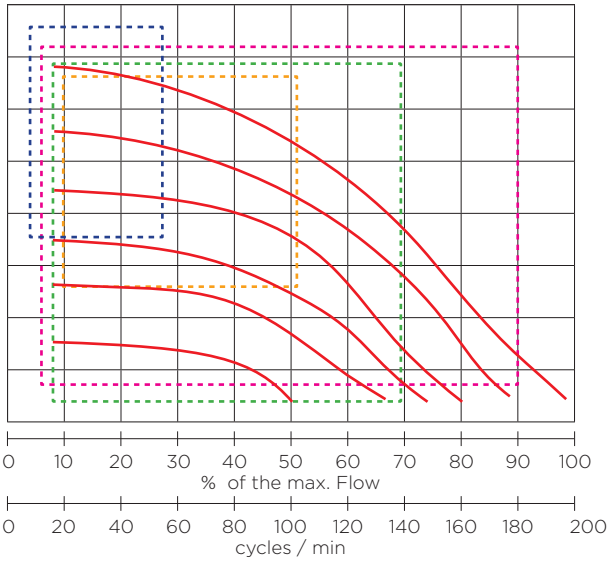
A general indication assumes that the more fluid is viscous, and the less number of cycles per minute is performed.

Products viscosity

Food Industry		Cosmetic Pharmaceutical industry		Variuos Industry	
product	cP	product	cP	product	cP
Butter	50000	**Toothpaste**	5000	**Oil SAE70**	18000
Whipped acid cream	13000	**Gel**	2000	**Paper pulp in water**	15000
Mayonnaise	6000	**Glycerin**	1400		
Honey	1500 ÷ 3000	**Shampoo**	250	**Barbotine**	2000
				Grease lubr.	2000
Marmalade	<1000			**Mineral oil**	800
Tomato sauce	180			**Oil SAE30**	350
Yogurt	100			**Varnish**	300
Olive Oil	100				

Viscosity is an important parameter to select the right pump for your application. Indeed, the more fluid is viscous, and larger the pipelines must be. Viscosity is measured in Centipoise (Cp)

Viscosity



The viscosity of the moving fluid can be constant or variable. Fluids with variable viscosity can be pumped only respecting the head and flow limits as described in the chart.

- **Not viscous fluids (1 < μ < 10)**
  (water, acid solutions, basic solutions, organic solvents).
- **Fluids with constant viscosity**
  (sulphuric acid, sodium hydroxide, oil, acetyl ethanolamine, glycerine,toothpaste, mayonnaise, margarine, slurries).
- **Fluids with increasing viscosity**
  (corn starch, siliconic oils, raw sugar, colloidal dispersion, whipped cream).
- **Fluids with decreasing viscosity**
  (paper pulp in water, acrylic paint, latex, blood, ketchup, jellified enamels, jellified hydro carbons, lip gloss).

CONTENTS

MATERIALS

PP Polypropylene

UPPE Ultra High Molecular Weight Polyethylene

FRP Fiberglass

HYTREL Hytrel

PVDF Polyvinylidene Fluoride

PTFE Poly Tetra Fluoro Ethylene (Teflon®)

POMc Polyoxymethylene

Alu Aluminium

DX Alloy Duplex

AISI 316 L Stainless Steel (low Carbon)

AISI 316 Stainless Steel

BR Bronze

TECHNOLOGY

Self-priming

Submersible

TEMPERATURES (°C)

+115° +100° +80° +60° −5 −10° −20° −35° −40°

CERTIFICATION/WARRANTY

Atex

FDA COMPLIANT Food and Drug Administration

CE European Conformity

EAC Eurasian Conformity

WARRANTY

12 months

24 months

60 months

WETTED PARTS

WR	PP (GFR)
FC	PVDF (CFF)
DL	POMc (GFR)
AL	ALUMINUM
SS	AISI 316
SP	AISI 316 (FDA)

DIAPHRAGMS

NT	NBR & PTFE
HT	HYTREL® & PTFE
MT	SANTOPRENE® & PTFE
M	SANTOPRENE®
H	HYTREL®
D	EPDM RUBBER

BALL VALVE

T	PTFE
S	AISI 316
D	EPDM
N	NBR

BALL SEATS

P	PP
S	AISI 316
Z	PE (UHMW)
K	PVDF
O	POMc
A	ALUMINUM

GASKETS

T	PTFE
D	EPDM
V	FKM
N	NBR

ASTRA

ASTRA range is ideal for the most **various industrial applications.**
This newest project is made with the very last technologies to guarantee a major reliability of the pump: lifetime and diaphragms are improved, maintenance operations are reduced and it has an enviable quality/price offer.
ASTRA COMPACT range is composed of smaller sizes made for **OEM customers**, guaranteeing the major constructive simplicity and taking up the minimal amount of space.

Zone 2

MAIN APPLICATIONS

- **Chemical industry**
- **Automotive**
- **Textile**
- **Graphic**
- **Leather tanning**
- **Electroplating ceramics**
- **Paints**
- **Ink**
- **Paper**
- **Construction**
- **Water and Waste treatment**

ASTRA OVERVIEW

ASTRA (*)	Flow rate (l/min")	Ports (inch)	Materials	Solids (mm)	The best selling
25-09 	9	¼"	• POMc • PP • PVDF	2,5	• WR NT TPD • WR NT TPT • FC NT TKT • FC NT TKV • DL NT TOT
38-18 	18	⅜"	• POMc • PP • PVDF • AISI 316	3	• WR HT TPD • WR HT TPT • FC MT TKT • FC MT TKV • DL HT TOT • DL HT TOV • SS HT TST
50-30 	30	½"		3,5	• WR NT TPD • WR NT TPT • WR M-DZD • WR M-TPD • FC NT TKT • FC NT TKV • DL HT TAT • DL HT TAV • SS HT TST • SS HT TSV
50-50 	50	½"	• PP • PVDF • ALU • AISI 316	3,5	• WR HT TPD • WR HT TPT • WR M-DZD • WR M-TPD • FC NT TKT • FC NT TKV • AL HT TAT • AL HT TAV • SS HT TST • SS HT TSV
50-65 	65	½"		3,5	
75-100 	100	¾"		3,5	
100-100 	100	1"	• PP • PVDF	3,5	
100-160 	160	1"	• PP • PVDF • ALU • AISI 316	7,5	
125-250 	250	1 ¼"		7,5	
150-400 	400	1 ½"		8,5	
200-650 	650	2"		8,5	

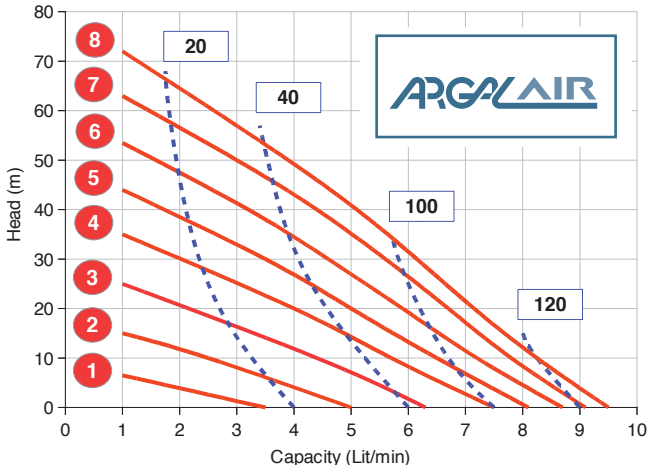
(*) **Max pressure 8 bar**

ASTRA COMPACT
DDA 25-09

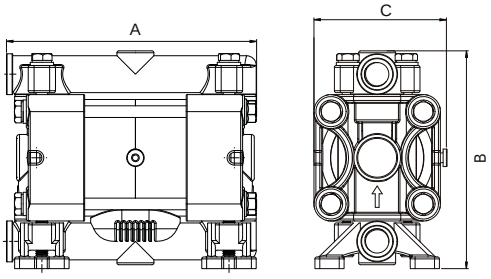
PP +60° −5 0,7 Kg + 0,1 Kg
Pump Packaging

POMc +80° −10° 0,8 Kg + 0,1 Kg
Pump Packaging

PVDF +80° −10° 0,8 Kg + 0,1 Kg
Pump Packaging



TECHNICAL DATA	
Fluid connections	¼" BSP • NPT*
Air connection	4 mm
Max flow rate	9 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	3 mca
Max suction lift wet	9,8 mca
Max size solids	2,5 mm
Noise level	62 dB(A)
Max viscosity	6.000 cPs



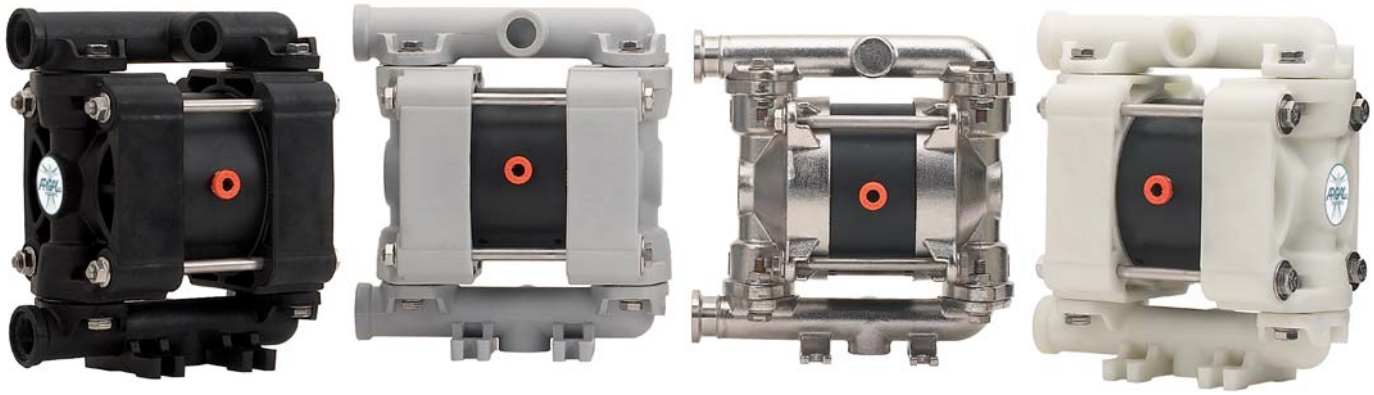
DIMENSIONS (mm)	
PP	**A** 129 **B** 112 **C** 68
PVDF	**A** 129 **B** 112 **C** 68
POMc	**A** 129 **B** 112 **C** 68

COMPOSITION	
Wetted parts	• PP • PVDF • POMc
Diaphragms	• NBR+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• PP • PVDF • POMc
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA COMPACT
DDA 38-18

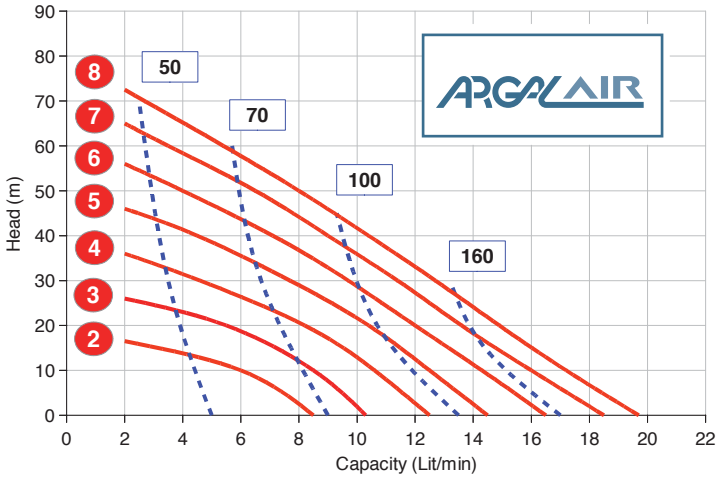


PVDF +80° −10° 1,4 Kg + 0,2 Kg Pump Packaging

PP +60° −5 1,1 Kg + 0,2 Kg Pump Packaging

AISI 316 +80° −10° 2,1 Kg + 0,2 Kg Pump Packaging

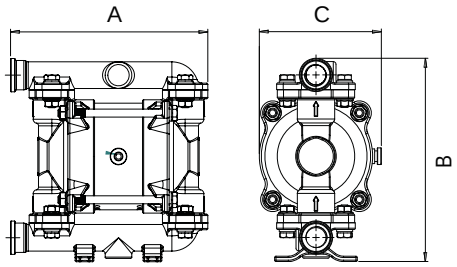
POMc +80° −10° 1,4 Kg + 0,2 Kg Pump Packaging



bar Air Pressure main supply NI/min Air consumption

TECHNICAL DATA	
Fluid connections	⅜" BSP • NPT*
Air connection	6 mm
Max flow rate	18 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	3 mm
Noise level	65 dB(A)
Max viscosity	12.000 cPs

DIMENSIONS (mm)	
PP	**A** 146 **B** 164 **C** 96
PVDF	**A** 146 **B** 164 **C** 96
POMc	**A** 146 **B** 164 **C** 96
AISI 316	**A** 148 **B** 153 **C** 92



COMPOSITION	
Wetted parts	• PP • PVDF • POMc • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE
Valve Balls	• PTFE • AISI 316
Valve Seats	• PP • PVDF • POMc • AISI 316
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

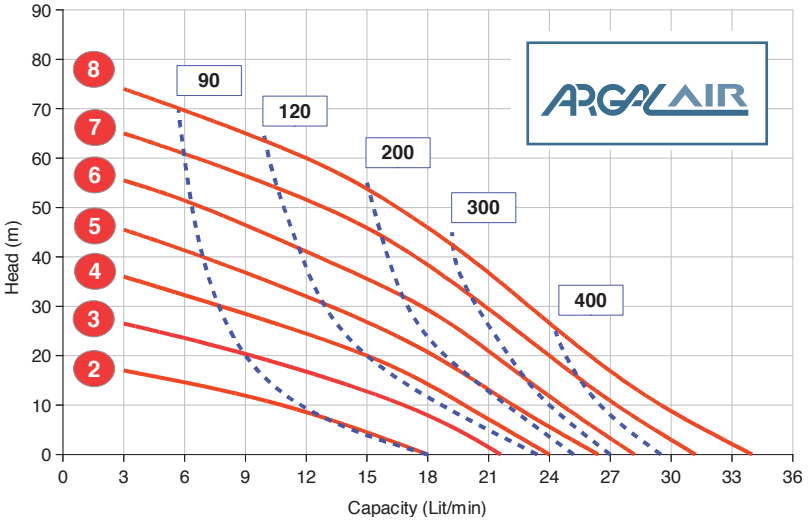
ASTRA COMPACT
DDA 50-30

PP | +60° | −5 | 1,2 Kg + 0,2 Kg — Pump Packaging

PVDF | +80° | −10° | 1,5 Kg + 0,2 Kg — Pump Packaging

POMc | +80° | −10° | 1,5 Kg + 0,2 Kg — Pump Packaging

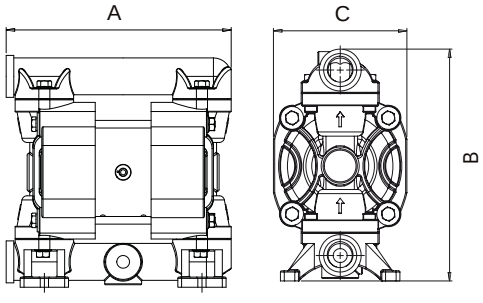
AISI 316 | +80° | −10° | 2,2 Kg + 0,2 Kg — Pump Packaging



bar Air Pressure main supply — Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	½" BSP • NPT* • FLANGED* DN15
Air connection	6 mm
Max flow rate	30 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	5 mca
Max suction lift wet	9,8 mca
Max size solids	3,5 mm
Noise level	65 dB(A)
Max viscosity	15.000 cPs

DIMENSIONS (mm)	
PP	**A** 177 **B** 183 **C** 105
PVDF	**A** 177 **B** 183 **C** 105
POMc	**A** 177 **B** 183 **C** 105
AISI 316	**A** 182 **B** 190 **C** 104



COMPOSITION	
Wetted parts	• PP • PVDF • POMc • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • POMc • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

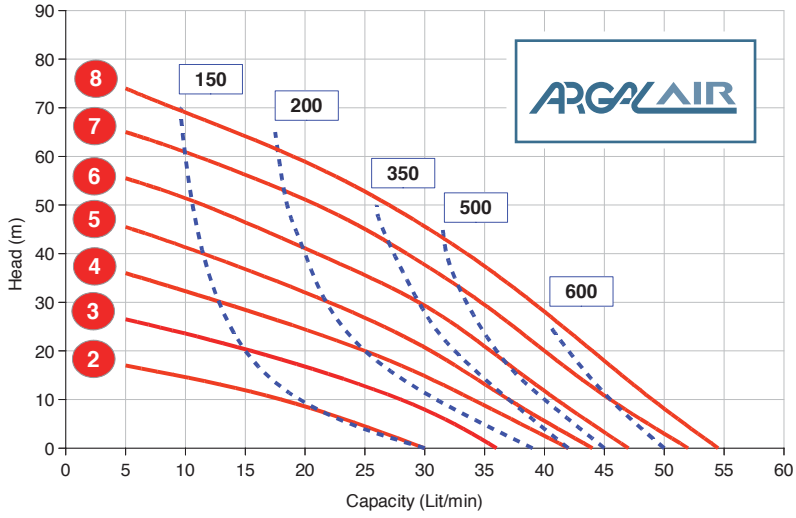
ASTRA COMPACT
DDA 50-50

PVDF +80° −10° 4,3 Kg + 0,3 Kg Pump Packaging

Alu +80° −10° 4,2 Kg + 0,3 Kg Pump Packaging

AISI 316 +80° −10° 6 Kg + 0,3 Kg Pump Packaging

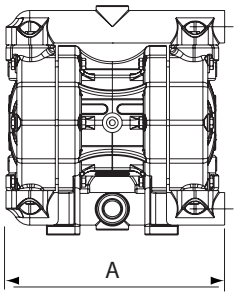
PP +60° 5 3,6 Kg + 0,3 Kg Pump Packaging

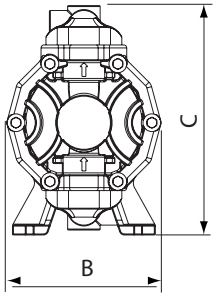


bar Air Pressure main supply Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	½" BSP • NPT* • FLANGED* DN15
Air connection	¼" BSP
Max flow rate	50 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	3,5 mm
Noise level	68 dB(A)
Max viscosity	20.000 cPs

DIMENSIONS (mm)	
PP	**A** 222 **B** 156 **C** 233
PVDF	**A** 222 **B** 156 **C** 233
ALU	**A** 225 **B** 156 **C** 230
AISI 316	**A** 225 **B** 156 **C** 230





COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA
DDA 50-65

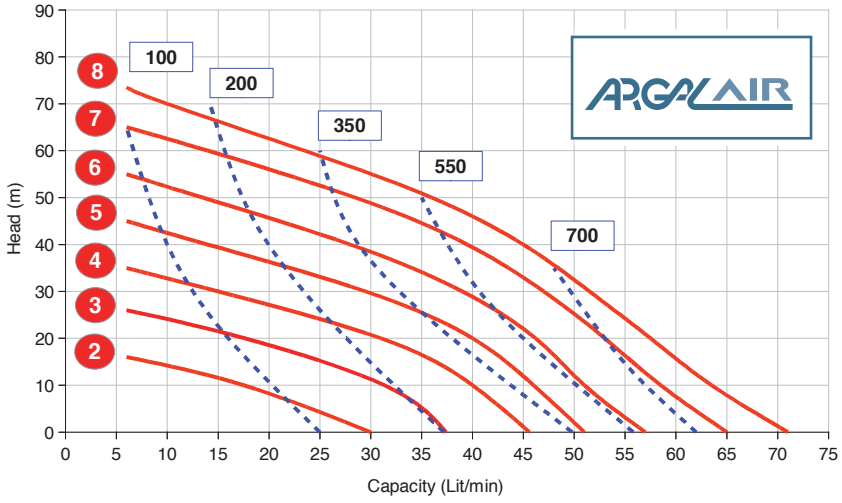



PVDF +80° −10° 6,1 Kg + 0,4 Kg — Pump Packaging

Alu +80° −10° 5,5 Kg + 0,4 Kg — Pump Packaging

AISI 316 +80° −10° 7,8 Kg + 0,4 Kg — Pump Packaging

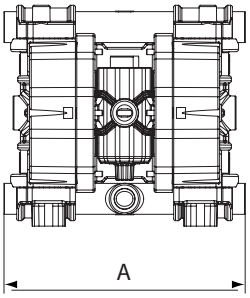
PP +60° −5 5,3 Kg + 0,4 Kg — Pump Packaging

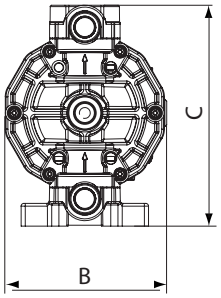


bar Air Pressure main supply — Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	½" BSP • NPT* • FLANGED* DN15
Air connection	⅜" BSP
Max flow rate	65 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	3,5 mm
Noise level	72 dB(A)
Max viscosity	25.000 cPs

DIMENSIONS (mm)	
PP	**A** 265 **B** 175 **C** 245
PVDF	**A** 265 **B** 175 **C** 245
ALU	**A** 265 **B** 175 **C** 245
AISI 316	**A** 250 **B** 175 **C** 250





COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA
DDA 75-100

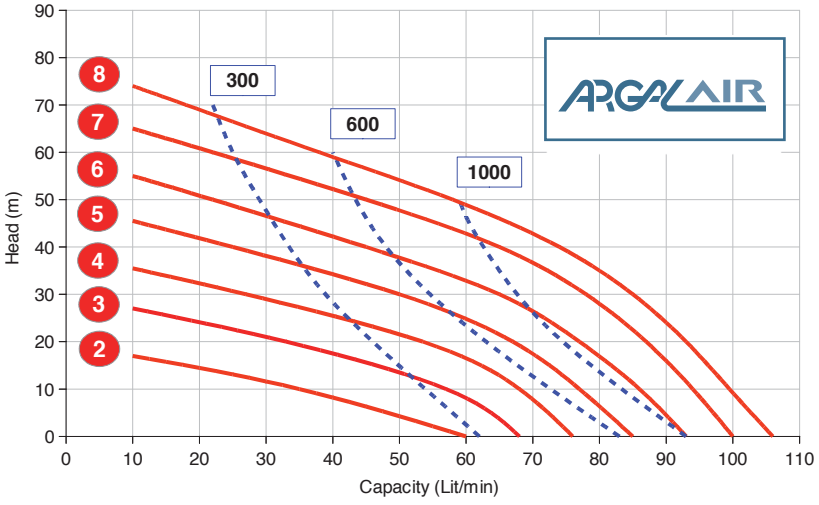



PVDF +80° −10° 6,2 Kg + 0,4 Kg Pump Packaging

Alu +80° −10° 5,7 Kg + 0,4 Kg Pump Packaging

AISI 316 +80° −10° 7,8 Kg + 0,4 Kg Pump Packaging

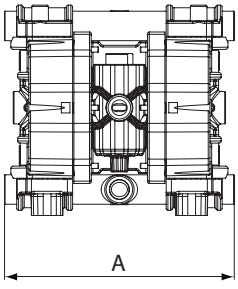
PP +60° −5 5,4 Kg + 0,4 Kg Pump Packaging

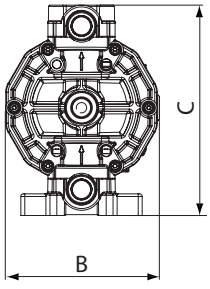


bar Air Pressure main supply Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	¾" BSP • NPT* • FLANGED* DN20
Air connection	⅜" BSP
Max flow rate	100 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	3,5 mm
Noise level	72 dB(A)
Max viscosity	25.000 cPs

DIMENSIONS (mm)	
PP	**A** 265 **B** 175 **C** 245
PVDF	**A** 265 **B** 175 **C** 245
ALU	**A** 265 **B** 175 **C** 245
AISI 316	**A** 250 **B** 175 **C** 250





COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

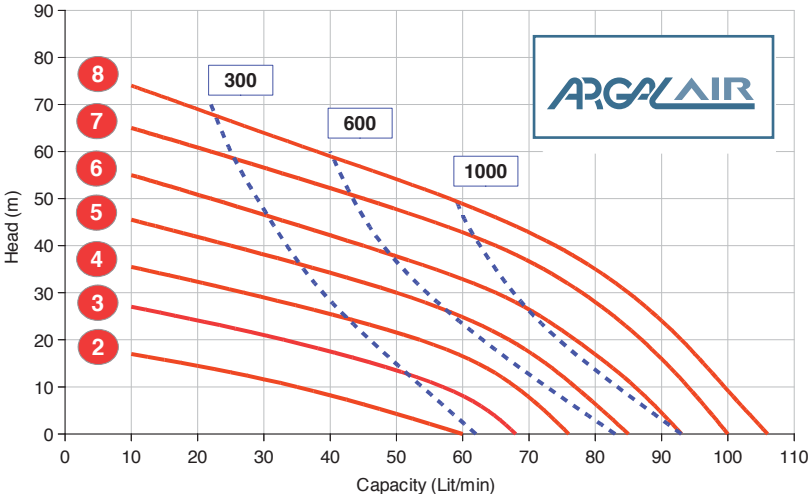
Connections scheme page 30

* Optional

ASTRA
DDA 100-100

PVDF | +80° | −10° | 6,3 Kg + 0,4 Kg — Pump Packaging

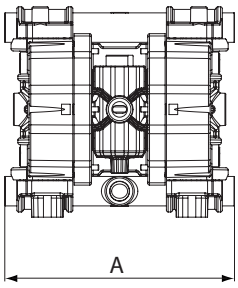
PP | +60° | −5 | 5,3 Kg + 0,4 Kg — Pump Packaging

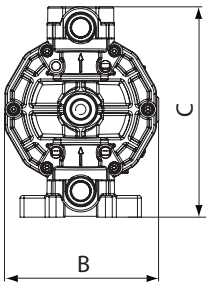


bar Air Pressure main supply — Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	1" BSP • NPT* • FLANGED* DN25
Air connection	⅜" BSP
Max flow rate	100 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	3,5 mm
Noise level	72 dB(A)
Max viscosity	25.000 cPs

DIMENSIONS (mm)	
PP	**A** 265 **B** 175 **C** 245
PVDF	**A** 265 **B** 175 **C** 245



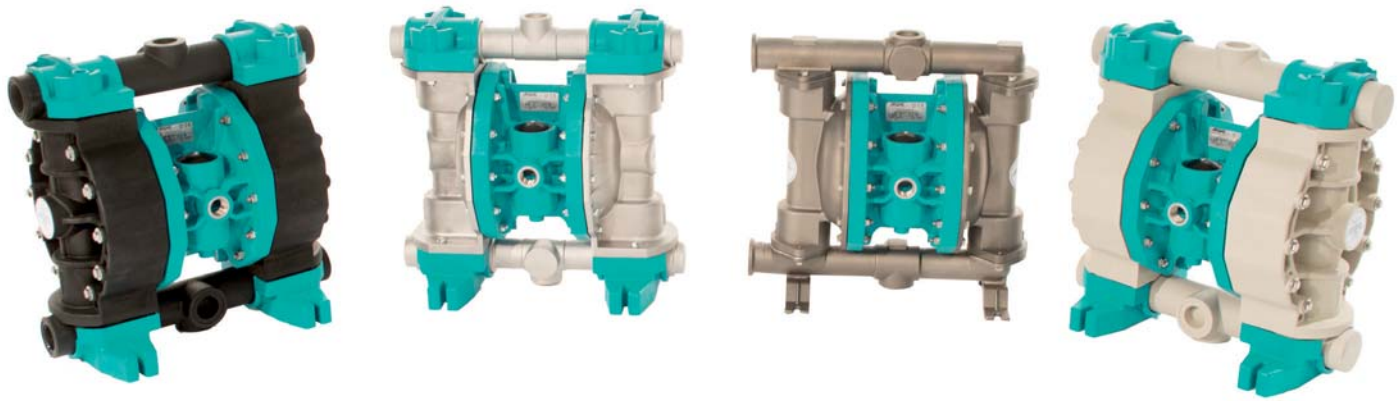


COMPOSITION	
Wetted parts	• PP • PVDF
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • SS • EPDM • NBR
Valve Seats	• PP • PVDF • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA
DDA 100-160

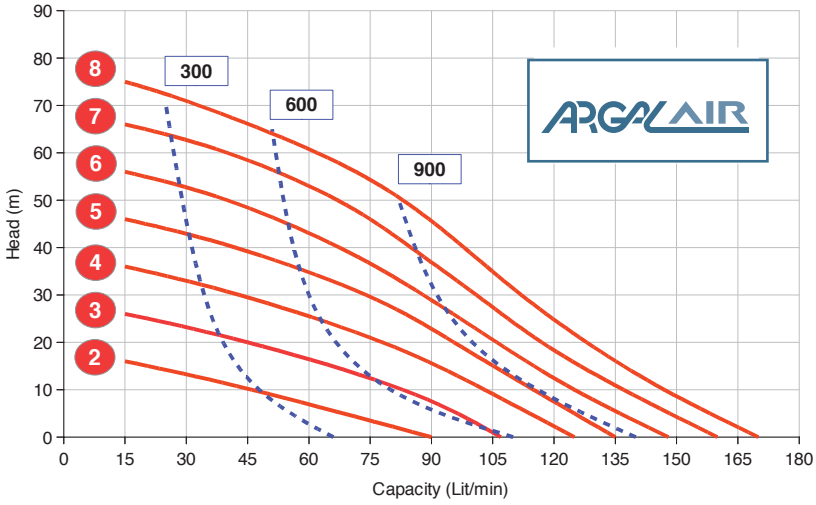


PVDF +80° −10° 13,4 Kg + 0,7 Kg Pump Packaging

Alu +80° −10° 12,4 Kg + 0,7 Kg Pump Packaging

AISI 316 +80° −10° 16,9 Kg + 0,7 Kg Pump Packaging

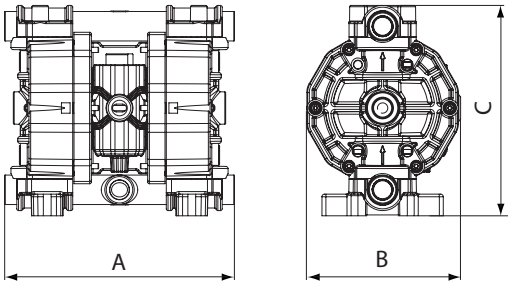
PP +60° −5 11 Kg + 0,7 Kg Pump Packaging



bar Air Pressure main supply Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	1" BSP • NPT* • FLANGED* DN25
Air connection	½" BSP
Max flow rate	160 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	7,5 mm
Noise level	75 dB(A)
Max viscosity	35.000 cPs

DIMENSIONS (mm)	
PP	**A** 370 **B** 222 **C** 370
PVDF	**A** 370 **B** 222 **C** 370
ALU	**A** 370 **B** 222 **C** 364
AISI 316	**A** 360 **B** 222 **C** 346

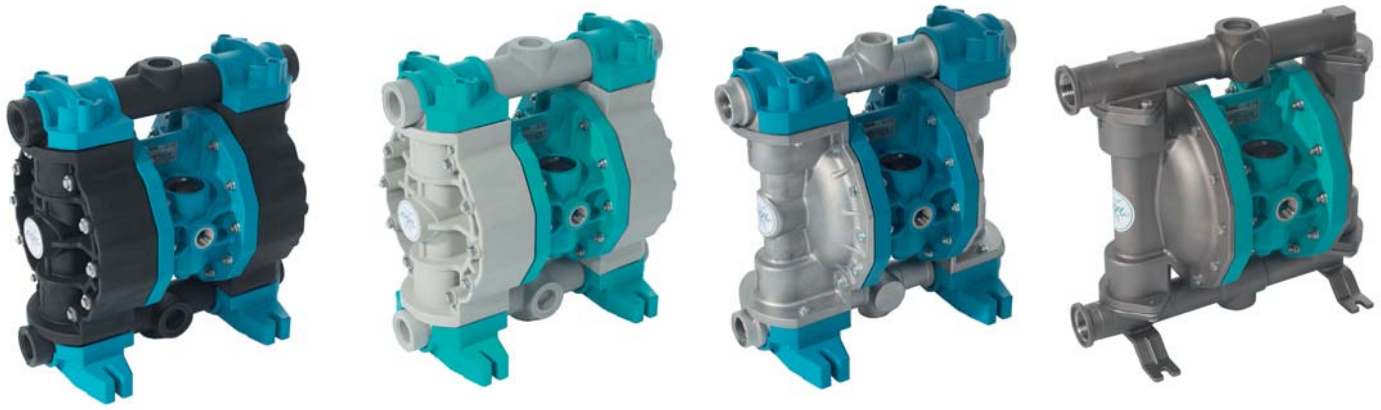


COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA
DDA 125-250

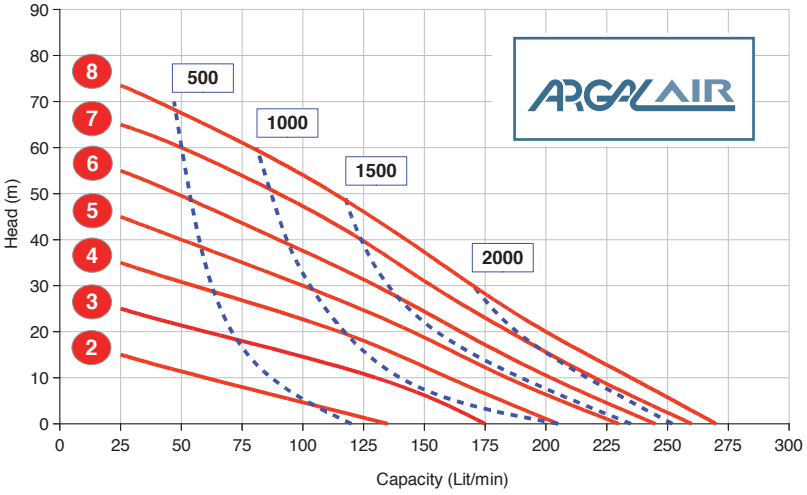


PVDF +80° −10° 13,9 Kg + 0,7 Kg Pump Packaging

PP +60° +5 11,1 Kg + 0,7 Kg Pump Packaging

Alu +80° −10° 12,5 Kg + 0,7 Kg Pump Packaging

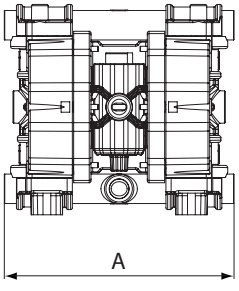
AISI 316 +80° −10° 17 Kg + 0,7 Kg Pump Packaging

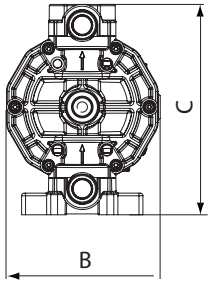


bar Air Pressure main supply Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	1¼" BSP • NPT* • FLANGED* DN32
Air connection	½" BSP
Max flow rate	250 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	6 mca
Max suction lift wet	9,8 mca
Max size solids	7,5 mm
Noise level	75 dB(A)
Max viscosity	35.000 cPs

DIMENSIONS (mm)	
PP	**A** 370 **B** 222 **C** 370
PVDF	**A** 370 **B** 222 **C** 370
ALU	**A** 370 **B** 222 **C** 364
AISI 316	**A** 360 **B** 222 **C** 346





COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

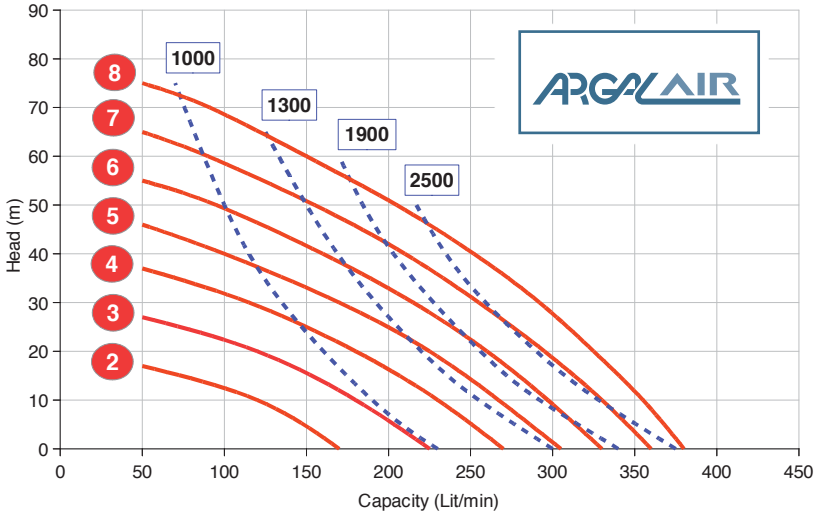
ASTRA
DDA 150-400

PP +60° −5 34 Kg + 2,2 Kg — Pump Packaging

PVDF +80° −10° 41 Kg + 2,2 Kg — Pump Packaging

Alu +80° −10° 38 Kg + 2,2 Kg — Pump Packaging

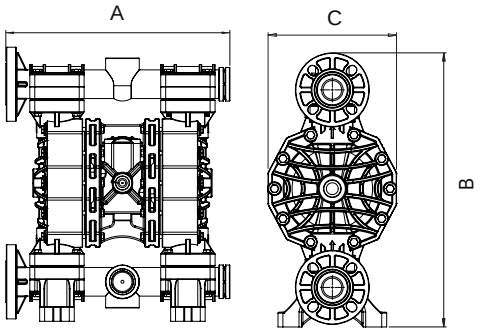
AISI 316 +80° −10° 54 Kg + 2,2 Kg — Pump Packaging



bar Air Pressure main supply — Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	1½" BSP • NPT* • FLANGED* DN40
Air connection	¾" BSP
Max flow rate	400 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	5 mca
Max suction lift wet	9,8 mca
Max size solids	8,5 mm
Noise level	78 dB(A)
Max viscosity	50.000 cPs

DIMENSIONS (mm)	
PP	**A** 595 **B** 345 **C** 565
PVDF	**A** 595 **B** 345 **C** 565
ALU	**A** 595 **B** 345 **C** 560
AISI 316	**A** 582 **B** 345 **C** 570



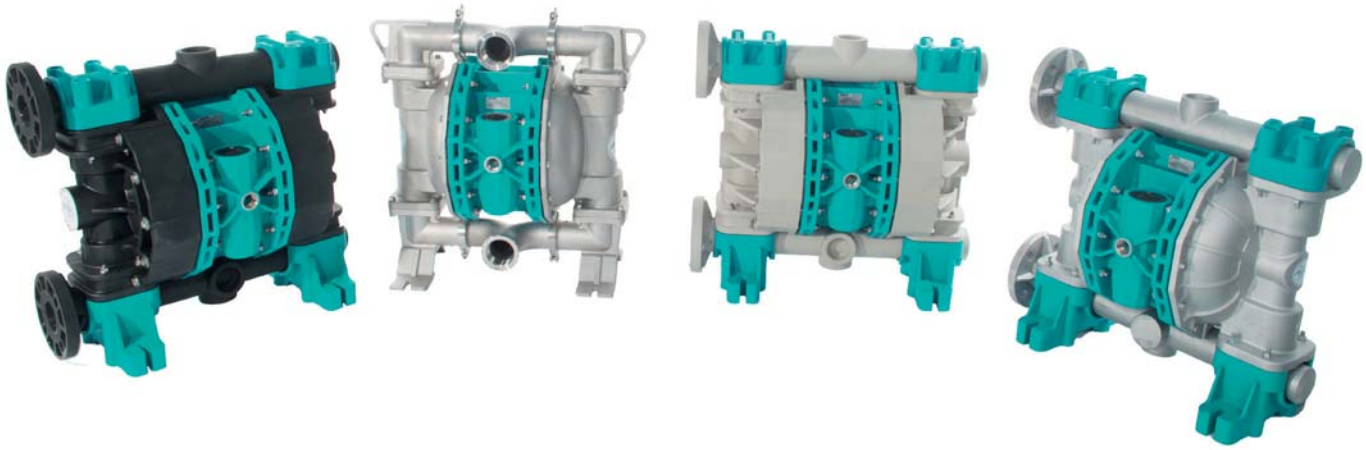
DIMENSIONI SBAGLIATE
VEDERE CON GIOVANNI

COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

ASTRA
DDA 200-650

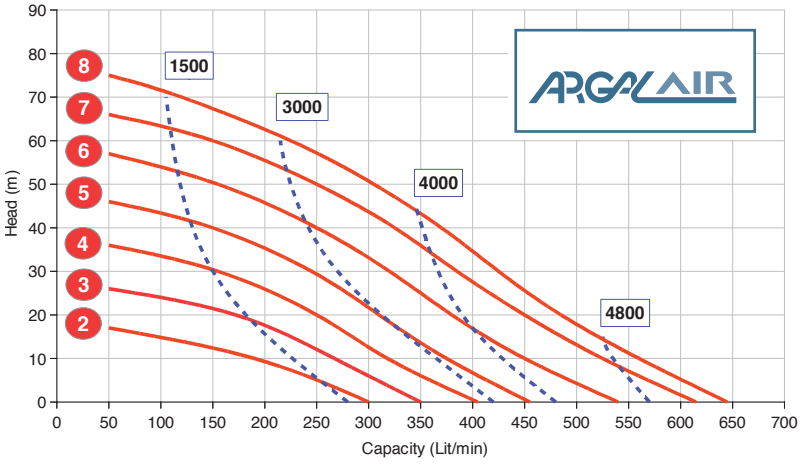


PVDF +80° −10° 41,5 Kg + 2,2 Kg Pump Packaging

AISI 316 +80° −10° 54,5 Kg + 2,2 Kg Pump Packaging

PP +60° −5 34,5 Kg + 2,2 Kg Pump Packaging

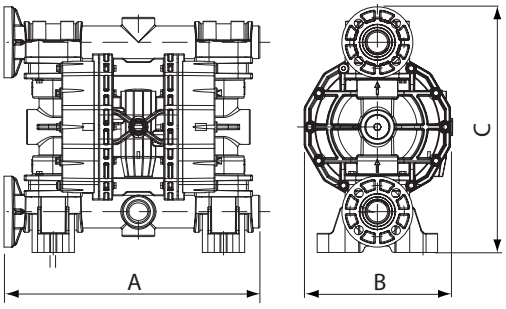
Alu +80° −10° 38,5 Kg + 2,2 Kg Pump Packaging



bar Air Pressure main supply Nl/min Air consumption

TECHNICAL DATA	
Fluid connections	2" BSP • NPT* • FLANGED* DN50
Air connection	¾" BSP
Max flow rate	650 l/m'
Max air pressure	8 bar
Max delivery head	80 mca
Max suction lift dry	5 mca
Max suction lift wet	9,8 mca
Max size solids	8,5 mm
Noise level	78 dB(A)
Max viscosity	50.000 cPs

DIMENSIONS (mm)	
PP	**A** 595 **B** 345 **C** 565
PVDF	**A** 595 **B** 345 **C** 565
ALU	**A** 595 **B** 345 **C** 560
AISI 316	**A** 487 **B** 345 **C** 599



COMPOSITION	
Wetted parts	• PP • PVDF • ALU • AISI 316
Diaphragms	• HYTREL + PTFE • SANTOPRENE + PTFE • HYTREL • SANTOPRENE • EPDM • NBR
Valve Balls	• PTFE • AISI 316 • EPDM • NBR
Valve Seats	• PP • PVDF • ALU • AISI 316 • UPPE
Gaskets	• EPDM • FKM • NBR • PTFE

Connections scheme page 30

* Optional

SPECIAL CONFIGURATIONS

ASTRA DRUM

Perfect for emptying barrels, drums, cans.

MAIN APPLICATIONS

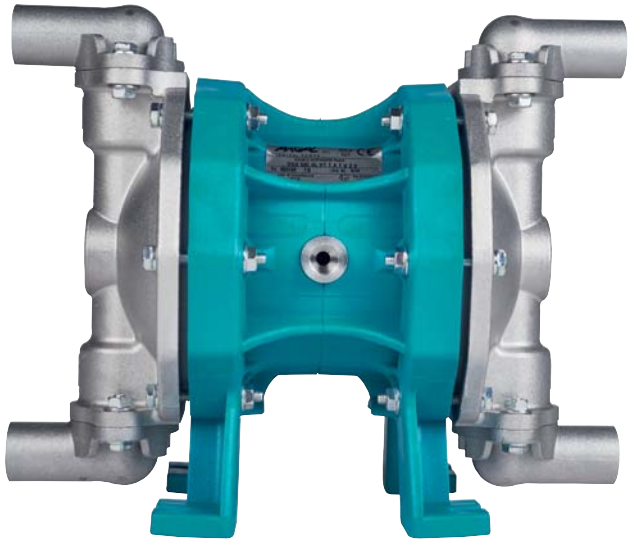
- AUTOMOTIVE INDUSTRY
- CHEMICAL INDUSTRY
- FOOD INDUSTRY
- WASTE DISPOSAL TECHNOLOGY

PUMPS

- ASTRA COMPACT
- ASTRA

ASTRA GEMINI

Delivery and suction manifolds can be doubled in this configuration so that two products can simultaneously be pumped.



MAIN APPLICATIONS

- FLEXOGRAPHIC INDUSTRY
- PAINTING INDUSTRY
- PAPER PROCESSING
- PRINTING INDUSTRY
- WASTE WATER TECHNOLOGY

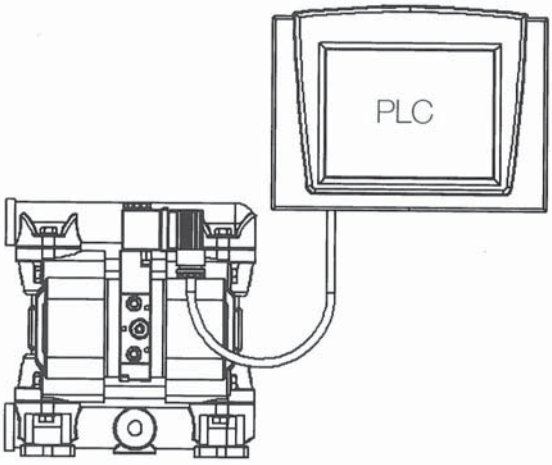
PUMPS

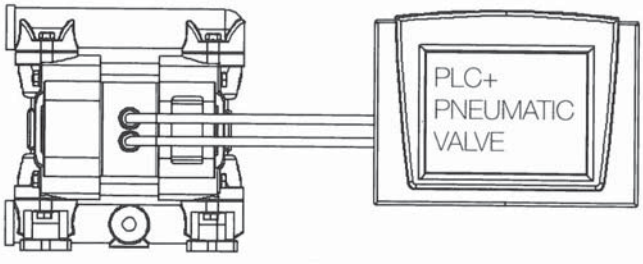
- ASTRA

SPECIAL CONFIGURATIONS

ASTRA FREE

The fluid is carried by compressed air while an electric signal controls the speed. In this way, metering, measurement and other applications of the electric command can be majorly accurate. The “ASTRA FREE” versions can be interconnected with a large range of devices to completely automise the operation.





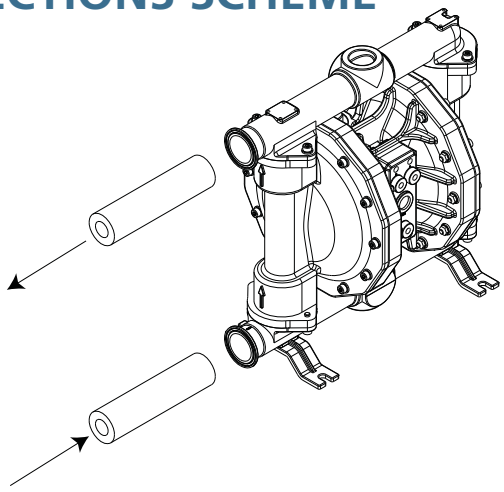
MAIN APPLICATIONS

- CHEMICAL INDUSTRY
- FLEXOGRAPHIC INDUSTRY
- PAINTING INDUSTRY
- PRINTING INDUSTRY
- WASTE WATER TECHNOLOGY

PUMPS

- ASTRA COMPACT
- ASTRA

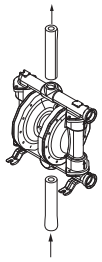
ASTRA
CONNECTIONS SCHEME



STANDARD CONNECTIONS 2 O

Maximise the pump flow rate

1 V



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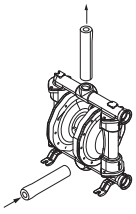

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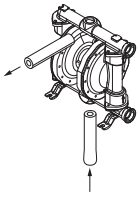

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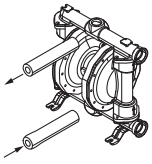

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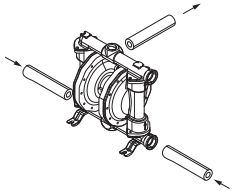

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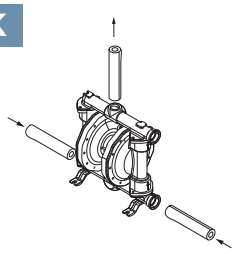

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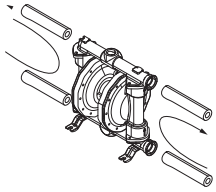

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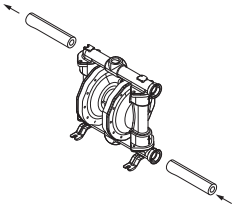

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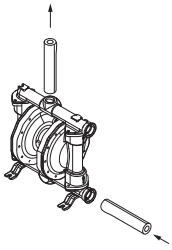

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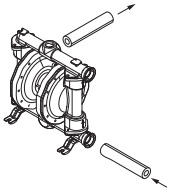

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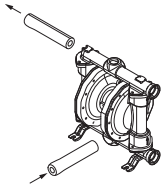

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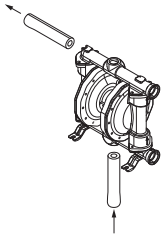

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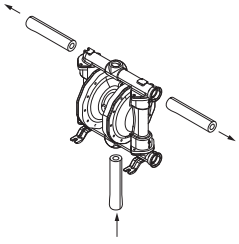

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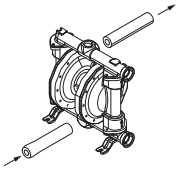

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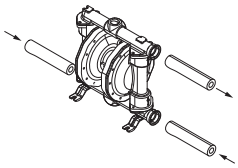

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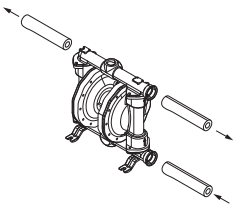


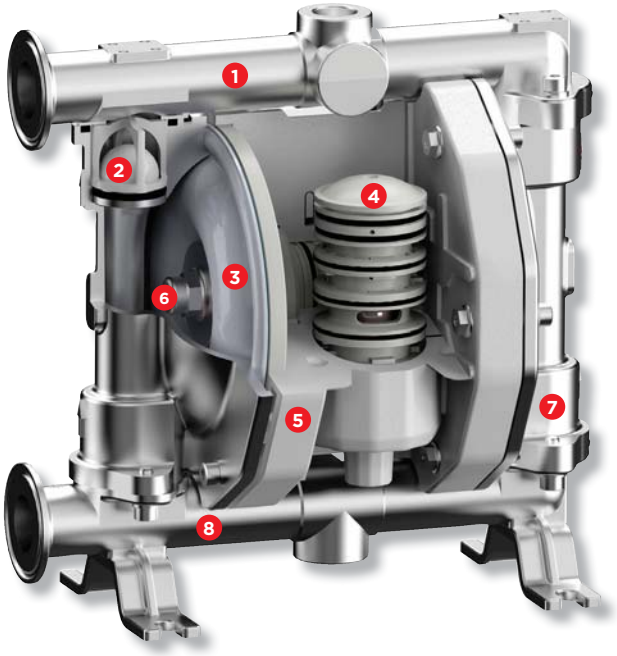
ASTRA FOOD

ASTRAFOOD range can be used for handling and pumping products from food industry and related ones. These pumps comply with **FDA recommendations**, as the parts in contact with the fluid are made of **AISI 316 electro-polished** with *125 Ra* finish and PTFE - both certified for food usage.

FDA COMPLIANT

ASTRAFOOD

FOOD INDUSTRY		COSMETIC PHARMACEUTICAL INDUSTRY		VARIOUS INDUSTRY	
Product	**cP**	**Product**	**cP**	**Product**	**cP**
Butter	50.000	**Toothpaste**	5.000	**Oil SAE70**	18.000
Whipped acid cream	13.000	**Gel**	2.000	**Paper pulp in water**	15.000
Mayonnaise	6.000	**Glycerin**	1.400	**Barbotine**	2.000
Honey	1.500÷3.000	**Shampoo**	250	**Grease lubr.**	2.000
Marmalade	<1.000			**Mineral oil**	800
Tomato sauce	180			**Oil SAE30**	350
Yogurt	100			**Varnish**	300
Olive oil	100	**PRODUCTS VISCOSITY**			

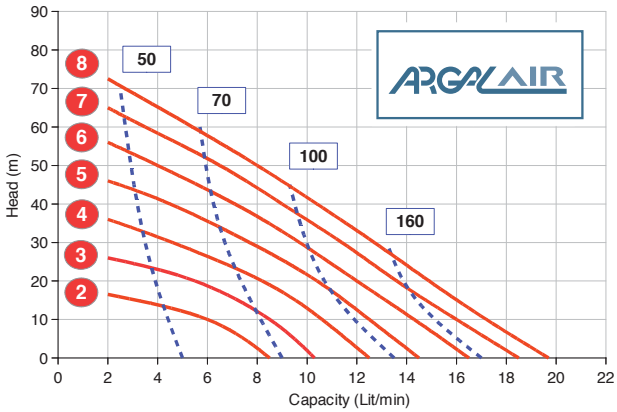


1. Delivery manifold
2. Ball valve
3. Diaphragm
4. Air Distributor
5. Central casing
6. Wetted washer
7. Pump casing
8. Suction manifold

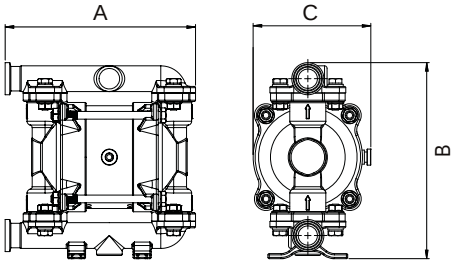
Thanks to their characteristics and design **ASTRAFOOD "DFA"** series can be applied for the transfer of fluids deployed in industries as food, the cosmetics, pharmaceuticals, or chemical additives, beverages, dairy, biotechnologies, medical appliances, paint and in all those applications were a quick release clamp connection is required or appreciated.
These pumps are usually used to transfer or to remove the products from the mixing contains or storage basins or to pack them in bottles or similar containers.
The air operated double diaphragm pumps **ASTRAFOOD** are constructed with materials compliant with the FDA regulation: the wet parts are made of AISI 316 electro-polished and the surface finish is realised in **125 Ra** (average **2,7 µm**) both certified for food applications. All **ASTRAFOOD** pumps comply with ATEX Zona 2 regulation and are adequate to operate in areas with atmosphere potentially explosive and, with the variant of the conductive executions, can operate also in areas classified ATEX Zone 1.
These pumps are capable to pump fluids with very high viscosity and temperature up to **95°C.**
All other constructive and functional characteristics are equal to those of the ASTRA.

DFA 125 - 250

DFA 38-18



bar Air Pressure main supply Nl/min Air consumption



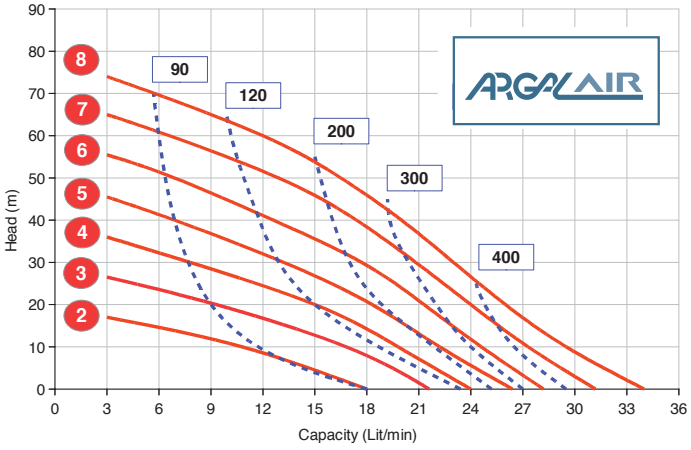
COMPOSITION (mm)	
AISI 316	**A** 148 **B** 92 **C** 153

TECHNICAL DATA	
Fluid connections	• Tri-Clamp ½" • BSP • NPT
Air connection	6 mm
Max flow rate	18 l/m
Max air pressure	8 bar
Max viscosity	12.000 cPs

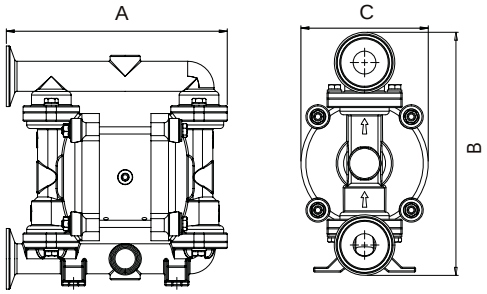
COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• NBR+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

Connections scheme page 30

DFA 50-30



bar Air Pressure main supply Nl/min Air consumption



COMPOSITION (mm)	
AISI 316	**A** 184 **B** 106 **C** 203

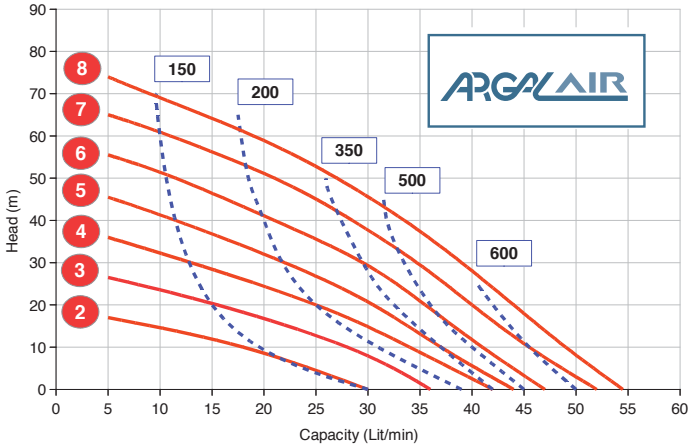
TECHNICAL DATA	
Fluid connections	• Tri-Clamp 1" • BSP • NPT
Air connection	6 mm
Max flow rate	30 l/m'
Max air pressure	8 bar
Max viscosity	15.000 cPs

COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• HYTREL+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

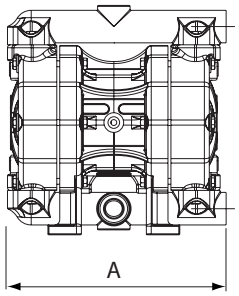
Connections scheme page 30

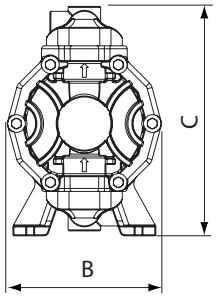
ASTRAFOOD

DFA 50-50



bar Air Pressure main supply Nl/min Air consumption





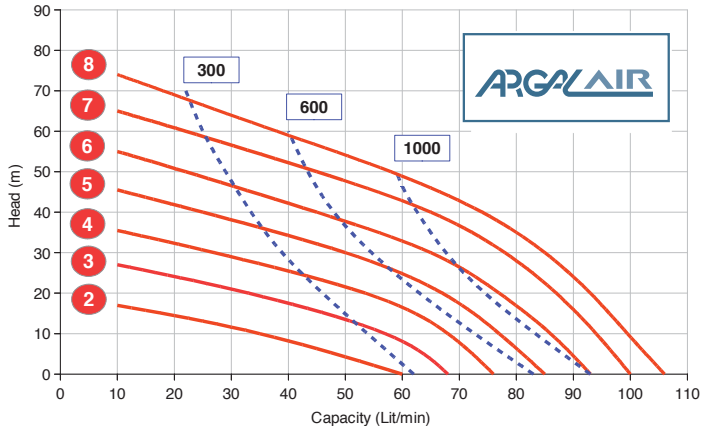
DIMENSIONS (mm)	
AISI 316	**A** 251 **B** 249 **C** 177

TECHNICAL DATA	
Fluid connections	• Tri-Clamp 1" • BSP • NPT
Air connection	¼" BSP
Max flow rate	50 l/m'
Max air pressure	8 bar
Max viscosity	20.000 cPs

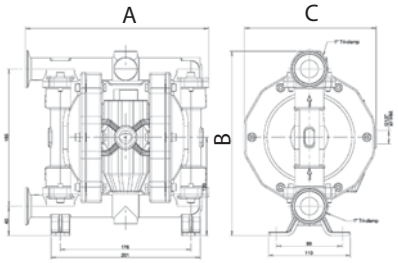
COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• HYTREL+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

Connections scheme page 30

DFA 75-100



bar Air Pressure main supply Nl/min Air consumption



DIMENSIONS (mm)	
AISI 316	**A** 247 **B** 249 **C** 177

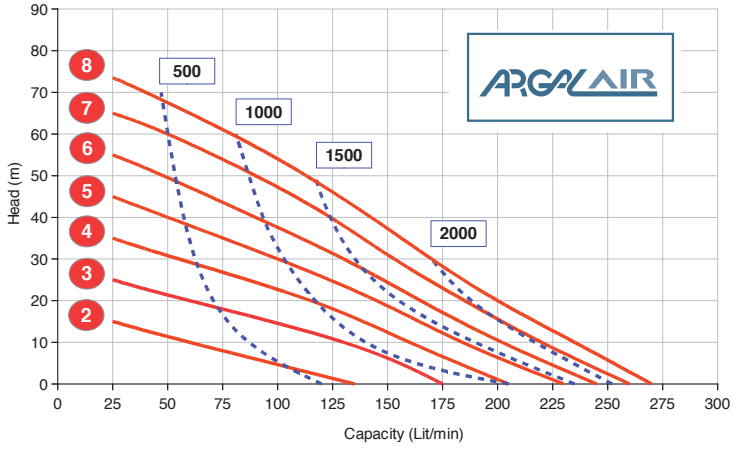
TECHNICAL DATA	
Fluid connections	• Tri-Clamp 1" • BSP*
Air connection	⅜" BSP
Max flow rate	100 l/m'
Max air pressure	8 bar
Max viscosity	25.000 cPs

COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• HYTREL+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

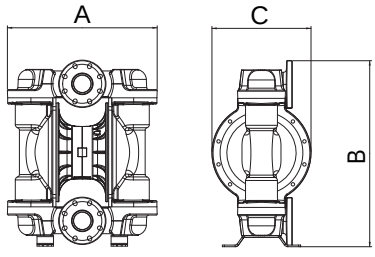
Connections scheme page 30

* Optional

DFA 125-250



bar Air Pressure main supply Nl/min Air consumption



DIMENSIONS (mm)	
AISI 316	**A** 360 **B** 222 **C** 346

TECHNICAL DATA	
Fluid connections	• Tri-Clamp 1 ¼" • BSP*
Air connection	½" BSP
Max flow rate	250 l/m'
Max air pressure	8 bar
Max viscosity	35.000 cPs

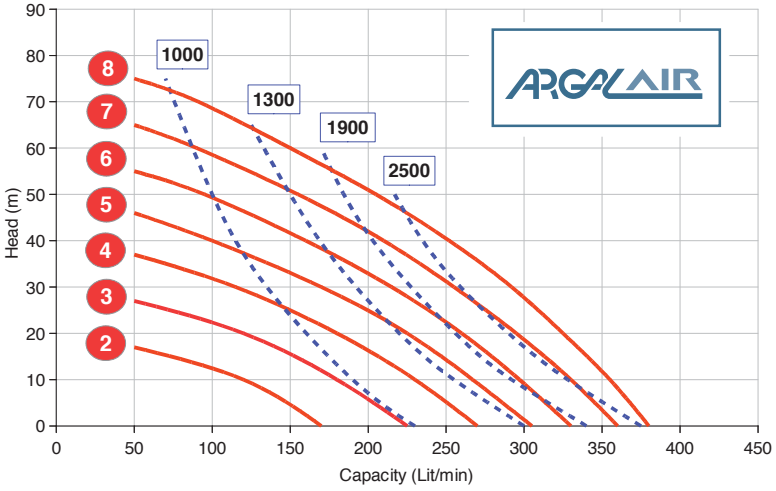
COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• HYTREL+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

Connections scheme page 30

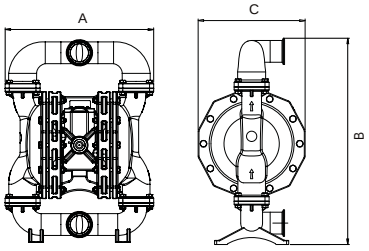
* Optional

ASTRAFOOD

DFA 150-400



bar Air Pressure main supply Nl/min Air consumption



DIMENSIONS (mm)	
AISI 316	**A** 361 **B** 260 **C** 502

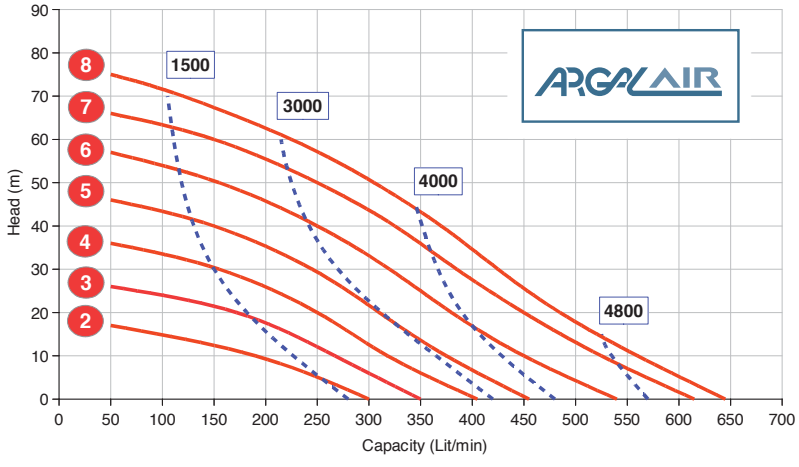
TECHNICAL DATA	
Fluid connections	• Tri-Clamp 2"
Air connection	¾" BSP
Max flow rate	400 l/m'
Max air pressure	8 bar
Max viscosity	50.000 cPs

COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• NBR+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

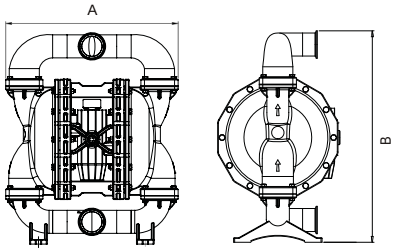
Connections scheme page 30

* Optional

DFA 200-650



bar Air Pressure main supply Nl/min Air consumption



DIMENSIONS (mm)	
AISI 316	**A** 487 **B** 598

TECHNICAL DATA	
Fluid connections	• Tri-Clamp 2½" • BSP*
Air connection	¾" BSP
Max flow rate	650 l/m'
Max air pressure	8 bar
Max viscosity	50.000 cPs

COMPOSITION	
Wetted parts	• AISI 316 Polished
Diaphragms	• HYTREL+PTFE
Valve Balls	• PTFE • AISI 316
Valve Seats	• AISI 316
Gaskets	• PTFE

Connections scheme page 30

* Optional

MISTRAL AODD PUMPS

WITH AISI 316L CENTRAL BLOCK

AODD MISTRAL

Zone 1

MISTRAL range represents the safest and most efficient solution for heavy dangerous and even explosive applications but also for process applications. The entire construction of the body pumps and of the distributor is realised in AISI 316L (low carbon content) making the pumps extremely resistant to corrosion, robust and perfect **for continuous operation.**

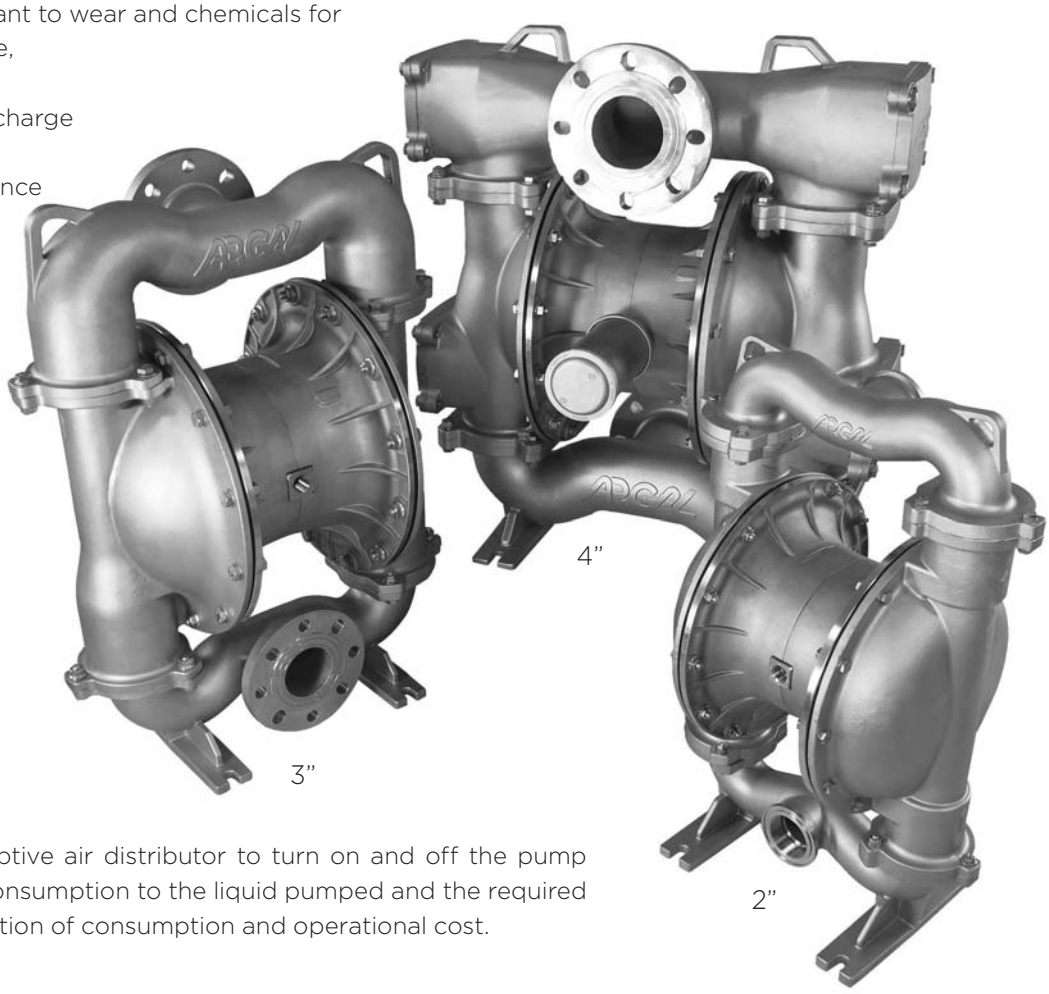
MAIN APPLICATIONS

- **Off-Shore platforms**
- **Marine**
- **Chemical process**
- **Cleaning/Cement mixer sewage**
- **Mining**

MISTRAL
200 (2”) - 300 (3”) - 400 (4”)

The significant advantages of the distribution system designed for the **MISTRAL:**

- **simple and maintenance free 5-component construction,**
- material of construction resistant to wear and chemicals for longer lifetime without damage,
- affordable cost,
- High-shift speed and high-discharge speed of the exhaust air,
- low consumption as consequence of the fine tuned air quantity supplied to the diaphragms.



“PROGRESS” VALVE

Argal designed a special adaptive air distributor to turn on and off the pump and to fine tune the air flow consumption to the liquid pumped and the required performance with a real reduction of consumption and operational cost.

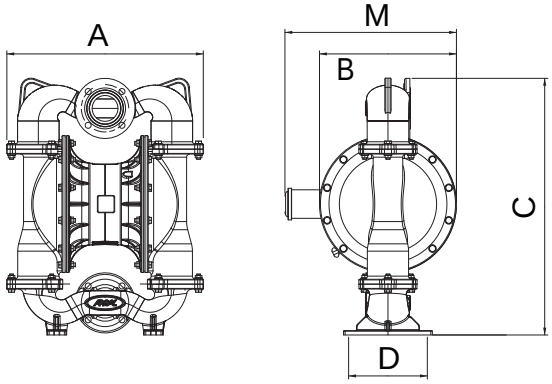
BR · AISI 316 L · Alu · DX · +100° · −20° (PTFE diaphragms) · +80° · −40° (NBR, EPDM, SANTOPRENE diaphragms)

The materials used, the switching speed and the distribution spool shift speed all highly **resist to the formation of ice** that detaches itself from the surface to get then ejected from the discharge tube. Possible remaining will never affect the pump operation.

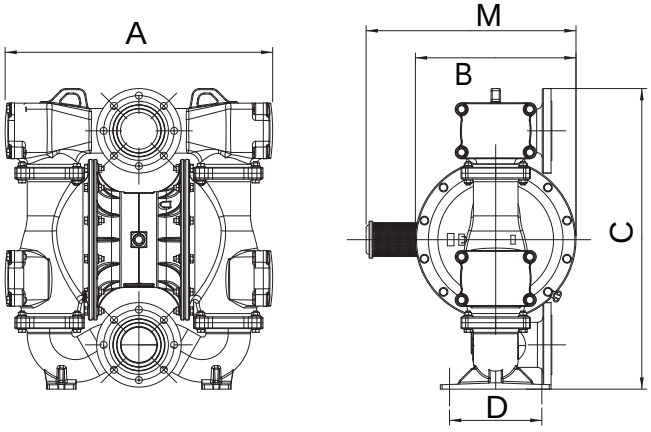
MISTRAL

200 (2”) - 300 (3”) - 400 (4”)

TECHNICAL DATA	200 (2”)	300 (3”)	400 (4”)
Maximum Capacity Litres/Minute	680	1100	1280
Materials of Pump Housings & Center Block	AISI 316L	AISI 316L	AISI 316L
Fluid Port (ISO-ANSI Flange) Intake & Discharge Connections	2” BSP	3” DN80	4” DN100
Air Inlet	½” female NPT	¾” female NPT	¾” female NPT
Air Exhaust (included silencer)	¾” female NPT	1” female NPT	1” female NPT
Maximum Working Pressure	8 bar	8 bar	8 bar
Maximum Cycles per Minutes	140	96	96
Max. Discharge Volume/Cycles	3,7 litres	8,5 litres	8,5 litres
Maximum Solids Particle Size	9 mm	11 mm	13 mm
Suction Lift (dry)	6 m	6 m	4,5 m



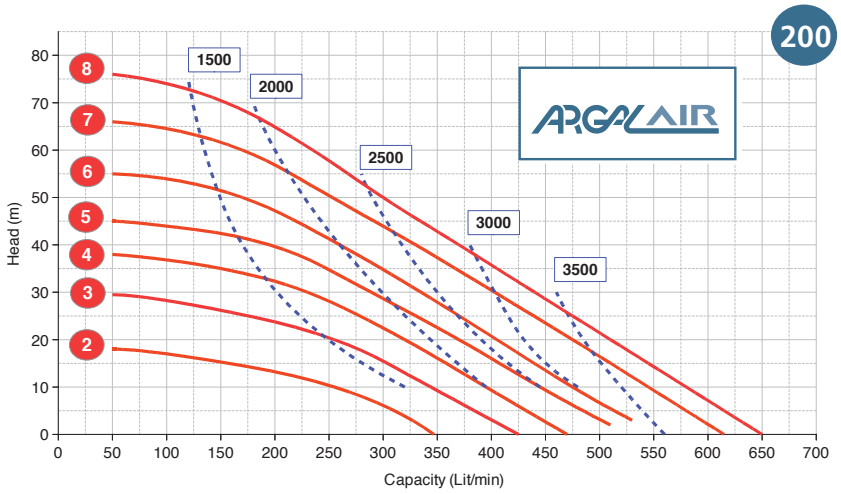
DIMENSIONS	200 (2”)	300 (3”)
A	440	624
B	340	435
C	707	815
D	220	250
M	460	570



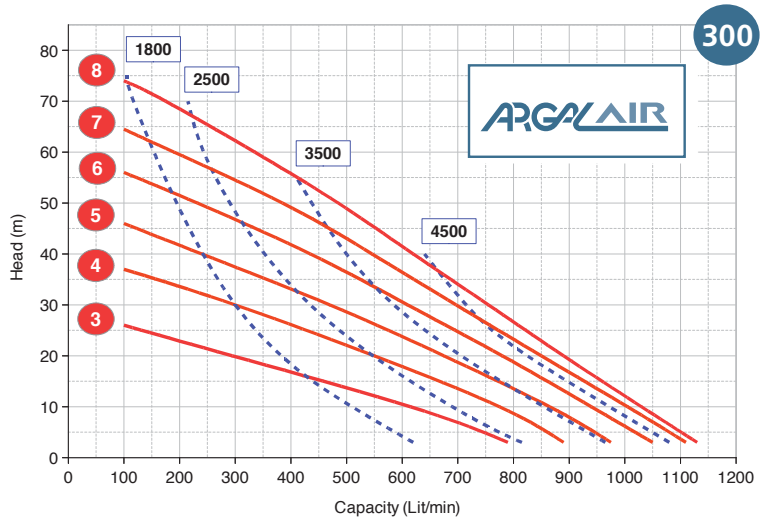
DIMENSIONS	400 (4”)
A	725
B	435
C	815
D	235
M	570

MISTRAL

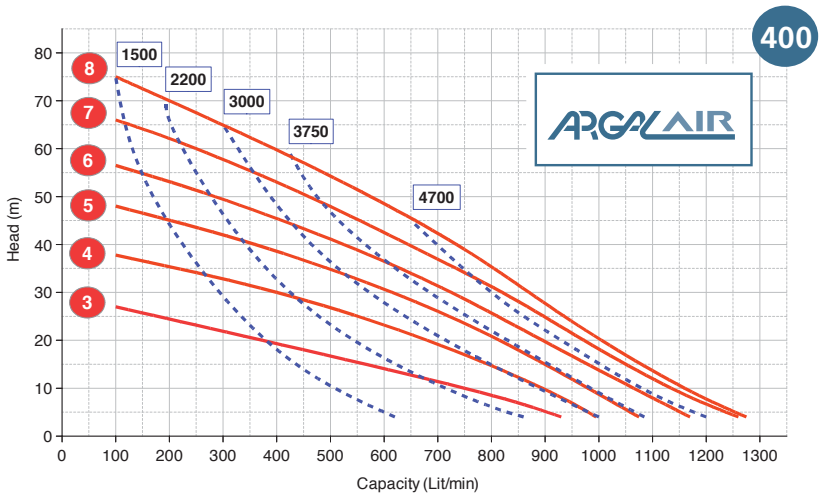
200 (2”) - 300 (3”) - 400 (4”)



COMPOSITION MISTRAL 2”	
Wetted parts	• AISI 316L • DUPLEX • BRONZE
Diaphragms	• EPDM • NBR • HYTREL • SANTOPRENE • HYTREL +PTFE
Valve Balls	• EPDM • NBR • PTFE • AISI 316L
Valve Seats	• POLYURETHANE • UPPE • PVDF • AISI 316L
Gaskets	• EPDM • NBR • FKM • FEP



COMPOSITION MISTRAL 3”	
Wetted parts	• AISI 316L • DUPLEX • BRONZE
Diaphragms	• EPDM • NBR • EPDM+PTFE • NBR+PTFE
Valve Balls	• EPDM • NBR • PTFE • AISI 316L
Valve Seats	• POLYURETHANE • UPPE • PVDF • AISI 316L
Gaskets	• EPDM • NBR • FKM • FEP



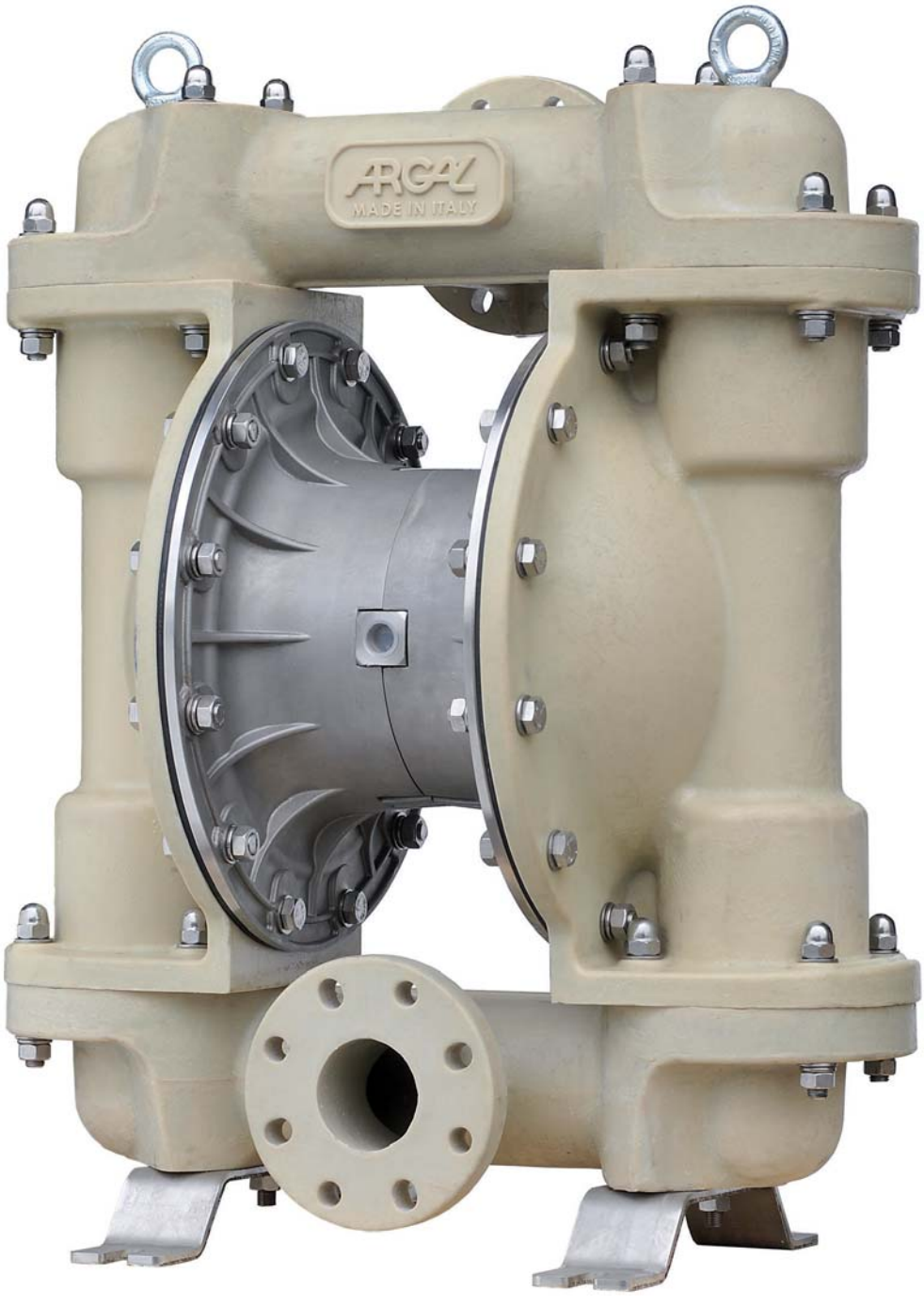
COMPOSITION MISTRAL 4”	
Wetted parts	• AISI 316L • DUPLEX • BRONZE
Diaphragms	• EPDM • NBR • EPDM+PTFE • NBR+PTFE
Valve Balls	• EPDM • NBR • PTFE • AISI 316L
Valve Seats	• POLYURETHANE • UPPE • PVDF • AISI 316L
Gaskets	• EPDM • NBR • FKM • FEP

bar Air Pressure main supply **Nl/min** Air consumption

AIRSATURN

Zone 2

"COMPOSITE MATERIALS PNEUMATIC PUMPS".



FRP

WORLD FIRST

AIRSATURN
300 (3") - 400 (4")

Thanks to the experience obtained with our pneumatic pumps ASTRA from size ¼" to 2" and the know how acquired manufacturing the Fiberglass centrifugal pumps SATURN under his belt, Argal could design and propose first to market these new air pumps made of thermoset resins. The main functional characteristics and peculiarities of the air pumps and its main applications are widespread and generally known.
So far the market lacked a solid and effective proposal for pneumatic pumps of large sizes made of non-metallic materials.
Some competitor offers 3" pumps made of plastics with **the physical-and mechanical limits intrinsic to the nature of the thermoplastic resins** and to overcome these limitations resort to **metal alloys with in turn have limits themselves** (one overall the high cost but even the corrosion-abrasion resistance).

"The composites MADE by ARGAL PUMPS, do not suffer the limits mentioned above and are proposed as the solution of synthesis and/or alternative".

MAXIMUM CHEMICAL AND MECHANICAL STRENGTH.

These pumps are obtained deploying composite materials made of vinyl ester resins reinforced with long strand only glass fibres moulded with RTM technique in its factory located in Brescia.
The parts wet by the liquid pumped in particular have important prerogatives:

- high chemical resistance (the highest among resins, polyester);
- mechanical strength comparable to some metal alloys;
- dimensional stability, characteristic of the thermosetting resins which during catalysis transform themselves irreversibly becoming insoluble and infusible;
- abrasion resistance and resistance to aging;
- resistance to low and high temperatures (from -35°C to + 115°C);
- lightness typical of composites which, because of differentiated modulus of elasticity for the various parts of the pump and with the minimum thickness of 20 mm exceed the hydrostatic tests from 20 to 50 bar;
- resistance to flame propagation in case of fire.

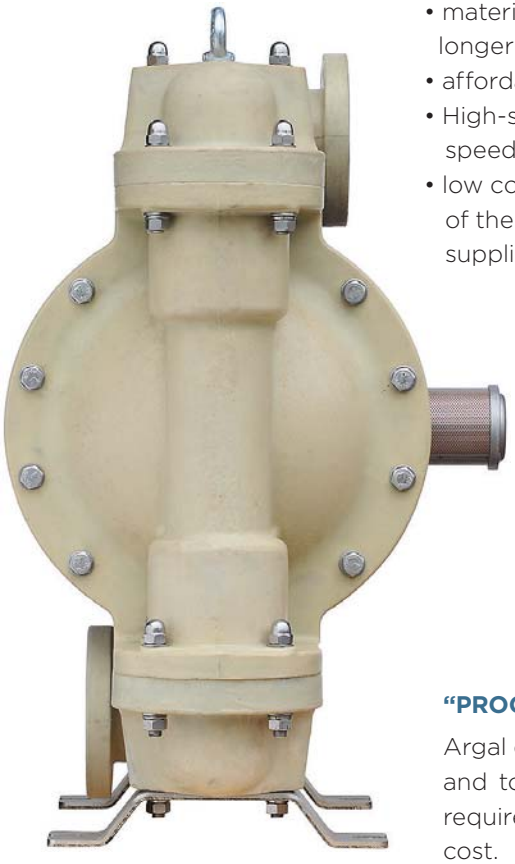
MATERIALS PROFILE Pump Casings

Pump casings of **AIRSATURN** are of the following types of FRP:

V1G standard vinyl ester resin for **general use**;
V1A mixture of vinyl ester resin for **abrasive liquids**;
V1C mixture of vinyl ester resin for **liquids with chlorine**;
V1F mixture of vinyl ester resin for **liquids with fluorine**.

AIRSATURN
300 (3") - 400 (4")

The significant advantages of the distribution system designed for the **AIRSATURN:**



- **simple and maintenance free 5-component construction,**
- material of construction resistant to wear and chemicals for longer lifetime without damage,
- affordable cost,
- High-shift speed and high-discharge speed of the exhaust air,
- low consumption as consequence of the fine tuned air quantity supplied to the diaphragms.

"PROGRESS" VALVE

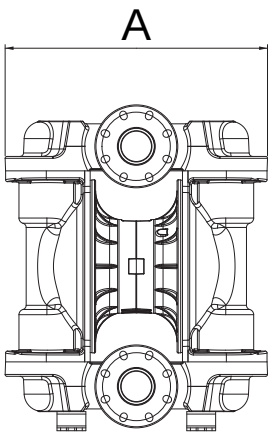
Argal designed a special adaptive air distributor to turn on and off the pump and to fine tune the air flow consumption to the liquid pumped and the required performance with a real reduction of consumption and operational cost.

FRP +115° -35° (PTFE diaphragms) +80° -40° (NBR, EPDM, SANTOPRENE diaphragms)

The materials used, the switching speed and the distribution spool shift speed all highly **resist to the formation of ice** that detaches itself from the surface to get then ejected from the discharge tube. Possible remaining will never affect the pump operation.

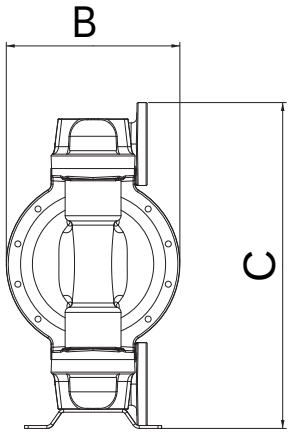
AIRSATURN
300 (3”) - 400 (4”)

TECHNICAL DATA	300 (3”)	400 (4”)
Maximum Capacity Litres/Minute	1100	1280
Materials of Pump Housings & Central Block	FRP + AISI 316L	FRP + AISI 316L
Fluid Port (ISO-ANSI Flange) Intake & Discharge Connections	3” DN80	4” DN100
Air Inlet	¾” F NPT	¾” F NPT
Air Exhaust (included silencer)	1” F NPT	1” F NPT
Maximum Working Pressure	8 bar	8 bar
Maximum Cycles per Minutes	96	96
Max. Discharge Volume/Cycles	8,5 litri	8,5 litri
Maximum Solids Particle Size	11 mm	13 mm
Suction Lift (dry)	6 m	4,5 m



DIMENSIONS (mm)	300 (3”)	400 (4”)
A	662	728
B	436	482
C	803	904

Connections scheme 1 C - 1 O page 30



TEMPERATURES	
DIAPHRAGM MATERIALS	**TEMP. °C MIN/MAX**
EPDM	+100 -35
NBR	+80 -20
EPDM + PTFE	+120 -35
NBR + PTFE	+80 -20

AIRPISTON

The AIRPISTON piston pumps family addresses the problems inherent to metering products with high viscosity up to 1,000,000 cPs.
These pumps are **made combining synthetic materials for the body with stainless steel AISI 316** for most of the wet parts.
AIRPISTON range complies with **the requirements of ATEX** Class 3: Zone 2 (Serie II 3/3GD IIB T 275°F). AIRPISTON pumps are offered in inline or submerged versions:

- **In-line pumps,** meant for "passing through" installation with suction pipe and delivery pipe connected to the system.
- **Submerged pumps,** with casing submerged in the liquid and delivery pipe connected to the system.

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MAIN APPLICATIONS

- **Mechanics: Lubricants and lubro-refrigerants**
- **Energy: Gas odorization**
- **Ecology: Coagulant, flocculent, deodorization**
- **Surface Treatment: Colorant liquids, varnish**
- **Cosmetics: Essences, pastes, lotions, soaps, shampoos**
- **Textile: Basic resins preparation and mix of addictive.**

PISTON METERING PUMPS
AIRPISTON

Both versions share the pneumatic motor which is the most sophisticate and important part of the device and is responsible for:

- **Actuating the piston to the required stroke length;** adjustable by ergonomic handle command from 0 to 100%
- **controlling the piston speed** movement as well as the frequency drive **from a minimum of 3 pumping per minute to 100 pumping per minute;**
- regulating one of the two lengths without affecting the other (frequency/cycles);
- **accepting external inputs** to execute single stroke metering or **batch dosing;**
- generating outputs to **command external devices** for a total dosing control.

Motor is provided with control connection.
External pneumatic devices can be added (e.s. pilot-operated valve) and the piston pump does not require additional piping.

APL IN-LINE PUMPS - HIGH VISCOSITY

APL pumps operate with viscosity up to **1,000,000 cPs.**
The volume of liquid delivered by each single pump stroke and its **frequency per minute** are controlled.
The pump **generates a signal** at the end of the **metering cycle** as an integrated characteristic.
The frequency is controlled by **pneumatically operated unstable oscillator** or external pneumatic or electric devices **(remote control).**

APL

APS SUBMERGED PUMPS - VERY HIGH VISCOSITY

This version is deployed to pump liquids of high-level of viscosity.
The casing is immersed in the fluid to minimise risks of cavitation and consequent erosion and premature wear of parts which is the main cause of failure of pumps to address this service.
The neat design of APS pumps simplifies installation and integrates:

- Suction valve integrated within the casing.
- Delivery valve integrated within the pumping piston.
- Sealed pumping piston.
- 2 spheres within its valves.

The motor actuates the piston by means of a metallic stem hosted within the dual purpose metallic (or synthetic) tube.
The liquid pumped by the piston passes through the dual purpose pipe and is delivered from its hydraulic connection.
The length of the dual purpose tube can be customised to match as much as possible the required dive depth.

APS

ACL

IN-LINE OR SUBMERGED METERING BASE PUMPS (ABL - ABS - ACL) ARE PERFECT FOR METERING HIGH AND VERY HIGH-LEVEL OF VISCOSITY.

The volume regulator control is integrated while the metering command is provided by an external unit.

The ABL and the ABS are realised in two different typologies**: "In-line" (ABL) or "Submerged" (ABS)**

ABS

ACL- The ACL realised **"in-line"** are ideal for metering high-viscosity fluids (<3000 cPs). Control devices can be assembled on to the ACL pump on pre-set positions thanks to its parallelepiped shape.
Liquid connections can be oriented in many positions.

All the BASE pumps models are in fact metering pumps that can regulate the dosed fluid volume.
Though, they are not equipped with an autonomous control as the metering command is provided by an external unit (on ACL model, a working frequency control can be added for example).
Pumps can be deployed in batteries (of 2 or more units) and a be run simultaneously with single command.

CDS

COMMAND DEVICES

- "Main" APS or APL piston metering pumps
- Frequency generator with pneumatic output
- Transducer with pneumatic output operated by the system cycle (where the pump is installed).

In **CDS system,** pumps have a flow rate equal or inferior to the main pump's one.

CDS COMBINED METERING SYSTEM

It smartly combines one main metering pump with one minor metering pump to deliver a single modular device to precisely mix two products of different physical characteristics. It is a standard feature of main pump models APL and APS 2.

SPECIFIC APPLICATIONS:
MECHANICS:
Lubro-refrigerants metering
Automatic refill with lubro-refrigerants
ECOLOGY AND ENVIRONMENT:
Dilution and dosage of flocculent liquids, dilution and metering of deodorizers.

It requires the addition of static auto-lube system **SMX** if the products have various viscosity.

SMX STATIC BLENDER

This device is built in 2 lengths and is used for blending two products with different physical characteristics to obtain one homogeneous compound.
The cylindrical construction made of synthetic materials encases the calibrated internal casing of the blending element.
The two outputs are equipped with non return valves.

ACCESSORIES SHARED BY ALL AIRPISTON

AIRPISTON pumps share a list of accessories to match different scenarios and satisfy different requirements:

- External timer (to set time lapse between metering cycles from 0 to many minutes).
- Cycle counter (presettable).
- Cycle counter (to actuate dosing batch).
- Solenoid valve (for remote electric command).
- Transducer (to convert the “end of cycle” signal from pneumatic to electric).
- Static blender (to instantly meter and blend meter products).
- Combined metering system kit consisting of: APL pump support, SMX static blender, water main supply adaptor, ABS pumps connexions.

AIRPISTON METERING PUMPS MAIN CHARACTERISTICS

MODEL	FLOW RATE l/h min-max	MAX volume per cycle in CC	MAX frequency (cycle per min')	MAX delivery pressure (bar)
ABL/ABS/ACL 1	0,003 - 1	0,18	100	30
ABL/ABS /ACL 4,5	0,013 – 4,5	0,75	100	30
ABL/ABS/ACL 12 APL/APS 12	0,036 - 12	2	100	30
ACL17	0,054 - 17	3	100	30
ABL/ABS 27 APL/APS 27	0,08 - 27	4,5	100	30
ABL/ABS 54 APL/APS 54	0,16 - 54	9	100	30
ABL/ABS 75 APL/APS 75	0,22 - 75	12,5	100	30
ABL/ABS 120 APL/APS 120	0,36 - 120	20	100	30
APL/APS 160	0,80 - 160	45	60	16
APL/APS 320	1,60 - 320	90	60	16
APL/APS 450	2,20 - 450	125	60	16

ADJUSTABLE CYCLE VOLUME: from 10 to 100%
ADJUSTABLE FREQUENCY: from 3 to 60/100 CYCLE per MIN'
INLET PRESSURE: from 2 to 8 BAR

MATERIALS: MAIN CONFIGURATIONS (Custom layouts available on request).

VERSION	CASING	PUMPING PISTON	GASKET	DRUM/STEM
DL S N DL S D	POMc	AISI 316	NBR EPDM	AISI 316
WW U D WW U T	PP	CER	EPDM PTFE	PP/AISI 316
SS S D SS S T	AISI 316	AISI 316	EPDM PTFE	AISI 316

WELL PUMPS
AIRDRAIN

AIRDRAIN series was designed to operate in wells. The main applications are reclaimed areas drainage, ground level control, supernatant and leachate from municipal solid waste collecting areas.
AIRDRAIN is composed of 4 models with different operating system:

- **BSD** BASIC STATIC DRAIN
- **ASD** AUTOMATIC STATIC DRAIN
- **ADD** AUTOMATIC DIAPHRAGM DRAIN
- **ABD** AUTOMATIC BELLOW DRAIN

BSD - BASIC STATIC DRAIN is the most reliable pump of AIRDRAIN series. The pump casing consisting of a hollow vessel is fitted with one intake and one evacuation liquid valve. An airline connects the pump casing with the pneumatic operating central block located at the top of the well. Once submerged, the pump casing is flooded till filled up through the intake valve because of the liquid's hydrostatic pressure and the air contained inside is displaced through the airline connected to the control unit.

ASD - AUTOMATIC STATIC DRAIN is similar in operating principle to BSD pumps. ASD differ from BSD pumps as for BSD pumps do not require the external pneumatic operating central block. The replenishment and the evacuation phases of the BSD pumps are controlled by its internal air compressor control device assisted by a floating probe to detect the liquid level. ASD pumps evacuate exhausted air through a dedicated pipe. ASD pumps do not need the bathymetric probe to monitor the level of the liquid pumped for the function is delivered by the mentioned floating probe. BSD and ASD pump comply with the requirements of ATEX Class 3.

ADD - AUTOMATIC DIAPHRAGM DRAIN These automatic pumps do not require external controls. ADD model delivers the pumping effect by a flexible diaphragm coupled to suction and delivery valves. It can be supplied with liquid level detection to stop once the liquid is missing. The pump does not fail if run dry. This design is advantageous for the pump that can operate properly till the liquid is completely run out even if the pump is not entirely submerged. As an additional bonus, these pumps are extremely short which reduces the risk for the pump to be abandoned inside the well if it deforms.

ABD - AUTOMATIC BELLOW DRAIN is similar to ADD with the difference that the element responsible for delivering the liquid flow is not a flexible diaphragm but a bellow. Thanks to the reduced diameter of the bellow and the diameter of the diaphragm, the ABD pumps are more compact than ADD pumps hence easier to install into minor-size wells.

ADD and ABD pumps are special for they comply with the requirements of ATEX Class 2 zone 1, as such pumps can be safely operated into wells and ideal for extracting percolate from municipal solid waste collecting areas with biogas presence and consequent risk of explosion.

Options for all AIRDRAIN Pumps:

- Installation kit for wells (pressure reducer, suspension cable, air compressed and liquid pipes).
- Lamellar filter on the intake.
- Level control probe for liquid collection tanks, with min. max.
- Only for BSD pumps: level control bathymetric probe.
- Only for ADD and ABD pumps: level control device.

AIRDRAIN PUMPS MAIN CHARACTERISTICS

MODEL	PUMP DIAMETER mm	FLOW RATE l/h min-max	MAX volume per cycle in CC	MAX frequency (cycle per min')	MAX delivery pressure (bar)
BSD / ASD	63	6	0,18	10	8
BSD / ASD	90	20	0,75	10	8
ADD	125	18	2	150	8
ABD	70	10	4,5	100	8
ABD	90	18	9	100	8

MATERIALS: MAIN CONFIGURATIONS

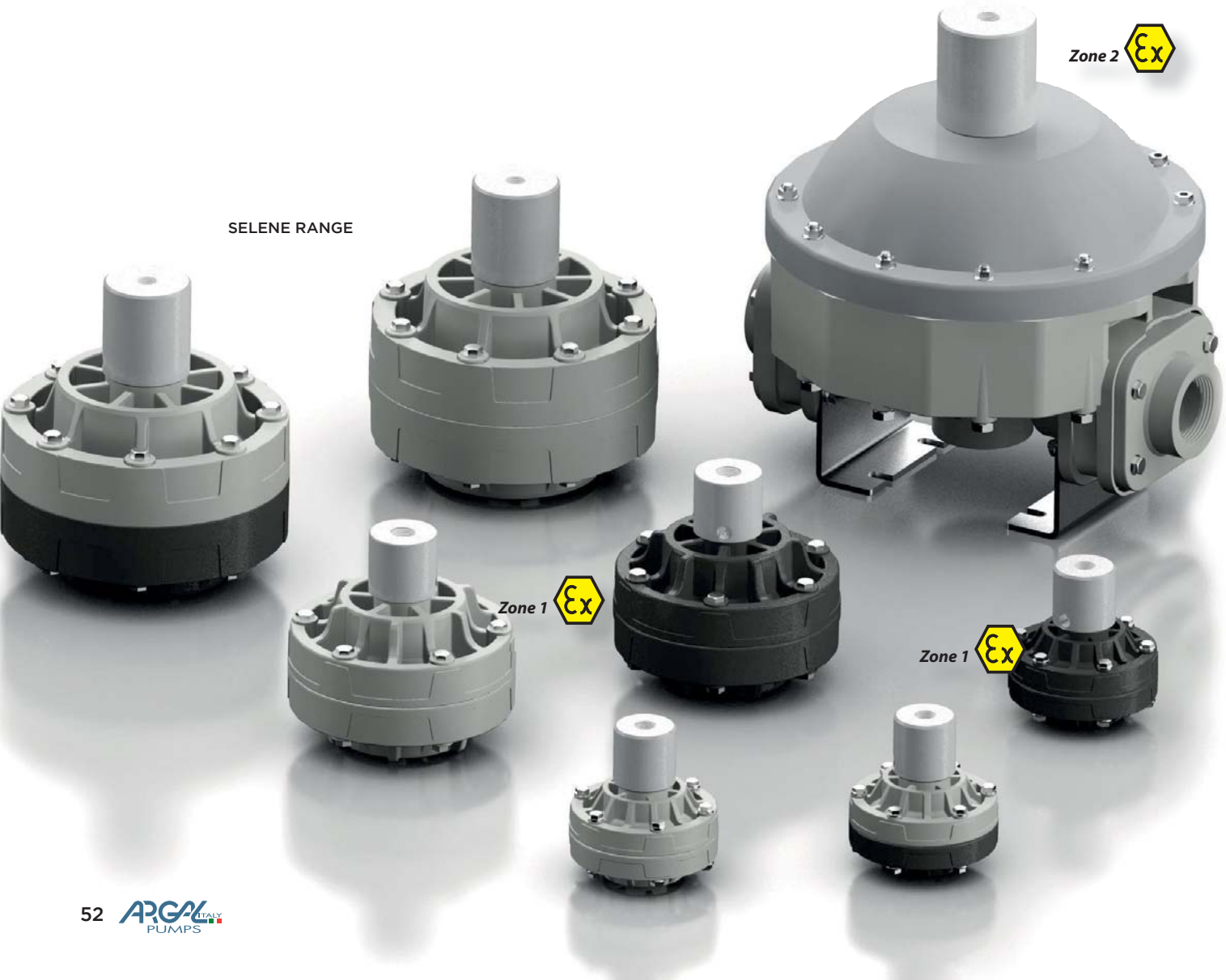
VERSION	HEAD/CASING	DISCHARGE VALVE	INTAKE VALVE	GASKETS	DIAPHRAGM BELLOW
BSD / ASD WS	PP • AISI 316	AISI 316	PTFE • AISI 316	FKM	-
ADD WW M	PP	AISI 316	PTFE • AISI 316	FKM	SANTOPRENE®
ABD 70 WS T	PP • AISI 316	AISI 316	PTFE • AISI 316	FKM	PTFE
ABD 90 WS T	PP • AISI 316	AISI 316	PTFE • AISI 316	FKM	PTFE

SANTOPRENE® is a registered trademark of Exxon Mobil.

SELENE & ZEFIRO (DAMPENERS)

The range of SELENE & ZEFIRO flow pulsation dampeners exploits a new technology which minimises the pulsation typical of the flow delivered by air operated double diaphragm pumps. All volumetric pumps as metering pumps with double diaphragm or plumber piston generate pulsations from their pumping alternative motion and hydraulic shocks potentially capable to damage the complete device.
The pulsation dampeners Selene are mounted on the line where the liquid is delivered and reduce drastically pulsation, liquid hammers and vibration of the pump.
The dampener needs its source of pressurised air supply.

Its use is advised when the hydraulic circuit of the pump suffers peaks of pressure, thermal expansions, sudden starts and stops or fast valve shut offs of delivery valves.



PNEUMATIC PULSATION

SELENE dampeners are “active“ and do no need tuning or pre-loading for they are self-adaptive; their can dampen the amplitude of the pulsations up to 90% of their max. amplitude.

Dampeners require a minimal maintenance and are available in the same construction materials of the liquid chambers and diaphragms for thermoplastic pumps and in stainless steel SUS 316 for the metallic versions. For pumps made of aluminium the SELENE dampeners are constructed in PPS (Ryton®).

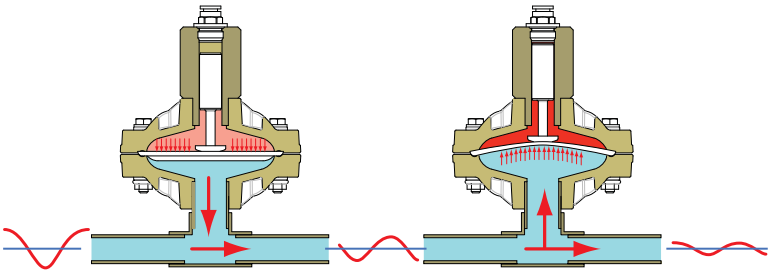
SELENE dampeners are available in ATEX compliant version and are adequate to operate in areas at risk of explosion, classified as Atex Zone 1.

ZEFIRO MODEL

PNEUMATIC PULSATION

The major advantages of the Selene dampener are:

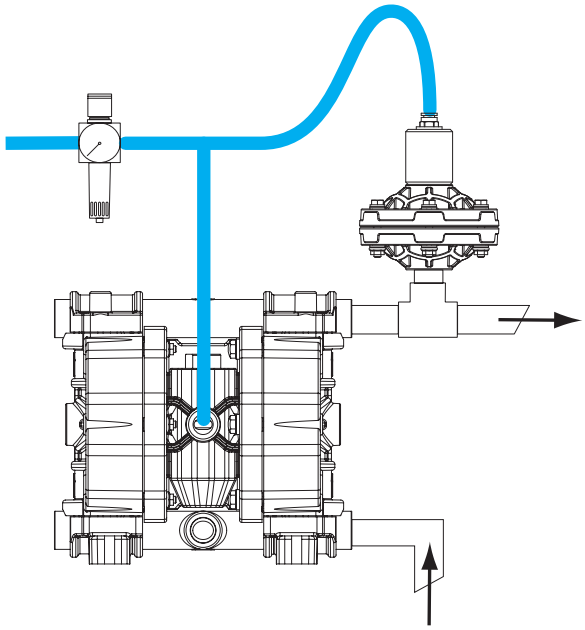
- Stabilizing the flow generated by volumetric pumps
- Reducing significantly the vibrations
- Reducing liquid hammers
- Preventing potentially damaging pressure peaks
- Reducing significantly the noise of the system
- Protecting the appliances connected along the same hydraulic line
- Reducing the maintenance cost of the plant
- Increasing global productivity
- Is operating with liquids viscous or laden with solids.



PDA 75 TECHNICAL DATA		MATERIALS	APPLICABILITY
Connections	• Threaded BSP • Threaded NPT • Flanged (1)	• PP + Glass fibre • PP + Carbon fibre • PVDF + Carbon fibre • POMC + Carbon fibre • POMC • AISI 316 • AISI 316 Polished	• DDA 25-09 • DDA 38-18 • DDA 50-30
Inlet/Outlet	¾"		
Air connection	ø 6 mm		
Air exhaust plug	¼"		
Max pressure	8 bar		
Dimension	ø 120x125 mm		

PDA 100 TECHNICAL DATA		MATERIALS	APPLICABILITY
Connections	• Threaded BSP • Threaded NPT • Flanged (1)	• PP + Glass fibre • PP + Carbon fibre • PVDF + Carbon fibre • POMC + Carbon fibre • POMC • AISI 316 • AISI 316 Polished	• DDA 50-50 • DDA 50-65 • DDA 75-100 • DDA 100-100
Inlet/Outlet	1" ¾" solo per i corpi in AISI		
Air connection	ø 8 mm		
Air exhaust plug	¼"		
Max pressure	8 bar		
Dimension	ø 182x175 mm		

DAMPENER



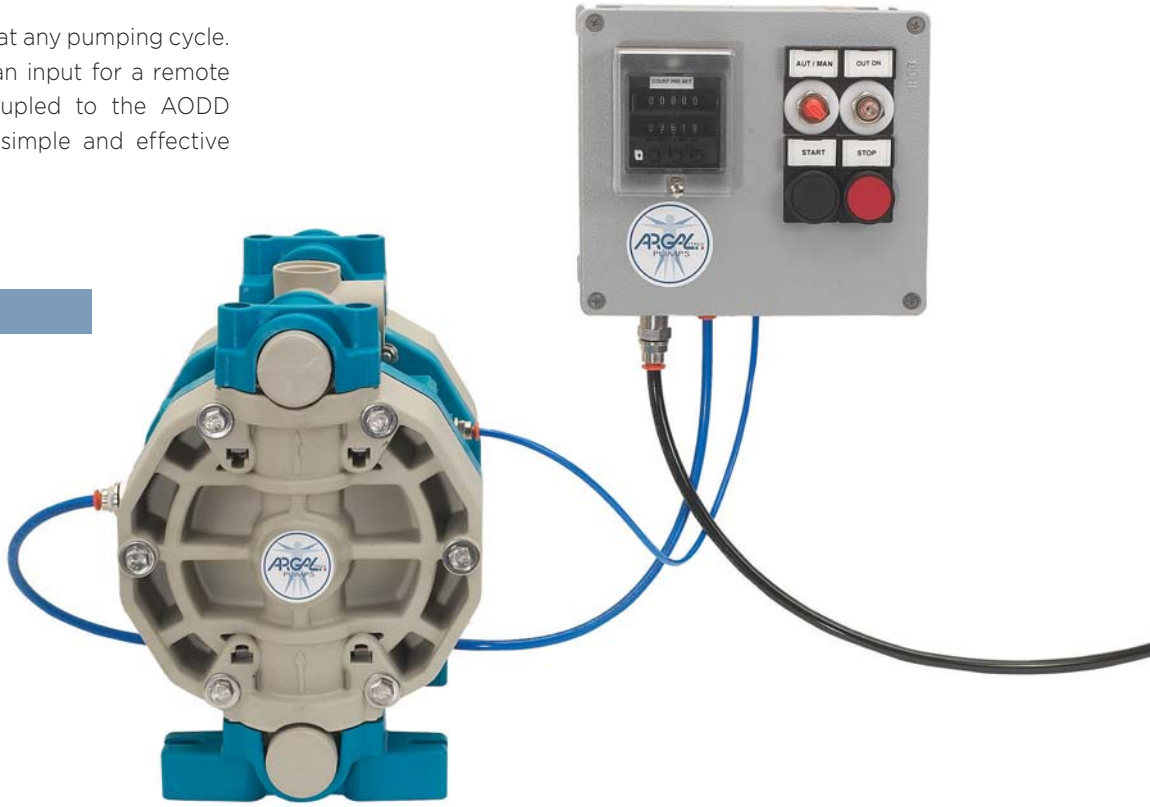
PDA 150 TECHNICAL DATA		MATERIALS	APPLICABILITY
Connections	• Threaded BSP • Threaded NPT • Flanged (1)	• PP + Glass fibre • PP + Carbon fibre • PVDF + Carbon fibre • POMC + Carbon fibre • POMC • AISI 316 • AISI 316 Polished	• DDA 100-160 • DDA 125-250
Inlet/Outlet	1 ½"		
Air connection	ø 10 mm		
Air exhaust plug	¼"		
Max pressure	8 bar		
Dimension	ø 231x252 mm		

PDZ 200 TECHNICAL DATA		MATERIALS	APPLICABILITY
Connections	• Threaded BSP • Threaded NPT • Flanged (1)	• PP + Glass fibre • PP + Carbon fibre • PVDF + Carbon fibre • ALUMINUM • AISI 316 • AISI 316 Polished • AISI 316 Lined	• DDA 150-500 • DDA 200-650 • MISTRAL 200
Inlet/Outlet	2"		
Air connection	ø 12 mm		
Air exhaust plug	½"		
Max pressure	8 bar		
Dimension	ø 350x405 mm		

ACCESSORIES

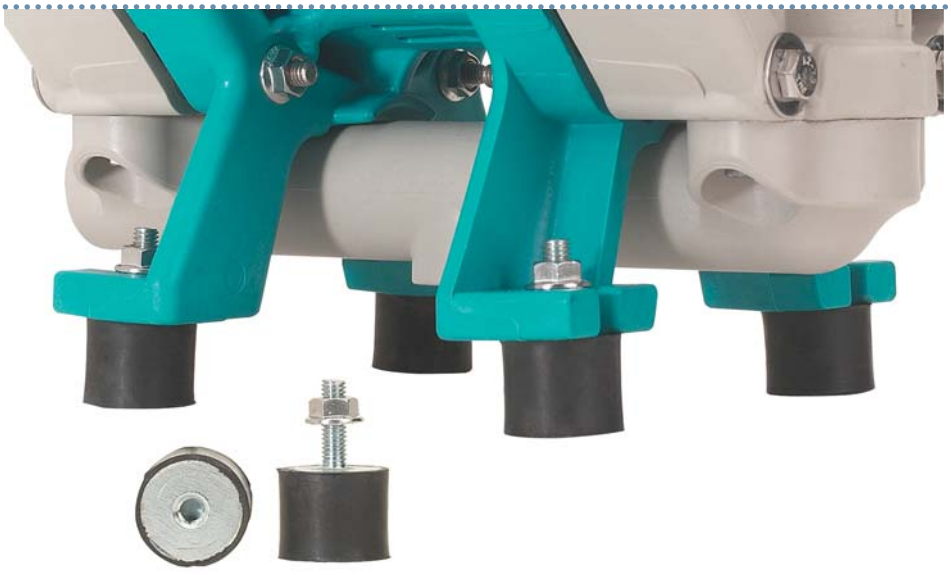
CYCLE-COUNTER

Delivers on/off switch signal at any pumping cycle. This signal can be used as an input for a remote cycle counter device; if coupled to the AODD pump, it may constitute a simple and effective dosing system.



COMPATIBILITY

- ASTRA COMPACT
- ASTRA
- MISTRAL
- AIRPISTON



ANTI VIBRATION MOUNTINGS

Minimise the vibrations transmitted from pump to system.

1. Air supply input
2. Pump supply output
3. Start command
4. Stop command
5. Pump signal input
6. Modality selector Auto/Man.
7. Remote start command
8. Remote stop command
9. Light-activated output
10. Preselection impulse counter

STROKE-COUNTER

Counts the number of strokes and is connected to a PCL or a counter to allow several control modes.

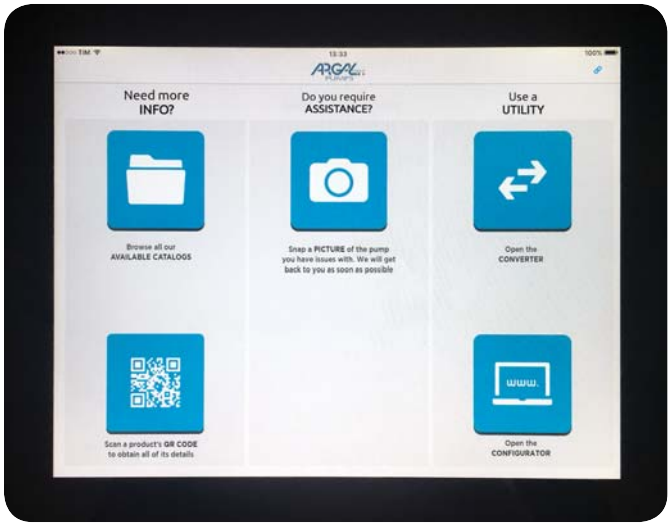
TROLLEY

Easy to apply on the installation site.

MOBILE APP

Find **ARGAL** in Apple **APPSTORE** and Google **PLAYSTORE** to get precious features:

CATALOGS all catalogues continually updated;
CONVERTER of the principal measure units;
SETTINGS to set up your pump through your smartphone or tablet



Google play

App Store

DO YOU NEED HELP?
Just take a **PICTURE** of the pump to repair or to change. You'll get in touch with our custom care or sales office to have a quick answer.

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MAG-DRIVE & MECH-SEALED CENTRIFUGAL PUMPS

ARGAL AIR

AIR-METERING & AODD PUMPS PULSATION DAMPENERS

VERTICAL SUMP PUMPS

SUBMERSIBLE PUMPS

SELF-PRIMING PUMPS

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