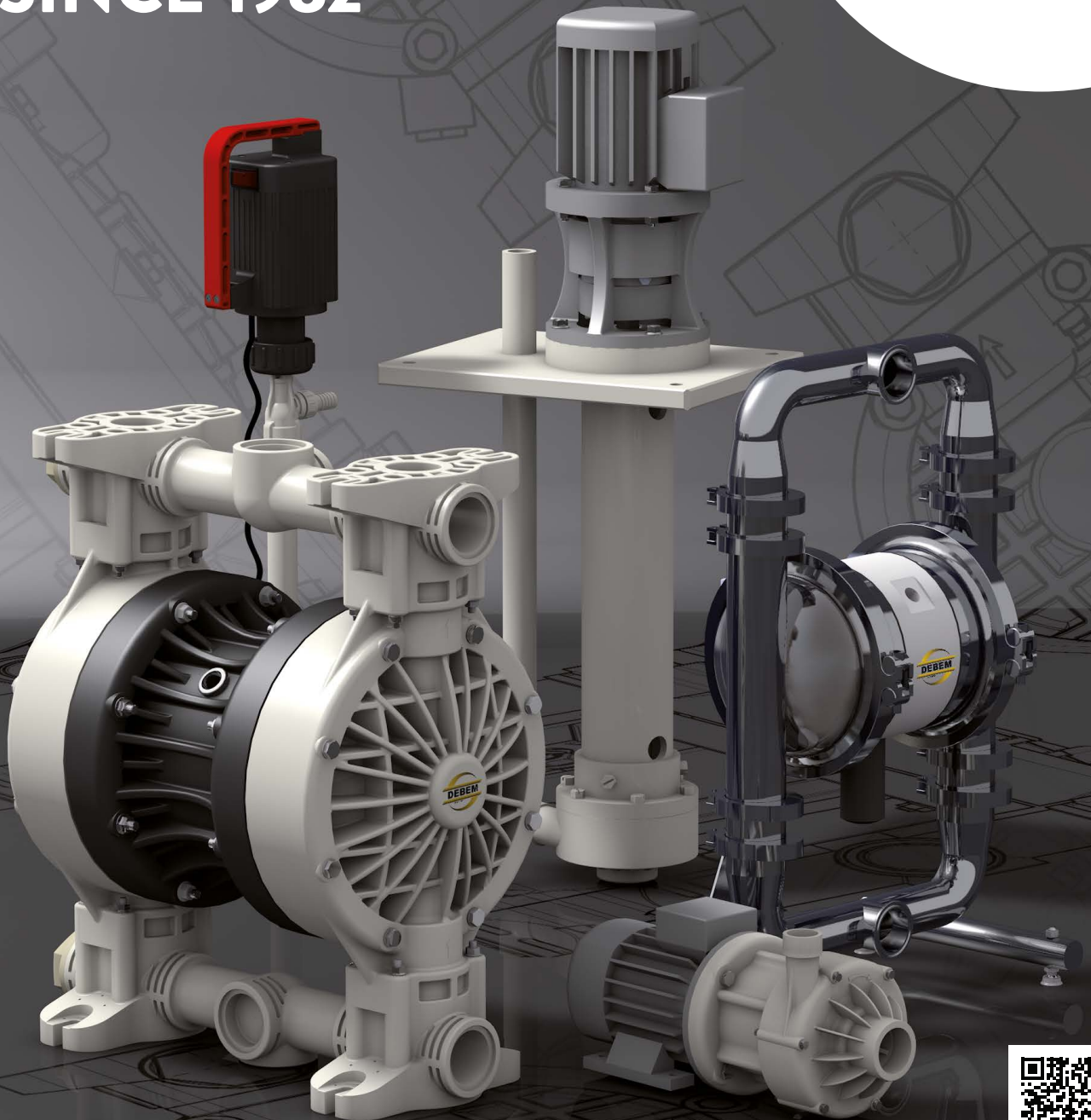


INDUSTRIAL PUMPS SINCE 1982



PRODUCTION PROGRAM

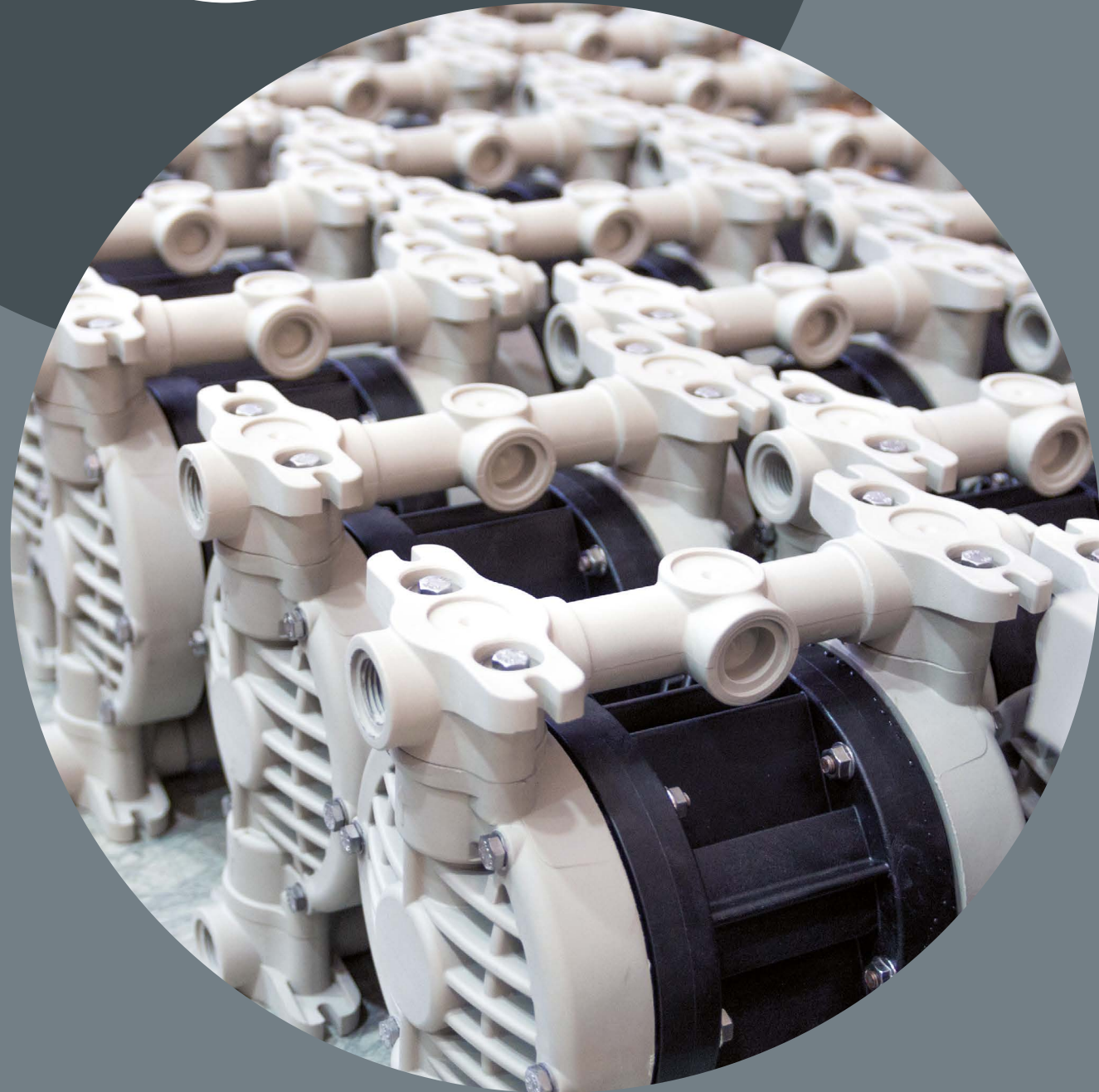
MADE IN ITALY





INDUSTRIAL PUMPS SINCE 1982

for chemical, textile, food, environment, graphic, leather tanning, ceramic, electronic, galvanic, paint, biodiesel and other industries.



PRODUCTION PROGRAM

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Made in Italy

PHILOSOPHY

A clear idea: design innovative hi-tech pumps using materials and components capable of withstanding the most testing and aggressive conditions, easy to install and highly-efficient for dependable, long-lasting service. This is the corporate philosophy of Debem from Busto Arsizio that has been operating in the liquid transfer sector for more than thirty years, establishing itself as one of the leading players specialising in the manufacture of industrial pumps for highly corrosive and aggressive applications.

KNOW-HOW

Debem offers a new range of effective services, supplying customers with technical and sales information that help to select the right product for every type of use. Our customers can count on a call center for questions about product selection and chemical compatibility according to their needs. We also have a customer service answering to technical questions about installations and applications of the pumps or fluid pumping process.

ENGINEERING

The Debem engineering department, and in particular the research and development department, is continually involved in new projects and product innovation. The primary objective of customer satisfaction has led to the introduction of modular pump design allowing tailor-made assembly with suitable components and materials for the intended use.

The BOXER and CUBIC diaphragm pumps, the MB and IM centrifugal pumps, the TR barrel transfer pumps, the EQUAFLUX pulsation dampener are entirely designed and constructed in Italy by Debem who is also the proprietor of their patents.



Debem has been operating in the liquid transfer sector for more than 30 years. A pioneering business specialising in industrial pumps for highly corrosive and aggressive applications.

OVER 30 YEARS EXPERIENCE IN CUSTOMER SATISFACTION

The entire company philosophy hinges on close cooperation with the end user and customer feedback, thus establishing a highly-effective technological design and development system for products and services that has gained the approval of an increasing number of leading players in various sectors.



WAREHOUSE AND ASSEMBLY

A management system that controls the minimum stock of every component and preassembled part of all pumps in the catalogue means that when receiving an order Debem can give information about product availability in real time with fast assembly and certain delivery times.

TESTING AND INSPECTION

Quality certification procedures specify the tests and inspections to be carried out on each and every pump, therefore no random sampling, either during assembly whilst dry or operation when filled with fluid. The data obtained is used to check compliance with the required parameters.



QUALITY MANAGEMENT SYSTEM

Our entire range of pumps is exclusively designed, developed and manufactured by our technical staff and we own the patents. Our flagship is a modular pump design that allows custom assembly using components and materials that suit individual customer requirements. We can give information about availability in real time thanks to a computerized system that manages and controls the minimum stock of every component and preassembled part of all pumps in the catalogue. All our diaphragm pumps are available ready-assembled for immediate delivery. A few minutes are required to configurate the pumps for customer specifications. Shipment then follows. Likewise all spares are kept in our warehouse ready for immediate shipment whilst the customer has the option of purchasing individual spares or complete kits.



CUSTOMER CARE HAS BECOME OUR PRIORITY

Debem's growth figures are worthy of note: after starting off in a small workshop it has ended up in its impressive new premises. An important part of the company's success stems from the establishment of an in-house research and development department. This is unusual for a small business but has certainly produced its results. Initially established with a view to improve existing products (with studies regarding the use of new materials, size reduction, optimisation of current technology) and increasing cost effectiveness without affecting the already high quality standards, the research project has enabled the development of highly-innovative products of which the Boxer and Cubic series are shining examples.

We are certified to ISO 9001 and our quality procedure stipulates the tests and inspections to be performed on every pump we manufacture and not randomly, we have developed a highly-effective technological design and development system for products and services as a result of close cooperation with the end user.

DEBEM DEVELOPS INNOVATIVE AND TECHNOLOGICAL INDUSTRIAL DIAPHRAGM AND CENTRIFUGAL PUMPS USING MATERIALS AND COMPONENTS WHICH CAN WITHSTAND AGGRESSIVE AND UNFAVORABLE CONDITIONS.



PRODUCT APPLICATIONS

Only the main sectors are listed, there are more ways to use the Debem products.



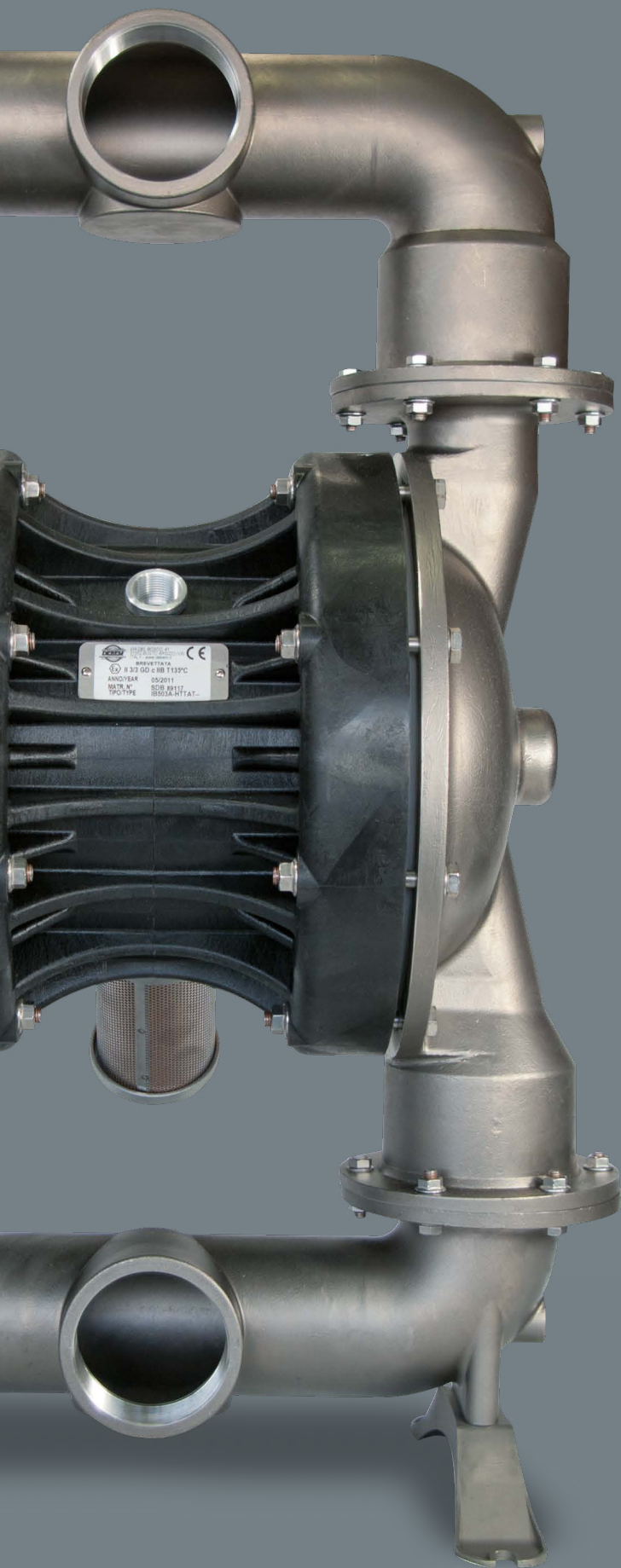
WE ONLY USE RENEWABLE ENERGY



Since we are always attentive to the quality of our products and manufacturing systems, we decided it was time to focus on the planet we all live in and that we have a duty to leave to our children in the best possible condition.

Starting this year, in fact, we are certified by Lifegate (a company that represents the Italian benchmark for the sustainability world) for the use of electricity produced from renewable sources.





Debem offers five extensive product ranges designed for specific applications:

CUBIC AND BOXER PUMPS: air-operated diaphragm pumps feature strength, power, self-priming operation (can run dry and with negative suction heads) even under exacting conditions and the ability to handle high viscosity fluids containing suspended particles.

The Boxer and Cubic series are both fitted with a special air-operated heat exchanger coaxial to the shaft and without external components, this is a unique piece of engineering, offering excellent protection against the formation of ice and something you will still not find in other pumps currently on the market. Polypropylene, PVDF/ECTFE, aluminium and AISI 316 stainless-steel versions are available. All pumps in these two series are tested to ensure maximum safety under difficult conditions (i.e. in the presence of particularly aggressive and viscous fluids), they can run whilst dry without suffering damage, do not require an air lubricant and are self-priming. Components are easily replaceable, whilst unskilled staff can perform maintenance without problems.

MB PUMPS: resin horizontal centrifugal pumps that operate with a direct-drive electric motor and are particularly suitable for fixed installations with the pump outside the drum, high flow rate and fast transfer speed of corrosive liquids.

IM PUMPS: resin vertical centrifugal pumps coupled with a direct drive electric motor designed for fixed installations with pump immersed in the tank, high flow rate and fast transfer speed of extremely dirty liquids.

TR PUMPS: drum transfer pumps coupled with a direct drive compressed-air or electric motor (see models). Being portable, they are ideal for fast transfer of clean corrosive liquids from drums.

EQUAFLUX DAMPENERS: air-operated automatic pulsation dampeners with diaphragm are installed on discharge lines with variations in fluid pressure in order to reduce pulsations and consequent vibrations or water hammer, thus protecting process equipment.

PRODUCTION RANGE



CUBIC
diaphragm pumps



BOXER
diaphragm pumps



FOODBOXER
diaphragm pumps FDA



SANIBOXER
diaphragm pumps 3A



EQUAFLUX
pulsation dampeners



MB
horizontal centrifugal pumps



DM
mag drive centrifugal pumps



IM
vertical centrifugal pumps



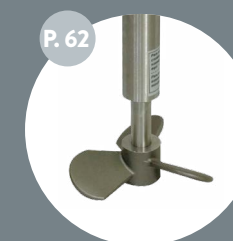
TR
transfer pumps



ACCESSORIES
and filters



MP
peristaltic pumps



MIXERS

TOTAL RELIABILITY

ATEX COMPLIANCE

Debem has filed with the **TÜV NORD** certification body the documentation certifying **ATEX compliance** pursuant to Directive 94/9/CE for its ranges of **BOXER** and **CUBIC** pneumatic diaphragm pumps and **EQUAFLUX** automatic pulsation dampeners, as described in the following table.

They are manufactured in a **STANDARD**, class II 3/3GD c IIB T135°C version **or - upon request - with special construction materials in a CONDUCT**, class II 2/2GD c IIB T135°C 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.



| PRODUCT SERIES | DESCRIPTION | CERTIFICATION CLASS |
|--|---|--|
| STANDARD version - CUBIC - BOXER - FOODBOXER - EQUAFLUX | Made from non-conductive plastic and/or with non-conductive centre casing or from metal with non-conductive centre casing. | II 3/3 GD c IIB T135°C (for zone 2) |
| CONDUCT version - CUBIC - BOXER - FOODBOXER - EQUAFLUX | Built with pump casings and/or manifolds (PP + carbon fibre, ECTFE/PVDF + carbon fibre), made from conductive plastic and metal materials (aluminium, stainless steel). | II 2/2 GD c IIB T135°C (for zone 1) |



Safety symbols in accordance with DIN 40012 Annex A

II 2/2 GD

Surface equipment for use in zones in which gases, vapours or mists and clouds of combustible dust in air occur in normal operation occasionally (EN 1127-1 subclause 6.3) in both the external and internal zone.

II 3/3 GD

Surface equipment for use in zones in which gases, vapours or mists and clouds of combustible dust in air are not likely to occur in normal operation or may occur rarely for a short period only in both the external and internal zone.

c

Equipment protected by constructional safety (EN 13463-5).

IIB

Exclusion of the following products: Hydrogen, acetylene, carbon disulphide.

T 135°

Allowed temperature class. The user shall process fluids in accordance with the corresponding temperature classification, bearing in mind the instructions in the manual and the provisions of current legislation. The user shall also consider the ignition temperatures of gases, vapours or mists and clouds of combustible dust in air in the area of use.

CHEMICAL COMPATIBILITY

The type of liquid, temperature and working environment are factors to be considered when deciding on the best choice of construction materials for the pump and its correct chemical compatibility. Some examples are given in the following table:



| SUBSTANCE | Polypropylene | PVDF ECTFE (Halair®) | Aluminium | Stainless Steel AISI 316 | NBR (Perbunan®) | EPDM (Dutral®) | PTFE (Teflon®) | PPS-V (Ryton®) | FPM (Viton®) | Santoprene® | PE-UHMW (Polizene®) |
|---------------|---------------|----------------------|-----------|--------------------------|-----------------|----------------|----------------|----------------|--------------|-------------|---------------------|
| Acetaldehyde | A1 | D | B | A | D | A | A | A | D | - | B |
| Acetamide | A1 | C | A | A | A | A | A | A | B | - | - |
| Vinyl acetate | B1 | A2 | A1 | B | D | B2 | A2 | - | A1 | - | D |
| Acetylene | A1 | A | A | A | B | A | A | A | A | - | - |
| Vinegar | A | B | D | A | B | A | A | A | A | - | A |
| Acetone | A | D | A | A | D | A | A | A | D | A1 | A2 |
| Fatty acids | A | A | A | A | B | D | A | - | A | D | A |

A = very good

B = good

C = poor (not recommended)

D = severe etching (non raccomandato)

- = information not available

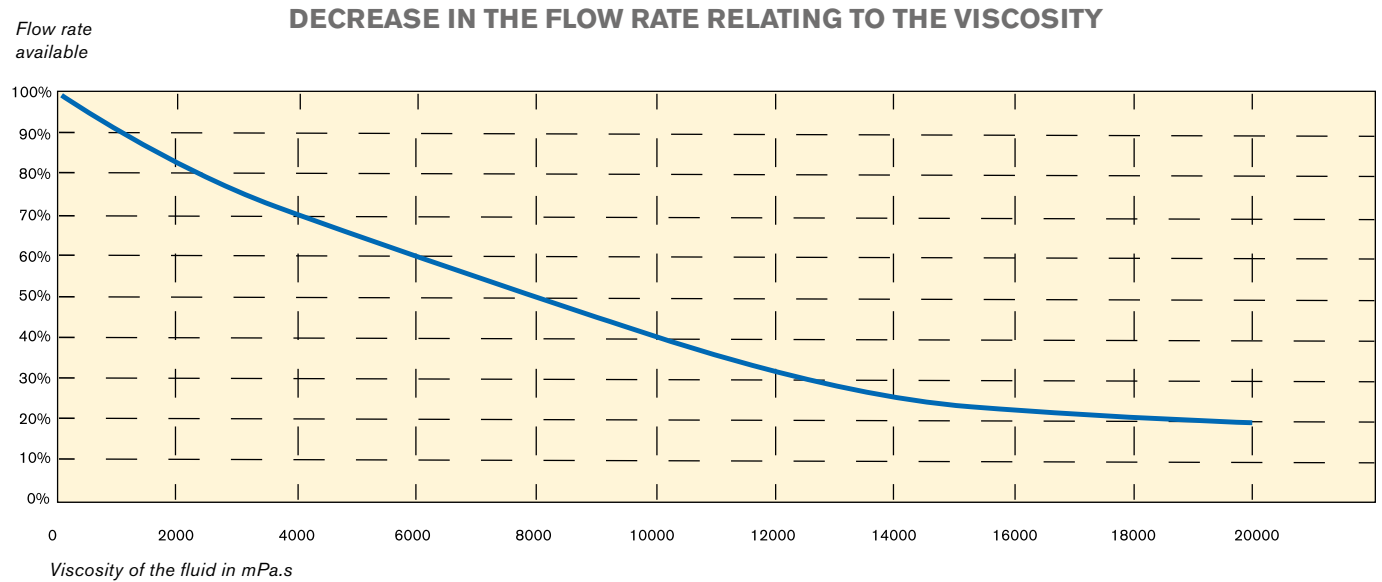
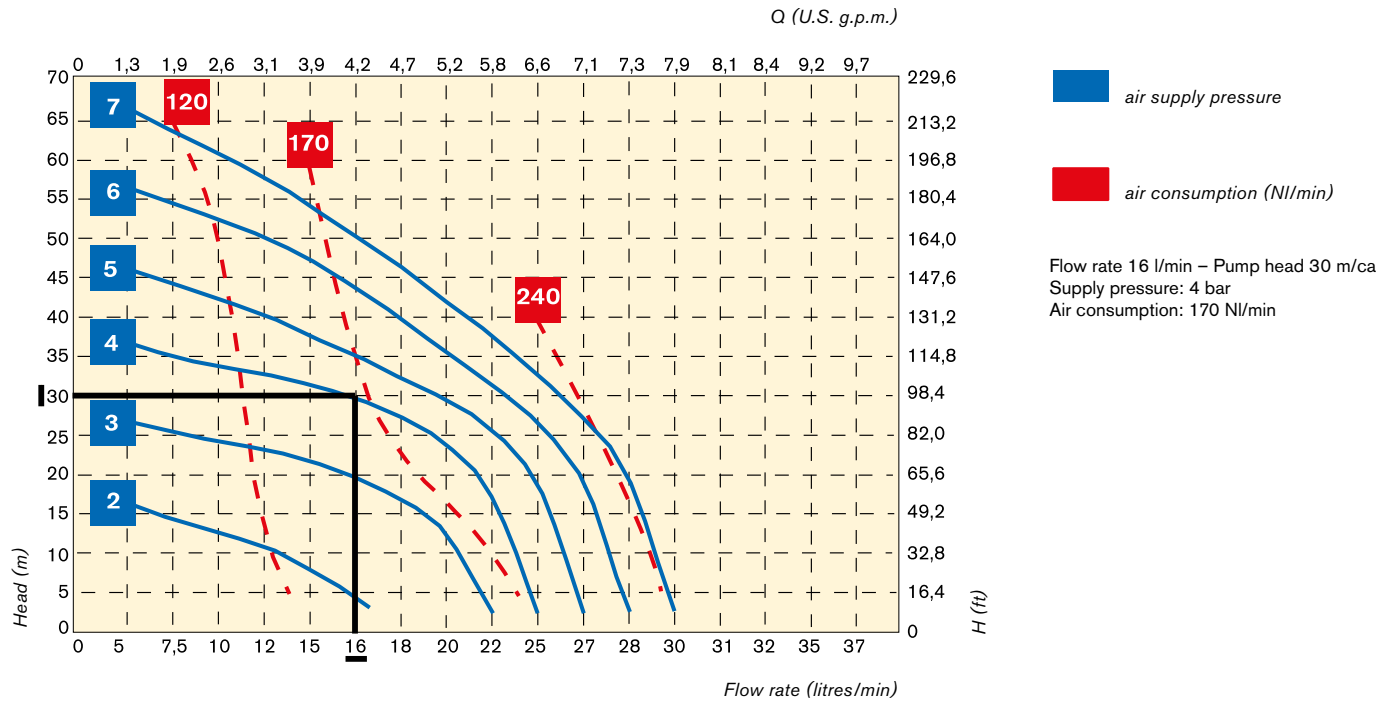
1 = satisfactory up to 22°C (72°F)

2 = satisfactory up to 48°C (120°F)

For further information, please do not hesitate to contact DEBEM's technical service department. We have obtained this information from reliable sources. Debem has not performed any form of testing in this regard and therefore accepts no liability for the accuracy of the details provided.

TECHNICAL DATA

EXAMPLE ILLUSTRATING THE GRAPHIC READING OF THE PERFORMANCE



COMPRESSOR TABLE

| AIR CONSUMPTION | POWER APPROXIMATED (COMPRESSOR) |
|-----------------|---------------------------------|
| NI/min | HP |
| 50 | 0,5 |
| 100 | 1 |
| 200 | 2 |
| 250 | 2,5 |
| 350 | 3,5 |
| 450 | 4,5 |
| 550 | 5,5 |
| 850 | 8,5 |
| 1000 | 10 |
| 1500 | 15 |
| 2000 | 20 |
| 3500 | 30 |
| 4000 | 40 |

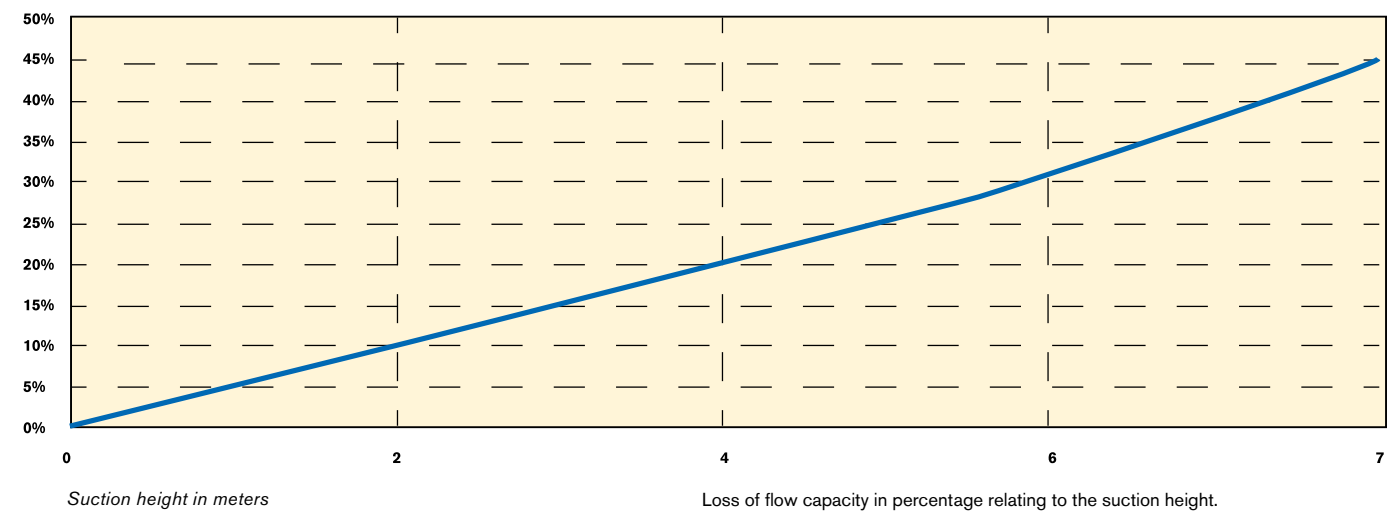
The actual power absorbed by the compressor is approximately 70% of the value indicated in the table. It is recommended to use a compressor with a tank.

DISPLACEMENT TABLE referred to the complete stroke of the diaphragm

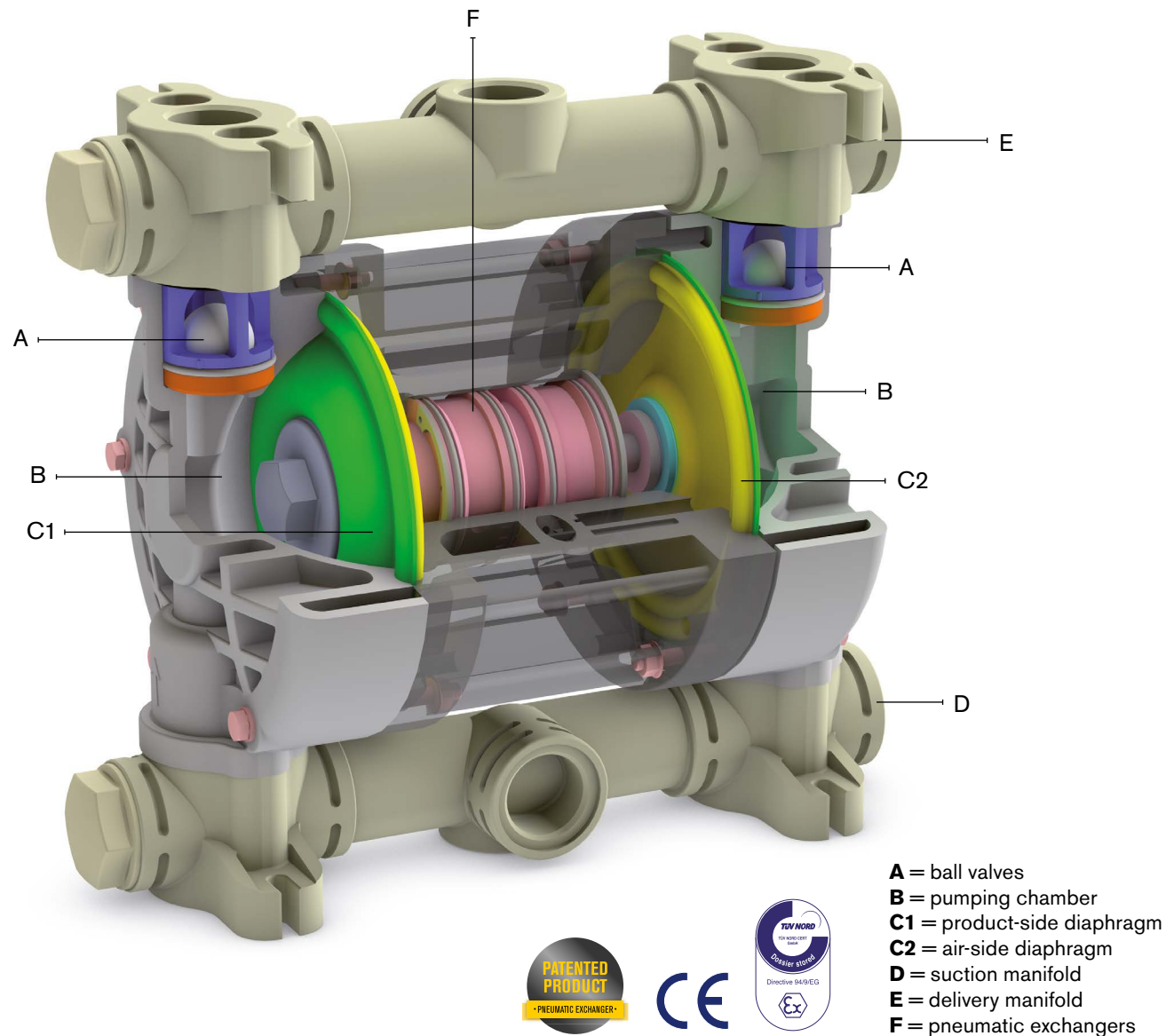
| PUMP TYPE | DISPLACEMENT |
|------------------|--------------|
| MIDGETBOX | 3,2 cc |
| CUBIC 15 | 10,3 cc |
| MICROBOXER | 30 cc |
| MINIBOXER/B50 | 67 cc |
| BOXER 80/81 | 100 cc |
| BOXER 100 | 222 cc |
| BOXER 150 | 340 cc |
| BOXER 251 | 522 cc |
| BOXER 502/522 | 1.825 cc |
| BOXER 503 | 1.852 cc |
| EQUAFLUX 51 | 8 cc |
| EQUAFLUX 100 | 15 cc |
| EQUAFLUX 200 | 100 cc |
| EQUAFLUX 302/303 | 320 cc |

Please note: when operating at FREE AIR FLOW conditions, the actual flow rate is much higher than the ratio between the number of cycles detected and the displacement due to the momentum.

BOXER PUMPS - LOSS OF FLOW CAPACITY ON THE SUCTION HEIGHT



INTRODUCTION



A = ball valves
 B = pumping chamber
 C1 = product-side diaphragm
 C2 = air-side diaphragm
 D = suction manifold
 E = delivery manifold
 F = pneumatic exchangers

CUBIC mini diaphragm pumps, BOXER and FOODBOXER diaphragm pumps are characterized by exceptional performance, power and strength, making them ideal for pumping liquids with high apparent viscosity even if containing suspended solids.

The stall-prevention pneumatic system assures a safe pump running and it does not need lubricated air. Self-priming dry capacity even with considerable suction

head, fine tuning of speed without pressure loss and the possibility of dry operation without suffering damage mean that these pumps offer unrivalled versatility. In addition, the huge choice of construction materials allows selection of optimum chemical compatibility with the fluid and/or environment without neglecting the temperature range. They are specifically designed for demanding applications with high humidity or in potentially explosive atmospheres (ATEX certification).

MAIN FEATURES

- Available in PP, PVDF/ECTFE, ALUMINIUM and AISI 316 STAINLESS STEEL
- Use in potentially-explosive atmospheres (ATEX zone 1-2 certification)
- Suitable for demanding applications and high-humidity environments
- Dry operation
- Dry self-priming
- Actuated using non-lubricated air
- Stall-prevention pneumatic circuit
- Adjustable flow rate and head
- Fine tuning of motor speed at constant pressure
- Twin-manifold option (two suction and two delivery)
- Bench or ceiling installation
- Three suction and delivery positions
- User-friendly maintenance and parts replacement
- Excellent performance and value for money

Max. operating temperature:

PP min +3°C/max +65°C
 PVDF min +3°C/max +95°C
 AISI 316 min +3°C/max +95°C
 Alu min +3°C/max +95°C

BOXER PLASTIC

II 2/2GD c IIB T135°C (zone 1)
 II 3/3GD c IIB T135°C (zone 2)

The plastic BOXER range is designed for the chemical industry's most demanding applications including highly-aggressive liquids and acids.



Materials PP - PVDF
 Self-priming capacity max 6m
 Max. head 70m
 Max. flow rate 30 ÷ 900 l/min

BOXER AND FOODBOXER METAL

II 2/2GD c IIB T135°C (zone 1)
 II 3/3GD c IIB T135°C (zone 2)

The metal BOXER range is designed for demanding applications throughout the paint sector and for solvent-based liquids.



Materials Alu - AISI 316
 Self-priming capacity max 6m
 Max. head 70m
 Max. flow rate 30 ÷ 900 l/min

CUBIC

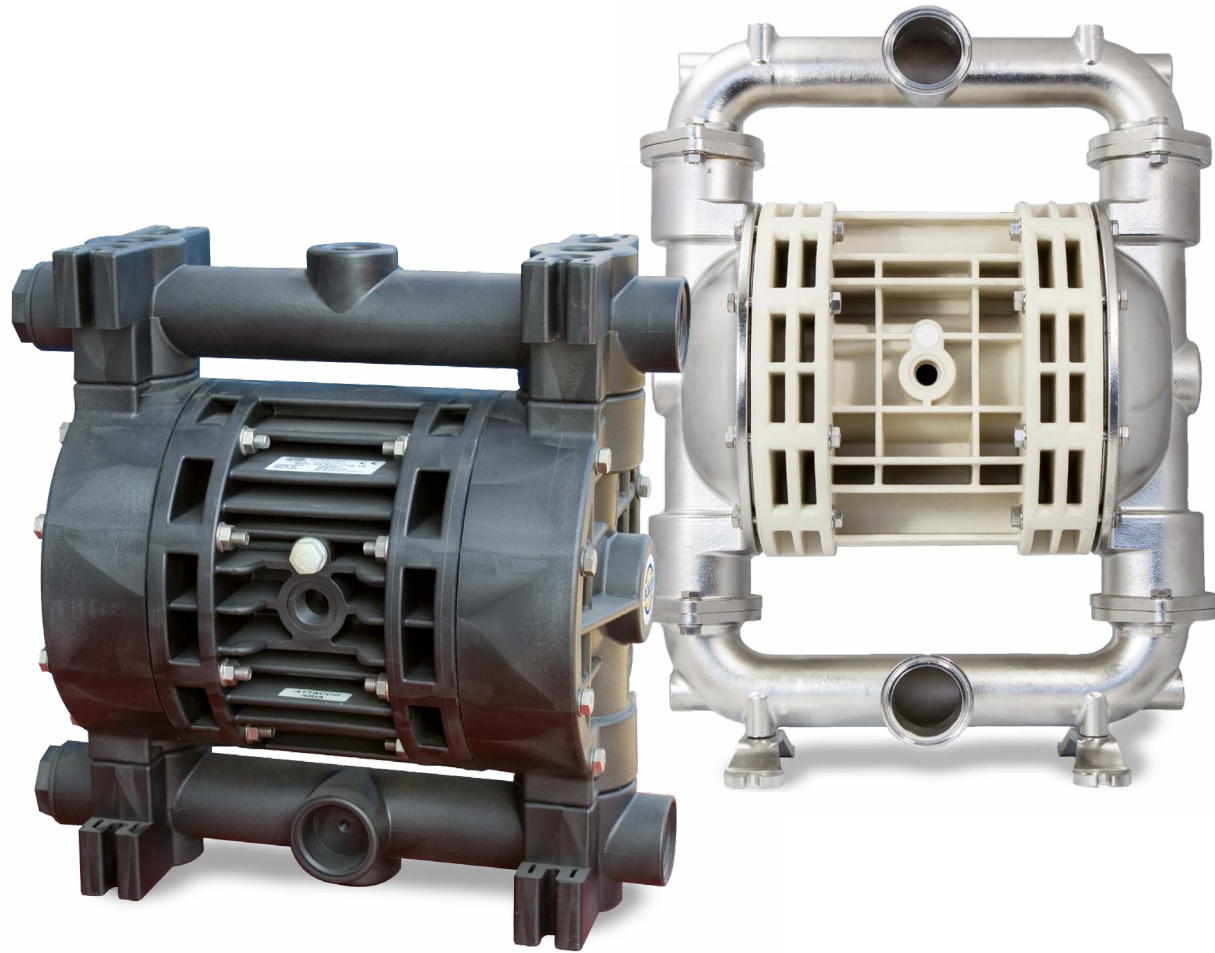
II 2/2GD c IIB T135°C (zone 1)
 II 3/3GD c IIB T135°C (zone 2)

This compact range with reduced footprint can be used in banks where space is at a premium.



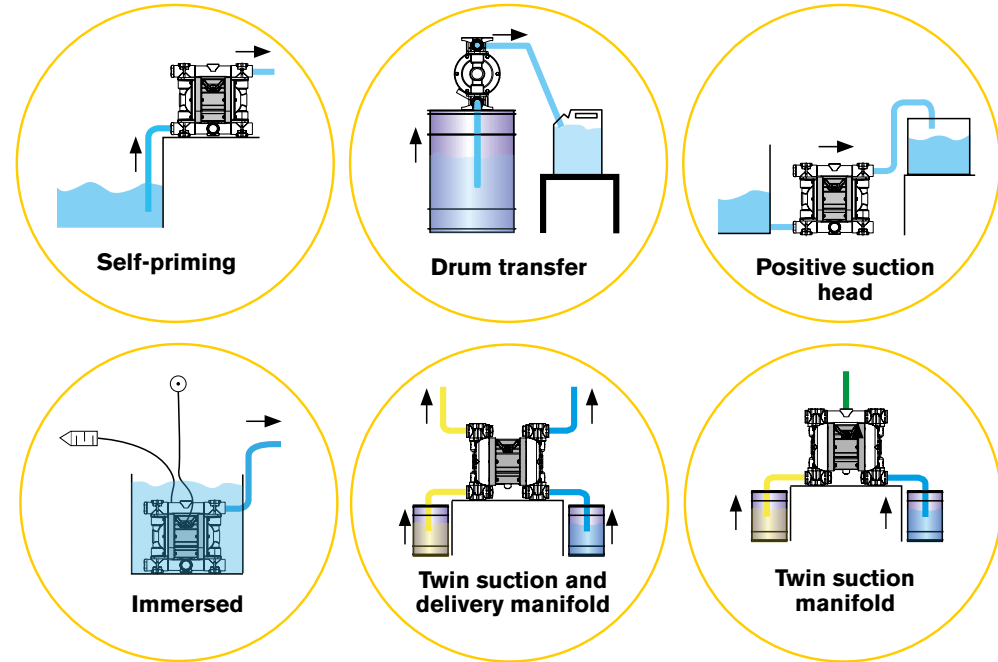
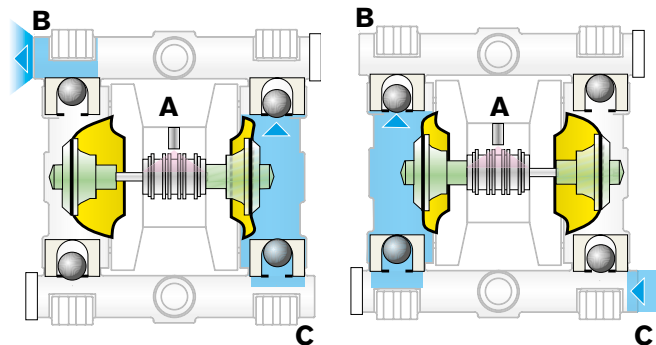
Materials PP - ECTFE
 Self-priming capacity max 3m
 Max. head 70m
 Max. flow rate 5 ÷ 17 l/min

FEATURES



HOW IT WORKS

The compressed air introduced by the pneumatic exchanger (A) behind one of the two diaphragms generates compression and pushes the product into the delivery duct (B), at the same time the opposing diaphragm that is integral with the exchanger shaft creates a vacuum and intakes the fluid (C). Once the stroke has been completed, the pneumatic exchanger diverts the compressed air behind the opposing diaphragm and the cycle is reversed.



INSTALLATION
The pumps **must be installed vertically** with special bolts on the feet or holes provided.

PNEUMATIC EXCHANGERS

The heart of an air-operated diaphragm pump consists of the pneumatic exchanger that DEBEM has succeeded in developing and innovating in a revolutionary manner, patenting the most durable and reliable system the market currently has to offer. This device introduces compressed air to alter the pressure balance of the diaphragms assisted by a stall-prevention circuit that ensures optimum performance even under the most critical conditions or with low-pressure compressed air supplies (min 2 bar).

Air-chamber volumes and airways are carefully designed to optimise consumption. Speed and flow rate can be easily adjusted by regulating air flow, whilst head can be adjusted as a function of compressed air supply pressure.

PATENTED PRODUCT
-PNEUMATIC EXCHANGER-

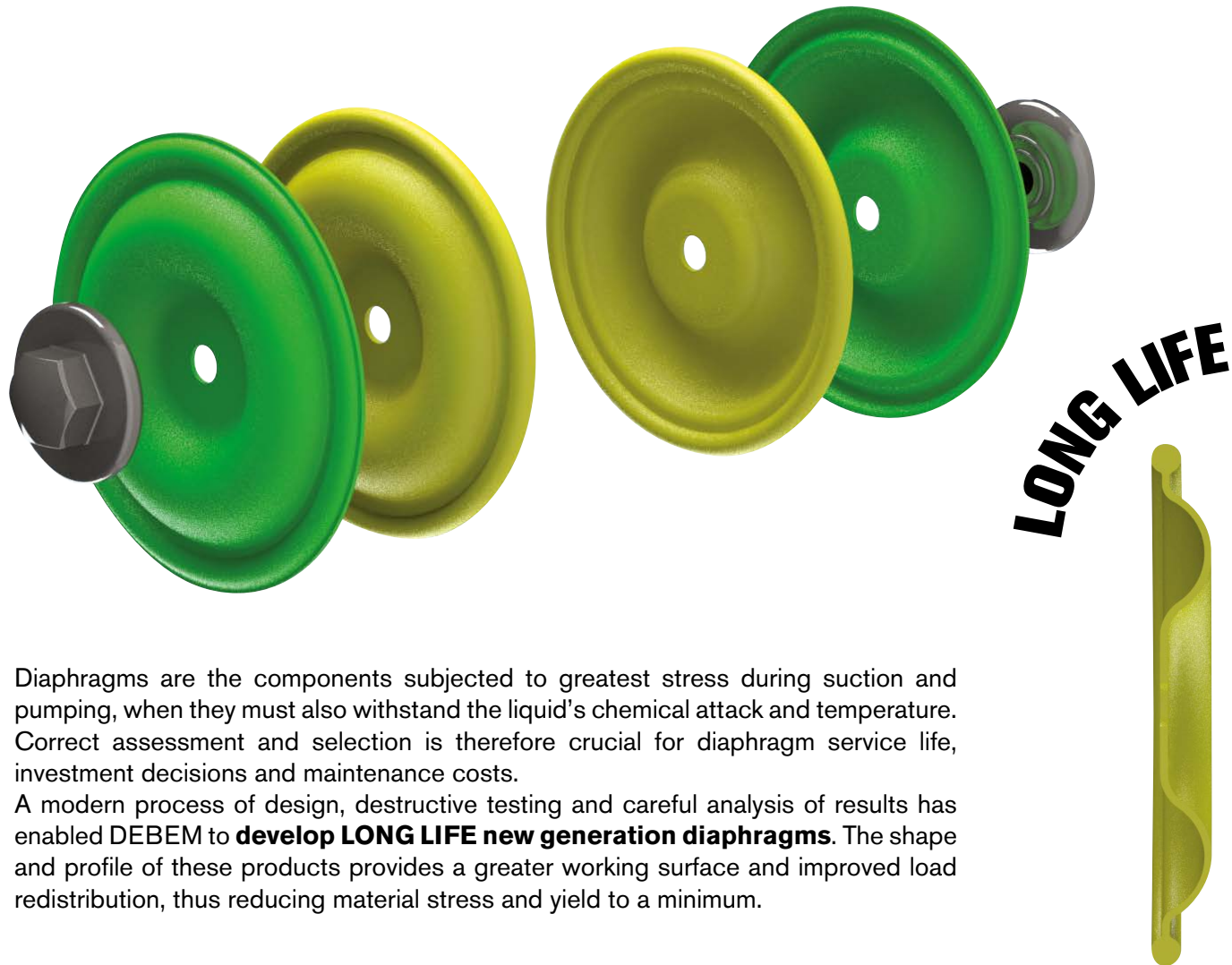


THE COMPONENTS

It has an extremely compact footprint and the small number of components ensures exceptional sturdiness and service life even under the most exacting conditions. The air passages are carefully designed and optimised to prevent the formation of ice even in low-temperature and high-head applications. The DEBEM pneumatic exchanger is an integrated system with a single central cartridge that does not require additional external components.

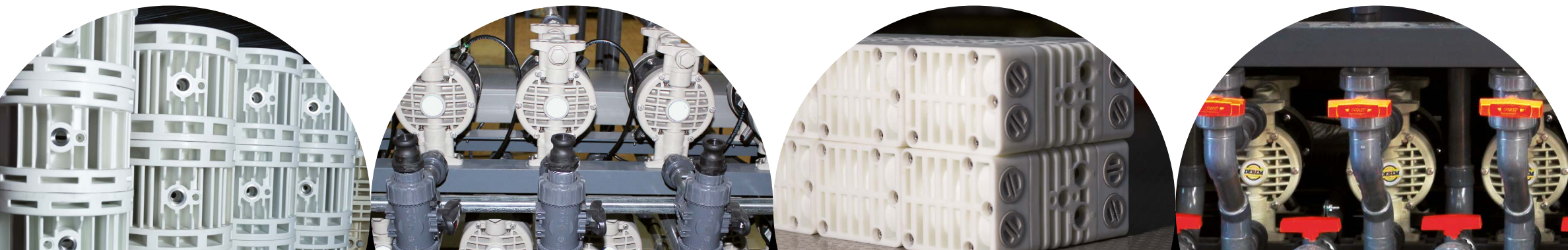


DEBEM DIAPHRAGMS



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

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



RUBBER DIAPHRAGMS

They are made from rubber compounds with special additives that improve chemical properties as well as mechanical bending and strength characteristics. These diaphragms have a nylon backing cloth that improves stress distribution:

NBR

Inexpensive and particularly suited to petroleum- and oil-based liquids.

EPDM

Good acid, alkaline and abrasion resistance, as well as good flexibility even at low temperatures.



NBR

EPDM

THERMOPLASTIC DIAPHRAGMS

They are made from thermoplastic polymers that provide high mechanical stress resistance and distribution.

HYTREL

Exceptional strength and elastic return; high resistance to creeping, impact and stress when flexed; excellent flexibility at low temperatures, while maintaining most of its properties at high temperatures. It is also resistant to the attack of many industrial chemicals, oils and solvents.

SANTOPRENE®

excellent acid and alkaline resistance, high flexural strength and good abrasion resistance.



HYTREL

SANTOPRENE

PTFE DIAPHRAGMS

This material is noted for its excellent resistance to high temperatures, chemicals and corrosive agents. DEBEM PTFE diaphragms are subjected to a double heat treatment in order to increase elasticity and service life. Each batch undergoes random destructive testing in order to verify its performance. This diaphragm can be fitted together with one of those previously mentioned in order to increase resistance to the liquid's corrosive chemicals and temperature.



PTFE

DIAPHRAGM PUMPS

CUBIC

Cubic diaphragm pumps: high performance, power and sturdiness, suitable for pumping fluids with high apparent viscosity, even in the presence of suspended solids. Particularly suitable for small spaces.

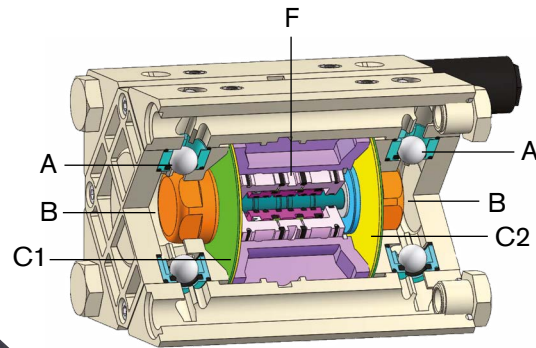
CUBIC* COMPOSITION CODES

ex. **ICU15P-NTTPV-**

Internal exchanger, Cubic 15, body PP, air side diaphragm NBR, fluid side diaphragm PTFE, balls PTFE, ball seats PP, O-Ring Viton.

| I | CU15 | P- | N | T | T | P | V | - | - |
|--------------------|---|--|--------------------|----------------------|--|--|---|-----------------------|-----------------|
| INTERNAL EXCHANGER | PUMP MODEL | PUMP BODY | AIR SIDE DIAPHRAGM | FLUID SIDE DIAPHRAGM | BALLS | BALL SEATS | O-RING* | TWIN MANIFOLD | CONDUCT VERSION |
| I | MID - Midgetbox (only in PP/PP+CF) CU15 - Cubic 15 | P - Polypropylene EC - ECTFE + CF ² PC - PP+CF | N - NBR | T - PTFE | G - Pyrex ¹ D - EPDM ² A - AISI 316 T - PTFE ² | R - PPS-V K - PEEK ¹ P - PP ² EC - ECTFE ² A - AISI 316 ² | D - EPDM ² V - Viton ² N - NBR ² T - PTFE | X ² | C |

1) Only for MIDGETBOX; 2) Only for CUBIC 15.
* THE MIDGETBOX only mounted O-Ring PTFE.




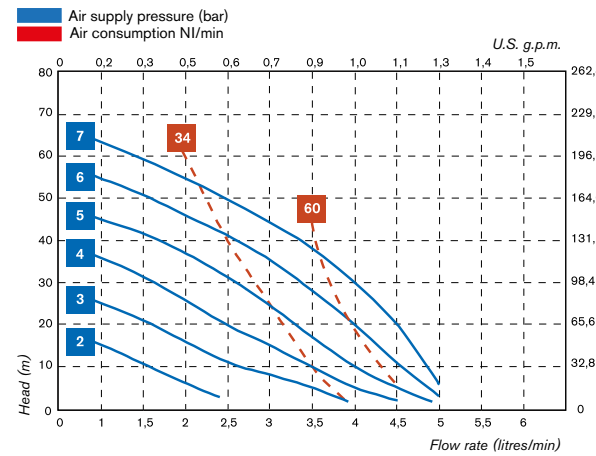
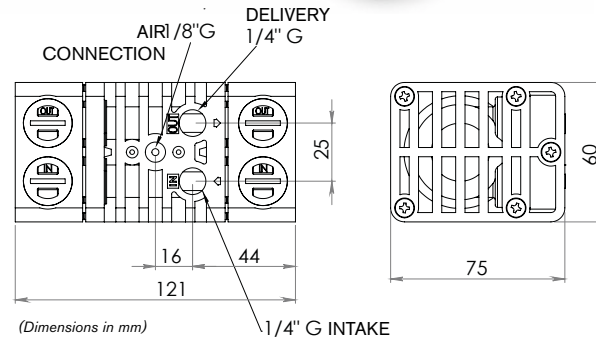
Debem diaphragm pumps consist of a stall-prevention centrally-housed pneumatic exchangers. The new generation diaphragms (Long Life profile) are fitted to its shaft. At the two ends, the two pump casings house the ball valves and seats of the product suction and delivery duct.

- A = ball valves
- B = pumping chamber
- C1 = product-side diaphragm
- C2 = air-side diaphragm
- F = pneumatic exchangers



MIDGETBOX


 **STANDARD:** II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)

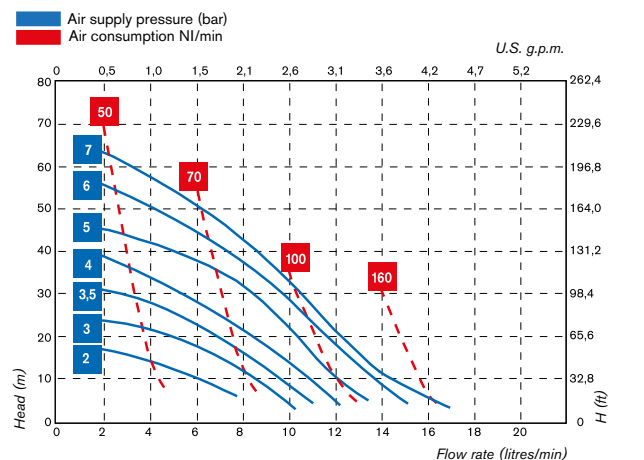
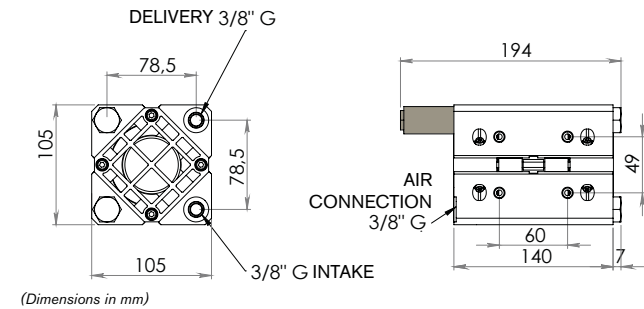


| | | | |
|---------------------------------------|--------------|--------|----------------|
| Intake/delivery connections | G 1/4" f (*) | | |
| Air connection | G 1/8" f | | |
| Max. self-priming capacity** | 3 m | | |
| Max. flow rate* | 5 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 0 mm | | |
| Construction materials and net weight | PP | 0,5 Kg | 65°C Max Temp. |

(*) NPT connections on request
*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. ** The value depends on the configuration of the pump.

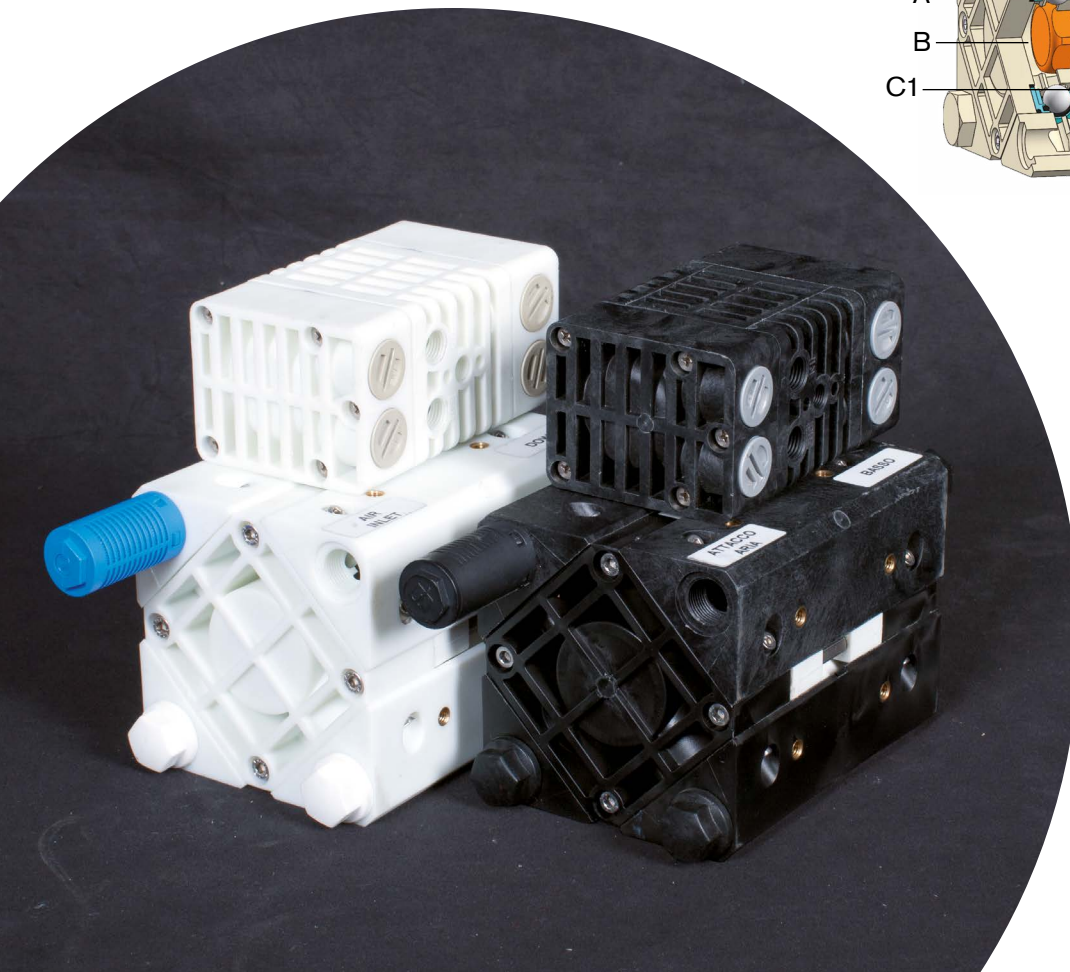
CUBIC 15

 **STANDARD:** II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



| | | | |
|---------------------------------------|----------|--------|----------------|
| Intake/delivery connections | G 3/8" f | | |
| Air connection | G 3/8" f | | |
| Max. self-priming capacity** | 4 m | | |
| Max. flow rate* | 17 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 0,5 mm | | |
| Construction materials and net weight | PP | 1 Kg | 65°C Max Temp. |
| | ECTFE | 1,5 Kg | 95°C Max Temp. |

(*) NPT connections on request
*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. ** The value depends on the configuration of the pump.



DIAPHRAGM PUMPS

BOXER

Boxer diaphragm pumps: high performance, high power and sturdiness. Suitable for pumping fluids with high apparent viscosity, even in the presence of suspended solids

BOXER COMPOSITION CODES

ex. **IB50-P-HTTPV--**
Internal Exchanger, Boxer 50, body PP, air side diaphragm Hytrel, fluid side diaphragm PTFE, balls PTFE, ball seats PP, O-Ring in Viton.

| I | B50 - | P - | H | T | T | P | V | - | - |
|--------------------|--|---|---|----------------------|---|---|--|---------------|-----------------|
| INTERNAL EXCHANGER | PUMP MODEL | PUMP BODY | AIR SIDE DIAPHRAGM | FLUID SIDE DIAPHRAGM | BALLS | BALL SEATS | O-RING* | TWIN MANIFOLD | CONDUCT VERSION |
| I | MICR - Microboxer ¹ MIN - Miniboxer ² B50 - Boxer 50 ³ B80 - Boxer 80 ⁴ B81 - Boxer 81 ⁵ B100 - Boxer 100 B150 - Boxer 150 B251 - Boxer 251 B502 - Boxer 502 ⁶ B522 - Boxer 522 ⁷ B503 - Boxer 503 | P - PP PC - PP + CF FC - PVDF + CF AL - ALU A - AISI 316 | H - Hytrel M - Santoprene D - EPDM N - NBR | T - PTFE | T - PTFE A - AISI 316 D - EPDM N - NBR | P - Polypropylene F - PVDF A - AISI 316 L - Aluminium I - PE-UHMW R - PPS-V (only for BOXER 100 and BOXER 150) | T - PTFE D - EPDM V - Viton N - NBR | X | C |

- 1) MICROBOXER only mounts internal diaphragms in HYTREL / SANTOPRENE / EPDM.
- 2) MINIBOXER inscription only on body in AISI 316.
- 3) BOXER50 inscription only on body in PP - PP+CF - PVDF - ALU.
- 4) BOXER80 inscription only on body in AISI 316.
- 5) BOXER81 inscription only on body in PP - PP+CF - PVDF - ALU.
- 6) BOXER502 inscription only on body in ALU - AISI 316.
- 7) BOXER522 inscription only on body in PP - PP+CF - PVDF.
- * BOXER100/BOXER150 only mounts ball seats in PPS-V, not in aluminium.
- ** BOXER503 in plastic cannot mount O-rings in PTFE, only in VITON or EPDM.



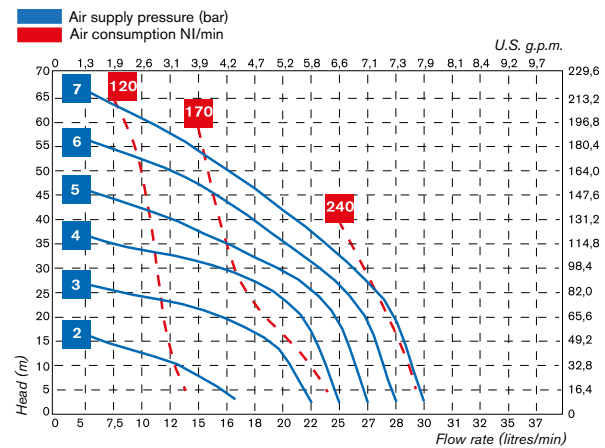
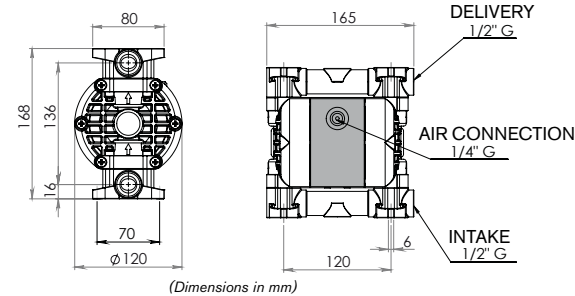
PATENTED PRODUCT
- PNEUMATIC EXCHANGER -


Directive 94/9/EG


REINFORCING RINGS
Steel ring to prevent breakage of the manifold.

MICROBOXER

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)

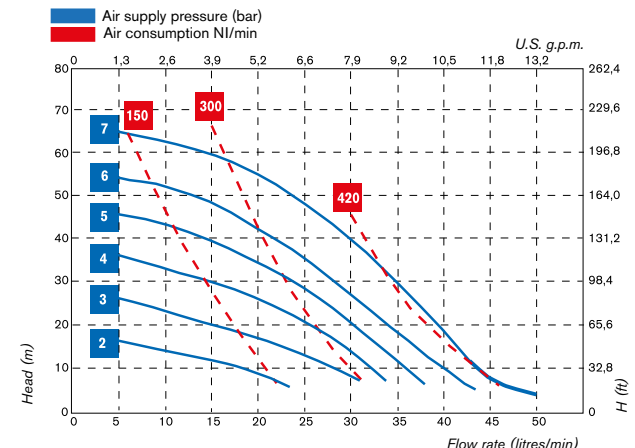
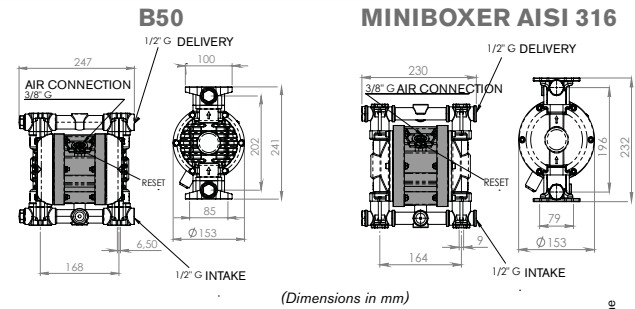


| | | | |
|--|--------------|--------|------------------|
| Intake/delivery connections | G 1/2" f (*) | | |
| Air connection | G 1/4" f | | |
| Max. self-priming capacity** | 6 m | | |
| Max. flow rate* | 30 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 2 mm | | |
| Construction materials and net weight | PP | 1,6 Kg | 65°C Max Temp. |
| | PVDF | 1,9 Kg | 95°C Max Temp. |
| | Alu | 2 Kg | 95°C Max Temp. |
| | AISI 316 | 3,8 Kg | 95°C T Max Temp. |

(*) NPT connections on request
*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. ** The value depends on the configuration of the pump.

MINIBOXER - BOXER 50

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)

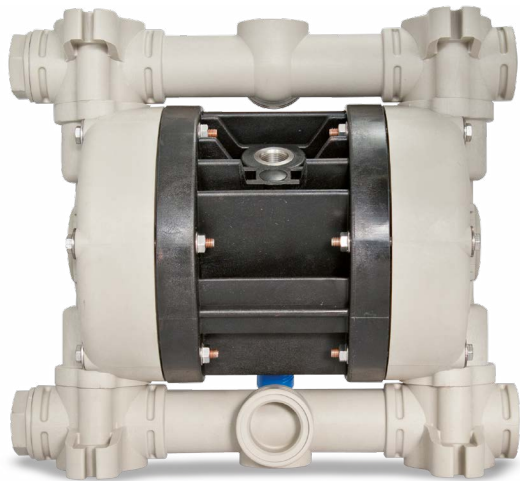


| | | | |
|--|----------------------|--------|----------------|
| Intake/delivery connections | G 1/2" f o DN 15 (*) | | |
| Air connection | G 3/8" f | | |
| Max. self-priming capacity** | 5 m | | |
| Max. flow rate* | 50 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 4 mm | | |
| Construction materials and net weight | PP | 3,6 Kg | 65°C Max Temp. |
| | PVDF | 4,2 Kg | 95°C Max Temp. |
| | Alu | 4 Kg | 95°C Max Temp. |
| | AISI 316 | 6,5 Kg | 95°C Max Temp. |

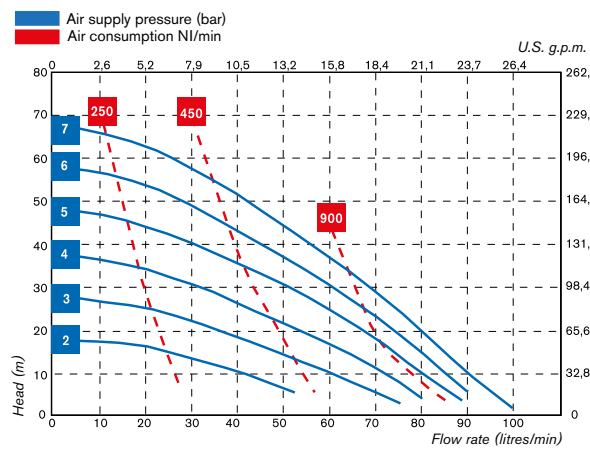
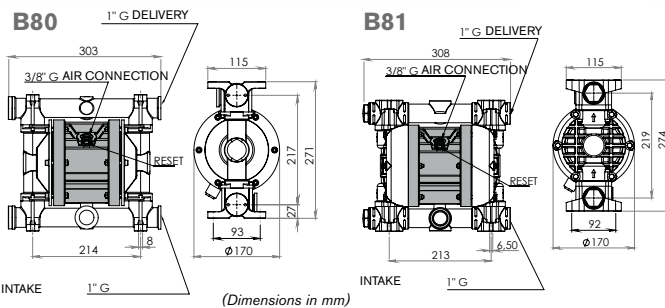
(*) NPT connections on request
*The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material. ** The value depends on the configuration of the pump.

BOXER 80/81

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



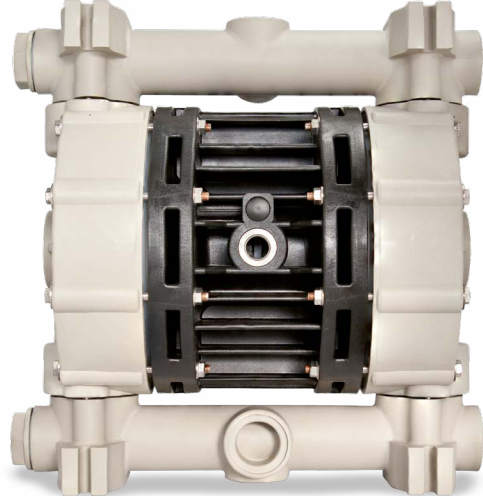
| | | |
|---------------------------------|--------------------|--|
| Intake/delivery connections | G 1" f o DN 25 (*) | |
| Air connection | G 3/8" f | |
| Max. self-priming capacity** | 6 m | |
| Max. flow rate* | 100 l/min | |
| Max. head* | 70 m | |
| Max. air supply pressure | 7 bar | |
| Max. diameter of passing solids | 4 mm | |

| | | | |
|---------------------------------------|----------|---------|----------------|
| Construction materials and net weight | PP | 5 Kg | 65°C Max Temp. |
| | PVDF | 6,5 Kg | 95°C Max Temp. |
| | Alu | 6,5 Kg | 95°C Max Temp. |
| | AISI 316 | 10,5 Kg | 95°C Max Temp. |

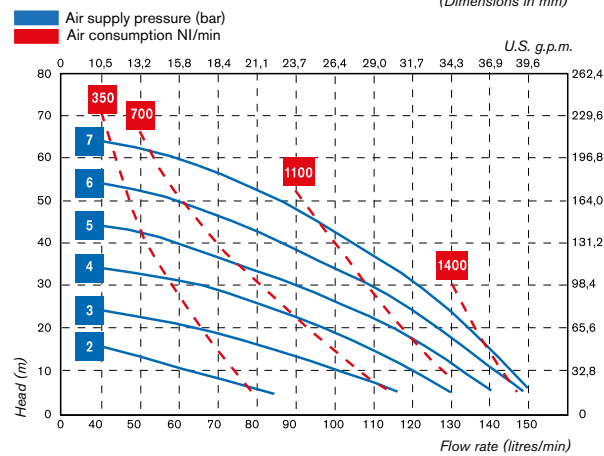
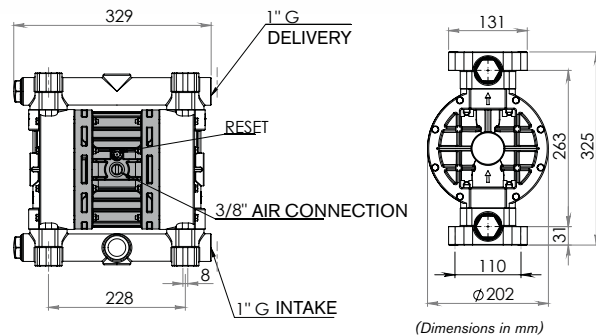
*The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material. ** The value depends on the configuration of the pump.

BOXER 100

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



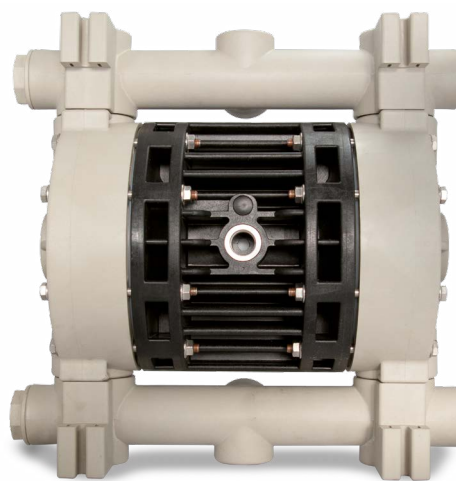
| | | |
|---------------------------------|--------------------|--|
| Intake/delivery connections | G 1" f o DN 25 (*) | |
| Air connection | G 3/8" f | |
| Max. self-priming capacity** | 5 m | |
| Max. flow rate* | 150 l/min | |
| Max. head* | 70 m | |
| Max. air supply pressure | 7 bar | |
| Max. diameter of passing solids | 4 mm | |

| | | | |
|---------------------------------------|----------|--------|----------------|
| Construction materials and net weight | PP | 7,5 Kg | 65°C Max Temp. |
| | PVDF | 8,5 Kg | 95°C Max Temp. |
| | Alu | 8,2 Kg | 95°C Max Temp. |
| | AISI 316 | 11 Kg | 95°C Max Temp. |

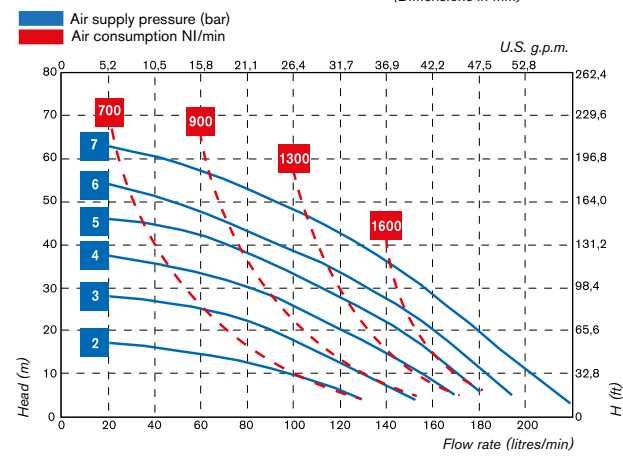
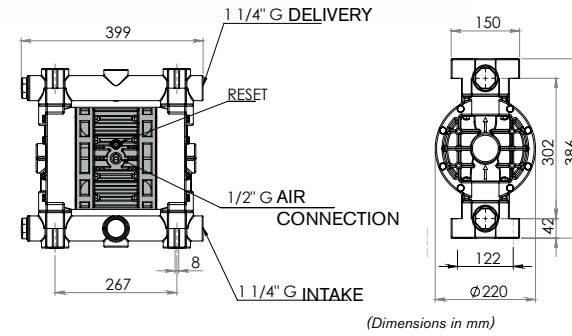
*The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material. ** The value depends on the configuration of the pump.

BOXER 150

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



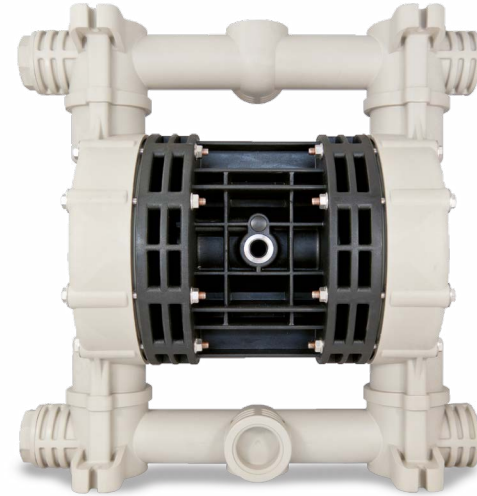
| | | |
|---------------------------------|------------------------|--|
| Intake/delivery connections | G 1" 1/4 f o DN 32 (*) | |
| Air connection | G 1/2" f | |
| Max. self-priming capacity** | 6 m | |
| Max. flow rate* | 220 l/min | |
| Max. head* | 70 m | |
| Max. air supply pressure | 7 bar | |
| Max. diameter of passing solids | 5 mm | |

| | | | |
|---------------------------------------|----------|-------|----------------|
| Construction materials and net weight | PP | 12 Kg | 65°C Max Temp. |
| | PVDF | 14 Kg | 95°C Max Temp. |
| | Alu | 16 Kg | 95°C Max Temp. |
| | AISI 316 | 21 Kg | 95°C Max Temp. |

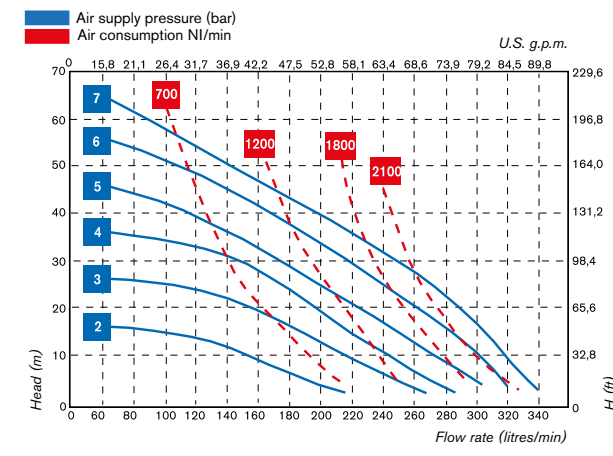
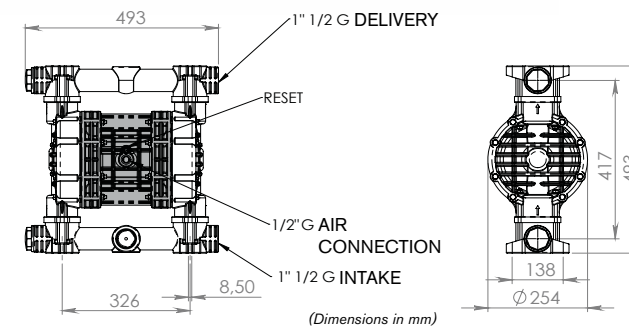
*The curves and performance values refer to pumps with submerged suction and a free delivery outlet with water at 20°C, and vary according to the construction material. ** The value depends on the configuration of the pump.

BOXER 251

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



| | | |
|---------------------------------|------------------------|--|
| Intake/delivery connections | G 1" 1/2 f o DN 40 (*) | |
| Air connection | G 1/2" f | |
| Max. self-priming capacity** | 6 m | |
| Max. flow rate* | 340 l/min | |
| Max. head* | 70 m | |
| Max. air supply pressure | 7 bar | |
| Max. diameter of passing solids | 6 mm | |

| | | | |
|---------------------------------------|----------|-------|----------------|
| Construction materials and net weight | PP | 16 Kg | 65°C Max Temp. |
| | PVDF | 20 Kg | 95°C Max Temp. |
| | Alu | 21 Kg | 95°C Max Temp. |
| | AISI 316 | 32 Kg | 95°C Max Temp. |

*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. ** The value depends on the configuration of the pump.

BOXER 522

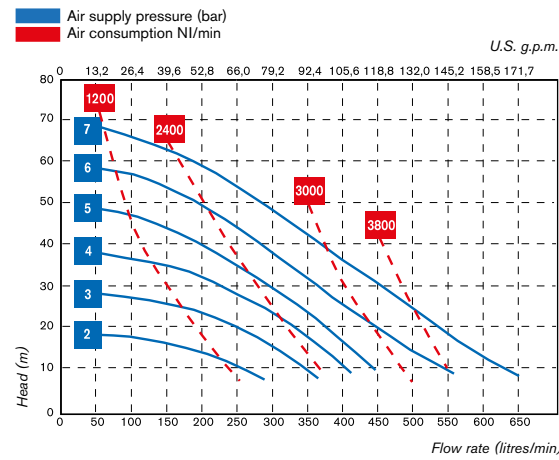
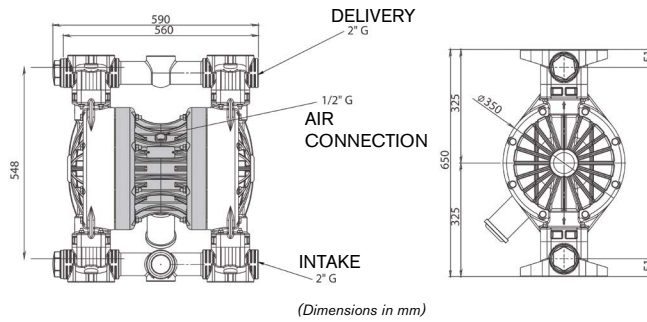
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



PVDF



| | | | |
|---------------------------------|--------------------|--|--|
| Intake/delivery connections | G 2" f o DN 50 (*) | | |
| Air connection | G 1/2" f | | |
| Max. self-priming capacity** | 6 m | | |
| Max. flow rate* | 650 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 8 mm | | |

| | | | |
|---------------------------------------|------|-------|----------------|
| Construction materials and net weight | PP | 38 Kg | 65°C Max Temp. |
| | PVDF | 45 Kg | 95°C Max Temp. |

(*) NPT connections on request

**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. ** The value depends on the configuration of the pump.

BOXER 502

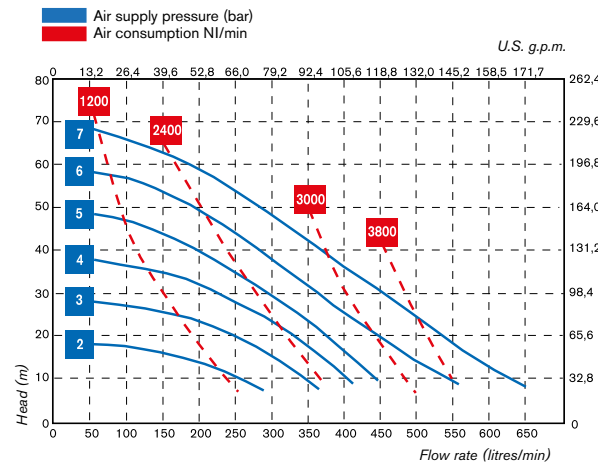
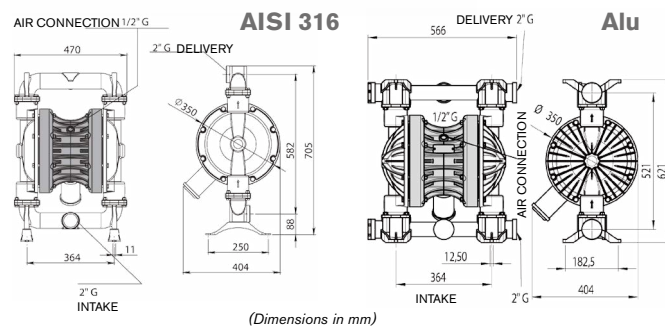
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



Alu



AISI 316



| | | | |
|---------------------------------|--------------------|--|--|
| Intake/delivery connections | G 2" f o DN 50 (*) | | |
| Air connection | G 1/2" f | | |
| Max. self-priming capacity** | 6 m | | |
| Max. flow rate* | 650 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 8 mm | | |

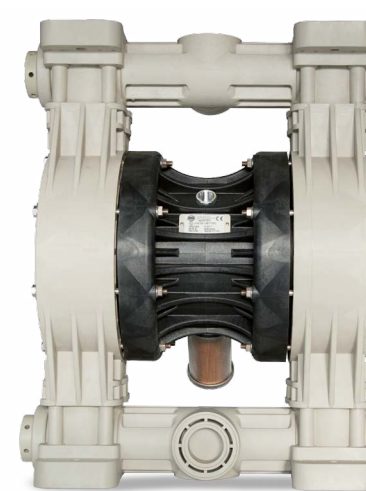
| | | | |
|---------------------------------------|----------|-------|----------------|
| Construction materials and net weight | Alu | 49 Kg | 95°C Max Temp. |
| | AISI 316 | 54 Kg | 95°C Max Temp. |

(*) NPT connections on request

**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. ** The value depends on the configuration of the pump.

BOXER 503 plastic

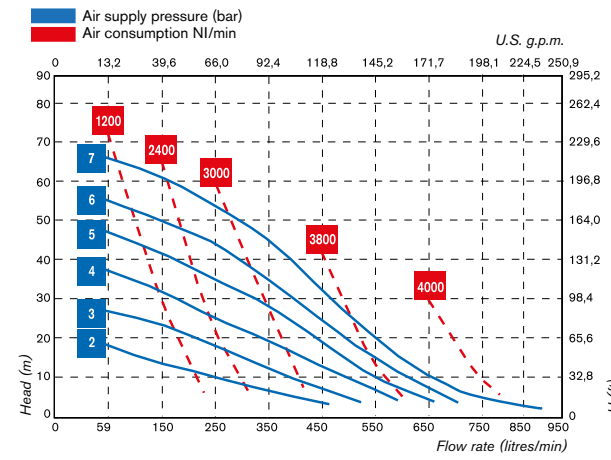
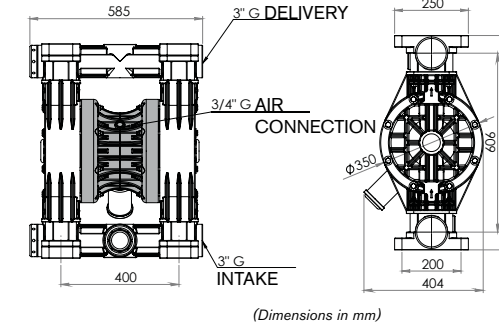
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



PP



PVDF



| | | | |
|---------------------------------|--------------------|--|--|
| Intake/delivery connections | G 3" f o DN 80 (*) | | |
| Air connection | G 3/4" f | | |
| Max. self-priming capacity** | 5 m | | |
| Max. flow rate* | 900 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 10 mm | | |

| | | | |
|---------------------------------------|------|-------|----------------|
| Construction materials and net weight | PP | 50 Kg | 65°C Max Temp. |
| | PVDF | 67 Kg | 95°C Max Temp. |

(*) NPT connections on request

**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. ** The value depends on the configuration of the pump.

BOXER 503 metal

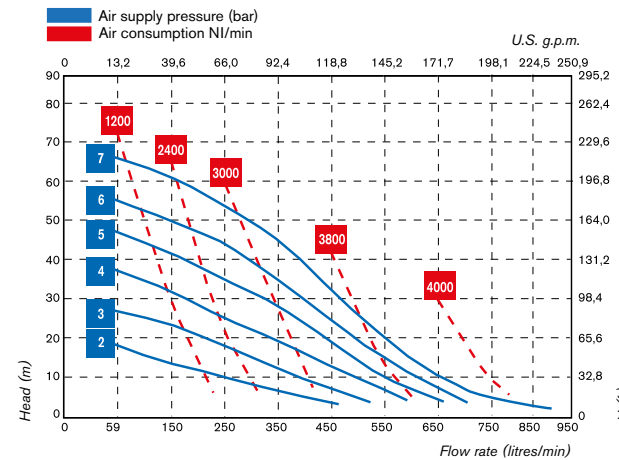
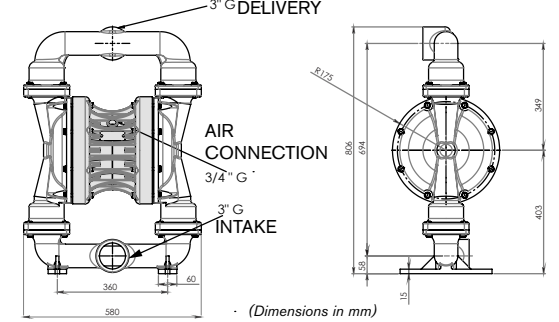
STANDARD: II 3/3 GD c IIB T135°C (zona 2)
CONDUCT: II 2/2 GD c IIB T135°C (zona 1)



AISI 316



Alu



| | | | |
|---------------------------------|--------------------|--|--|
| Intake/delivery connections | G 3" f o DN 80 (*) | | |
| Air connection | G 3/4" f | | |
| Max. self-priming capacity** | 5 m | | |
| Max. flow rate* | 900 l/min | | |
| Max. head* | 70 m | | |
| Max. air supply pressure | 7 bar | | |
| Max. diameter of passing solids | 10 mm | | |

| | | | |
|---------------------------------------|----------|-------|----------------|
| Construction materials and net weight | Alu | 66 Kg | 95°C Max Temp. |
| | AISI 316 | 71 Kg | 95°C Max Temp. |

(*) NPT connections on request

**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. ** The value depends on the configuration of the pump.

DIAPHRAGM PUMPS - FDA

FOODBOXER

Debem FDA Foodboxer pumps are made of electro-polished stainless steel, and are ideal for the food, cosmetics and beverage industries in compliance with FDA requirements. The parts in contact with the liquid are made exclusively of electro-polished AISI 316 and PTFE FDA.

FOODBOXER COMPOSITION CODES

ex. **FB50-A-HTAAT--**

Foodboxer 50, body AISI 316, air side diaphragm Hytrel, fluid side diaphragm PTFE, balls AISI 316, ball seats AISI 316, O-Ring PTFE

| FB50 - PUMP MODEL | A - PUMP BODY | H AIR SIDE DIAPHRAGM | T FLUID SIDE DIAPHRAGM | A BALLS | A BALL SEATS | T O-RING | - TWIN MANIFOLD | - CONDUCT VERSION |
|--|---------------------|-------------------------|---------------------------|--|---------------------|-----------------|--------------------|----------------------|
| FB30 - Foodboxer 30 FB50 - Foodboxer 50 FB80 - Foodboxer 80 FB100 - Foodboxer 100 FB251 - Foodboxer 251 FB502 - Foodboxer 502 FB503 - Foodboxer 503 | A - AISI 316 | H - Hytrel | T - PTFE | A - AISI 316 T - PTFE | A - AISI 316 | T - PTFE | X | C |



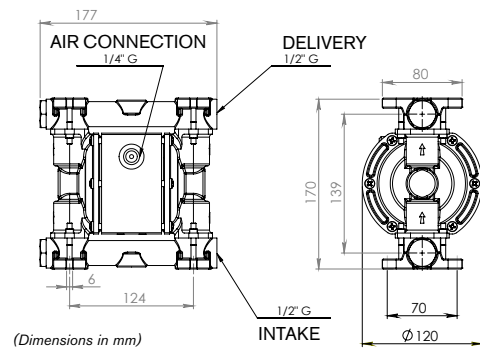
FOODBOXER 30

FDA
compliant

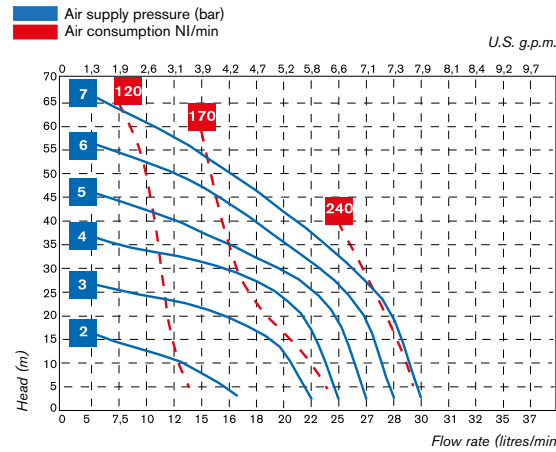
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



(Dimensions in mm)



| | |
|---------------------------------|--------------|
| Intake/delivery connections | G 1/2" f (*) |
| Air connection | G 1/4" f |
| Max. self-priming capacity** | 6 m |
| Max. flow rate* | 30 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 2 mm |

| | | | |
|---------------------------------------|----------|--------|----------------|
| Construction materials and net weight | AISI 316 | 3,8 Kg | 95°C Max Temp. |
|---------------------------------------|----------|--------|----------------|

(*) available with clamp, DIN or NPT connections on request

**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. ** The value depends on the configuration of the pump.

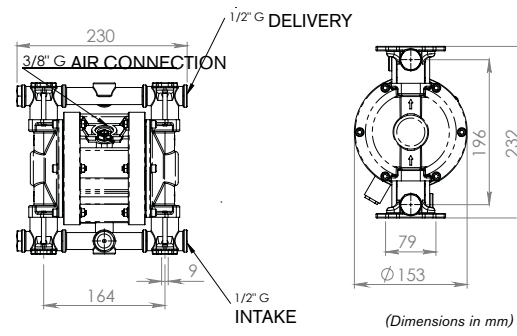
FOODBOXER 50

FDA
compliant

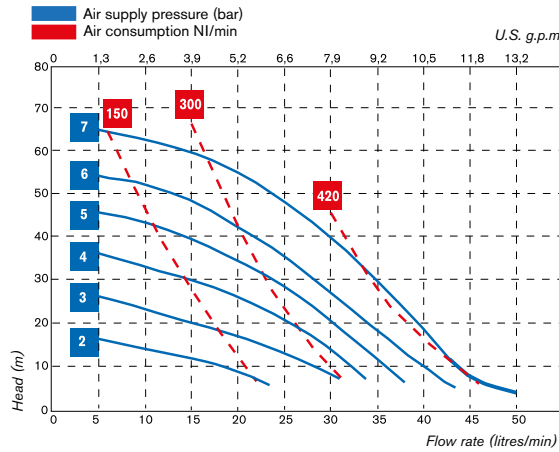
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



(Dimensions in mm)



| | |
|---------------------------------|--------------|
| Intake/delivery connections | G 1/2" f (*) |
| Air connection | G 3/8" f |
| Max. self-priming capacity** | 5 m |
| Max. flow rate* | 50 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 4 mm |

| | | | |
|---------------------------------------|----------|--------|----------------|
| Construction materials and net weight | AISI 316 | 6,5 Kg | 95°C Max Temp. |
|---------------------------------------|----------|--------|----------------|

(*) available with clamp, DIN or NPT connections on request

**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. ** The value depends on the configuration of the pump.

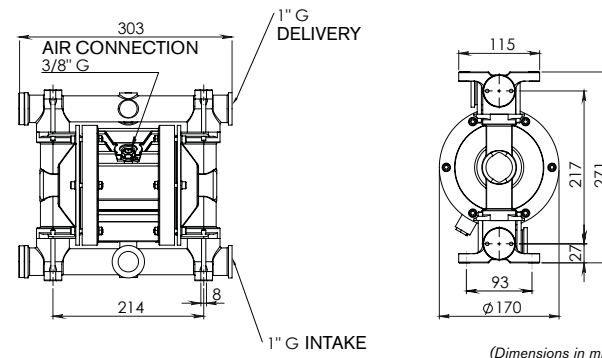
FOODBOXER 80

FDA
compliant

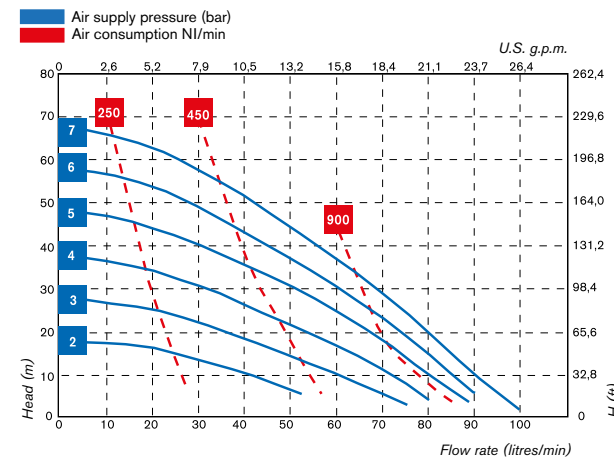
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



(Dimensions in mm)



| | |
|---------------------------------|------------|
| Intake/delivery connections | G 1" f (*) |
| Air connection | G 3/8" f |
| Max. self-priming capacity** | 6 m |
| Max. flow rate* | 100 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 4 mm |

| | | | |
|---------------------------------------|----------|---------|----------------|
| Construction materials and net weight | AISI 316 | 10,5 Kg | 95°C Max Temp. |
|---------------------------------------|----------|---------|----------------|

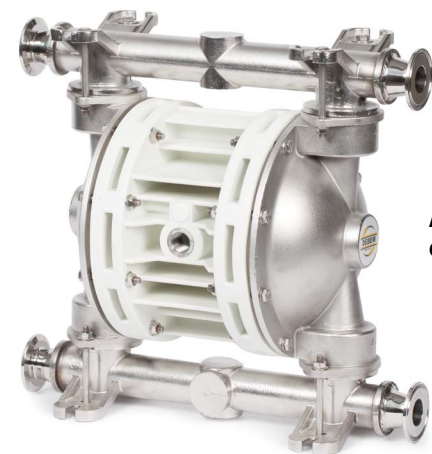
(*) available with clamp, DIN or NPT connections on request

**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. ** The value depends on the configuration of the pump.

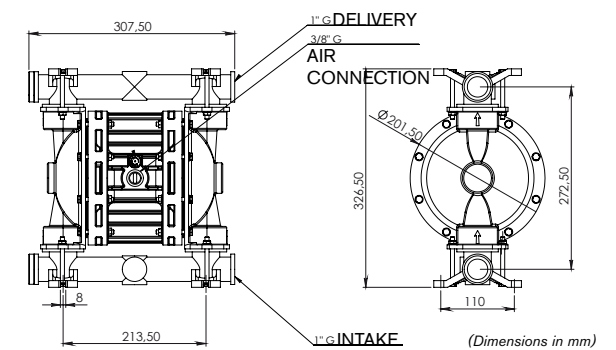
FOODBOXER 100

FDA
compliant

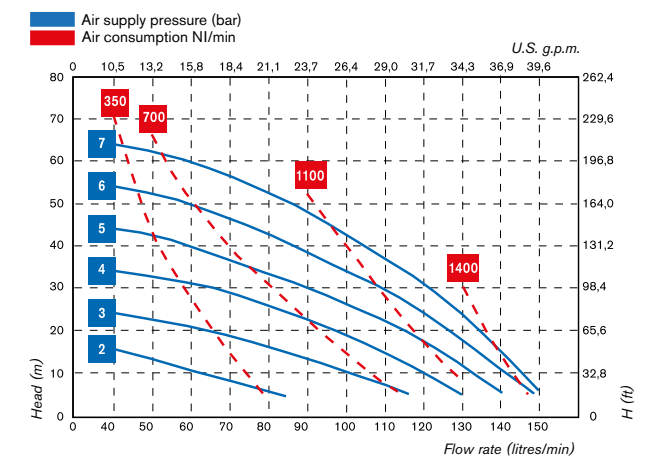
STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



(Dimensions in mm)



| | |
|---------------------------------|------------|
| Intake/delivery connections | G 1" f (*) |
| Air connection | G 3/8" f |
| Max. self-priming capacity** | 5 m |
| Max. flow rate* | 150 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 4 mm |

| | | | |
|---------------------------------------|----------|-------|----------------|
| Construction materials and net weight | AISI 316 | 11 Kg | 95°C Max Temp. |
|---------------------------------------|----------|-------|----------------|

(*) available with clamp, DIN or NPT connections on request

**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. ** The value depends on the configuration of the pump.

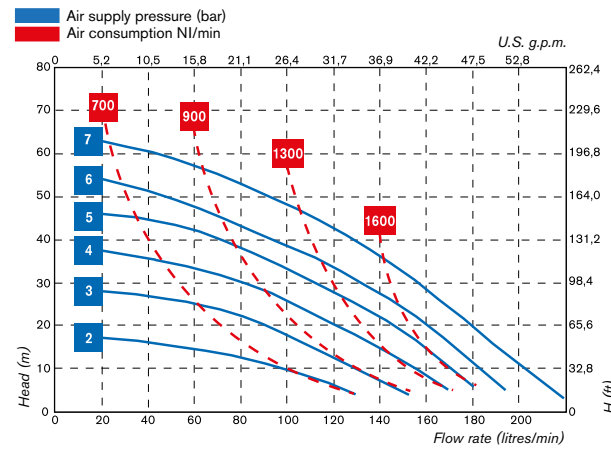
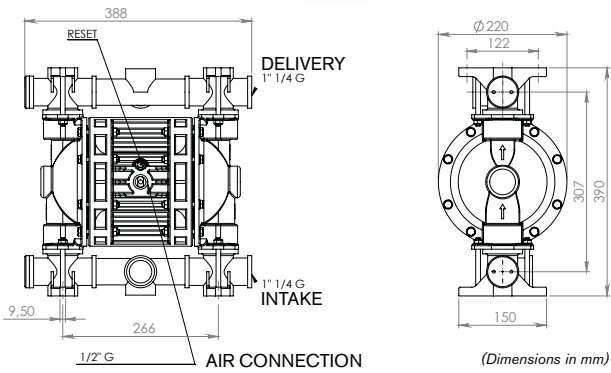
FOODBOXER 150



STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



| | |
|---------------------------------|---------------|
| Intake/delivery connections | G 1 1/4 f (*) |
| Air connection | G 1/2" f |
| Max. self-priming capacity** | 5 m |
| Max. flow rate* | 220 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 5 mm |

Construction materials and net weight: AISI 316, 32 Kg, 95°C Max Temp.

(*) available with clamp, DIN or NPT connections on request
 **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.

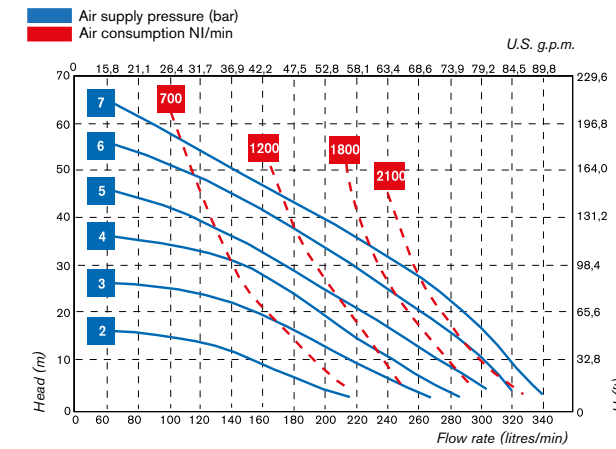
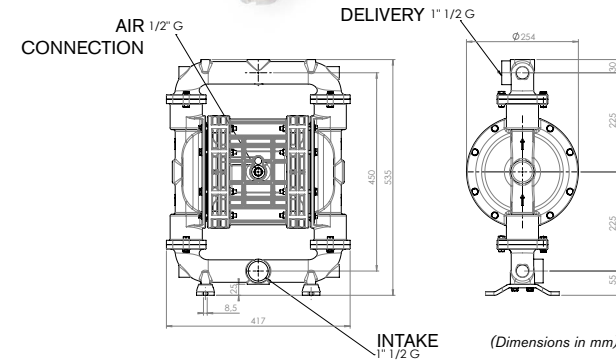
FOODBOXER 251



STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



| | |
|---------------------------------|---------------|
| Intake/delivery connections | G 1 1/2 f (*) |
| Air connection | G 1/2" f |
| Max. self-priming capacity** | 6 m |
| Max. flow rate* | 340 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 6 mm |

Construction materials and net weight: AISI 316, 6,5 Kg, 95°C Max Temp.

(*) available with clamp, DIN or NPT connections on request
 **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.

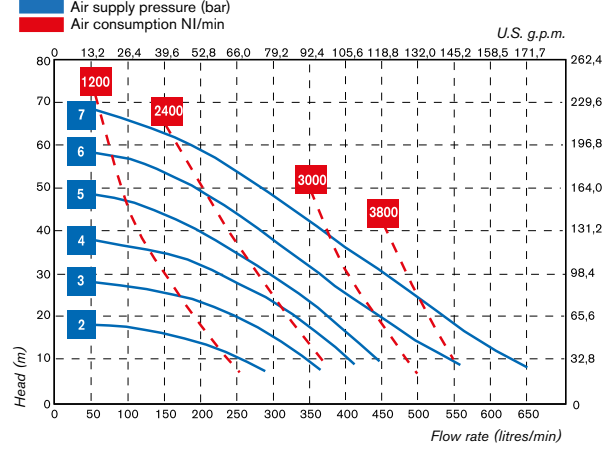
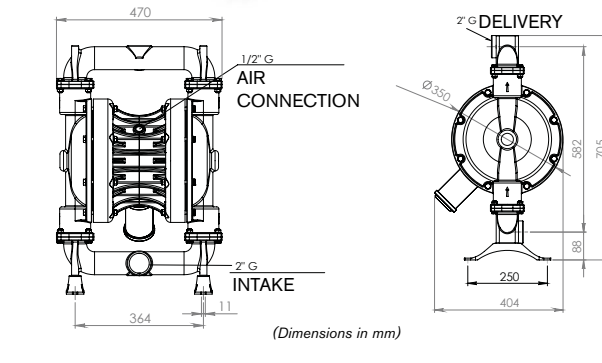
FOODBOXER 502



STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



| | |
|---------------------------------|------------|
| Intake/delivery connections | G 2" f (*) |
| Air connection | G 1/2" f |
| Max. self-priming capacity** | 6 m |
| Max. flow rate* | 650 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 8 mm |

Construction materials and net weight: AISI 316, 54 Kg, 95°C Max Temp.

(*) available with clamp, DIN or NPT connections on request
 **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.

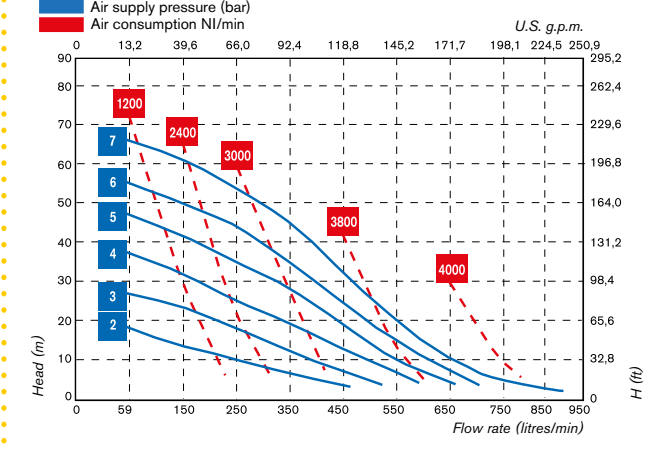
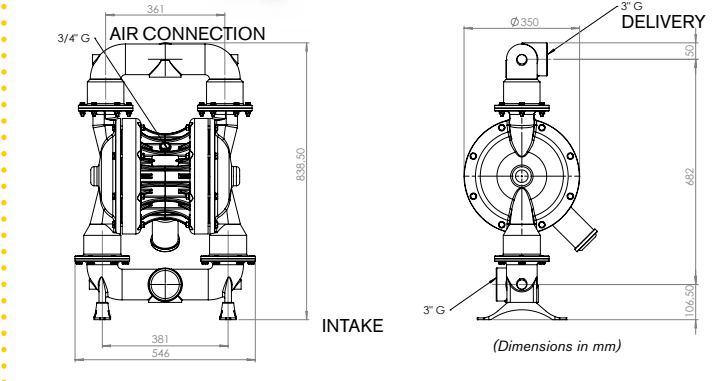
FOODBOXER 503



STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



AISI 316
electro-polished



| | |
|---------------------------------|------------|
| Intake/delivery connections | G 3" f (*) |
| Air connection | G 3/4" f |
| Max. self-priming capacity** | 5 m |
| Max. flow rate* | 900 l/min |
| Max. head* | 70 m |
| Max. air supply pressure | 7 bar |
| Max. diameter of passing solids | 10 mm |

Construction materials and net weight: AISI 316, 71 Kg, 95°C Max Temp.

(*) available with clamp, DIN or NPT connections on request
 **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.

DIAPHRAGM PUMPS - 3A

SANIBOXER

3A certified, made with mechanically polished AISI 316 L, the SANIBOXER pump is designed for the Food-Processing, Cosmetic and Pharmaceutical industry.

SANIBOXER COMPOSITION CODES

ex. **SB100A-DTTAT-**
Saniboxer 100 in AISI 316 L, diaphragm EPDM, diaphragm PTFE, balls PTFE + ball seats AISI 316, O-Ring PTFE

| SB100 | A - | D | T | T | A | T | - |
|-----------------------|--|-------------------------|----------------------|----------------------------|--------------|----------|---|
| PUMP MODEL | PUMP BODY | SINGLE DIAPHRAGM | | BALLS | BALL SEATS | O-RING* | |
| SB100 - Saniboxer 100 | A - AISI 316 L mechanically polished | AIR SIDE D - EPDM | FLUID SIDE T - | T - PTFE A - AISI 316 L | A - AISI 316 | T - PTFE | |



WORKING PRINCIPLE

The SANIBOXER diaphragm pumps consist of a centrally lodged coaxial pneumatic motor with diaphragms fixed to its shaft.

The ball valves and the seats of the suction and delivery lines are located on the ends of the two pump bodies.

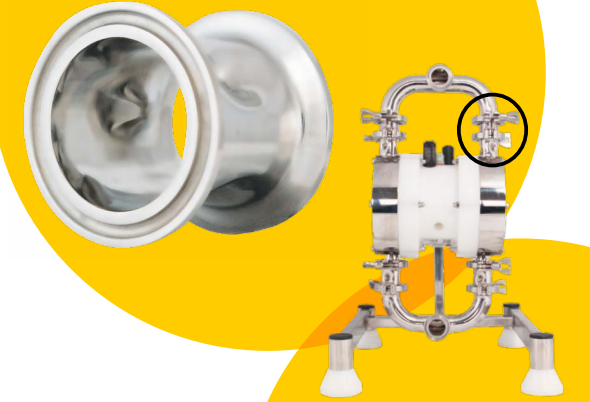
The compressed air injected by the coaxial exchanger behind one of the two diaphragms determines the compression and pushes the product in the delivery line.

At the same time the diaphragm, integral with the exchanger's shaft, creates a depression while sucking the fluid.

Once the run is completed, the pneumatic coaxial exchanger deviates the compressed air behind the opposite diaphragm and the cycle reverses automatically.

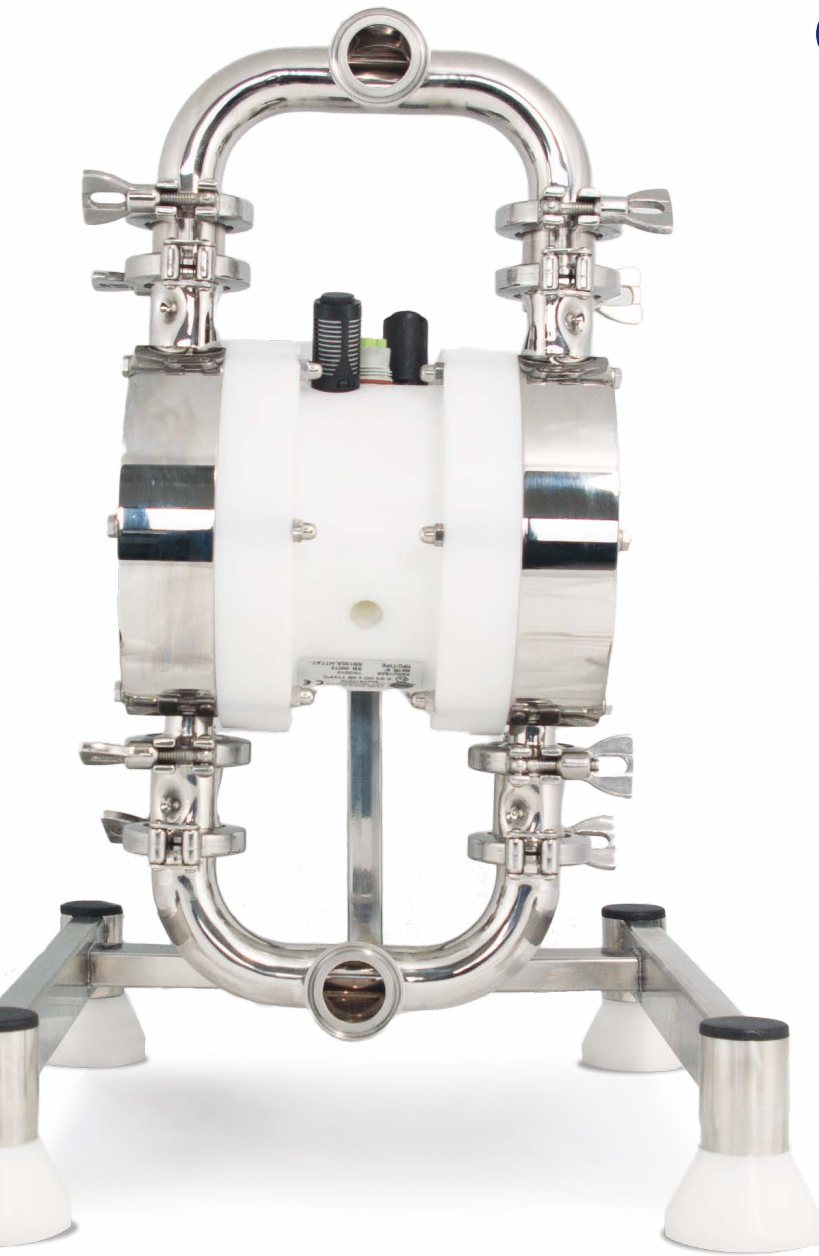
EASY-CLEAN Valve

Patent system

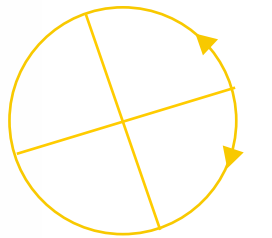


AISI 316 L
Mechanically
polished

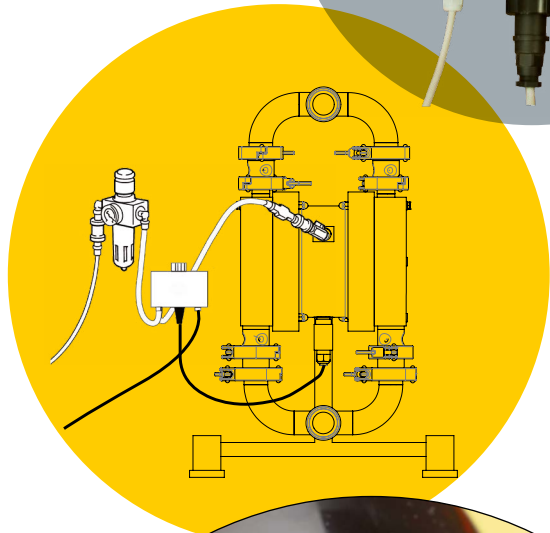
RA < 0,8µm



360°



**FAST
EMPTYING
SYSTEM**



DIAPHRAGMS

Diaphragms made of PTFE with EPDM support. Special "hygienic" design, without fixing nut, this profile avoids residues' deposit and make its cleaning easier.

ACCESSORIES - DIAPHRAGM LEAKER SENSOR

This system designed to be used by SANIBOXER diaphragm pumps, is provided with a self-diagnosis function for the contacts and the right operation of the circuit. In the event of a malfunction, the red pilot lamp always lits up and, depending on the irregularity the audible alarm will activate too.

The control unit operates exclusively during the pumping of conductive fluids; it detects the diaphragm breakage through the contacts placed behind the diaphragms, inside the compression chamber.

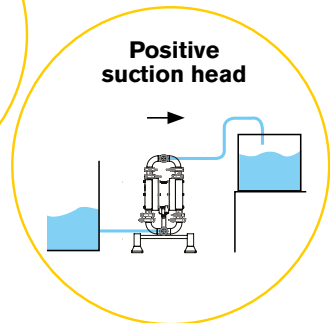
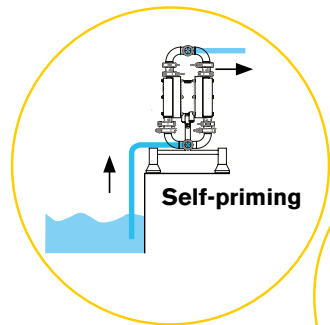
When the liquid stands between the two sensors, it causes the closing of the electric circuit placed inside the control unit and consequently the switching off of the output relay, deactivating then the solenoid valve which controls the pump, stopping its operation and enabling both a visual and acoustic alarm.

APPLICATIONS

The SANIBOXER pneumatic diaphragm pumps have been designed and built to pump liquid foodstuffs using materials that are compatible with the chemical substances used to clean and sanitize the pump.

The pump may be used at operating temperatures (temperature of the fluid + environmental temperature) compatible with the pump materials and in any case never exceeding 95°C.

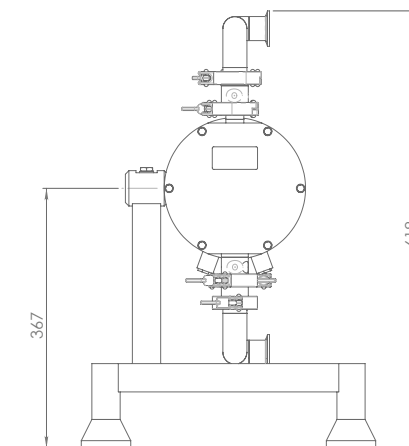
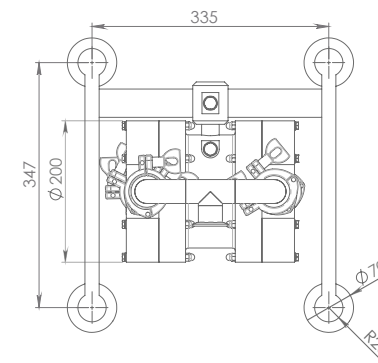
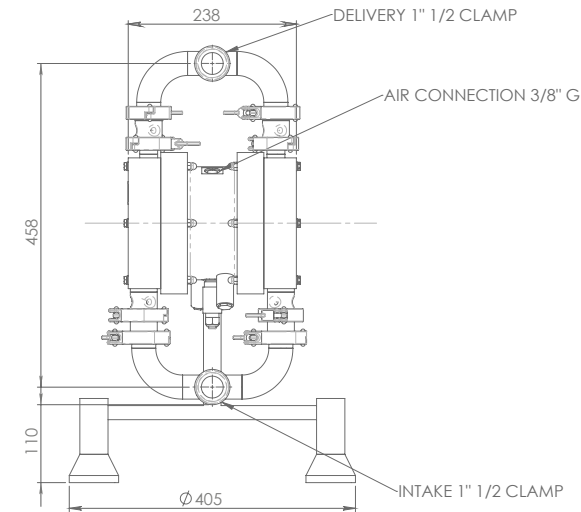
INSTALLATION



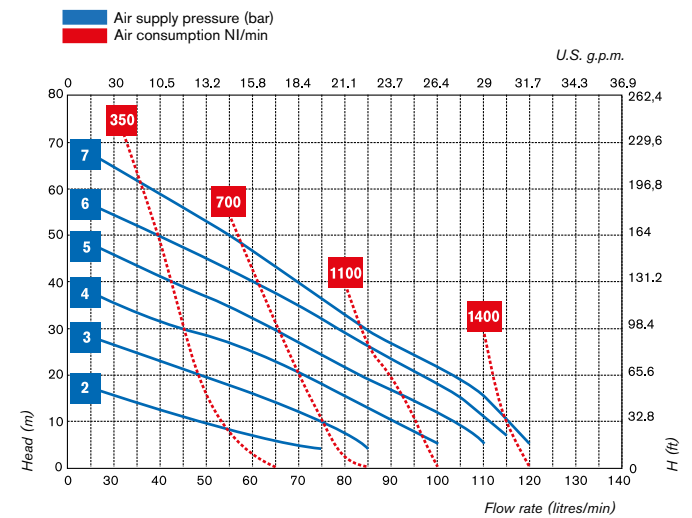
SANIBOXER 100



Mechanically polished AISI 316 L



(Dimensions in mm)



| | |
|--|--------------|
| Suction/delivery connections | 1" 1/2 clamp |
| Air connection | 3/8" |
| Air pressure (max.) | 7 bar |
| Max. operating temperature (fluid + amb.) | max 95°C |
| Dry suction capacity (PTFE diaphragm) | 4 m |
| Max flow rate (water at 18°C with immersed intake manifold) | 120 l/m |
| Net weight (empty) | 26 KG |
| Max. diameter of passing solids | 4 mm |



PULSATION DAMPENERS

EQUAFLUX

EQUAFLUX automatic diaphragm pulsation dampeners feature solid build and high performance. They are fitted to the discharge line of diaphragm pumps in order to smooth pulsating flows.

EQUAFLUX COMPOSITION CODES

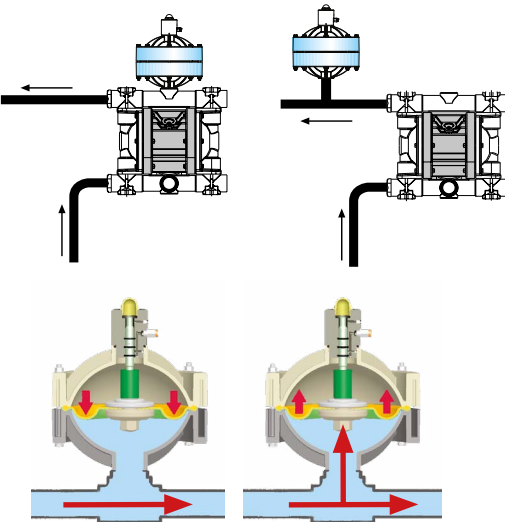
ex. **EQ100PCHTC**
 Equaflux 100 in PP+CF, air side diaphragm Hytrel, product side diaphragm PTFE, conduct

| EQ100 | P - | H | T | C |
|--|--|---|----------------------|---|
| DAMPENER MODEL | DAMPENER BODY | AIR SIDE DIAPHRAGM | FLUID SIDE DIAPHRAGM | CONDUCT VERSION |
| EQ 51 - Equaflux 51 EQ 100 - Equaflux 100 EQ 200 - Equaflux 200 EQ 302 - Equaflux 302 EQ 303 - Equaflux 303 | P - Polypropylene FC - PVDF+CF R - PPS-V A - AISI 316 (except EQ 303) AL - Aluminium PC - PP + CF | H - Hytrel M - Santoprene D - EPDM N - NBR | T - PTFE | (zone 1)  II 2/2GD c IIB T135°C C - if requested |
| FQ 51 - Foodequaflux 51 FQ 100 - Foodequaflux 100 FQ 200 - Foodequaflux 200 FQ 302 - Foodequaflux 302 | A - AISI 316 | H - Hytrel | T - PTFE | (zone 1)  II 2/2GD c IIB T135°C C - if requested |

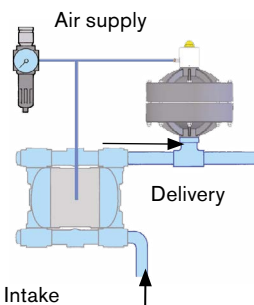
EQUAFLUX dampeners can be used with liquids having high apparent viscosity even if containing suspended solids of considerable size and they automatically adapt to system conditions without the need for manual adjustment or calibration. The ability to minimise pulsations, vibrations and water hammer means that this component provides excellent protection and smooth system flow. The huge choice of construction materials allows selection of optimum chemical compatibility with the fluid and/or environment without neglecting the temperature range. Dampeners are also available for use in potentially explosive atmospheres (ATEX certification).

HOW IT WORKS

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

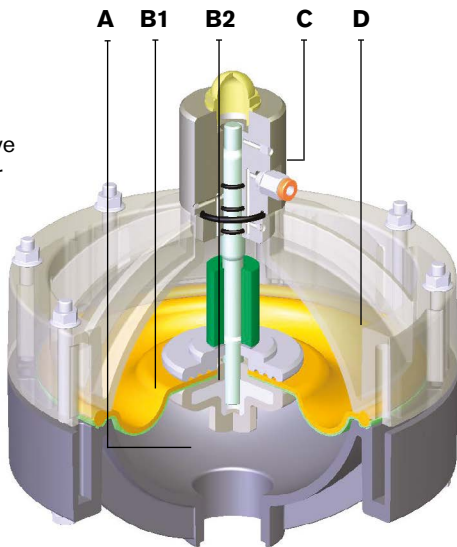


- A** = expansion opening
- B1** = air-side diaphragm
- B2** = fluid-side diaphragm
- C** = automatic pneumatic valve
- D** = compressed-air chamber




MAIN FEATURES

- Available in PP, PVDF, PPS-V, AISI 316, Alu
- Automatic dampening control
- Suitable for demanding applications
- Use in potentially-explosive atmospheres (ATEX certifications)
- Use in environments subject to high humidity
- Actuated using non lubricated air (2 ÷ 7 bar)
- Range of construction materials ensures correct fluid compatibility
- User-friendly parts replacement and maintenance
- Excellent performance and value for money



EQUAFLUX

 **STANDARD:** II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



| PRODUCT CONNECTION | AIR CONNECTION | MAX. AIR SUPPLY PRESSURE | APPLICABILITY | WEIGHT | OPERATING TEMPERATURE | DIMENSION (mm) |
|--------------------|----------------|--------------------------|--|--------|-----------------------|----------------|
| G 3/4" | ø 6 mm | 7 bar | MIDGETBOX PP, CUBIC 15 PP, MICROBOXER PP | 0,5 Kg | min +3°C max +65°C | 121x117 |
| G 3/4" | ø 6 mm | 7 bar | CUBIC 15 ECTFE, MICROBOXER PVDF | 0,5 Kg | min +3°C max +95°C | 121x117 |
| G 3/4" | ø 6 mm | 7 bar | MICROBOXER ALUMINIUM | 0,6 Kg | min +3°C max +95°C | 121x117 |
| G 1/2" | ø 6 mm | 7 bar | MICROBOXER AISI | - | min +3°C max +95°C | 133x117 |
| G 1" | ø 6 mm | 7 bar | BOXER 50 PP, BOXER 81PP | 1,5 Kg | min +3°C max +65°C | 177x170 |
| G 1" | ø 6 mm | 7 bar | BOXER 50 PVDF, BOXER 81 PVDF | 1,7 Kg | min +3°C max +95°C | 177x170 |
| G 1" | ø 6 mm | 7 bar | BOXER 50 ALU, BOXER 81 ALU | 1,7 Kg | min +3°C max +95°C | 177x170 |



EQUAFLUX

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



| PRODUCT CONNECTION | AIR CONNECTION | MAX. AIR SUPPLY PRESSURE | APPLICABILITY | WEIGHT | OPERATING TEMPERATURE | DIMENSION (mm) |
|--------------------|----------------|--------------------------|--|---------|-----------------------|----------------|
| G 1" | ø 6 mm | 7 bar | MINIBOXER AISI 316, BOXER 80 AISI 316 | - | min +3°C max +95°C | 183,2x151 |
| G 1" 1/2 | ø 6 mm | 7 bar | BOXER 100 PP, BOXER 150 PP, BOXER 251 PP | 3,8 Kg | min +3°C max +65°C | 283,2x254 |
| G 1" 1/2 | ø 6 mm | 7 bar | BOXER 100 PVDF, BOXER 150 PVDF, BOXER 251 PVDF | 4,5 Kg | min +3°C max +95°C | 283,2x254 |
| G 1" 1/2 | ø 6 mm | 7 bar | BOXER 150 ALU, BOXER 251 ALU, BOXER 100 ALU | 4,5 Kg | min +3°C max +95°C | 283,2x254 |
| G 1" 1/2 | ø 6 mm | 7 bar | BOXER 150 AISI, BOXER 251 AISI, BOXER 100 AISI | - | min +3°C max +95°C | 264,7x254 |
| G 2" | Ø 8 mm | 7 bar | BOXER 522 PP | 23 Kg | min +3°C max +65°C | 398x516 |
| G 2" | Ø 8 mm | 7 bar | BOXER 522 PVDF | 28,5 Kg | min +3°C max +95°C | 398x516 |
| G 2" | Ø 8 mm | 7 bar | BOXER 502 ALU | 26 Kg | min +3°C max +95°C | 356x352 |
| G 2" | Ø 8 mm | 7 bar | BOXER 502 AISI 316 | 32 Kg | min +3°C max +95°C | 356x352 |

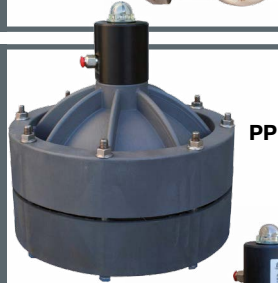
EQUAFLUX 100

AISI 316



EQUAFLUX 200

PP



PVDF



PPS-V



AISI 316

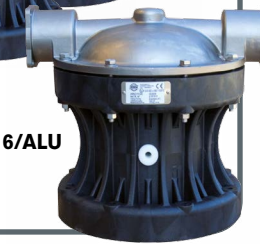


EQUAFLUX 302

PP/PVDF



AISI 316/ALU



EQUAFLUX / FOODEQUAFLUX

STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)



| PRODUCT CONNECTION | AIR CONNECTION | MAX. AIR SUPPLY PRESSURE | APPLICABILITY | WEIGHT | OPERATING TEMPERATURE | DIMENSION (mm) |
|--------------------|----------------|--------------------------|----------------------------|---------|-----------------------|----------------|
| G 3" | Ø 8 mm | 7 bar | BOXER 503 PP | 23 Kg | min +3°C max +65°C | 398x516 |
| G 3" | Ø 8 mm | 7 bar | BOXER 503 PVDF | 28,5 Kg | min +3°C max +95°C | 398x516 |
| G 3" | Ø 8 mm | 7 bar | BOXER 503 ALU | 29 Kg | min +3°C max +95°C | 356x352 |
| G 1/2" | ø 6 mm | 7 bar | FOODBOXER 30 | - | min +3°C max +95°C | 133x117 |
| G 1" | ø 6 mm | 7 bar | FOODBOXER 50 e 80 | - | min +3°C max +95°C | 183,2x151 |
| G 1" 1/2 | ø 6 mm | 7 bar | FOODBOXER 100, 150, 251 | - | min +3°C max +95°C | 264,7x254 |
| G 2" | Ø 8 mm | 7 bar | FOODBOXER 502 | 32 Kg | min +3°C max +95°C | 356x352 |

EQUAFLUX 303

PP



PVDF



ALU



FOOD EQUAFLUX (AISI 316)

FQ 51



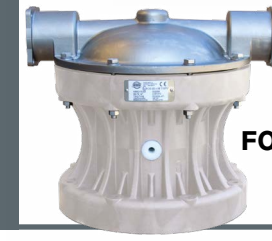
FQ 100



FQ 200



FQ 302



HORIZONTAL CENTRIFUGAL PUMPS



Debem manufactured resin-encased horizontal centrifugal pumps are pumps operated by a direct-drive motor (max 3000 rpm) for fast fluid transfer and/or drainage with flow rates ranging from 6 to 75 m³/h.

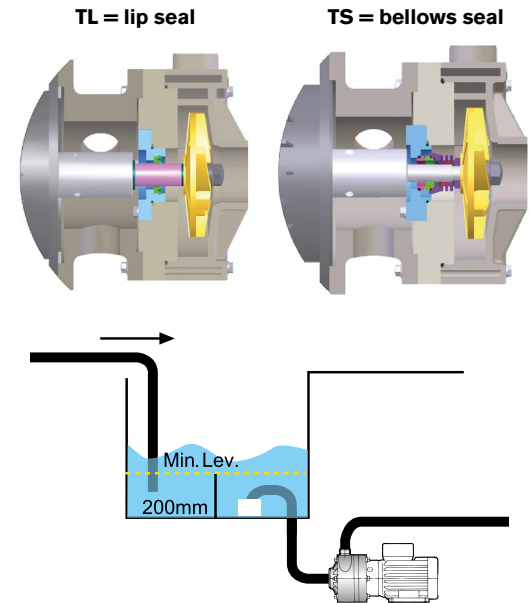
MB COMPOSITION CODES

ex. **MB080P-TLVN**
 MB 80 in PP +Viton lip seal + Three-phase motor

| MB080 | P - | TLV | N |
|------------------------|--------------------------|--------------------------------|-------------------------------|
| PUMP MODEL | PUMP MATERIAL | TYPE OF SEAL | MOTOR |
| MB 080 - MB 80 | P - polypropylene | TLV - Viton lip seal | N* - Three-phase motor |
| MB 100 - MB 100 | FC - PVDF+CF | TLD - EPDM lip seal | M - Single-phase motor |
| MB 110 - MB 110 | | TSV - Viton bellow seal | A - ATEX motor |
| MB 120 - MB 120 | | TSD - EPDM bellow seal | |
| MB 130 - MB 130 | | | |
| MB 140 - MB 140 | | | |
| MB 150 - MB 150 | | | |
| MB 155 - MB 155 | | | |
| MB 160 - MB 160 | | | |
| MB 180 - MB 180 | | | |

* Standard motor is the three-phase induction type with European voltage (2-pole) 50Hz

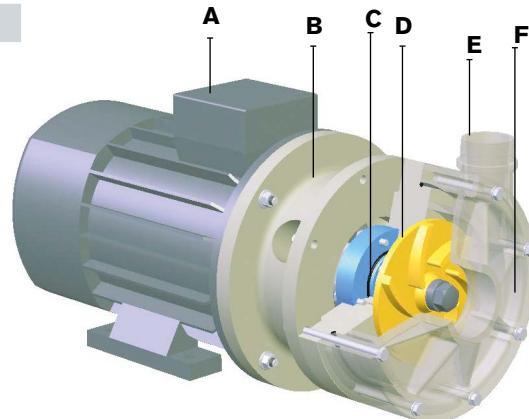
Their special open-impeller design allows pumping even with very dirty liquids having apparent viscosity up to 500 cps (at 20°C) and small suspended solids. There are two versions available with different internal mechanical seal depending on use, TL (lip seal) and TS (bellows seal).



HOW IT WORKS

The impeller is integral with the shaft and direct-drive electric motor and is rotated at a preset speed with the centrifugal effect producing suction on the intake side and discharge on the delivery side.

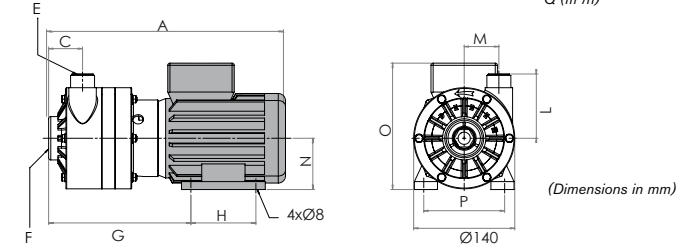
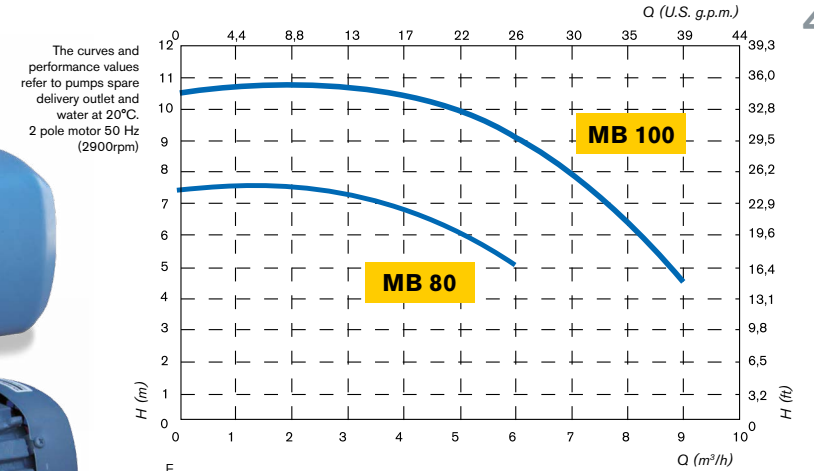
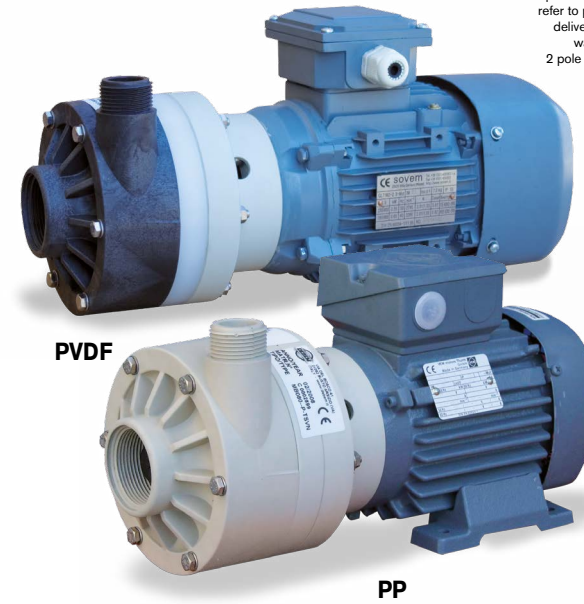
- A** = electric motor
- B** = inspection lantern
- C** = mechanical seal
- D** = impeller
- E** = delivery duct
- F** = intake duct



MAIN FEATURES

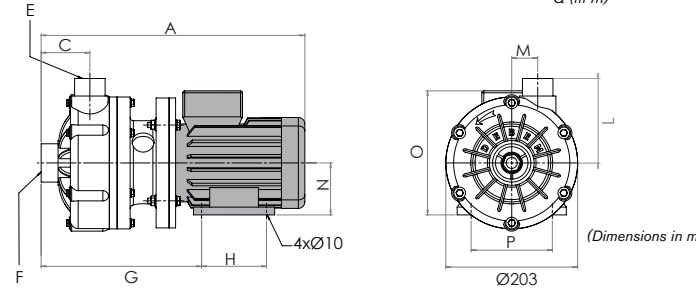
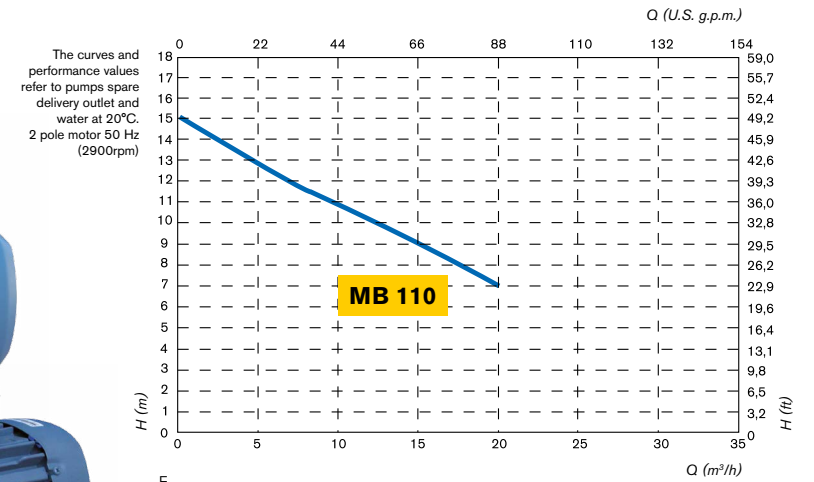
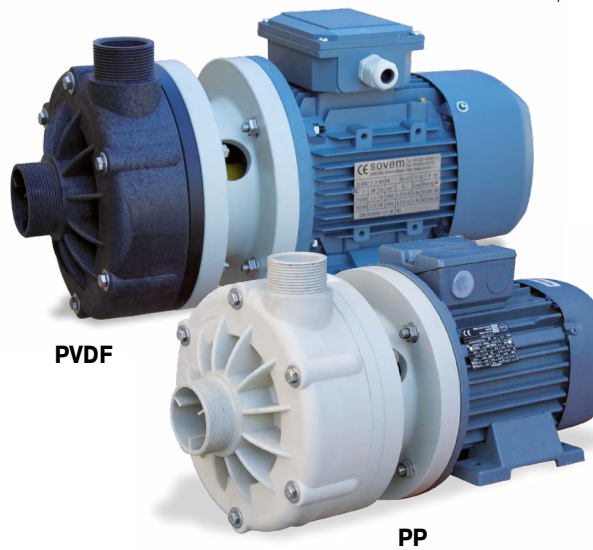
- Available in polypropylene, PVDF
- Positive suction head operation
- Weldless
- Mechanical bellows or lip seal
- Usable even with extremely dirty liquids
- Flow rates: from 6 to 75 m³/h
- Head: up to 38 mt
- Quick and easy maintenance
- Inexpensive spares
- Viscosity: up to 500 cps
- European voltage motors: IP55 - F Class - 2-pole - 50 Hz - three-phase single phase from 0,55 kw to 2,2 kw - 50/60 Hz
- Max. operating temperature: PP min +3°C/max +65°C PVDF min +3°C/max +95°C

MB 80/100



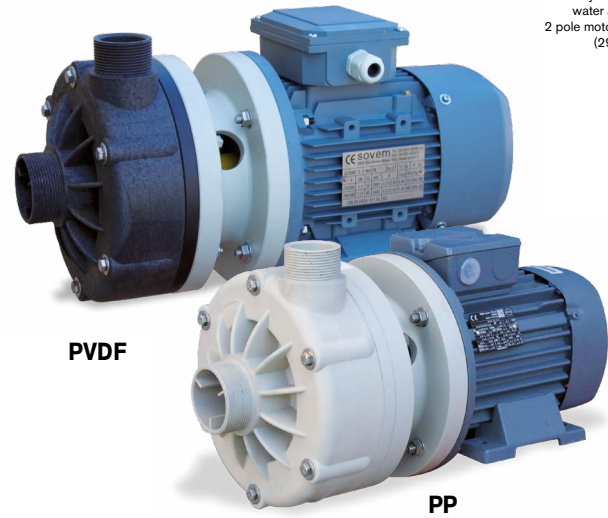
| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|--------------------|------------------|-----|----|------------------|----------------------|-----|----|----|----|----|-----|-----|-------|---------|
| MB80 | TL-TS | 0,37 Kw 0,5 HP | 5 | 328 | 47 | G 1" M o DN25 | G 1 1/2 f o DN 40 | 197 | 90 | 89 | 48 | 71 | 175 | 112 | 8,5 | 9,5 |
| MB100 | TL-TS | 0,55 Kw 0,75 HP | 7 | 328 | 47 | G 1" M o DN25 | G 1 1/2 f o DN 40 | 197 | 90 | 89 | 48 | 71 | 175 | 112 | 8,5 | 9,5 |

MB 110



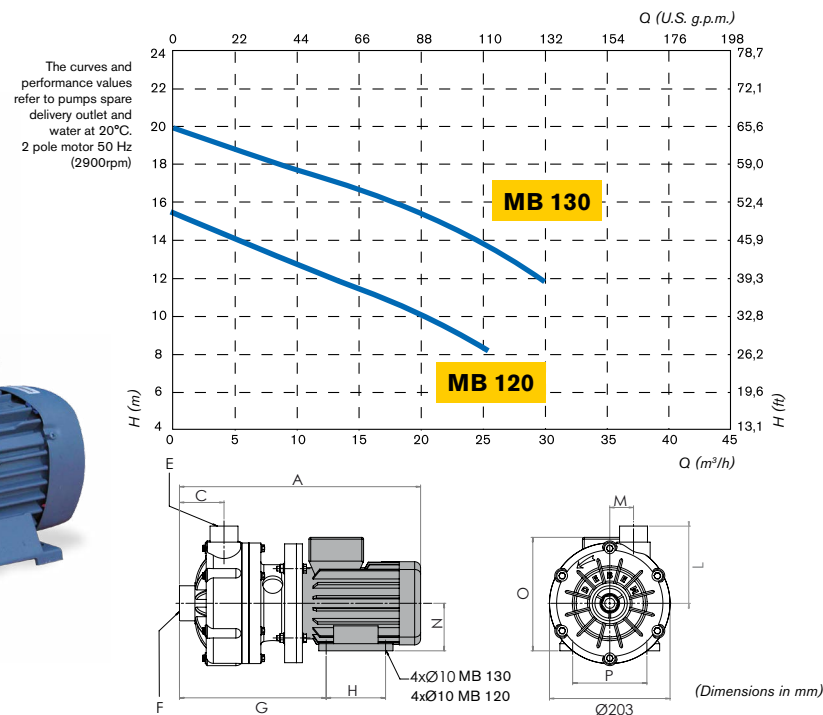
| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|------------------|------------------|-----|----|---------------------|------------------|-----|-----|-----|----|----|-----|-----|-------|---------|
| MB110 | TL-TS | 1,1 Kw 1,5 HP | 2 | 406 | 75 | G 1 1/2 M o DN40 | G 2" M o DN50 | 247 | 100 | 130 | 40 | 80 | 191 | 125 | 16 | 17 |

MB 120/130



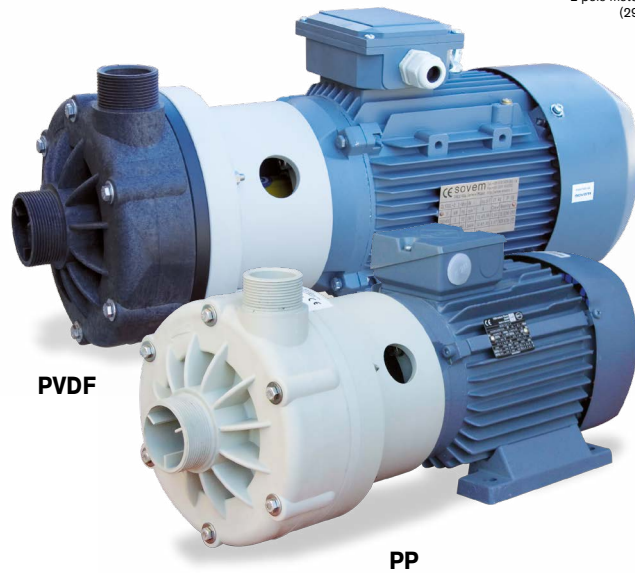
PVDF

PP



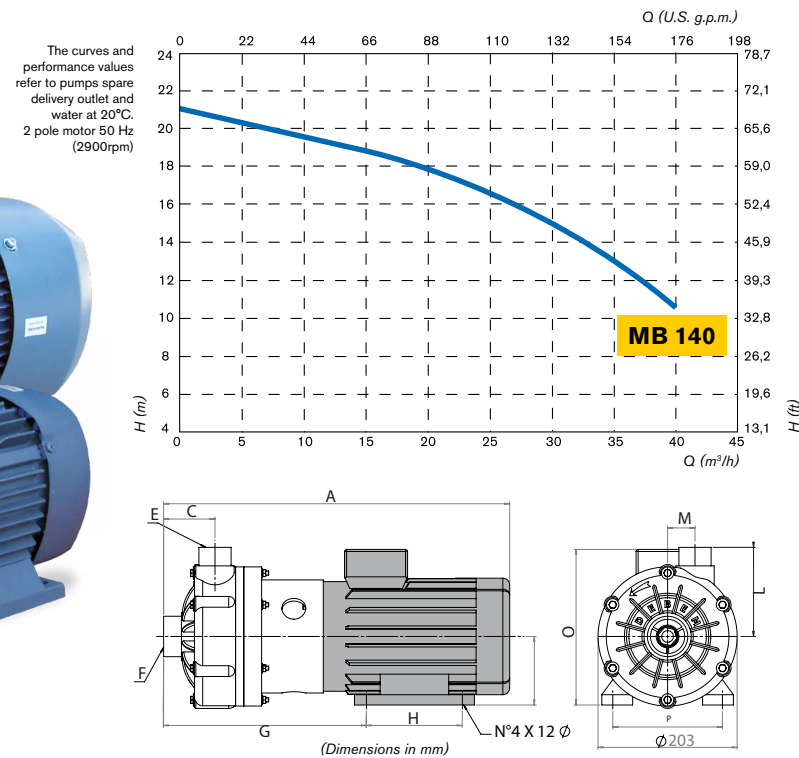
| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|----------------|------------------|-----|----|----------------------|------------------|-----|-----|-----|----|----|-----|-----|-------|---------|
| MB120 | TL-TS | 1.5 Kw 2 HP | 6 | 426 | 75 | G 1" 1/2 M o DN40 | G 2" M o DN50 | 257 | 100 | 130 | 40 | 90 | 210 | 140 | 16 | 17 |
| MB130 | TL-TS | 2.2 Kw 3 HP | 6 | 448 | 75 | G 1" 1/2 M o DN40 | G 2" M o DN50 | 257 | 125 | 130 | 40 | 90 | 210 | 140 | 22,5 | 23,5 |

MB 140



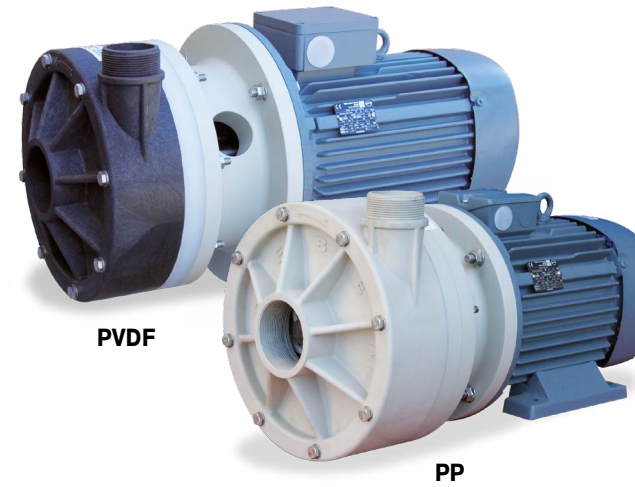
PVDF

PP



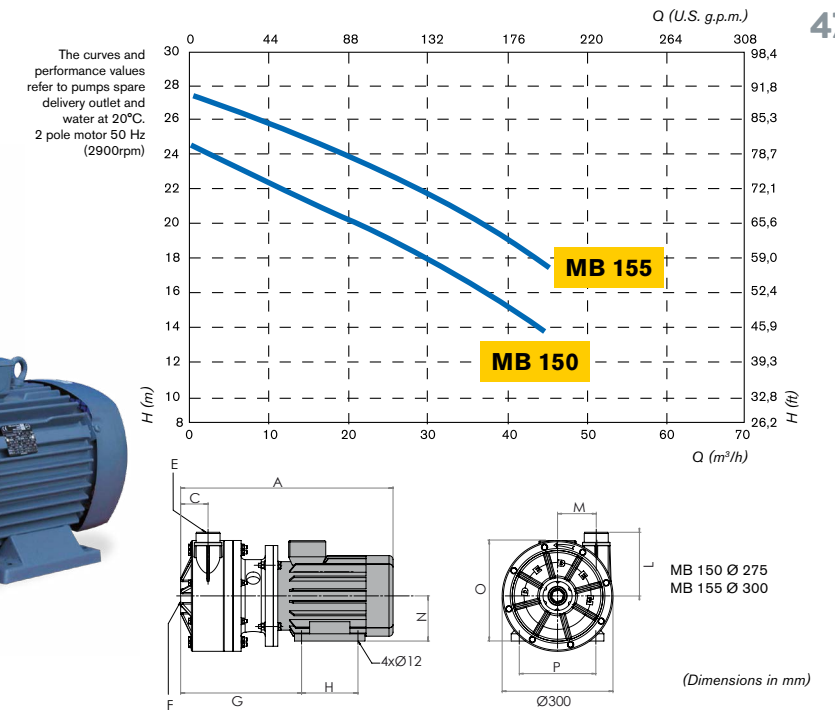
| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|--------------|------------------|-----|----|----------------------|------------------|-----|-----|-----|----|-----|-----|-----|-------|---------|
| MB140 | TL-TS | 3 Kw 4 HP | 12 | 505 | 75 | G 1" 1/2 M o DN40 | G 2" M o DN50 | 296 | 140 | 130 | 40 | 100 | 227 | 160 | 29 | 30 |

MB 150/155



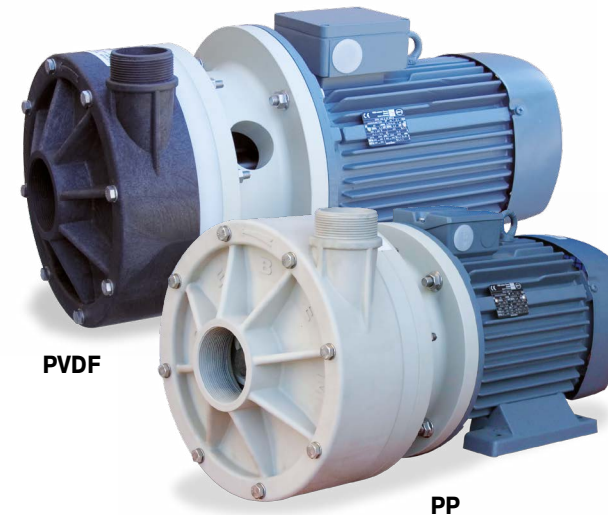
PVDF

PP



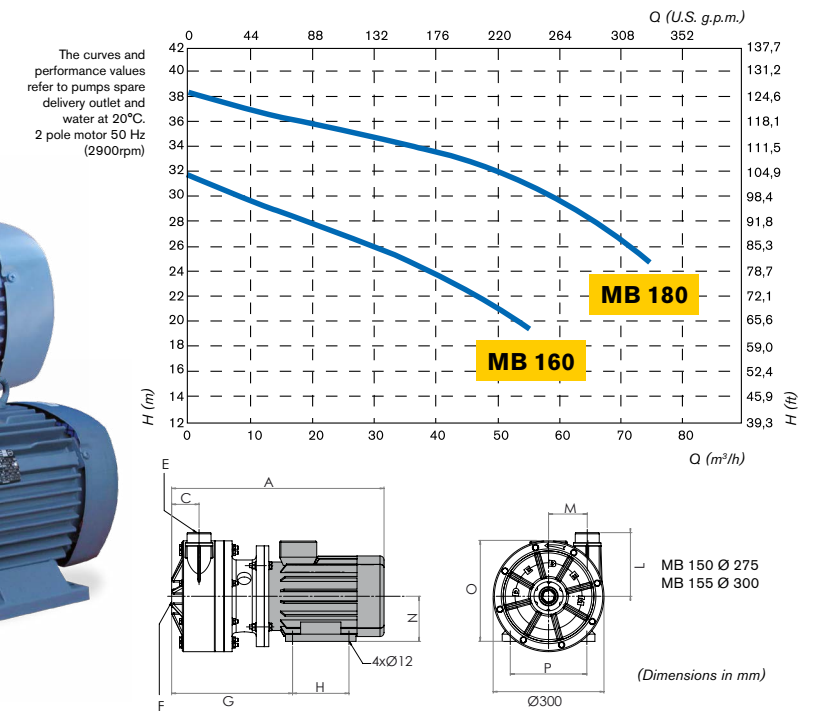
| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|------------------|------------------|-----|----|------------------|----------------------|-----|-----|-----|----|-----|-----|-----|-------|---------|
| MB150 | TL-TS | 4 Kw 5.5 HP | 2 | 527 | 68 | G 2" M o DN50 | G 2" 1/2 F o DN65 | 300 | 140 | 158 | 96 | 112 | 249 | 190 | 44 | 47 |
| MB155 | TL-TS | 5.5 Kw 7.5 HP | 3 | 619 | 68 | G 2" M o DN50 | G 2" 1/2 F o DN65 | 329 | 140 | 158 | 96 | 132 | 312 | 216 | 60 | 63 |

MB 160/180



PVDF

PP



| MODEL | SEAL | POWER | Ø PASSING SOLIDS | A | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------|-----------------|------------------|-----|----|------------------|----------------------|-----|-----|-----|----|-----|-----|-----|-------|---------|
| MB160 | TL-TS | 7.5 Kw 10 HP | 9 | 645 | 68 | G 2" M o DN50 | G 2" 1/2 F o DN65 | 335 | 140 | 158 | 96 | 132 | 310 | 216 | 70 | 73 |
| MB180 | TL-TS | 11 Kw 15 HP | 9 | 695 | 68 | G 2" M o DN50 | G 2" 1/2 F o DN65 | 335 | 178 | 158 | 96 | 132 | 310 | 216 | 96 | 99 |

MAGNETIC DRIVE CENTRIFUGAL PUMPS

DM Our pumps are successfully suitable for many different application fields such as: laboratory technique, medical equipments, photo processors, x rays film processors, laser beam systems, metal finishing machines, graphics, heat exchangers, aquariums, water treatment, filter units, chemical industry, galvanic industry.

DM COMPOSITION CODES

ex. **DM10P-SD1NE071**
DM10 in PP, standard thrust washer, Epdm O-Ring, impeller Ø 98, NPT connection, MEC motor flange, motor casing 071

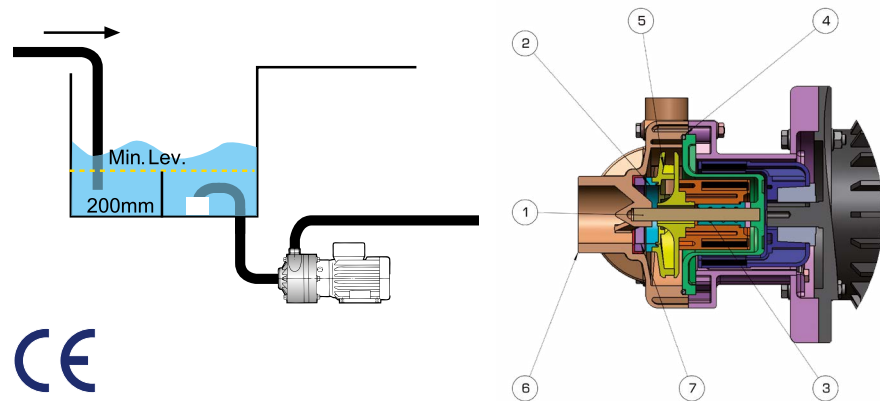
| DM10 | P- | S | D | 1 | N | E | 071 |
|-------------|--------------------------|--|-------------------------------------|-------------|----------------------------------|------------------------------------|--------------|
| PUMP MODEL | PUMP BODY | THRUST WASHER | O-RING | IMPELLER | CONNECTION | MOTOR FLANGE | MOTOR CASING |
| DM06 | P - Polypropylene | S - Standard (ceramic + PTFE Grafite) | D - EPDM V - Viton | DM06 | N - NPT B - BSP | E - MEC U* - NEMA | DM06 |
| DM10 | FC - PVDF +CF | | | 1=Ø 81 | | | 063 |
| DM15 | | | | 2=Ø 70 | | | 071 |
| DM30 | | | | 3=Ø 65 | | | DM10 |
| | | | | 1=Ø 98 | | | 071 |
| | | | | 2=Ø 85 | | | 080 |
| | | | | 3=Ø 70 | | | DM15 |
| | | | | 1=Ø 123 | | | 090 |
| | | | | 2=Ø 108 | | | 100 |
| | | | | 3=Ø 90 | | | DM30 |
| | | | | 1=Ø 134 | | | 090 |
| | | | | 2=Ø 122 | | | 122 |
| | | | | 3=Ø 110 | | | |

* It can be supplied only the pump with American flange for coupling with NEMA motor

INSTALLATION

DM magnetic drive centrifugal pumps should only be installed with the shaft positioned horizontally in a positive suction head arrangement. Suitable devices should be fitted to prevent dry running and the formation of a vortex and possible air suction. Horizontal centrifugal pumps should only operate **WHILST FILLED**.

A couple of magnets leads the operation of the pump; the outer magnet placed on the drive shaft transmits the motion to the inner magnet integrated with the impeller that is hermetically insulated. The pump impeller is not physically fixed to the drive shaft, seals are therefore eliminated and this consequently avoids leakages of the liquid drawn by the pump which are usually due to its wear and tear. The pump head is manufactured with few components, thus the maintenance of which becomes extremely easy. The materials used as standard are polypropylene (pp) and polyvinylidene fluoride (pvdf). The pumps can't run dry. Dirty liquids can reduce the pump life.



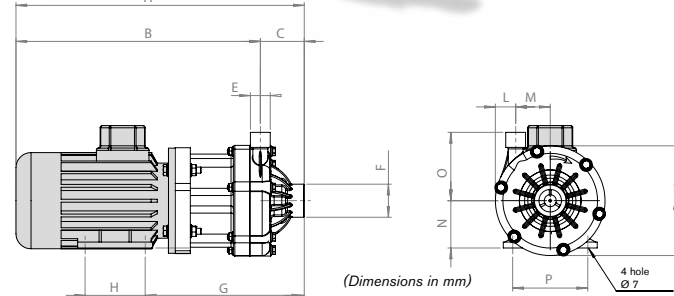
MAIN FEATURES

- Available in polypropylene, PVDF
- Positive suction head operation
- Weldless
- High flow rates: from 5 to 35 m³/h
- Quick and easy maintenance
- Inexpensive spares
- There is no possibility of fluid leakage
- Head: up to 24 mt
- Viscosity: up to 150 cps
- Motors: standard IEC - IP 55 - CLASS F - 2 POLE - 2.900rpm
optional: three phase 230/400V 50/60 Hz
single phase 230V 50/60 Hz

Working temperatures:
PP min +3°C/max +65°C
PVDF min +3°C/max +95°C

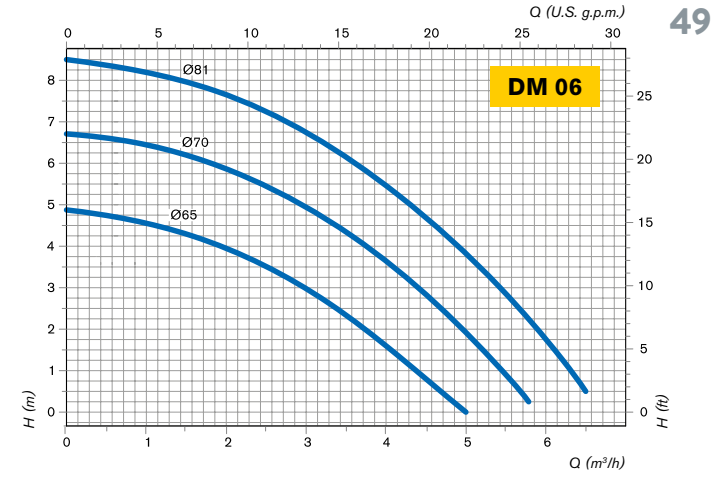
| components | material |
|------------------------------|------------------------|
| 1 Shaft | Alumina Ceramics 99,7% |
| 2 Thrust bearing washer | PTFE + 30% Grafite |
| 3 Bearing | PTFE + 30% Grafite |
| 4 O-ring | VITON/EPDM |
| 5 Impeller | PP/PVDF+CF |
| 6 Pump Casing | PP/PVDF+CF |
| 7 Head thrust bearing washer | Alumina Ceramics 99,7% |

DM 06



| MODEL | MOTOR SIZE | POWER | A | B | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------------|------------|---------|-----|-----|----|-----------------------|---------------------|-----|----|----|----|----|----|-----|-------|---------|
| DM06 | IEC 63 | 0,25 Kw | 383 | 325 | 58 | 3/4" M ⁽¹⁾ | 1" F ⁽¹⁾ | 211 | 80 | 27 | 46 | 63 | 91 | 100 | 6,7 | 7 |
| DM06 | IEC 71 | 0,37 Kw | 404 | 346 | 58 | 3/4" M ⁽¹⁾ | 1" F ⁽¹⁾ | 217 | 90 | 27 | 46 | 71 | 91 | 112 | 7,5 | 7,8 |
| DM06 | NEMA 56C | 0,5 Hp | 436 | 377 | 58 | 3/4" M ⁽¹⁾ | 1" F ⁽¹⁾ | 228 | 90 | 27 | 46 | 89 | 91 | 112 | - | - |

*gas bsp or NPT

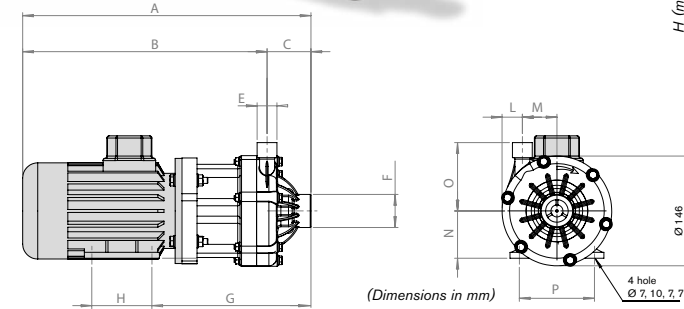


The curves and performance values refer to pumps spare delivery outlet and water at 20°C.
2 pole motor 50 Hz (2900rpm)

| impeller | motor 0,25 Kw (0.35 HP) | motor 0,37 Kw (0.50 HP) |
|----------|-------------------------|-------------------------|
| Ø 81 mm* | up to 1,2 | up to 1,8 |
| Ø 70 mm | up to 1,5 | up to 2 |
| Ø 65 mm | up to 1,8 | up to 2 |

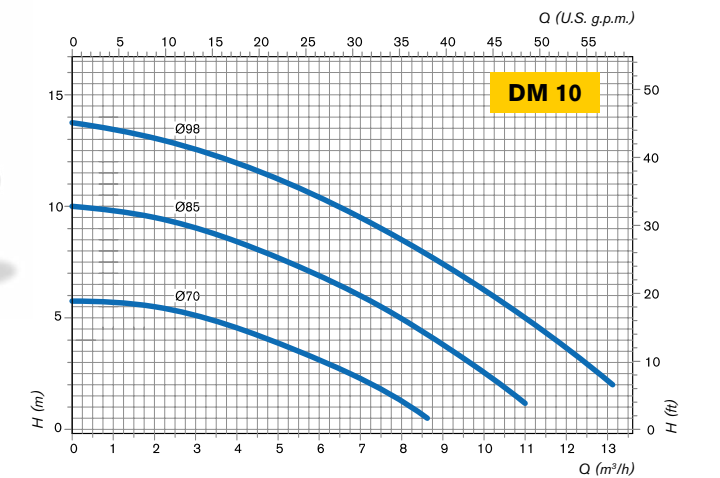
*standard

DM 10



| MODEL | MOTOR SIZE | POWER | A | B | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------------|------------|---------|-----|-----|----|---------------------|-------------------------|-----|-----|----|----|----|----|-----|-------|---------|
| DM10 | IEC 71 | 0,55 Kw | 417 | 349 | 68 | 1" M ⁽¹⁾ | 1 1/2" F ⁽¹⁾ | 229 | 90 | 25 | 47 | 71 | 91 | 112 | 8,6 | 9 |
| DM10 | IEC 80 | 0,75 Kw | 459 | 391 | 68 | 1" M ⁽¹⁾ | 1 1/2" F ⁽¹⁾ | 346 | 100 | 25 | 47 | 80 | 91 | 125 | 10,6 | 11 |
| DM10 | NEMA 56C | 0,75 Hp | 448 | 380 | 68 | 1" M ⁽¹⁾ | 1 1/2" F ⁽¹⁾ | 240 | 90 | 25 | 47 | 89 | 91 | 112 | - | - |
| DM10 | NEMA 143TC | 1,00 Hp | 482 | 414 | 68 | 1" M ⁽¹⁾ | 1 1/2" F ⁽¹⁾ | 245 | 90 | 25 | 47 | 89 | 91 | 112 | - | - |

*gas bsp or NPT



The curves and performance values refer to pumps spare delivery outlet and water at 20°C.
2 pole motor 50 Hz (2900rpm)

| impeller | motor 0,55 Kw (0.75 HP) | motor 0,75 Kw (1 HP) |
|----------|-------------------------|----------------------|
| Ø 98 mm* | up to 1,1 | up to 1,5 |
| Ø 85 mm | up to 1,6 | up to 2 |
| Ø 70 mm | up to 2 | up to 2 |

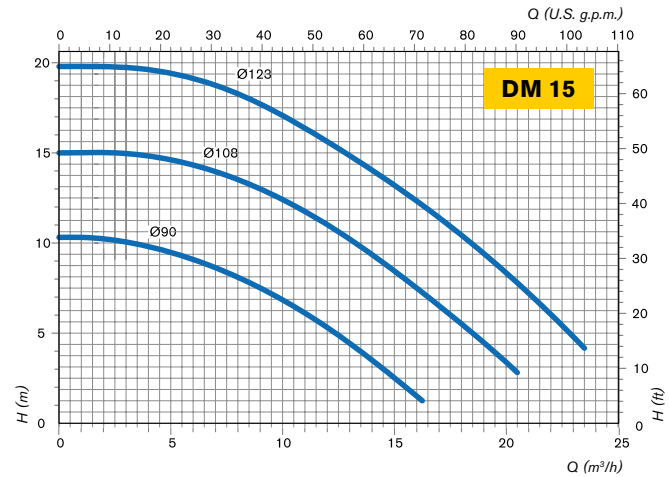
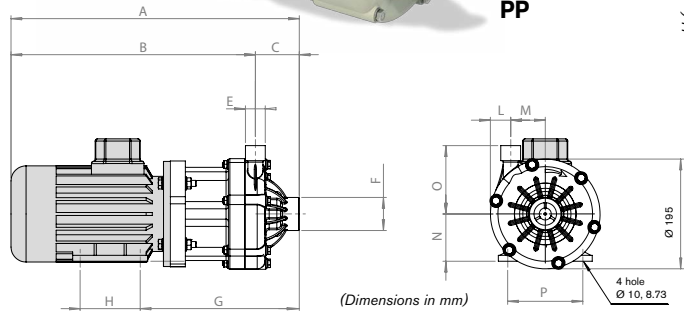
*standard

DM 15



PVDF

PP



The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

| impeller | motor 1.5 Kw (2 HP) | motor 2.2 Kw (3 HP) |
|-----------|---------------------|---------------------|
| Ø 123 mm* | up to 1,1 | up to 1,8 |
| Ø 108 mm | up to 1,6 | up to 2 |
| Ø 90 mm | up to 2 | up to 2 |

*standard

| MODEL | MOTOR SIZE | POWER | A | B | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|-------------|--------|-----|-----|----|------------------------|------------------------|-----|-----|----|----|----|-----|-----|-------|---------|
| DM15 | IEC 90 | 1,5 Kw | 489 | 408 | 81 | 1"1/4 M ⁽¹⁾ | 1"1/2 F ⁽¹⁾ | 298 | 125 | 35 | 62 | 90 | 125 | 140 | - | - |
| DM15 | IEC 90 | 2,2 Kw | 489 | 408 | 81 | 1"1/4 M ⁽¹⁾ | 1"1/2 F ⁽¹⁾ | 298 | 125 | 35 | 62 | 90 | 125 | 140 | - | - |
| DM15 | NEMA 145 TC | 3 Hp | 530 | 449 | 81 | 1"1/4 M ⁽¹⁾ | 1"1/2 F ⁽¹⁾ | 327 | 127 | 34 | 62 | 88 | 125 | 139 | - | - |

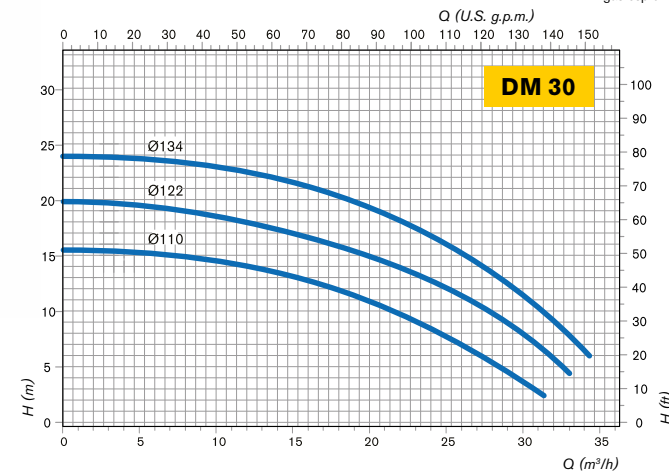
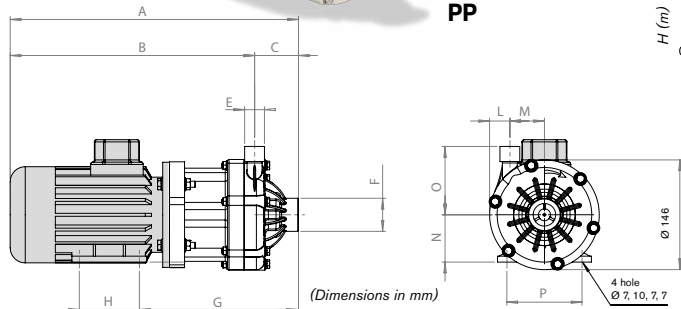
*gas bsp or NPT

DM 30



PVDF

PP



The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

| impeller | motor 2,2 Kw (3 HP) | motor 3 Kw (4 HP) | motor 4 Kw (5,5 HP) |
|-----------|---------------------|-------------------|---------------------|
| Ø 134 mm* | up to 1,1 | up to 1,5 | up to 1,8 |
| Ø 122 mm | up to 1,4 | up to 2 | up to 2 |
| Ø 110 mm | up to 1,8 | up to 2 | up to 2 |

*standard

| MODEL | MOTOR SIZE | POWER | A | B | C | E | F | G | H | L | M | N | O | P | KG PP | KG PVDF |
|-------|------------|--------|-----|-----|----|------------------------|--------------------|-----|-----|----|----|-----|-----|-----|-------|---------|
| DM30 | IEC 90 | 2,2 Kw | 499 | 408 | 91 | 1"1/2 M ⁽¹⁾ | 2 F ⁽¹⁾ | 308 | 125 | 31 | 66 | 90 | 140 | 140 | - | - |
| DM30 | IEC 100 | 3 Kw | 524 | 433 | 91 | 1"1/2 M ⁽¹⁾ | 2 F ⁽¹⁾ | 315 | 140 | 31 | 66 | 100 | 140 | 160 | - | - |
| DM30 | IEC 112 | 4 Kw | 549 | 458 | 91 | 1"1/2 M ⁽¹⁾ | 2 F ⁽¹⁾ | 322 | 140 | 31 | 66 | 112 | 140 | 190 | - | - |
| DM30 | NEMA 145TC | 3 Hp | 541 | 450 | 91 | 1"1/2 M ⁽¹⁾ | 2 F ⁽¹⁾ | 337 | 127 | 31 | 66 | | 140 | 139 | - | - |
| DM30 | NEMA 184TC | 5 Hp | 608 | 517 | 91 | 1"1/2 M ⁽¹⁾ | 2 F ⁽¹⁾ | 328 | 139 | 31 | 66 | 89 | 140 | 190 | - | - |

*gas bsp or NPT

VERTICAL CENTRIFUGAL PUMPS



The IM series of resin-encased vertical centrifugal pumps features high-performance pumps for fixed installations with pump immersed directly in the tank and operated by a direct-drive electric motor (max 3000 rpm) for fast fluid drainage with flow rates ranging from 6 to 75 m³/h and head up to 38 mt.

IM COMPOSITION CODES

ex. **IM095P-V0800N**

IM95 in PP, O-RING Viton, column length 800 mm, three-phase motor

| IM095 | P - | V | 0800 | N |
|-----------------|-------------------|-----------|-----------------|------------------------|
| PUMP MODEL | PUMP MATERIAL | O-RING | COLUMN LENGTH | MOTOR |
| IM 80 - IM 80 | P - Polypropylene | D - EPDM | 0250 - 250 mm** | N* - Three-phase motor |
| IM 90 - IM 90 | FC - PVDF+CF | V - Viton | 0500 - 500 mm | M - Single-phase motor |
| IM 95 - IM 95 | | | 0800 - 800 mm | A - ATEX motor |
| IM 110 - IM 110 | | | 1000 - 1000 mm | |
| IM 120 - IM 120 | | | 1250 - 1250 mm | |
| IM 130 - IM 130 | | | | |
| IM 140 - IM 140 | | | | |
| IM 150 - IM 150 | | | | |
| IM 155 - IM 155 | | | | |
| IM 160 - IM 160 | | | | |
| IM 180 - IM 180 | | | | |

* Standard motor is the three-phase induction type with European voltage (2-pole) 50Hz - ** only available for IM 80/90 pumps

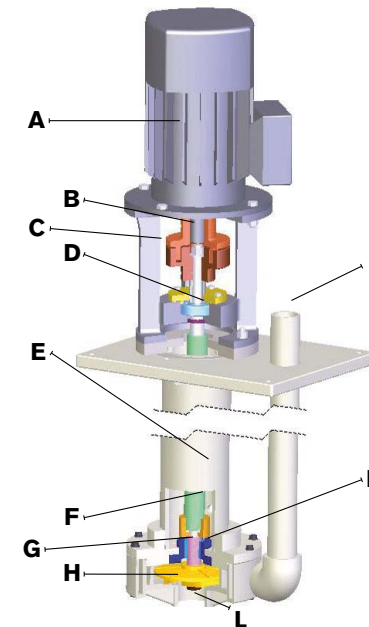
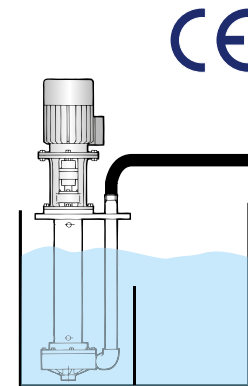
The special design of this type of pump avoids the use of internal mechanical seals (subject to heavy wear) and ensures that any accidental spillages are collected in the tank.

The open impeller allows continuous pumping even with very dirty liquids having apparent viscosity of up to 500 cps (at 20°C) and small suspended solids.

The choice of pump construction materials allows selection of optimum chemical compatibility with the fluid and/or environment without neglecting the temperature range.

HOW IT WORKS

The impeller is integral with the shaft and direct-drive electric motor and is rotated at a preset speed with the centrifugal effect producing suction on the intake side and discharge on the delivery side.



- A = electric motor
- B = drive coupling
- C = lantern
- D = radial bearing
- E = outer column
- F = shaft sleeve
- G = ceramic bushing
- H = impeller
- I = delivery duct
- L = intake duct
- M = bushing

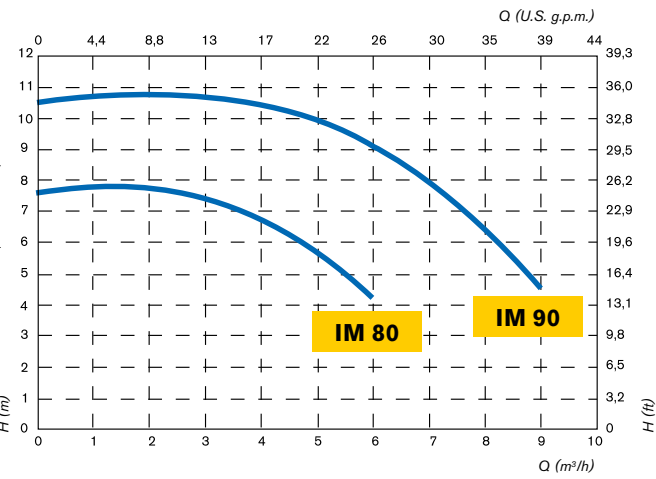
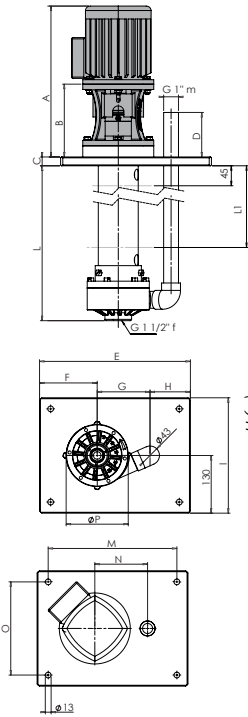
| pump | motor power |
|--------|-------------------|
| IM 80 | 0.37 Kw - 0.5 HP |
| IM 90 | 0.55 Kw - 0.75 HP |
| IM 95 | 0.75 Kw - 1 HP |
| IM 110 | 1.1 Kw - 1.5 HP |
| IM 120 | 1.5 Kw - 2 HP |
| IM 130 | 2.2 Kw - 3 HP |
| IM 140 | 3 Kw - 4 HP |
| IM 150 | 4 Kw - 5.5 HP |
| IM 155 | 5.5 Kw - 7.5 HP |
| IM 160 | 7.5 Kw - 10 HP |
| IM 180 | 11 Kw - 15 HP |

MAIN FEATURES

- Construction materials: PP, PVDF
- Pump immersed in the tank
- Motor removable even with pump installed
- Weldless
- Usable even with extremely dirty liquids
- High flow rates: from 6 to 75 m³/h
- User-friendly bushing replacement
- Quick and easy maintenance
- Also available without motor
- Max. head: 7,2 ÷ 38 m
- Viscosity: up to 500 cps
- European voltage motors: IP55 - F Class - 2-pole - 230/400 V 50/60 Hz - three-phase single phase from 0,55 kw to 2,2 Kw - 50/60 Hz
- Column length (L): 500/800/1000/1250 mm (other sizes available on request)

Max. operating temperature:
 PP min +3°C/max +65°C
 PVDF min +3°C/max +95°C

IM 80/90



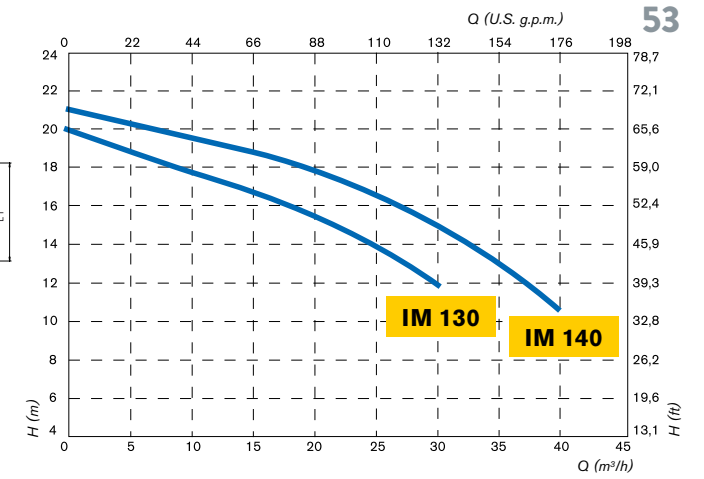
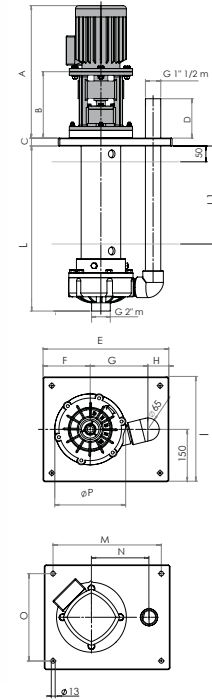
| L column | Weight PP | Weight PVDF | L1 max |
|----------|-----------|-------------|--------|
| 250 | 6,5 Kg | 7 Kg | 100 |
| 500 | 7,5 Kg | 8 Kg | 350 |
| 800 | 10,5 Kg | 11 Kg | 650 |

The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

(Dimensions in mm - Other sizes available on request)

| MODEL | POWER | Ø PASSING SOLIDS | A | B | C | D | E | F | G | H | I | M | N | O | P | KG MOTOR |
|-------|-------------------|------------------|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----------|
| IM 80 | 0.37 Kw - 0.5 HP | 7 | 340 | 164 | 20 | 100 | 340 | 130 | 119 | 91 | 260 | 290 | 119 | 210 | Ø140 | 8 |
| IM 90 | 0.55 Kw - 0.75 HP | 10 | 340 | 164 | 20 | 100 | 340 | 130 | 119 | 91 | 260 | 290 | 119 | 210 | Ø140 | 8 |

IM 130/140



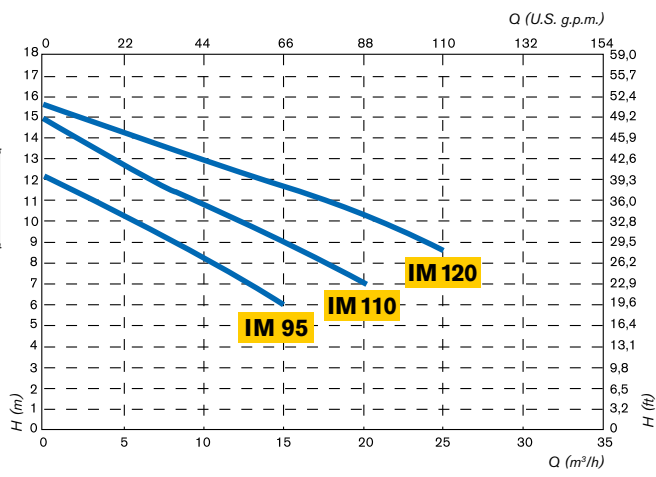
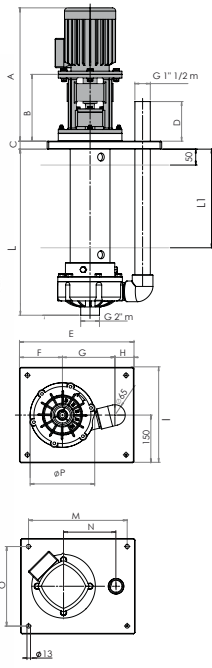
| L column | Weight PP | Weight PVDF | L1 max |
|----------|-----------|-------------|--------|
| 500 | 15 Kg | 16 Kg | 300 |
| 800 | 19 Kg | 20 Kg | 600 |
| 1000 | 22 Kg | 23 Kg | 800 |
| 1250 | 24 Kg | 25 Kg | 1050 |

The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

(Dimensions in mm - Other sizes available on request)

| MODEL | POWER | Ø PASSING SOLIDS | A | B | C | D | E | F | G | H | I | M | N | O | P | KG MOTOR |
|--------|---------------|------------------|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----------|
| IM1 30 | 2.2 Kw - 3 HP | 6 | 467 | 220 | 25 | 125 | 360 | 135 | 165 | 60 | 300 | 310 | 165 | 250 | Ø203 | 20 |
| IM 140 | 3 Kw - 4 HP | 12 | 507 | 235 | 25 | 120 | 360 | 135 | 165 | 60 | 300 | 310 | 165 | 250 | Ø203 | 34 |

IM 95/110/120



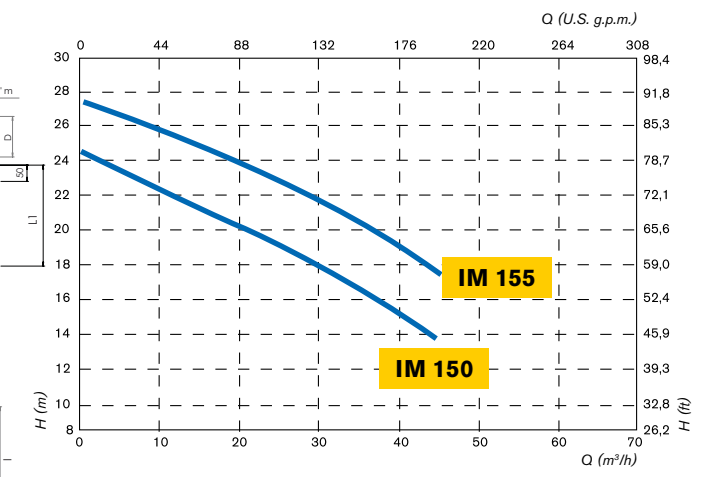
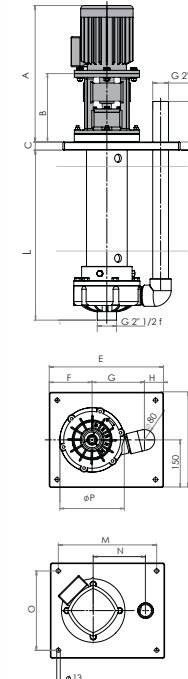
| L column | Weight PP | Weight PVDF | L1 max |
|----------|-----------|-------------|--------|
| 500 | 15 Kg | 16 Kg | 300 |
| 800 | 19 Kg | 20 Kg | 600 |
| 1000 | 22 Kg | 23 Kg | 800 |
| 1250 | 24 Kg | 25 Kg | 1050 |

The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

(Dimensions in mm - Other sizes available on request)

| MODEL | POWER | Ø PASSING SOLIDS | A | B | C | D | E | F | G | H | I | M | N | O | P | KG MOTOR |
|--------|-----------------|------------------|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----------|
| IM 95 | 0.75 Kw - 1 HP | 6 | 419 | 210 | 25 | 125 | 360 | 135 | 165 | 60 | 300 | 310 | 165 | 250 | Ø203 | 12 |
| IM 110 | 1.1 Kw - 1.5 HP | 6 | 419 | 210 | 25 | 125 | 360 | 135 | 165 | 60 | 300 | 310 | 165 | 250 | Ø203 | 13 |
| IM 120 | 1.5 Kw - 2 HP | 6 | 446 | 220 | 25 | 125 | 360 | 135 | 165 | 60 | 300 | 310 | 165 | 250 | Ø203 | 17 |

IM 150/155



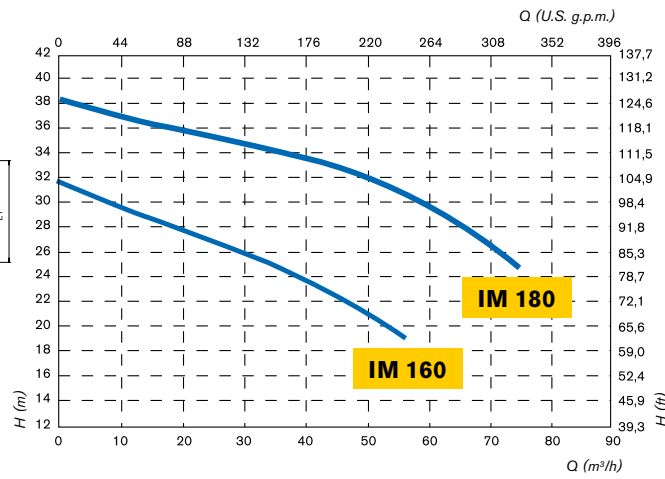
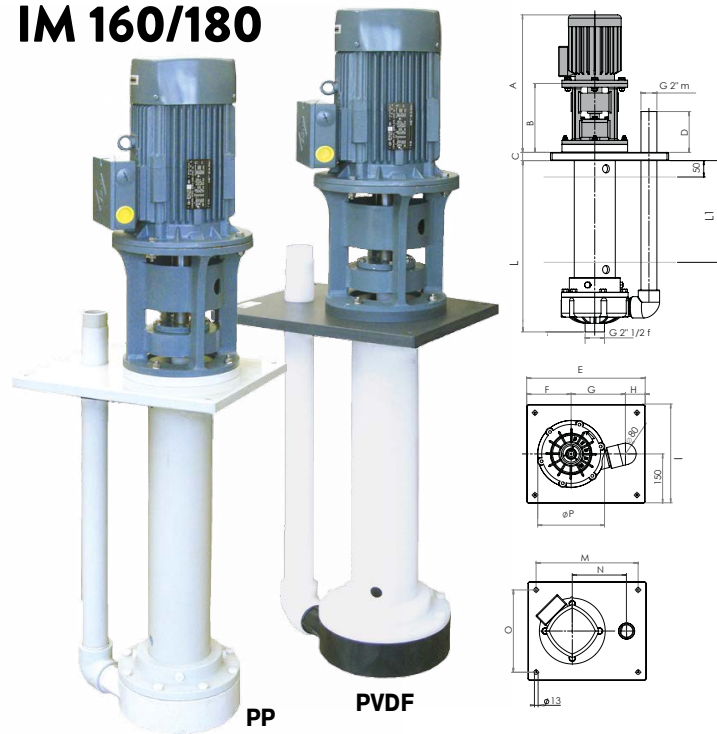
| L column | Weight PP | Weight PVDF | L1 max |
|----------|-----------|-------------|--------|
| 500 | 28 Kg | 30 Kg | 300 |
| 800 | 31 Kg | 33 Kg | 600 |
| 1000 | 33 Kg | 35 Kg | 800 |
| 1250 | 36 Kg | 38 Kg | 1050 |

The curves and performance values refer to pumps spare delivery outlet and water at 20°C. 2 pole motor 50 Hz (2900rpm)

(Dimensions in mm - Other sizes available on request)

| MODEL | POWER | Ø PASSING SOLIDS | A | B | C | D | E | F | G | H | I | M | N | O | P | KG MOTOR |
|--------|-----------------|------------------|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----------|
| IM 150 | 4 Kw - 5.5 HP | 2 | 532 | 233 | 25 | 132 | 480 | 170 | 215 | 95 | 380 | 430 | 215 | 330 | Ø275 | 36 |
| IM 155 | 5.5 Kw - 7.5 HP | 2 | 682 | 303 | 25 | 130 | 480 | 170 | 215 | 95 | 380 | 430 | 215 | 330 | Ø275 | 53 |

IM 160/180



| L column | Weight PP | Weight PVDF | L1 max |
|----------|-----------|-------------|--------|
| 500 | 31 Kg | 33 Kg | 300 |
| 800 | 34 Kg | 36 Kg | 600 |
| 1000 | 36 Kg | 38 Kg | 800 |
| 1250 | 39 Kg | 41 Kg | 1050 |

The curves and performance values refer to pumps spare delivery outlet, and water at 20°C. 2 pole motor 50 Hz (2900rpm)

(Dimensions in mm - Other sizes available on request)

| MODEL | POWER | Ø PASSING SOLIDS | A | B | C | D | E | F | G | H | I | M | N | O | P | KG MOTOR |
|--------|----------------|------------------|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|-----|------|----------|
| IM 160 | 7.5 Kw - 10 HP | 9 | 702 | 303 | 25 | 130 | 480 | 170 | 215 | 95 | 380 | 430 | 215 | 330 | Ø275 | 61 |
| IM 180 | 11 Kw - 15 HP | 11 | 752 | 303 | 25 | 130 | 480 | 170 | 215 | 95 | 380 | 430 | 215 | 330 | Ø275 | 71 |

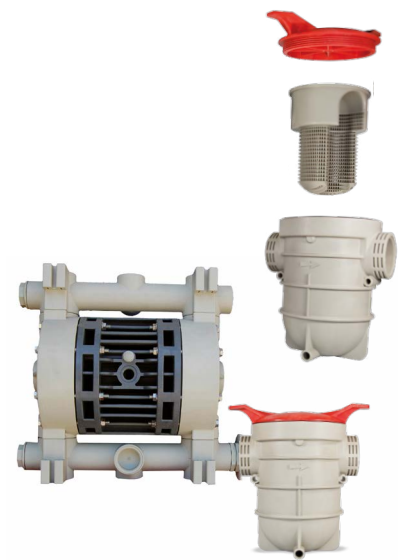
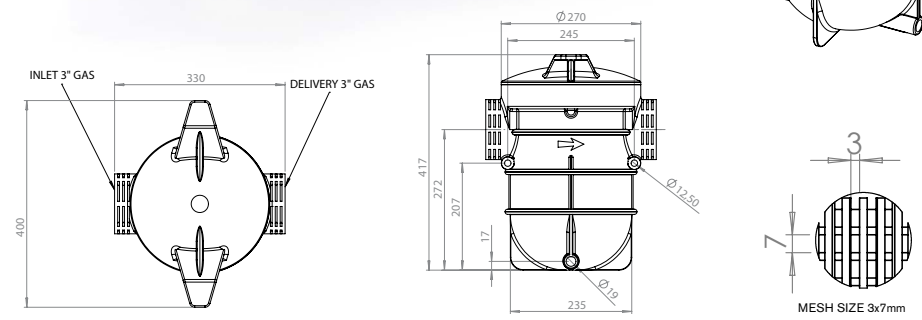
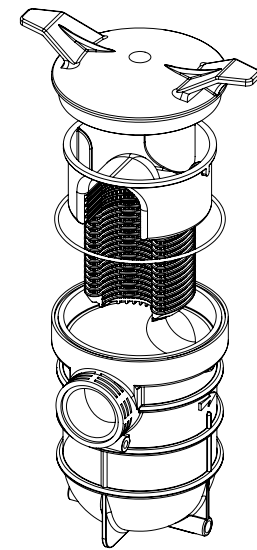
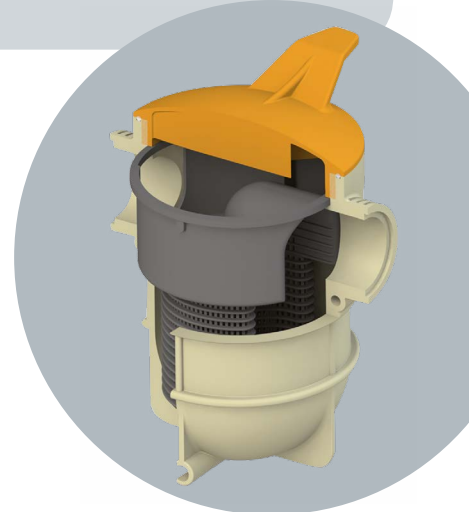


PUMP-PROTECTING BASKET STRAINERS

The large passage surface of the basket makes these filters particularly suitable to be installed on the suction head of the pumps, protecting them from suspended solids, impurities and foreign bodies without causing excessive pressure loss.

For the chemical industry, water purification, fish farming, galvanizing, tanning, textile, paper, and printing industries and a host of other industrial applications. Available in connection sizes of 1" 1/2 F, 2" F, 2" 1/2 F, 3" F.

- ## MAIN FEATURES
- Built with PP
 - No metal parts
 - Easy to inspect and remove basket
 - Operating pressure of 1 bar



TRANSFER PUMPS

TR

These drum transfer pumps consist of a dip tube the end of which houses the open impeller that is secured to the driveshaft connected to the pump by means of a ring nut, whilst transmission is provided by a shaft coupling.

TR COMPOSITION CODES

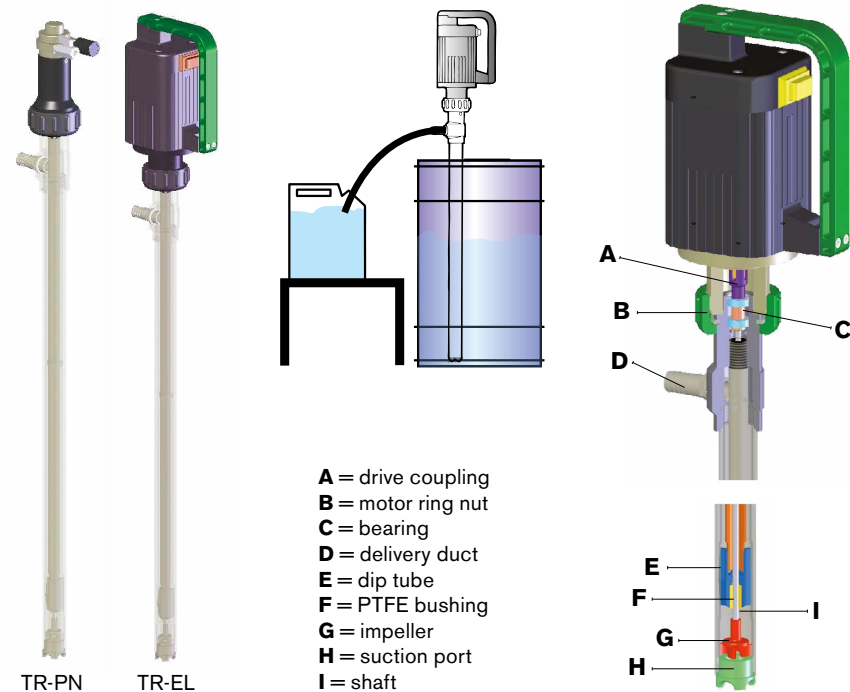
ex. **TRPH1200**
TR in PP, shaft in Hastelloy, suction hose length 1200 mm, electric motor

| TR | P - | H | 1200 |
|---------------------|--|---|---|
| PUMP MODEL | PUMP MATERIAL | SHAFT MATERIAL | SUCTION HOSE LENGTH |
| TR - TRANSFER PUMPS | P - Polypropylene F - PVDF A - AISI 316 | H - Hastelloy S - AISI 316 | 0900 (900 mm) 1200 (1200 mm) |

INSTALLATION

TR drum transfer pumps should only be used with the shaft positioned vertically and the pump immersed in the drum, whilst liquid must be present. Running dry or with air bubbles can cause damage to the internal shaft guide bushing.

These portable drum-transfer immersion pumps are designed to pump corrosive liquids. Their special shape ensures that any spillages are collected in the drum. Available with fully-interchangeable electric or pneumatic motor, these pumps have an open impeller that allows continuous pumping of clean corrosive liquids having apparent viscosity of up to 600 cps with 500-watt electric and pneumatic motor (at 20°C) and 900 cps with 800-watt electric motor (at 20°C). TR-EL series pumps driven by an electric motor are also fitted with a safety cut-out switch that prevents accidental restart after a power outage.



- A = drive coupling
- B = motor ring nut
- C = bearing
- D = delivery duct
- E = dip tube
- F = PTFE bushing
- G = impeller
- H = suction port
- I = shaft

TR-PN TR-EL

MAIN FEATURES

- Available in PP, PVDF e AISI 316
- Inexpensive
- Portable
- Handles corrosive liquids
- Viscosity up to 900 cps
- Available with either electric or pneumatic motor
- Adjustable flow rate (pneumatic version)
- No mechanical seals
- Easily dismantled
- Dip tube length = 900 mm or 1200 mm
- Flow rate up to 90 l/min.

* Standard electric motor single-phase 50/60Hz

Max. operating temperature:
PP min +3°C/max +65°C
PVDF min +3°C/max +95°C
AISI 316 min +3°C/max +95°C

Ex STANDARD: II 3/3 GD c IIB T135°C (zone 2)
CONDUCT: II 2/2 GD c IIB T135°C (zone 1)

HOW IT WORKS

The impeller is integral with the shaft and coupled to the electric or pneumatic motor that makes it rotate, thus creating the centrifugal effect.

TR - PUMP BODIES

TRP BODY PP

| | |
|-------------------|-----------------------|
| Suction hose | ø 42 mm |
| Hose clamp | ø 25 mm |
| Max. temp. | 60°C |
| Total Weight Kg | 1,4/1,7 |
| Suct. hose mat. | PP |
| Shaft material | HASTELLOY or AISI 316 |
| Bushing material | ECTFE |
| Rotor material | PP |
| Intake port. mat. | 900/1200 |

TRA BODY AISI 316

| | |
|-------------------|-----------|
| Suction hose | ø 42,5 mm |
| Hose clamp | ø 25 mm |
| Max. temp. | 95°C |
| Total Weight Kg | 4,3/5,3 |
| Suct. hose mat. | AISI 316 |
| Shaft material | AISI 316 |
| Bushing material | ECTFE |
| Rotor material | ECTFE |
| Intake port. mat. | 900/1200 |

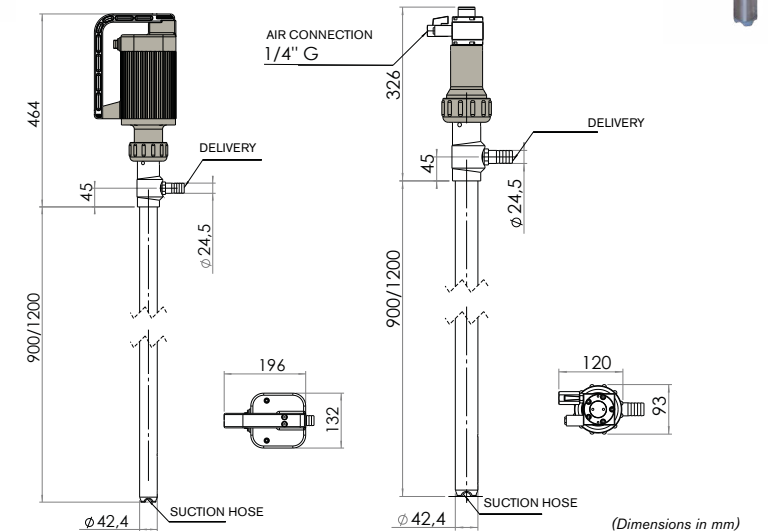
TRF BODY PVDF

| | |
|-------------------|-----------|
| Suction hose | ø 40 mm |
| Hose clamp | ø 25 mm |
| Max. temp. | 95°C |
| Total Weight Kg | 1,6/1,9 |
| Suct. hose mat. | PVDF |
| Shaft material | HASTELLOY |
| Bushing material | ECTFE |
| Rotor material | ECTFE |
| Intake port. mat. | 900/1200 |

TRAX BODY AISI 316

PTB 03 ATEX 400X II/2 G c IIB T4

| | |
|-------------------|---------------|
| Suction hose | ø 42,5 mm |
| Hose clamp | ø 25 mm |
| Max. temp. | 95°C |
| Total Weight Kg | 3/4,4/5,3 |
| Suct. hose mat. | AISI 316 |
| Shaft material | AISI 316 |
| Bushing material | AISI 316/PVDF |
| Rotor material | AISI 316/PVDF |
| Intake port. mat. | 700/1000/1200 |

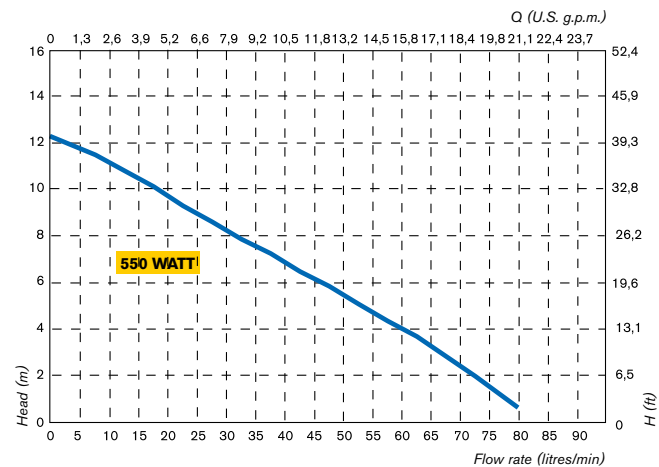
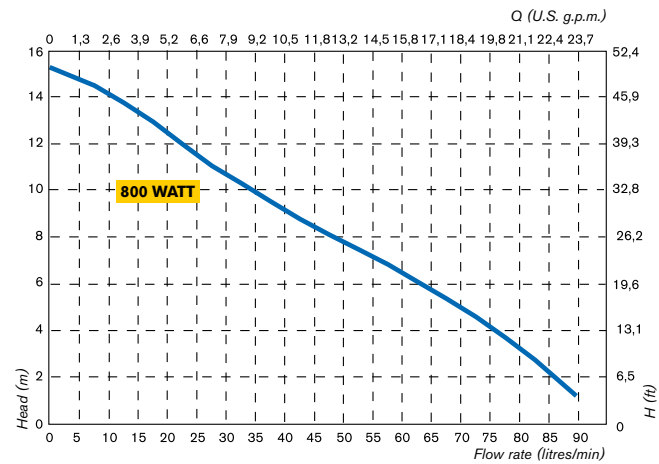


TR - MOTORS



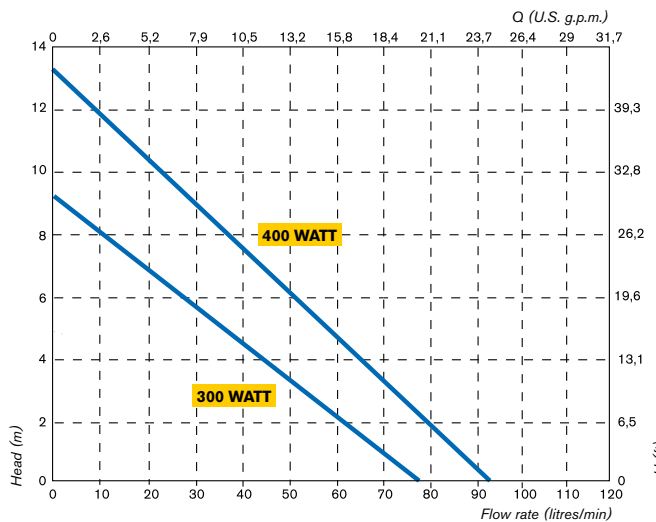
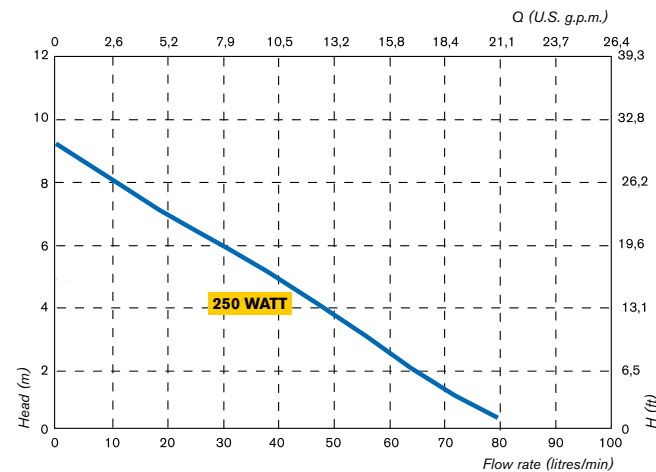
| MOTOR MODEL | Electric motor 800 watt | Electric motor 550 watt with earth cable and EX plug II 2 G Ex de IIA T6 |
|--------------|-------------------------|---|
| POWER | 800 watt | 550 watt |
| VOLTAGE | 230 V single fase | 230 V singlefase |
| PROTECTION | IP 54 | IP 54 |
| CLASS | F | F |
| FLOW RATE | 90 l/min | 100 l/min |
| VISCOSITY | 900 cps | 600 cps |
| WEIGHT IN KG | 3,7 | 11 |

*on request

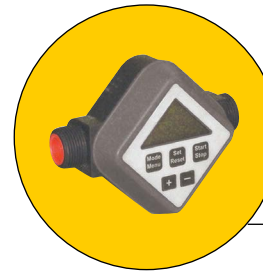


| MOTOR MODEL | Pneumatic motor | Pneumatic moto II 2 G Ex de IIA T6 (80C°) X | Pneumatic moto II 2 G Ex de IIA T6 (80C°) X |
|--------------|---------------------------|---|---|
| POWER | 0,33 HP a 7bar (250 watt) | 0,40 HP a 6bar (300 watt) | 0,54 HP a 6bar (400 watt) |
| FLOW RATE | 80 l/min | 90 l/min | 120 l/min |
| VISCOSITY | 600 cps | 400 cps | 600 cps |
| WEIGHT IN KG | 1,1 | 3 | - |

The curves and performance values refer to pumps spare delivery outlet and water at 20°C.

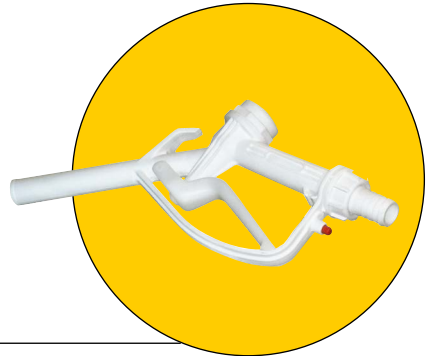


TR - ACCESSORIES



FLOW METERS PP - PVDF

Flow meters are fitted exclusively to centrifugal or drum-transfer pumps and can measure either the pump's instantaneous flow rate or the total number of litres of liquid delivered. The reading appears on the incorporated display.



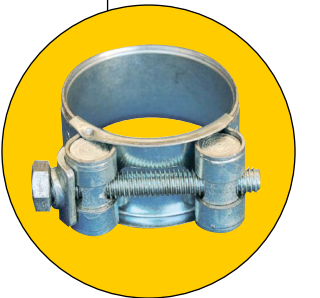
DISPENSER PP - ALU INOX - PVDF

Made in polypropylene, aluminium alloy, stainless steel, PVDF and equipped with delivery trigger.



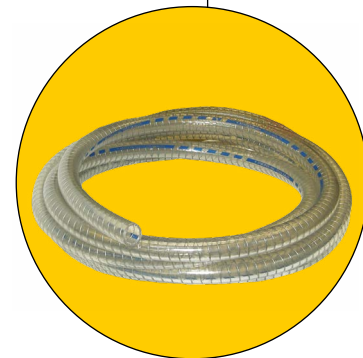
T-BOLT CLAMPS

High-strength clamps for spiralled hose.



DIP TUBE FILTER PP - INOX

It is made in polypropylene and inox and allows fluids to be filtered at the intake. For TR pumps only.



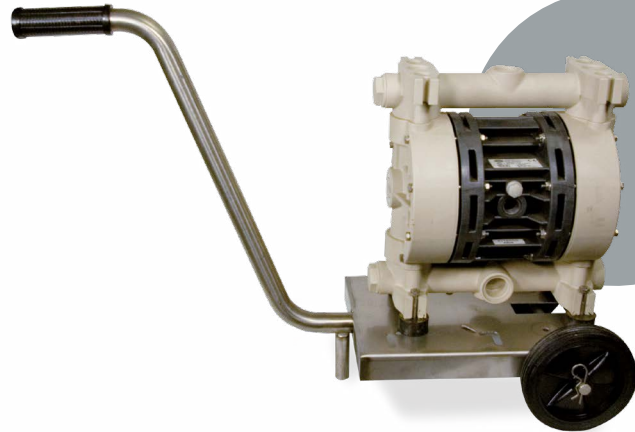
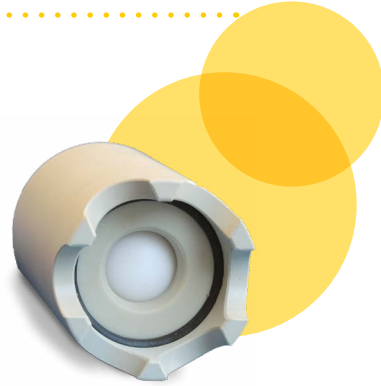
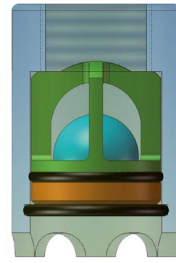
REINFORCED HOSE

Food-grade PVC construction with metal reinforcement for suction/ discharge.

ACCESSORIES

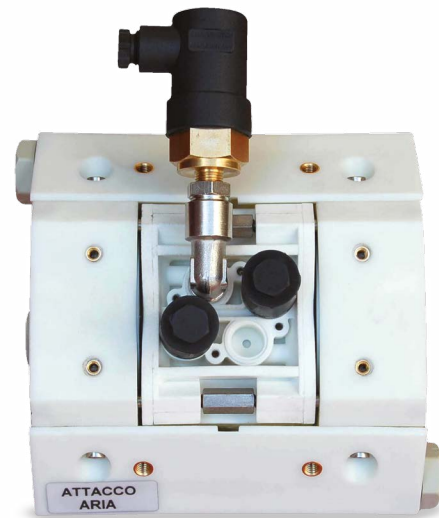
FOOT VALVES

Check valves designed for vertical fitting at the bottom end of the suction pipe on both centrifugal and pneumatic pumps. These non-return valves prevent water from flowing out of the suction pipe so that the pump remains primed at all times.
 Sizes available: 1", 1¼", 1½", 2", 3".
 Construction materials: PP and PVDF



TROLLEY FOR BOXER PUMPS

The pump is blocked through fixing holes.
 model 01 for MINIBOXER/B50 - B80/81 - B100
 model 02 for B150 - B251

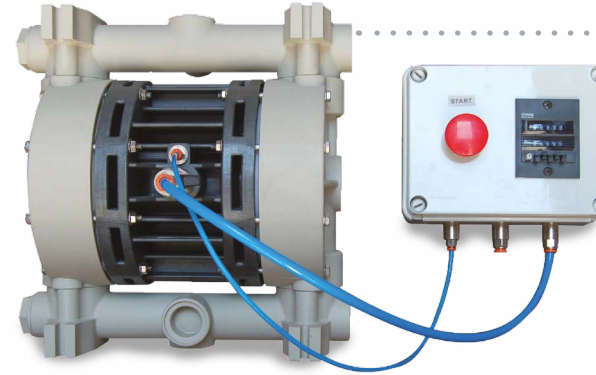


STROKE COUNTER

Devices that are fitted to the pneumatic circuit of diaphragm pumps. They can count the number of strokes made by the diaphragms and therefore the number of cycles. This device allows various types of monitoring, e.g. litres of liquid delivered by the pump as a function of its displacement capacity and it also allows the control of the pump running at distance.

REINFORCING RINGS

Steel ring to prevent breakage of the manifold.



BATCH CONTROLLER

Mechanical batch controller with 5-digit display and start/stop button. Pneumatic operation, no electrical connection required. Designed for BOXER series.

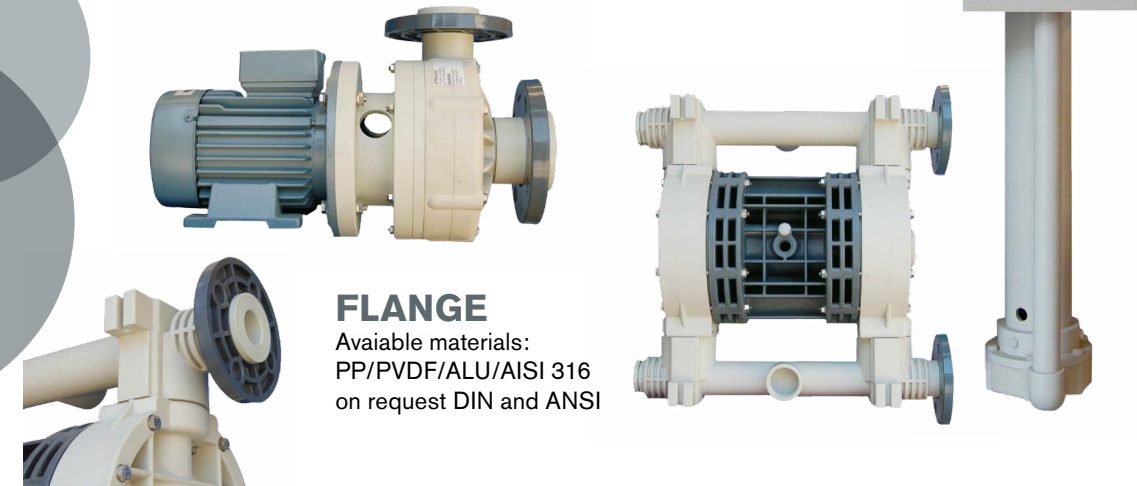
AIR REGULATOR KIT

It is composed of a compressed air filter regulator, fixing bracket, gauge, Elaston tube (5 m) cock and fittings.

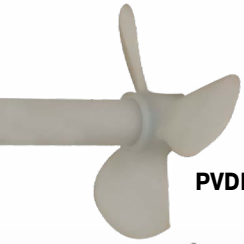


FLANGE

Available materials:
 PP/PVDF/ALU/AISI 316
 on request DIN and ANSI



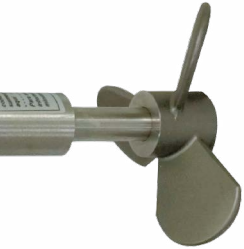
E/EH/F/FR/H/J/RV*



PVDF



PP



AISI 316

The compact submersed mixers have been designed for a wide range of applications. These devices can be used independently from the shape and size of the basin. Fields of application: water purification plants, biogas plants, production of liquid feed-stuff.



PERISTALTIC PUMPS

MP*

The peristaltic pump's operation is obtained through a "flow pressure" which acts on a flexible pipe; such flow pressure is exercised by some rollers which turn parallel to the axis, supported by a roller holder. The slow rotary motion of the roller holder support is transmitted by a two or three passages motor reducer at 35, 86 or 141 rpm's, equipped with a 0.09 KW (1/8 CV) MEC-56 electric motor with a continuous service speed of 1450 rpm's.



* For further information, please do not hesitate to contact DEBEM's staff.

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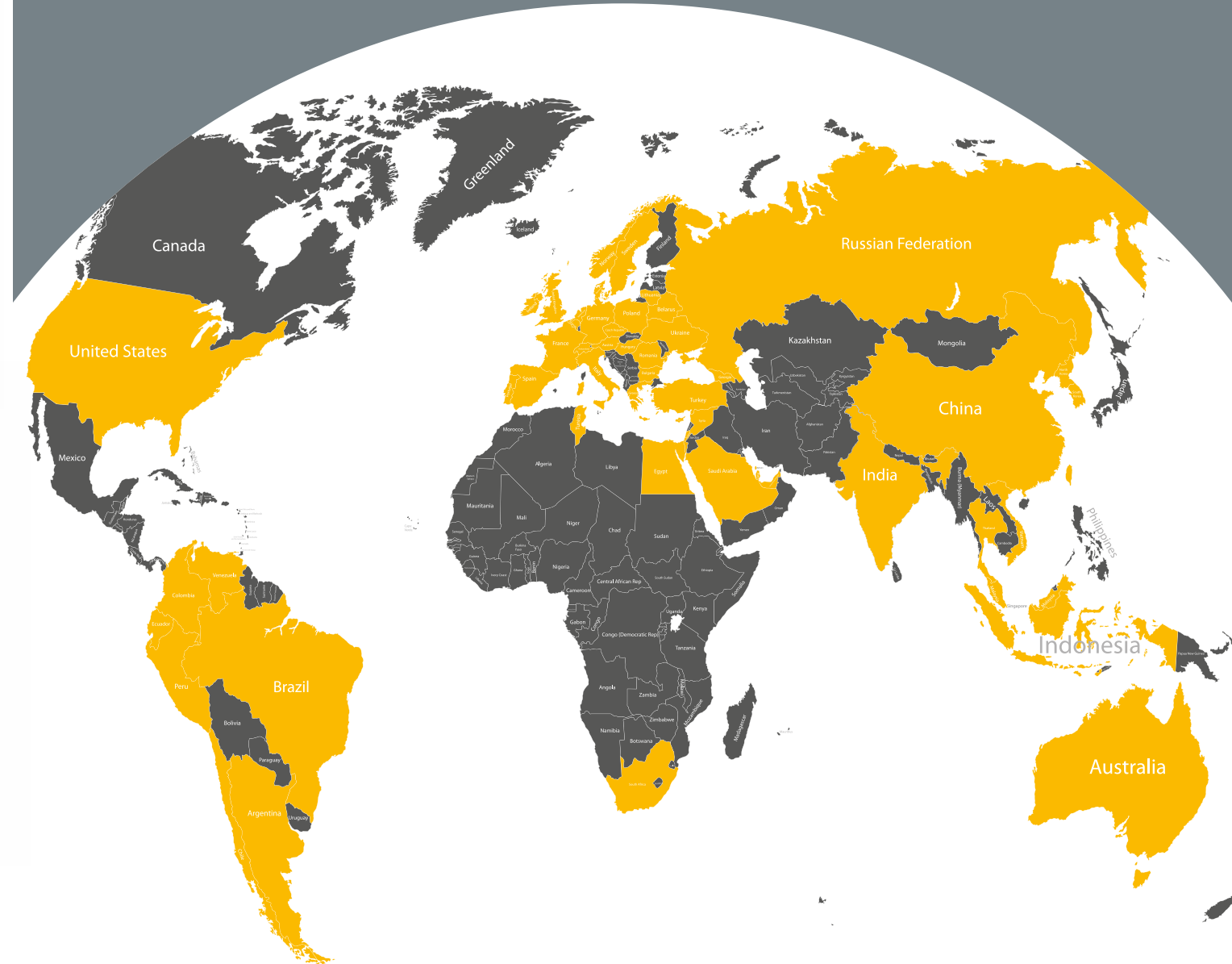
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