



II 2 GD c IIB T4  
Baseefa15ATEX13DR

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WARRANTY



# Ruby Air Operated Diaphragm Pumps

[www.alphadynamicpumps.co.uk](http://www.alphadynamicpumps.co.uk)

# Ruby Air Operated Diaphragm pumps



New pump line with a brand new designing that offers reinforced pumping potentials. The updated designing provides the possibility to use also other materials at the hydraulic parts without decreasing the efficiency in pressure. Plus, it offers even bigger performance provided with economy

## Ruby Pumps composition codes

Pump model	Body	Center block	Diaphragms	Valve Seats	Balls	O-ring	Other Options
Mini 005	P: PP	P: PP	N: NBR Conductive	N: NBR	N: NBR	N=NBR	D: Twin
Mini 017	V: PVDF+CF	A: Aluminium	E: EPDM Conductive	E: EPDM	E: EPDM	F=FKM	Manifold
Ruby 012	A: Aluminium	AN: Alu Nickel Plated	T: TFM+(EPDM Conductive)	T: PTFE	T: PTFE	T=PTFE	
Ruby 015	S: AISI 316	PC: PP+CF	Z: TFM-A+(EPDM Conductive)	A: Aluminium	S: AISI 316	E=EPDM	F: Flange
Ruby 020	PC: PP+CF	W: PP FDA	ST: PTFE+SANTOPRENE (Backup)	V: PVDF			PN10
Ruby 025	SL: AISI 316 electropolished		HY: PTFE + HYTREL (Backup)	S: AISI 316			
Ruby 040				P: PP			
Ruby 140							
Ruby 050							
Ruby 150							
Ruby 051							
Ruby 080							
Ruby 081							

## Main features

Available in PP, PP+CF, PVDF, ALUMINIUM and AISI 316 STAINLESS STEEL

- Use in potentially explosive atmospheres (conductive series)

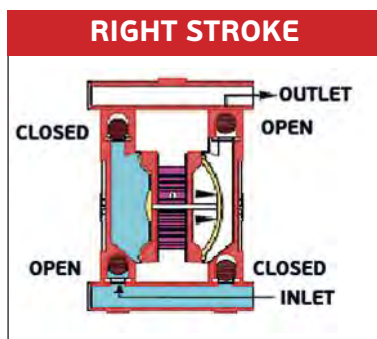


II 2 GD c IIB T4

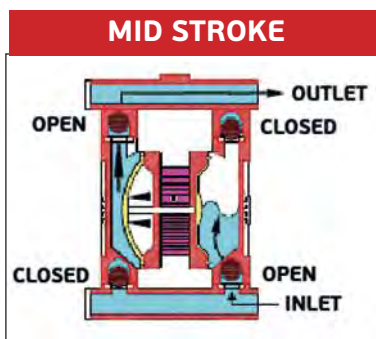
- High efficiency degree
- Economical air consumption, ecological designing
- Pressure / capacity high efficiency
- Oil free operation
- Very low level of icebarriers, up to zero in high wear outs
- New air valve designing, fully controled air passage, with the potential to use additional ice barrier protectives.
- Easy disassembling and re-assembling
- Easy transportation
- New generation diaphragms with embodied inner / outer piston
- New generation PTFE diaphragms of embodied type for long-life operation (compound)
- Potential to be submersible
- Possibility to be used in dirty environments due to their closed designing
- Easy entrance orientation changing (manifold reverse)
- Automatic suction

## How it works

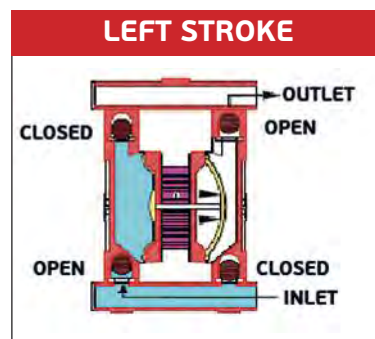
The Ruby diaphragm pump is an air-operated, positive displacement, self-priming pump. These drawings show flow pattern through the pump upon it's initial stroke. It is assumed the pump has no fluid in it, prior to it's initial stroke



**FIGURE 1** The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on it's suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

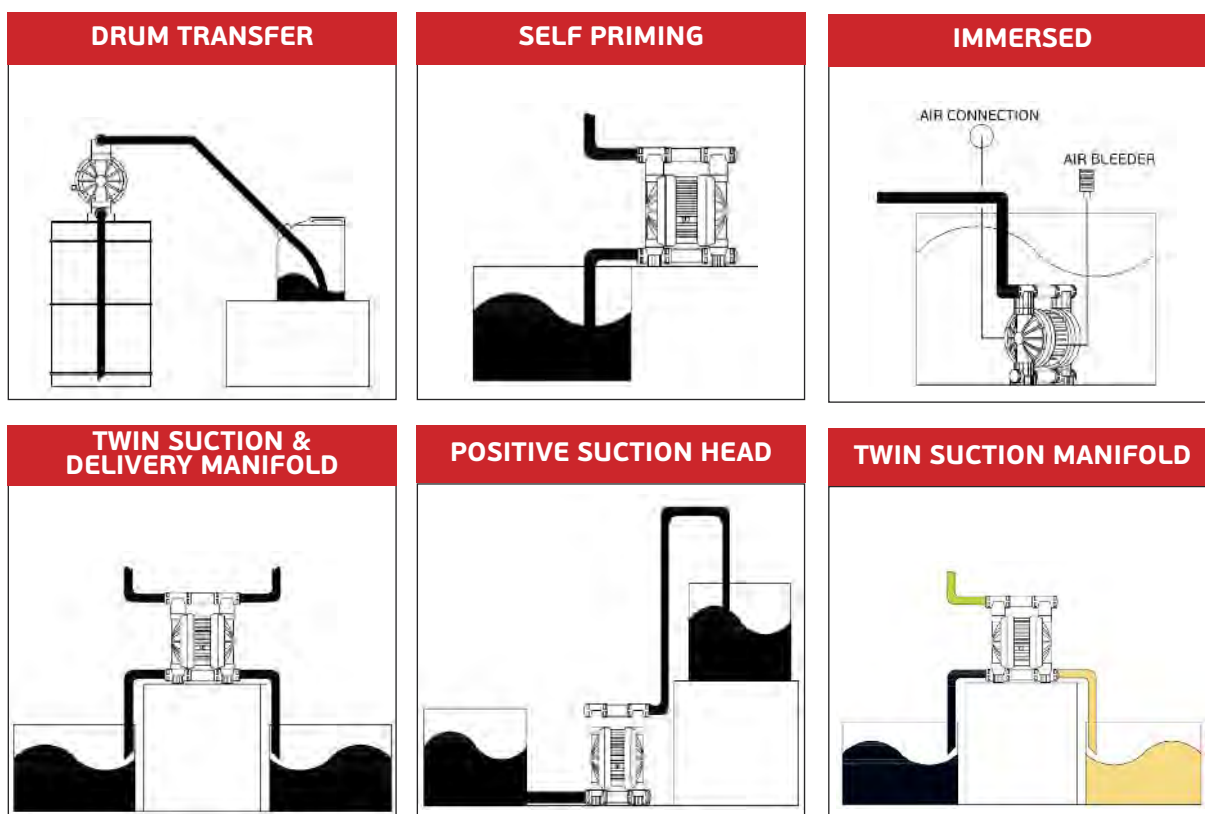


**FIGURE 2** When the pressurized diaphragm, diaphragm A, reaches the limit of it's discharge stroke, the air valve redirects pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off it's seat, while the opposite discharge valve ball is forced onto it's seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off it's seat allowing the fluid being pumped to fill the liquid chamber.



**FIGURE 3** At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches it's original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

# Installation



## ATEX Certificate

**ALPHADYNAMIC PUMPS** has stored the documentation certifying ATEX compliance according to Directive 94/9/CE for its ranges of Ruby air operated diaphragm pumps with the SGS Baseefa Limited certification body. They are manufactured in a CONDUCT, class II 2 GD c IIB T4 version.

The equipment user is responsible for classifying its area of use.

On the other hand, the manufacturer shall identify and affix the certification class of the manufactured equipment.



## Advance Unified Diaphragms Featuring

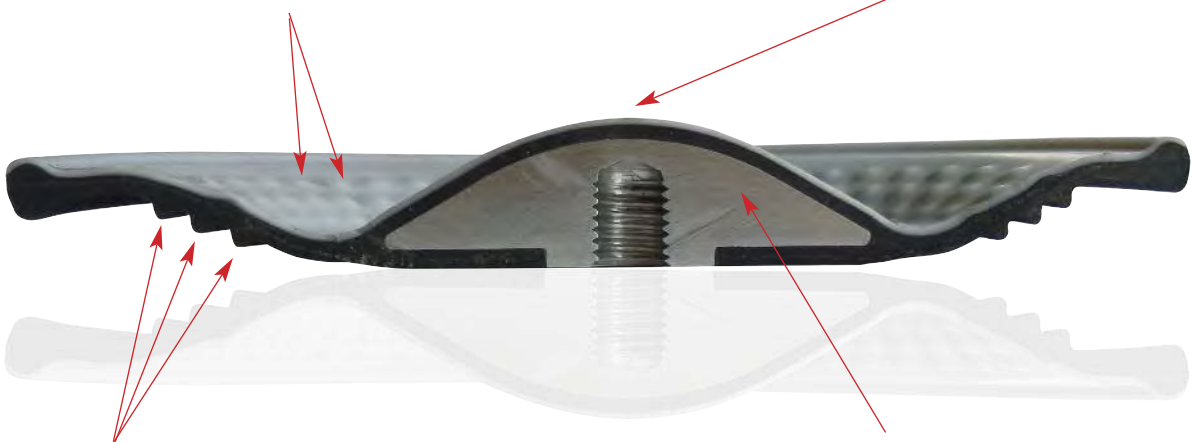
- ✓ Easy installation and maintenance
- ✓ Excellent service life
- ✓ Inventory cost reduction
- ✓ Improved performance
- ✓ Greater displacement per cycle
- ✓ No center hole, elimination of potential leak paths.
- ✓ There is no need for the main axis to be insured
- ✓ They can be screwed and unscrewed without the use of tools



## Advance Unified Diaphragm Offers:

**The prominences decrease** the stretching of the PTFE during the regression and prevent it from cracking.

**Exclusive conical shape** provides excellent service life, suction lift and lower start-up pressure



**Backing ribs** sustain and guide the diaphragm's flexibility for extended life and reduced cavitation on suction stroke

**Oversized integrated plate** supports nearly 50% of the diaphragm through the entire dynamic motion.



# Minipump 005

Construction materials: PP – PP+CF



Minipump 005

# Minipump 017

Construction materials: PP, PP+CF, ECTFE

## Technical data

	Minipump 005	Minipump 017
ATEX certification	II 2 GD c IIB T4	II 2 GD c IIB T4
Construction materials	PP, PP+CF	PP, ECTFE, PP+CF
Intake/delivery connections (standard)	G 1/4"	G 3/8"
Air connection	1/8"	3/8"
Max. self-priming capacity	3 m	3 m
Max. flow rate	5 l/min	17 l/min
Max. head	70 m	70 m
Max. air supply pressure	7 bar	7 bar
Diameter	0,5 mm	0,5 mm
Max. operating temp.	60°C	60°C, ECTFE 90°C
Weight	0,5Kg	1Kg, ECTFE 1,5Kg

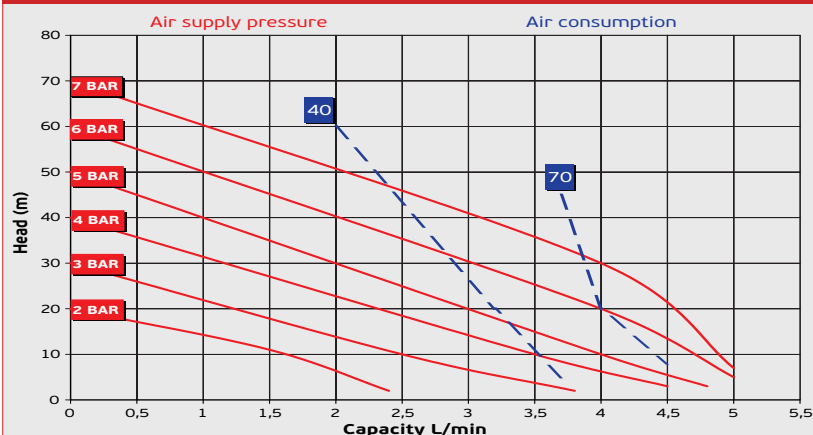
\* The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material.



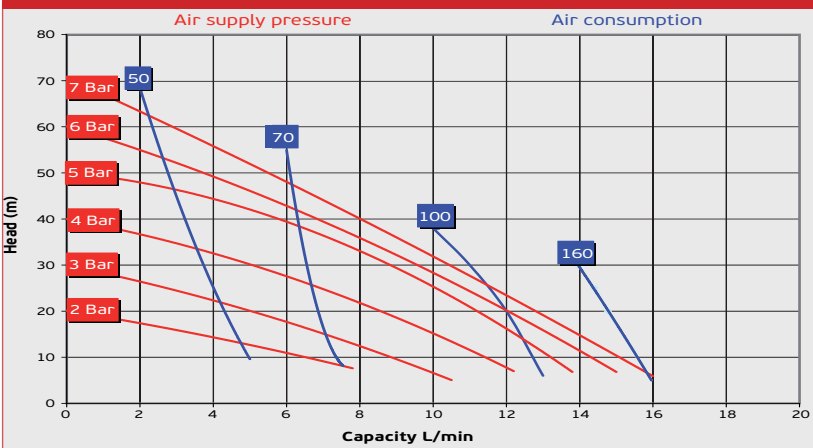
Minipump 017



## Performance Minipump 005



## Performance Minipump 017



# Ruby 012 Pump

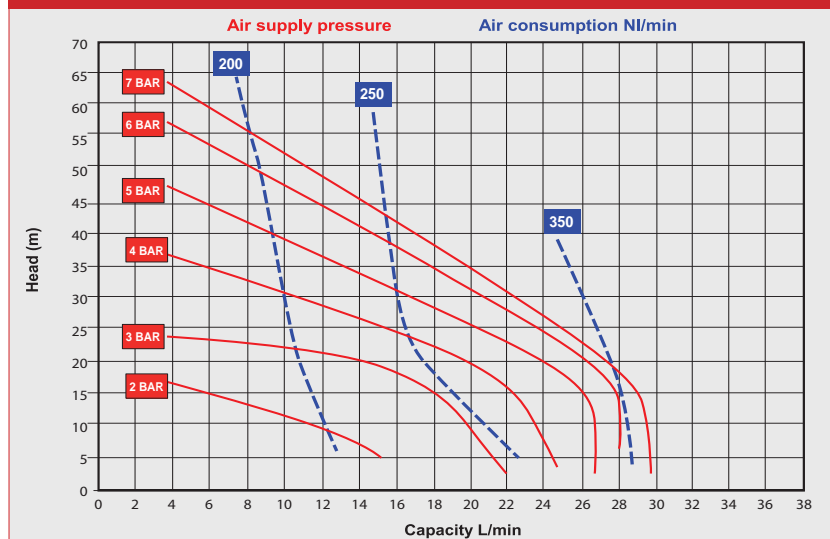
Construction materials: PP - PVDF- PP+CF

## Technical data

ATEX certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, PP+CF
Diaphragms	SANT+PTFE, HYTREL+PTFE
Intake/delivery connections	G 1/2"
Air connection	1/4"
Max. self-priming capacity	4 m
Max. flow rate	30 L/min
Max. head	70 m
Max. air supply pressure	7 bar
Max solid size (diameter)	2 mm
Max. operating temp.	PP 60°C, PVDF 95°C, PP+CF 60°C
Weight PP , PP+CF	1,6 Kg
Weight PVDF	1,9 Kg



**CURVES RUBY 012**



# Ruby 015 Pump

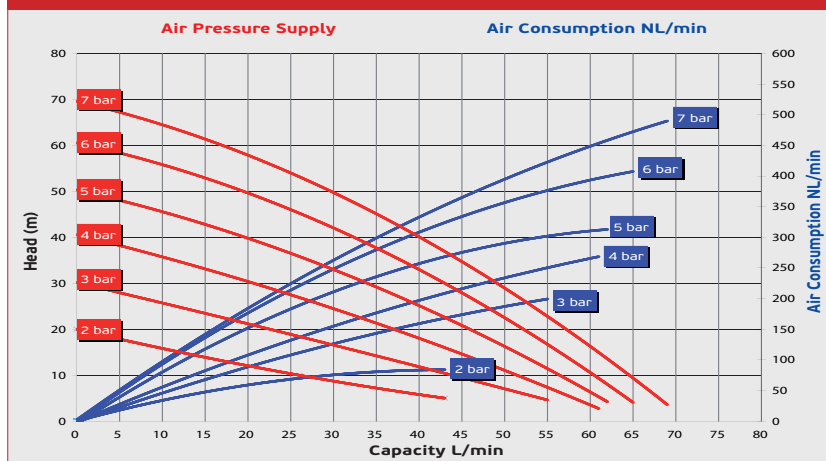
Construction materials: PP – ALUMINIUM – PVDF – AISI 316 – PP+CF

## Technical data

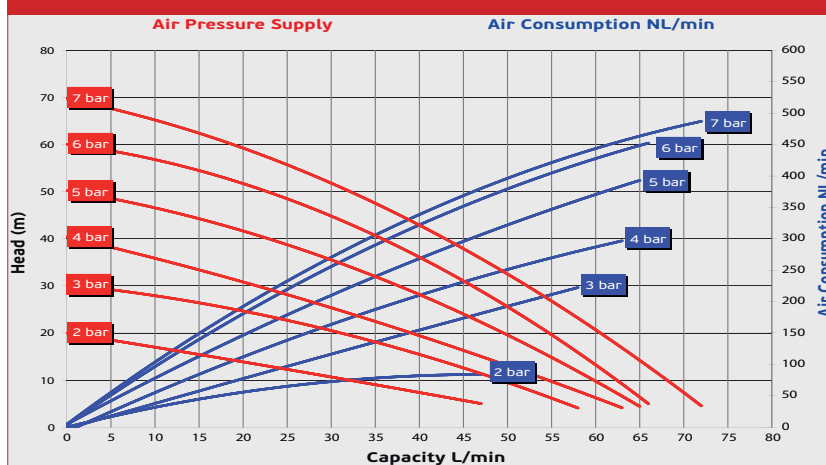
ATEX certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, ALUMINIUM, AISI 316, PP+CF
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	1/2" BSP G-Flange on Request
Air connection	1/2"
*Max. self-priming capacity	4 m
*Max. flow rate	72 l/min
Max. head	70 m
Max. air supply pressure	7 bar
Diameter	3,0 mm
Max. operating temp.	PP 60°C, PVDF 95°C, Alu 95°C, AISI 316 95°C
Weight PP	4,0 kg
Weight PVDF	5,5 Kg
Weight Aluminium	6,0 kg
Weight AISI 316	9,0 kg

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

### CURVES RUBY 015 PTFE FULL CAPACITY FITTED



### CURVES RUBY 015 RUBBER FITTED





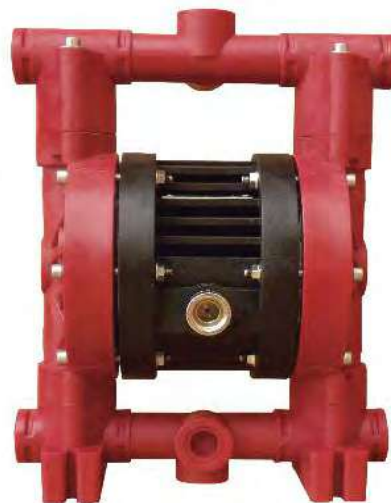
# Ruby 020 Pump

Construction materials: PP – ALUMINIUM – PVDF – PP+CF

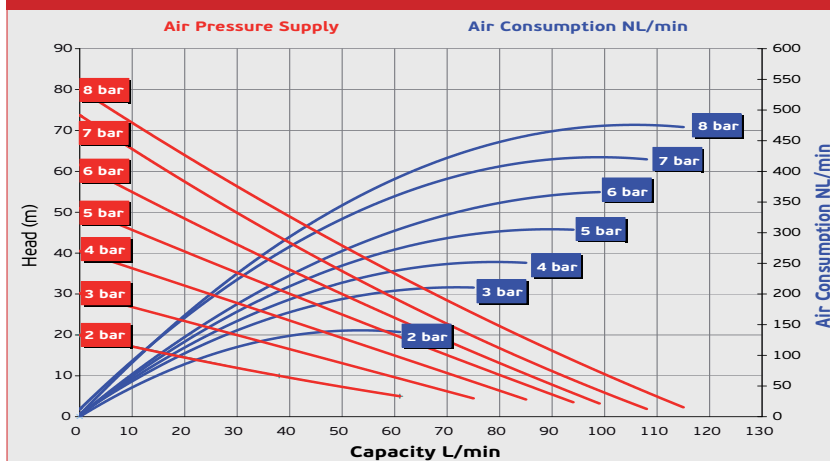
## Technical data

ATEX certification	II 2 GD c IIB T4 135°C
Construction materials	PP, PVDF, ALUMINIUM, PP+CF
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	3/4" BSP G -Flange on Request
Air connection	1/2"
*Max. self-priming capacity	4 m
*Max. flow rate	117 L/min
Max. head	80 m
Max. air supply pressure	8 bar
Diameter	3,0 mm
Max. operating temp.	PP 60°C, PVDF 95°C, Alu 95°C
Weight PP	4,0 kg
Weight PVDF	5,5 Kg
Weight Aluminium	6,0 kg

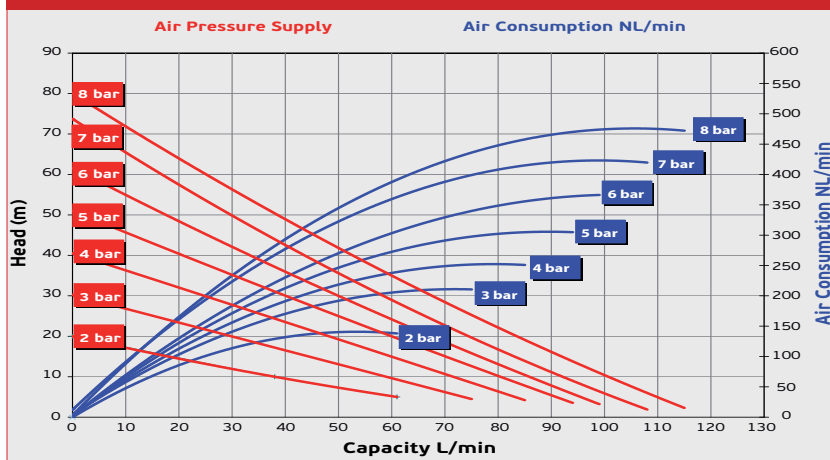
\* The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material.



### RUBY 020 - FULL CAPACITY PTFE - A FITTED



### RUBY 020 - RUBBER FITTED



# Ruby 025 Pump

Construction materials: PP – ALUMINIUM – PVDF – AISI 316 – PP+CF

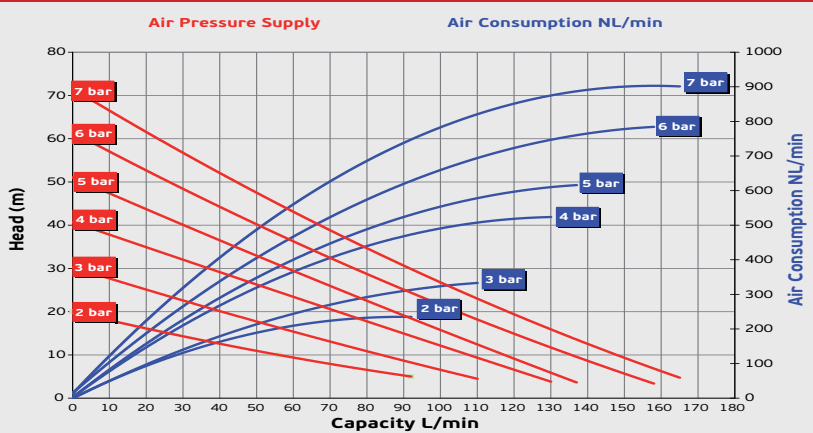


## Technical data

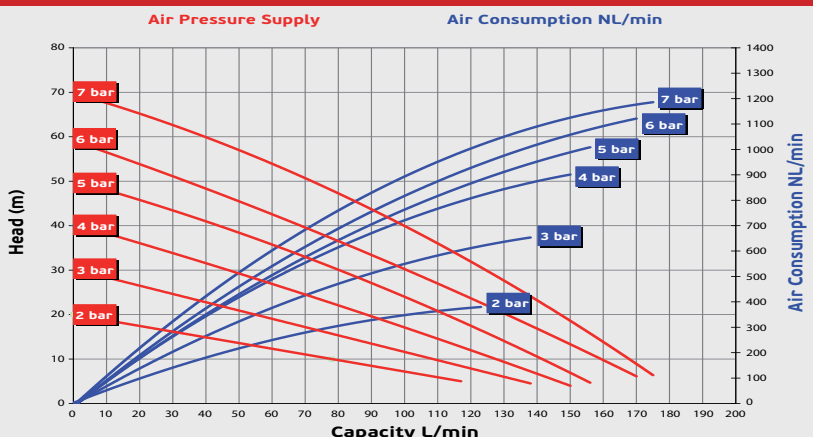
ATEX certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, ALUMINIUM, AISI 316, PP+CF
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	1" BSP G -Flange on Request
Air connection	½"
*Max. self-priming capacity	4 m
*Max. flow rate	175 L/min
Max. head	70 m
Max. air supply pressure	7 bar
Diameter	3,5 mm
Max. operating temp.	PP 60°C, PVDF 95°C, Alu 95°C, AISI 316 95°C, 130°C with Metallic center block
Weight PP	6,0 kg
Weight PVDF	7,0 kg
Weight Aluminium	7,5 kg
Weight AISI 316	14,0 kg

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

### RUBY 025 - FULL CAPACITY PTFE - A FITTED



### RUBY 025 - RUBBER FITTED



# Ruby 040 Pump

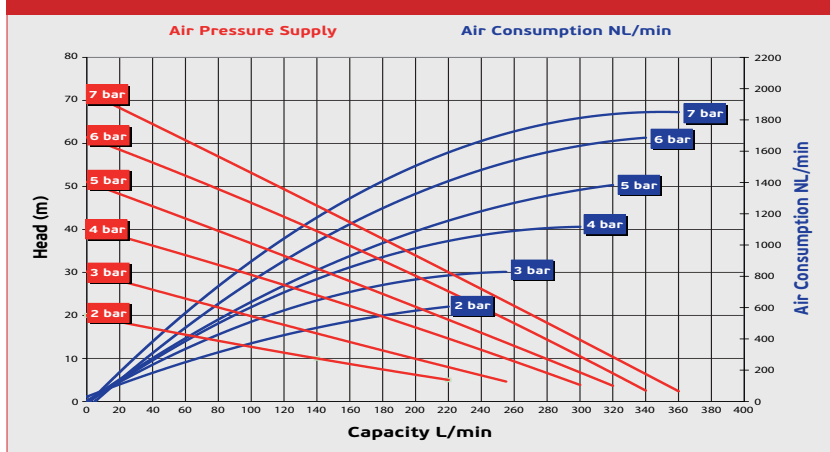
Construction materials: PP – ALUMINIUM – PVDF – AISI 316 – PP+CF

## Technical data

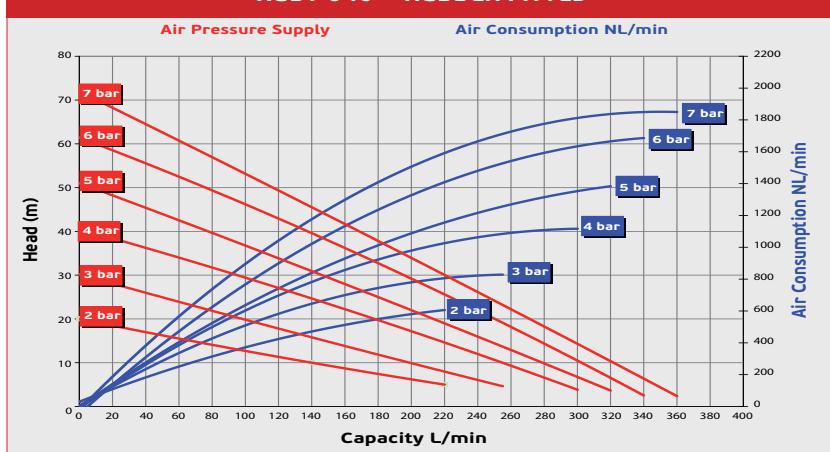
Atex Certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, ALUMINIUM, AISI 316, PP+CF
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	1 1/2 " BSP G -Flange on Request
Air connection	1/2 "
* Max self-priming capacity	5 m
* Max. flow rate	360 L/min
Max. solid size (diameter)	5mm
Max head	70 m
Max air supply	7 Bar
Max operating Temperature	PP: 60°C , PVDF: 95°C , Alu: 95°C , AISI316: 95°C 130°C with Metallic center block
Weight PP	14 kg
Weight PVDF	22 kg
Weight Alu	14 kg
Weight AISI316	30 kg

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

### RUBY 040 - FULL CAPACITY PTFE - A FITTED



### RUBY 040 - RUBBER FITTED



# Ruby 140 Pump

Construction materials: **ALUMINIUM**

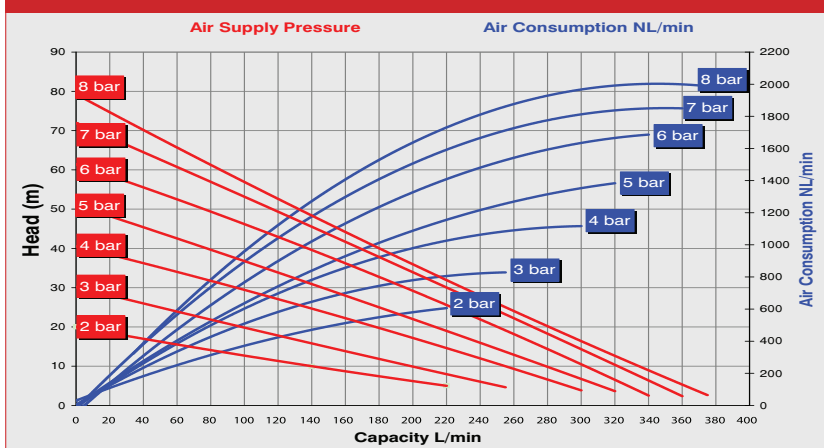


## Technical data

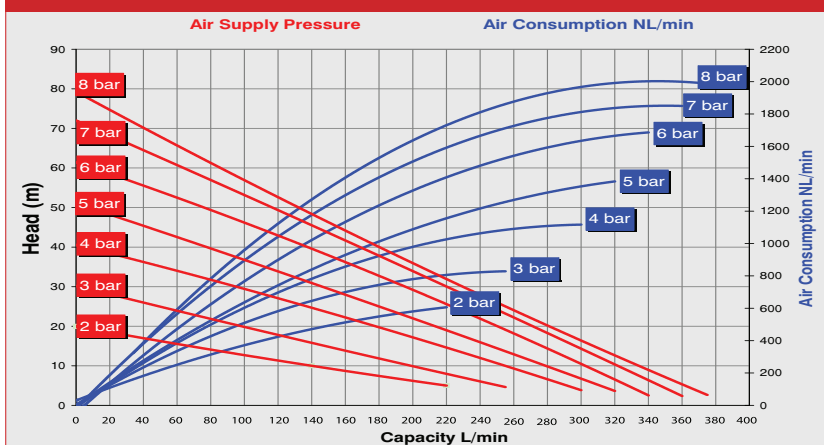
Atex Certification	II 2 GD c IIB T4 135°C
Construction materials	ALUMINIUM
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake / delivery connections	1 1/2" BSP G - Flange on Request
Air connection	1/2 "
* Max self-priming capacity	5 m
* Max. flow rate	375 L/min
Max. solid size (diameter)	5mm
Max head	80 m
Max air supply	8 Bar
Max operating Temperature	95°C 130°C with Metallic center block
Weight	14 kg

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

### RUBY 140 - FULL CAPACITY PTFE - A FITTED



### RUBY 140 - RUBBER FITTED





# Ruby 050 Pump

Construction materials: PP – PVDF – PP+CF

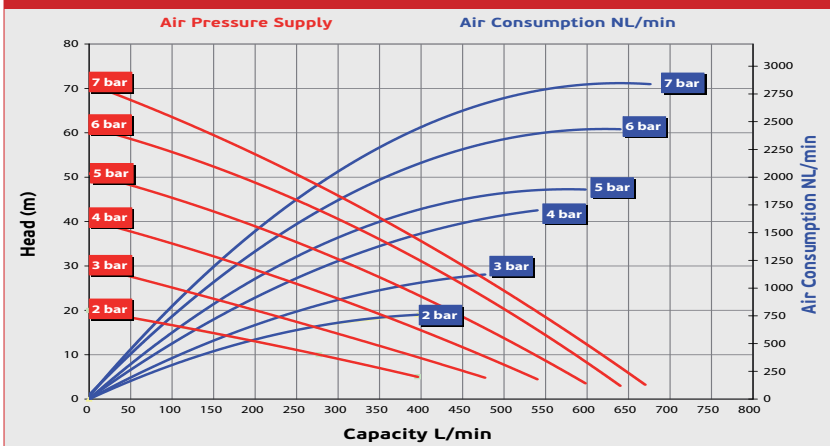
## Technical data

ATEX certification	II 2 GD c IIB T4 135°C
Construction materials	ALUMINIUM, AISI 316
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	2" BSP G - Flange on Request
Air connection	3/4"
*Max. self-priming capacity	5 m
*Max. flow rate	696 L/min
Max. head	70 m
Max. air supply pressure	7 bar
Diameter	8 mm
Max. operating temp.	95°C
Weight Aluminium	50 kg
Weight AISI 316	70 Kg

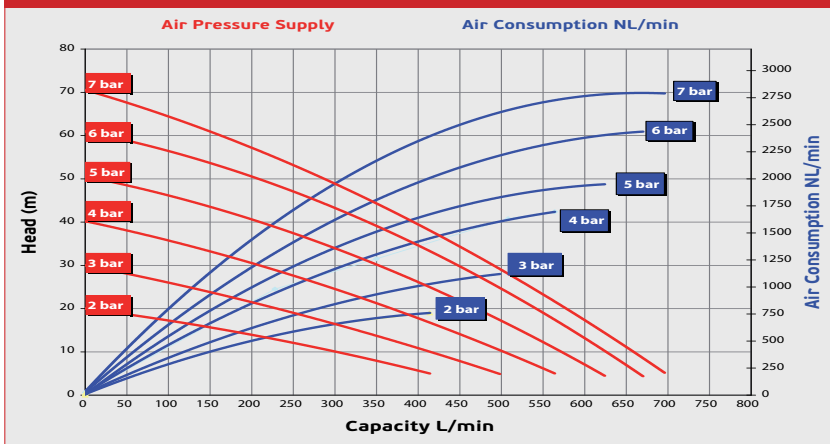
\* The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material.



### RUBY 050 - FULL CAPACITY PTFE FITTED



### RUBY 050 - RUBBER FITTED





# Ruby 150 Pump

Construction materials: **ALUMINIUM**

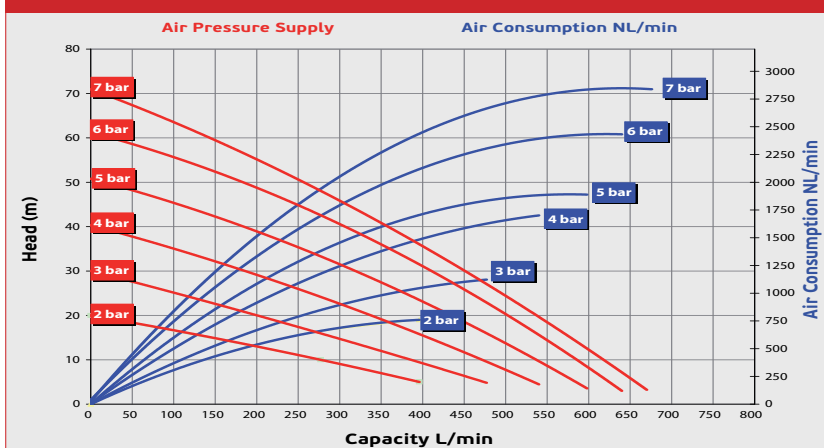


## Technical data

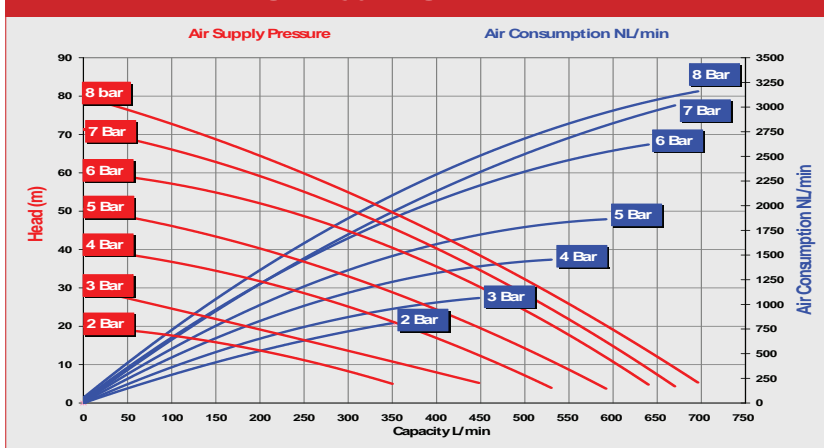
ATEX certification	II 2 GD c IIB T4 135°C
Construction materials	ALUMINIUM
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	2" BSP G - Flange on Request
Air connection	3/4"
*Max. self-priming capacity	5 m
*Max. flow rate	696 L/min
Max. head	80 m
Max. air supply pressure	8 bar
Diameter	8 mm
Max. operating temp.	95°C
Weight Aluminium	35 kg
Weight	35 kg

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

### RUBY 150 - FULL CAPACITY PTFE FITTED



### RUBY 150 - RUBBER FITTED



# Ruby 051 Pump

Construction materials: PP – PVDF – PP+CF

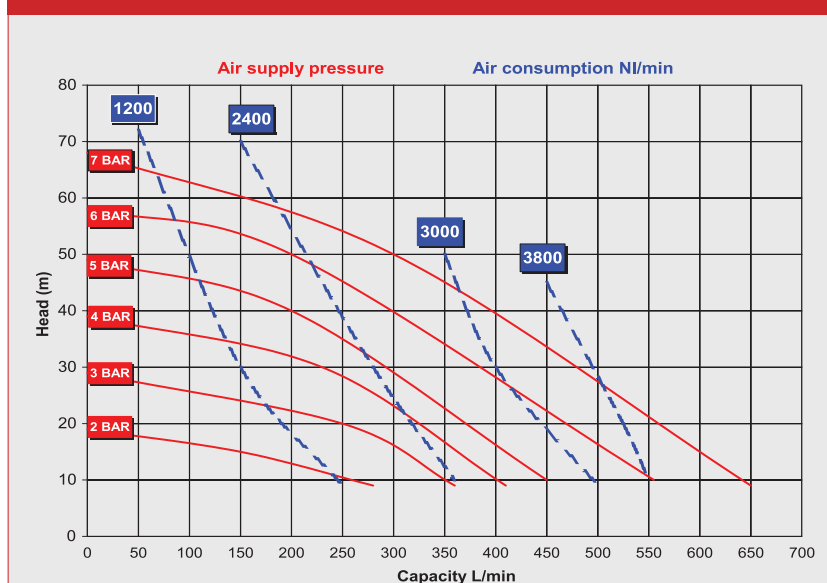
## Technical data

ATEX certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, PP+CF
Diaphragms	PTFE+SANTOPRENE, PTFE+HYTREL, NBR-BUNA, EPDM
Intake/delivery connections	2" BSP G - Flange on Request
Air connection	3/4"
Max. self-priming capacity	5 m
Max. flow rate	650 l/min
Max. head	70 m
Max. air supply pressure	7 bar
Max solid size (diameter)	8 mm
Max. operating temp.	PP 60°C, PVDF 95°C, PP+CF 60°C
Weight PP	38 Kg
Weight PVDF	45 Kg

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



## RUBY 051 - FULL CAPACITY PTFE FITTED



# Ruby 080 Pump

Construction materials: **ALUMINIUM, AISI 316**

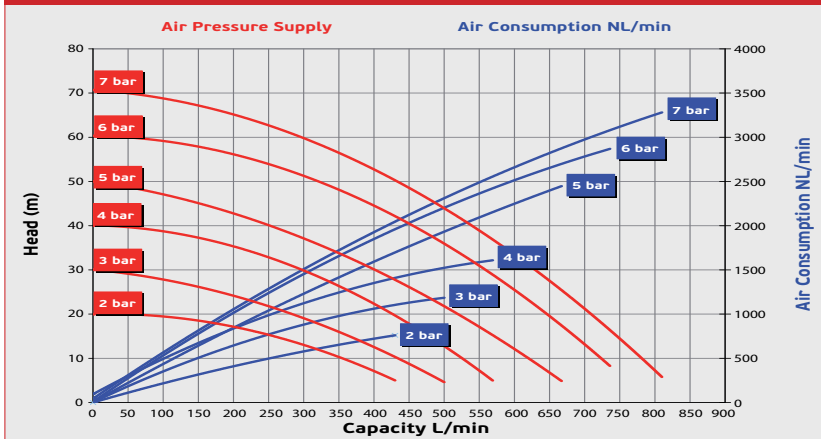


## Technical data

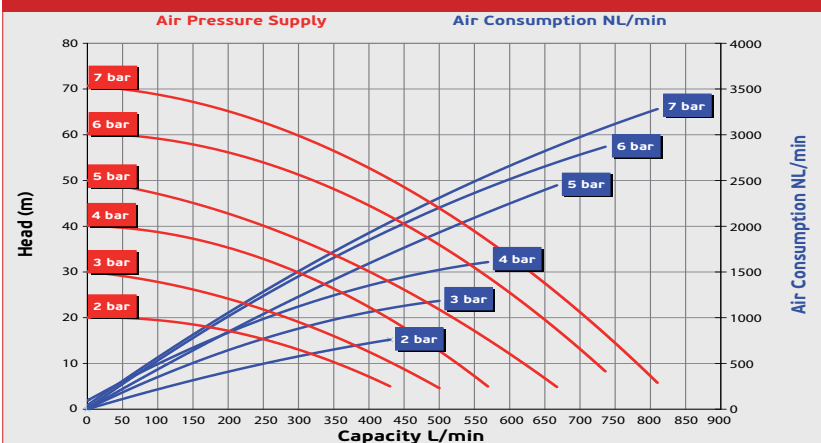
ATEX certification	II 2 GD c IIB T4 135°C
Construction materials	ALUMINIUM, AISI 316
Diaphragms	PTFE with Conductive EPDM (compound) PTFE-A Full Capacity with conductive EPDM (compound) NBR-BUNA Conductive EPDM Conductive
Intake/delivery connections	3" BSP G - Flange on Request
Air connection	3/4"
*Max. self-priming capacity	5 m
*Max. flow rate	810 L/min
Max. head	70 m
Max. air supply pressure	7 bar
Diameter	8 mm
Max. operating temp.	95°C
Weight Aluminium	50 kg
Weight AISI 316	70 Kg

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

### RUBY 080 - FULL CAPACITY PTFE FITTED



### RUBY 080 - RUBBER FITTED



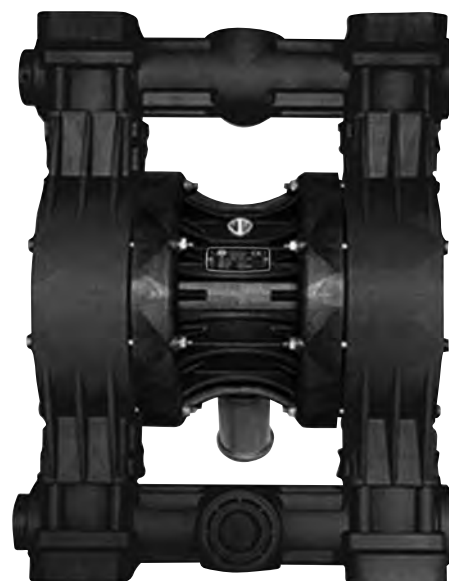
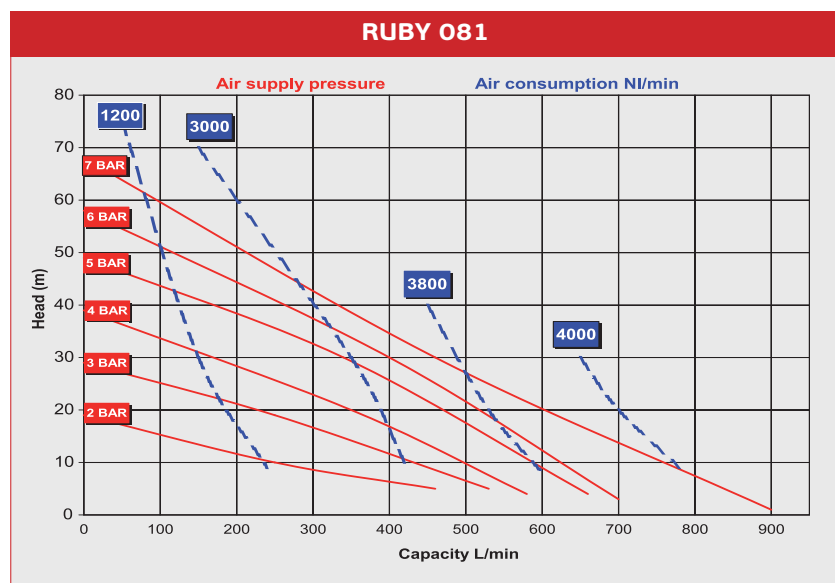
# Ruby 081 Pump

Construction materials: PP – PVDF – PP+CF

## Technical data

ATEX certification	II 2 GD c IIB T4
Construction materials	PP, PVDF, PP+CF
Diaphragms	PTFE+SANTOPRENE, PTFE+HYTREL, NBR-BUNA, EPDM
Intake/delivery connections	G 3"
Air connection	½"
Max. self-priming capacity	5 m
Max. flow rate	900 l/min
Max. head	70 m
Max. air supply pressure	7 bar
Max solid size (diameter)	10 mm
Max. operating temp.	PP 60°C, PVDF 95°C, PP+CF 60°C
Weight PP	50 Kg
Weight PVDF	67 Kg

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



# Certifications

## Quality Standards

**ALPHADYNAMIC PUMPS** designs, develops and manufactures pumps and parts to the highest quality standards.

**ALPHADYNAMIC PUMPS** consistently exceeds the expectations of service, quality and integrity through its deep commitment to lean manufacturing and compliance with industry certifications, including ISO Certificate.

**ALPHADYNAMIC PUMPS** employees and distributor networks are deeply committed to excellence, innovation and customer service.

EC Declaration of Conformity ATEX 100a

 II 2 GD c IIB T4  
Baseefa15ATEX13DR



Manufactured By: **ALPHADYNAMIC PUMPS Co**  
3 Eleftherias Str - 14564 Kifisia Greece  
Tel: +30 210 420338 Fax: +30 210 268837  
www.alphadynamic.eu



This declaration applies to all Metallic & Conductive Plastic Ruby Air Operated Double Diaphragm pumps, ALPHADYNAMIC PUMPS (HELLAS), declare under our sole responsibility that the product listed below conforms with the relevant provisions of EC directive 94/9/EC for equipment and protective systems intended for use in potentially explosive atmospheres, and is self certified for safe use in Area Group I, Category 2 area's.

We hereby declare, that the pump units manufactured in series production

Designation: Ruby AIR OPERATED DIAPHRAGM PUMP  
Series: Ruby 015 / 020 / 025 / 040 / 050 / 051 / 080 / 081  
Serial number: SN XXXXX

In the version delivered by us, is in compliance with the following applicable regulations:

- EC Directive 94/9/EC Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)
- EN 13463-1:2009 Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements
- EN 13463-5:2013 Non-electrical equipment intended for use in potentially explosive atmospheres-Part 5: Protection by construction safety "c"

Signature of manufacturer:  Date: 19/01/2015

Information on signatory: Nikolaos Prodromidis



## CERTIFICATE

Management system as per  
ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

**ALPHADYNAMIC PUMPS CO**  
3, Eleftherias Str.  
145 64 Kifisia  
Hellas



represents a management system in compliance with the requirements for the following scope:

Design, Manufacture and Export of Industrial Pumps.

Certificate Registration No. # 100-13310122  
Audit Report No. QR-3807537

Valid until 2020-11-17  
TUV NORD CERT 2017

Signature: 

Valid until 2017-11-17

Co-Responsible Body:  
ALPHADYNAMIC PUMPS CO

The certification was conducted in accordance with the TÜV NORD CERT auditing procedures and is subject to regular surveillance audits.

TÜV NORD CERT Group | Long-term certificate 20 | 2017-2020 | www.tuv-nord.com





## TECHNICAL FILE REVIEW REPORT

According to the requirements of Directive 2006 / 42 / EC

Report No: 221-2015  
Manufacturer: ALPHADYNAMIC  
3 Eleftherias str - 14564  
Kifisia Industrial Park - Hellas

Date: 16.01.2016

Applicable Design Code: EN ISO 12100-2:2010,  
EN 609-1999+A1:2009

Description: AIR - OPERATED DIAPHRAGM PUMP  
Type: RUBY 015, RUBY 030  
(according to technical file)  
RUBY 025, RUBY 040  
RUBY 050, RUBY 080

Technical Characteristics:  
(according to technical file)

Maximum Operating Pressure:	7 bar(g)
Minimum Operating Pressure:	2 bar(g)
Maximum Operating Temperature:	-10 °C up to 130 °C (limits according to diaphragm material)
Maximum Operating Temperature:	-25 °C up to 130 °C (limits according to housing material)
Maximum Noise Level:	70 - 80 dB
Maximum Viscosity:	50,000 cP (s)

The manufacturer in accordance with Annex VII of the Directive 2006/42/EC and article 12 § 2 has completed and submitted for review to the QMSCERT, the technical construction file of the above mentioned machinery. (Guide to application of the Machinery Directive, Annex C, section 3.11.1.1)

The technical construction file was evaluated and found to be in accordance with Annex VII §A 1 of the Directive 2006/42/EC. The present report is an integral part of the technical file of the machinery and cannot be used as a certificate.

This report must be kept with its technical documentation by the manufacturer for a period of ten years. The applicant must inform QMSCERT which reviewed the technical documentation of all modifications to the technical file of equipment.

These are subject to additional review where they may affect conformity with the essential requirements for the prescribed conditions for use of the equipment. This additional review will be given in the form of issuing a new report.

This review of the Technical File has been carried out to the best knowledge and ability and our responsibility is limited to the exercise of due care and the results concern only the items inspected.



Director Papadopoulos  
Lead Auditor M.Sc. Dipl. Mechanical Eng.  
Dr. Waiding Eng. - Level II RT, MT, PT, UT





II 2 GD c IIB T4  
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VER 2018.05



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