INDUSTRIAL PUMPS
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Who we are

Debem has been active in the liquid transfer sector for over 30 years. A cutting edge company, specialised in pumps for numerous industries and for highly demanding environments. Our close collaboration with the end user and our customer’s feedback have been the key factors of the company’s philosophy. We have developed a virtuous system of research and development of the product and service, which has garnered growing appreciation from leading companies in different sectors.

Debem’s impressive growth is reflected in the difference between the original small premises and the current large warehouse. Debem offers its customers new and effective services, providing them with technical and commercial information to make it easier to choose the most suitable product and meet every operating requirement.

Our customers can count on a call centre able to resolve questions tied to product selection and the most suitable chemical compatibility for their requirements. Moreover we also provide a technical support service that can respond to any queries of a technical nature, about the installation, pump optimisation, system or about the fluid pumping process.

Debem’s technical office, alongside the research and development department, is constantly developing new projects and innovating current products. Our primary objective of customer satisfaction has led to the development of a modular design of the pumps, which allows for tailor-made and custom assemblies with components and materials that are ideally suited for their use. One of our company’s strengths is the development of our in-house R&D department, which is quite unusual for a small company, but something that has certainly borne its fruits. Initially introduced to improve our existing products (by researching the use of new materials, rationalising the spaces used, optimising the existing technology) and reducing costs without affecting the already high quality standards, the research project has allowed us to develop highly innovative products, such as the BOXER and CUBIC series, which represent the pinnacle of our research.

DEBEM: TRADITION AND INNOVATION

Debem Srl traces its roots to 1975, when its founder, Marco De Bernardi, thanks to the theoretical and practical experience garnered in the field, decided to tackle his first independent project: an industrial pump and in particular a 1.5 HP plastic centrifugal pump. The prototype was an immediate success, so much so that he decided to risk everything and go it alone, creating his own line of industrial pumps. The main sectors that he focused on were the chemical industry, in all its variants, and the textile industry. At the time the latter was particularly successful in Italy and Varazze was in many ways its beating heart.

As the demand for pumps continued growing, Debem increased its product range, always striving to be ahead of the times and looking for new solutions to overcome the difficulties of the production process. The continuous technical research and industrial innovation led to the first patent in 1987, which covered the engineering study of the air-operated system of the distributor. This design is still in use in Debem’s air-operated double diaphragm pumps and has even been copied by various Italian and international competitors.

The new design, utterly unique for the time, met with immediate and extensive success. This triggered an exponential growth that over the years confirmed Debem’s role as one of Italy’s points of excellence in the production of pumps, and especially air-operated double diaphragm pumps.
Why choose us

Our strengths
Choosing DEBEM means putting your trust in a company driven by passion that has built a business based on values, tradition, innovation, people, experience and professionalism.

Innovative and technologically advanced pumps built with materials and components resistant to aggressive conditions

History
Over 30 years of innovation, research, quality and excellence.

Made in Italy Patents
The products are entirely designed, patented and built in Italy by Debem.

International distribution
Debem’s products can count on an extensive global distribution (see network).

Materials and Technologies
Debem’s products are constructed with the finest quality, certified Italian materials. We use the latest generation technologies in line with the industry 4.0 standards.

Service and consultancy
A call centre able to resolve questions tied to product selection and the most suitable chemical compatibility for their requirements. Support service that responds to technical, installation and pump optimisation queries.

Custom solutions
Debem’s air-operated double diaphragm pumps can be customised based on the customer’s requirements and application needs.

Research & Development - Innovation
Debem’s technical office, alongside the research and development department, is constantly developing new projects and innovating current products.

Optimal emergency management
Extremely quick deliveries of finished products and of spare parts for every pump model in the catalogue.

Quality
All the products that leave the company are stamped with a code that includes the production data entered into a database, to ensure utmost quality through every stage of the production process.

The structure

A total of 2500 m² of covered surface

Test Lab
We are very happy to present the new DEBEM TEST-LAB, an internal analysis and product refinement laboratory. Open to the public for technical courses and certified tests for customers, it is Italy’s first IECEx certified laboratory for air-operated pumps. Consisting of a 4000-litre polypropylene anti-cavitation tank with a compartmentalised structure, the TEST-LAB features two air lines to supply the pumps up to 6000 NL/min and three fluid lines to provide up to 3000 L/min. The technical equipment includes digital instruments certified to analyse air consumption, flow rate and hydraulic head, with a centralised data collection and graphics for issuing test certificates.
Our air-operated diaphragm pumps are sturdy and powerful, self-priming (dry negative vacuum), also in demanding conditions. They can transfer liquids with high viscosity and/or with suspended solids.

Automatic diaphragm pulsation dampers. Compressed air-driven devices that are installed on the delivery side of air-operated pumps. They minimise the pulsations of the fluid and the consequent vibrations, or water hammer, to protect the process equipment.

Resin centrifugal pumps with horizontal axis mechanical seal, with magnetic drive and vertical axis centrifugal pumps.

Compressed air or electrical motor driven drum transfer pumps, with the motor installed in direct drive or with a drive coupling. Their portable design renders them ideally suited to quickly transfer clean corrosive liquids from drums.
All the BOXER air operated pumps are ATEX certified and are explosion proof protected, in compliance with the directive 2014/34/EU and the harmonised European standards EN-60079-10 and EN 1127-1. They are constructed in compliance with ATEX II 3 G Ex h IIB T4 Gb and II 3 D Ex h IIIB T135° Db for use in “Zone 2 - Zone 22” (in the presence of flammable gases and dust). On specific request during the order, the pumps can be supplied in CONDUCT version in compliance with ATEX II 2 G Ex h T4 Gb and II 2 D Ex h IIIB T135° Db for use in “Zone 1 - Zone 21.”

**ATTENTION**

The identification plate of the pump includes the ATEX marking and the equipment category. Before the installation always check the compliance with the classification of the installation "Zone". The equipment user is responsible for classifying their installation zone. See below for the definition of the ATEX marking of each execution.

### ATEX CONFORMITY

<table>
<thead>
<tr>
<th>Equipment group for surface:</th>
<th>Equipment group</th>
<th>Type of explosive atmosphere (II unit)</th>
<th>Temperature Class (group III): Maximum surface temperature [°C]</th>
</tr>
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<tbody>
<tr>
<td><strong>M</strong></td>
<td>very high protection</td>
<td>G</td>
<td>T1 = 450</td>
</tr>
<tr>
<td><strong>M2</strong></td>
<td>high protection</td>
<td>D</td>
<td>T2 = 350</td>
</tr>
<tr>
<td><strong>M3</strong></td>
<td>normal protection</td>
<td><strong>D</strong></td>
<td>T3 = 200</td>
</tr>
</tbody>
</table>

**Dust group:**

- **MIA** = “Combustible volatile, etc.
- **MIB** = “Non-conductive dust, etc.
- **MIC** = “Conductive dust, etc.

Example of representative explosive dust

**Ex** = equipment in protection mode «c», «b», or «k», in agreement with standard EN 80079-37.

**IIB** = except for the following gases: hydrogen, acetylene, carbon sulphide.

**IIIB** = except for the following dust: conductive dust

**T4/T135°C** = temperature class admitted. The user must process fluids in temperature in compliance with this classification, taking into account the indications of this manual and the applicable legislative requirements. The user must also take into account the explosive temperature of the combustible gases, fumes, fog or dust in the air present in the zone of use.

The technical file is deposited with the certifying body TÜV NORD CERT in Hanover.

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### IECEx CONFORMITY

All the BOXER air operated pumps are IECEx certified and are explosion proof protected, in compliance with the international IECEx standards in compliance with standards EN-60079-10 and EN 1127-1.

The BOXER air operated pumps are constructed in the CONDUCT version, in compliance with IECEx, with class Ex h IIB T4 Gb and Ex h IIIB T135° Db.

**ATTENTION**

The identification plate of the pump includes the IECEx marking and the equipment category. Before the installation always check the compliance with the classification of the installation "Zone". The equipment user is responsible for classifying their installation zone. The IECEx compliant pumps are not available with Hytrel components and do not have a different usage specification in relation to the ambient temperature indicated on the plate. See below for the definition of the IECEx marking of each execution.

**Ex h** = equipment in protection mode «c», «bx», or «kx», in agreement with standard EN 80079-37.

**IIB** = except for the following gases: hydrogen, acetylene, carbon sulphide.

**IIIB** = except for the following dust: conductive dust

**T4/T135°C** = temperature class admitted. The user must process fluids in temperature in compliance with this classification, taking into account the indications of this manual and the applicable legislative requirements. The user must also take into account the explosive temperature of the combustible gases, fumes, fog or dust in the air present in the zone of use.

The technical file is deposited with the certifying body IEC EUROFINS (Certificate EX-3935).
Main advantages

The CUBIC diaphragm mini pumps and the BOXER diaphragm pumps feature high levels of performance. Their considerable power and sturdiness render them ideal for pumping highly viscous liquids, even with suspended solids. The pneumatic stall-prevention circuit guarantees a safe operation, without requiring lubricated air. These pumps have achieved unprecedented levels of versatility due to their dry self-priming capacity with a considerable suction head, the ability to fine-tune the speed without losses of pressure as well as the possibility of empty-running without suffering damage. The vast range of construction materials allows us to select the best chemical compatibility with the fluid and/or the environment, without neglecting the operating temperature range. Their construction principle makes them ideally suited for demanding applications with high levels of humidity or in potentially explosive atmospheres (ATEX and IECEx certification).

- Constructed in PP, PP+CF, PVDF, ECTFE, PTFE, ALUMINIUM, AISI 316 STAINLESS STEEL, AISI 316 L STAINLESS STEEL
- Use in explosive atmospheres (ATEX certification zone 1 – 2, IECEx certification)
- Suitable for demanding applications and in atmospheres with high levels of humidity
- Dry-running
- Dry self-priming
- Supply with non-lubricated air
- Patented stall-prevention pneumatic circuit
- Adjustable flow rate and head
- Fine adjustment of the speed at constant pressure
- Possibility of split manifolds (two suction and two deliveries)
- Bench or ceiling installation
- Customisable positions
- Easy maintenance and parts replacement
- Excellent ratio between performance and costs
- Operating temperature:
  - PP / PP+CF from +3°C to +65°C
  - PVDF / ECTFE from +3°C to +95°C
  - AISI 316 / AISI 316 L / Aluminium from +3°C to 95°C

PLASTIC BOXER

- ATEX ZONE 1 - AVAILABLE ON REQUEST
  II 2G Ex h IIb T4 Gb
  II 2D Ex h IIIB T135°C Db X
  Ex h IIb T4 Gb
  Ex h IIIB T135°C Db
- ATEX ZONE 2 - STANDARD ON ALL MODELS
  II 3G Ex h IIb T4 Gc
  II 3D Ex h IIIB T135°C Dc X
  I M2 Ex h I Mb X

IECEx

The plastic BOXER range is designed for demanding uses, for very aggressive and acid liquids, in the numerous applications of the chemical industry.

MATERIALS PP, PP+CF, PVDF, ECTFE, PTFE
Max dry suction 5m

METAL BOXER

- ATEX ZONE 1 - AVAILABLE ON REQUEST
  II 2G Ex h IIb T4 Gb
  II 2D Ex h IIIB T135°C Db X
  Ex h IIb T4 Gb
  Ex h IIIB T135°C Db
- ATEX ZONE 2 - STANDARD ON ALL MODELS
  II 3G Ex h IIb T4 Gc
  II 3D Ex h IIIB T135°C Dc X
  I M2 Ex h I Mb X

IECEx

The metal BOXER range is designed for demanding uses, for solvent-based liquids and for numerous uses in the paint industry.

MATERIALS ALUMINIUM, AISI 316 STAINLESS STEEL, AISI 316 L STAINLESS STEEL
Max dry suction 5m

CUBIC

- ATEX ZONE 1 - AVAILABLE ON REQUEST
  II 2G Ex h IIb T4 Gb
  II 2D Ex h IIIB T135°C Db X
- ATEX ZONE 2 - STANDARD ON ALL MODELS
  II 3G Ex h IIb T4 Gc
  II 3D Ex h IIIB T135°C Dc X

This range of pumps, with their unique design and compact dimensions, can be used in series in small spaces.

MATERIALS PP, PP+CF, ECTFE
Max dry suction 3m
Debem pumps use a patented stall-prevention coaxial pneumatic exchanger. This device introduces compressed air to change the equilibrium of the pressure of the diaphragms, assisted by a stall-prevention circuit, that guarantees optimal performance, even in the most critical conditions. The control part (spool) and the power part (exchanger) are both housed inside the pump in a single block, which limits further losses of load when compressed air flows in the pump. The Debem pneumatic exchanger is easy to repair and/or replace. The internal exchanger is built entirely with plastic parts (except for the shaft connecting the two diaphragms), rendering it resistant to corrosive fluids and fumes. The Debem exchanger is pre-lubricated, therefore the supply air for the pump does not require lubrication, quite the opposite, it must be dried and free of impurities, such as oil, dust or condensation. Debem’s pneumatic exchanger (unique in its kind) is built with an extremely low number of parts, making parts replacement and maintenance extremely easy.

**Amongst the lowest air consumptions on the market**

The air consumption data (expressed in NL/minute) of Debem’s pumps are real and checked, with certified state of the art instruments and are amongst the lowest available on the market today. Debem’s pumps have been specifically designed to optimise the consumption of air, regardless of whether electronic control systems are used. Our competitors sell this option as an accessory but certain misleading advertising would have you believe that this is a production standard. Be suspicious of all companies that claim technical data without having the instruments necessary to determine their veracity.

Debem can count on its own new-concept test bench, with state of the art certified instruments, designed to test and certify the parameters of its own products and the efficiency of the pumps, in compliance with the latest applicable standards and in line with the new European project for INDUSTRIA 4.0.

**Long life diaphragms**

The diaphragms are the parts subjected to the greatest stresses during suction and pumping, whilst also having to resist the chemical attack and temperature of the liquid and the mechanical fatigue. Their correct assessment and selection is therefore of fundamental importance for the life of the diaphragm, as well as for the investment decisions and maintenance costs. A modern design process, destructing testing, as well as an in-depth analysis of the results have allowed Debem to develop the new generation LONG LIFE diaphragms. Thanks to their profile and construction shape, these products offer a larger working surface and improved redistribution of the load, reducing the stress and yield of the material to a minimum.

**Patented exchanger**

**RUBBER DIAPHRAGMS**

They are produced with rubber mixtures and special additives that improve their chemical characteristics as well as their mechanical flexural and resistance characteristics. These diaphragms have a nylon cloth reinforcement that improves stress distribution.

**NBR**

Inexpensive and particularly suited for petroleum-based liquids, oil and abrasive fluids.

**EPDM**

Good resistance to acids, alkaline and abrasion as well as a good flexibility also at low temperatures.

**THERMOPLASTIC DIAPHRAGMS**

Made with thermoplastic polymers, these diaphragms provide a high level of mechanical resistance and stress distribution.

**HYTREL**

Exceptionally tough and elastic return: a high resistance to impact, flex fatigue and creep: excellent flexibility at low temperatures and at high temperatures it maintains most of its properties. It is also resistant to the attack of many industrial chemicals, oils and solvents.

**SANTOPRENE**

Excellent resistance to acid and alkaline fluids, high flexural resistance and good abrasion resistance.

**PTFE DIAPHRAGMS**

This material is known for its considerable resistance to temperature and chemical and corrosive agents. Diaphragms in Debem PTFE undergo a double heat treatment to increase their elasticity and service life. A sample of each batch is subject to destructive tests to check their compliance with the technical requirements. This diaphragm can be installed combined with one of the ones examined earlier, in order to increase the resistance to the corrosive chemical agents and temperature of the fluid.
How does it work?

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

Installations

- **SELF-PRIMING**
  - BOXER / CUBIC FAMILY

- **SPLIT SUCTION and DELIVERY**
  - BOXER FAMILY

- **UNDER HEAD**
  - BOXER / CUBIC FAMILY

- **SPLIT SUCTION**
  - BOXER FAMILY

- **IMMERSED**
  - BOXER / CUBIC FAMILY

- **DRUM TRANSFER**
  - BOXER FAMILY
Debem’s CUBIC diaphragm pumps are fitted with a centrally-positioned coaxial pneumatic motor.

### CUBIC MIDGETBOX

#### Specifications and types

- **STANDARD**: II 3G Ex h IIB T4 Gc - II 3D Ex h IIB T135°C Db X
- **CONDUCT**: II 2G Ex h IIb T4 Gb - II 2D Ex h IIIB T135°C Db X

**Suction / delivery connections**
- 0 1/4” (**) 
- 0 1/8” 
- Max flow rate*: 4 4.5 l/min. 
- Max supply air pressure: 8 bar 
- Max head*: 80 m 
- Max negative suction head - dry-running**: 3 m 
- Max negative suction head - pump primed: 9.5 m 
- Max diameter of suspended solids: 0 mm 
- Noise level: 60 dB 
- Volume per stroke: 3.2 cc

**Main APPLICATION SECTORS**

- Chemical industry
- Water and sludge treatment
- Graphic industry
- Surface treatment
- Pharmaceutical industry
- Water and sludge treatment
- Main application sectors

**CUBIC PUMPS CODES ENCODING**

<table>
<thead>
<tr>
<th>I</th>
<th>CUTS</th>
<th>P</th>
<th>N</th>
<th>T</th>
<th>T</th>
<th>P</th>
<th>V</th>
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<tbody>
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<td>1</td>
<td>MID - Midgetbox (available only in PP/PP+CF)</td>
<td>P - Polytetrafluorethylene</td>
<td>C1 - NBR</td>
<td>T - PTFE</td>
<td>R - PTFE</td>
<td>K - PEI</td>
<td>X - PTFE</td>
<td>C*</td>
<td></td>
</tr>
</tbody>
</table>

**PP**

- **Maximum Dimensions**
  - Height: 75 mm
  - Width: 121 mm
  - Depth: 60 mm

- **Construction materials (casing and manifolds) and net weight**
  - Polypropylene (with glass additive): 0.52 Kg
    - Temp. 3°C min. 65°C max
  - Conductive polypropylene (with carbon additive): 0.52 Kg
    - Temp. 3°C min. 69°C max

**Midgetbox**

- **PP**
- **Maximum Dimensions**
  - Height: 75 mm
  - Width: 121 mm
  - Depth: 60 mm

- **Construction materials (casing and manifolds) and net weight**
  - Polypropylene (with glass additive): 0.52 Kg
    - Temp. 3°C min. 65°C max
  - Conductive polypropylene (with carbon additive): 0.52 Kg
    - Temp. 3°C min. 69°C max

- **Air supply pressure (bar)**
- **Air consumption (Nm/min)**
Cubic diaphragm pumps: high performance levels, excellent power and sturdiness, ideal for pumping liquids with high apparent viscosity, even if containing suspended solids. Particularly suited for small spaces.

Air supply pressure (bar) Air consumption (l/min) Flow rate (l/min)
**BOXER**

Air-operated double diaphragm volumetric pumps, ATEX – IECEx certified, constructed in polypropylene or PVDF in the plastic version or in aluminium or AISI 316 L for the metal versions. BOXER pumps are ideal for pumping liquids with high apparent viscosity, even if containing suspended solids. The vast range of materials available for the parts in contact with the fluid, such as pump casings and manifolds, diaphragms, balls, ball seats and o-rings, makes them compatible with any type of fluid present on the market. They can be used in numerous applications such as the following industries: chemical, graphic, paint, galvanic, ceramic, naval, textile, leather, mechanical, oil and many more.

- **Product designed and constructed in Italy**
- **PATENTED stall-prevention pneumatic circuit**
- **Operates with non-lubricated air**
- **Self-priming**
- **Dry operation**
- **ATEX certification for ZONE 1 - ZONE 2**
- **IECEx certification**
- **Adjustable operating speed**
- **Extremely versatile**
- **Suitable for pumping liquids with high viscosity and demanding applications**
- **Possibility of pumping fluids containing suspended solids**
- **Possibility of suspended installation**
- **Manifolds can be supplied with stainless steel reinforcement rings for pumps in PP – PP+CF – PVDF**
- **Nozzles available with clamp connections and DIN 11851 (only pumps in AISI 316)**
- **Possibility of suspended installation**
- **MANIFOLD: Extra-long life profile diaphragms (available in different elastomers) for greater resistance and longer life**
- **Nozzles available with clamp connections and DIN 11851 (only pumps in AISI 316)**
- **Suitable for continuous use**

**BOXER PUMPS CODES ENCODING**

<table>
<thead>
<tr>
<th>I</th>
<th>INTERNAL DISTRIBUTION</th>
<th>P</th>
<th>H</th>
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<td>Boxer 7</td>
<td>7</td>
<td>P - Polypropylene</td>
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<td>D - EPDM</td>
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<td>Boxer 503</td>
<td>503</td>
<td>PP</td>
<td>N - NBR</td>
<td>T - PTFE</td>
<td>C*</td>
<td>2*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Main Application Sectors**

- **Food & Beverage Treatment**
- **Pharmaceutical, Blue Water and Food Mills**
- **Ceramic, Stone, Marble, Glass Industries**
- **Automotive**

**Specifications and Types**

- **Suction / delivery connections**: 0 1/4” 1”
- **Air fitting**: 0 1/8” T
- **Max flow rate**: 9.0 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 4 m
- **Max negative suction head - pump primed**: 7.5 m
- **Max diameter of suspended solids**: 0.5 mm
- **Noise level**: 45 dB
- **Volume per stroke**: 3.2 cc

**Main Technical Data**

- **Volume per stroke**: 3.2 cc
- **Noise level**: 65 dB
- **Max diameter of suspended solids**: 0.5 mm
- **Max negative suction head - dry-running**: 4 m
- **Max negative suction head - pump primed**: 7.5 m
- **Max diameter of suspended solids**: 0.5 mm
- **Noise level**: 45 dB
- **Volume per stroke**: 3.2 cc

**PP**

- **Boxer 7**
- **Maximum Dimensions**
  - **Height**: 120 mm
  - **Width**: 138 mm
  - **Depth**: 68 mm
- **Construction materials (casing and manifolds) and net weight**
  - **Polypropylene**: 0.7 Kg
    - **Temp.**: 3°C min., 65°C max
  - **Conductive polypropylene**
    - **Temp.**: 3°C min., 65°C max

**PVDF**

- **Boxer 7**
- **Maximum Dimensions**
  - **Height**: 120 mm
  - **Width**: 138 mm
  - **Depth**: 68 mm
- **Construction materials (casing and manifolds) and net weight**
  - **PVDF**: 0.7 Kg
    - **Temp.**: 3°C min., 65°C max
BOXER 15

Specifications and types

Suction / delivery connections  G 3/8” f (*)
Air fitting  G 3/8” f
Max flow rate*  17 l/min
Max supply air pressure  8 bar
Max head*  80 m
Max negative suction head - dry-running**  3 m
Max negative suction head - pump primed  9.5 m
Max diameter of suspended solids  0.5 mm
Noise level  65 dB
Volume per stroke  10.3 cc

PVDF

Maximum Dimensions
Height  151 mm
Width  148 mm
Depth  80 mm

Construction materials (casing and manifolds) and net weight
PVDF  1.38 Kg
Max 3°C min. 95°C max

Construction materials (casing and manifolds) available on request
POMc
UHMWPE

ALU

Maximum Dimensions
Height  161 mm
Width  153 mm
Depth  80 mm

Construction materials (casing and manifolds) and net weight
ALU  1.9 Kg
Max 3°C min. 95°C max

Construction materials (casing and manifolds) available on request
POMc
UHMWPE

AISI 316 L steel

Maximum Dimensions
Height  161 mm
Width  153 mm
Depth  80 mm

Construction materials (casing and manifolds) and net weight
AISI 316 L  2.4 Kg
Max 3°C min. 95°C max

Construction materials (casing and manifolds) available on request
DULEX/W.DUPLEX

(*) Available with Clamp or NPT connections (only on request)
** The value depends on the configuration of the pump.

Air supply pressure (bar) Air consumption (l/min)

Flow rate (l/min) 0 2 4 6 8 10 12 14 16 18 20
Head (m) 0 20 40 60 80 100

MAIN APPLICATION SECTORS

CERAMIC, STONE, MARBLE, GLASS AND MINING INDUSTRY
WATER AND SLUDGE TREATMENT
PACKING, GLUE, PAPER AND PAPER MILLS

Polypropylene (with glass additive)  1.1 Kg
Max 3°C min. 65°C max
Conductive polypropylene (with carbon additive)  1.1 Kg
Max 3°C min. 65°C max

Construction materials (casing and manifolds) available on request
POMc
UHMWPE

STANDARD: II 3G Ex h IIB T4 Gc - II 3D Ex h IIIB T135°C Dc X - I M2 Ex h I Mb X
CONDUCT: II 2G Ex h IIb T4 Gb - II 2D Ex h IIIB T135°C Db X - Ex h IIB T4 Gb - Ex h IIIB T135°C Db
### MICROBOXER

#### Specifications and types

**AIR-OPERATED DOUBLE DIAPHRAGM PUMPS**

<table>
<thead>
<tr>
<th>Material</th>
<th>Microboxer</th>
<th>Maximum Dimensions</th>
<th>Construction materials (casing and manifolds) and net weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP</td>
<td>Microboxer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Height</td>
<td>Width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>168 mm</td>
<td>165 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polypropylene (with glass additive)</td>
<td>1.6 Kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conductive polypropylene (with carbon additive)</td>
<td>1.6 Kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>POMc</td>
<td>UHMWPE</td>
</tr>
<tr>
<td>ALU</td>
<td>Microboxer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Height</td>
<td>Width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>172 mm</td>
<td>164 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ALU</td>
<td>2.1 Kg</td>
</tr>
<tr>
<td>AISI 316 L steel</td>
<td>Microboxer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Height</td>
<td>Width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>171 mm</td>
<td>177 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AISI 316 L</td>
<td>3.75 Kg</td>
</tr>
</tbody>
</table>

*The curves and performance are referred 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 confi guration of the pump.**

<table>
<thead>
<tr>
<th>Material</th>
<th>Microboxer</th>
<th>Maximum Dimensions</th>
<th>Construction materials (casing and manifolds) and net weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Height</td>
<td>Width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>168 mm</td>
<td>165 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PVDF</td>
<td>1.98 Kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction materials (casing and manifolds) available on request</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>POMc</td>
<td>UHMWPE</td>
</tr>
</tbody>
</table>

**Construction materials (casing and manifolds) available on request:**

- POMc
- UHMWPE
- DUPLEX/W.DUPLEX
**BOXER 50 / MINIBOXER**

### Specifications and types

#### AIR-OPERATED DOUBLE DIAPHRAGM PUMPS

**PP Boxer 50**

- **Suction / delivery connections**: 0 1/2” or DN 15 (*)
- **Air fitting**: 0 3/8” f
- **Max flow rate**: 60 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 4 m
- **Max negative suction head - pump primed**: 9.5 m
- **Max diameter of suspended solids**: 4 mm
- **Noise level**: 70 dB
- **Volume per stroke**: 67 cc

**MINIBOXER**

- **Maximum Dimensions**
  - **Height**: 234 mm
  - **Width**: 241 mm
  - **Depth**: 153 mm

**AISI 316 L steel**

- **Maximum Dimensions**
  - **Height**: 232 mm
  - **Width**: 240 mm
  - **Depth**: 153 mm

**PVDF**

- **Maximum Dimensions**
  - **Height**: 261 mm
  - **Width**: 267 mm
  - **Depth**: 153 mm

**Construction materials (casing and manifolds) and net weight**

- **PVDF**: 4.25 Kg
- **Max**: 3°C min. 95°C max

**Construction materials (casing and manifolds) available on request**

- **PVDF**
- **UHMWPE**

**ALU**

- **Maximum Dimensions**
  - **Height**: 236 mm
  - **Width**: 241 mm
  - **Depth**: 153 mm

**Construction materials (casing and manifolds) and net weight**

- **ALU**: 4.07 Kg
- **Max**: 3°C min. 95°C max

**Construction materials (casing and manifolds) available on request**

- **ALU**
- **POMc**
- **UHMWPE**

**MECHANICAL AND METALLURGIC INDUSTRY**

- **CERAMIC, STONE, MARBLE, GLASS AND MINING INDUSTRY**
- **GALVANIC AND ELECTRONIC INDUSTRY**
- **AUTOMOTIVE**
- **PACKING, GLUE, PAPER AND PAPER MILLS**
- **GRAPHIC**
- **OIL & GAS**
- **PAINT INDUSTRY**
- **PRODUCTION AND STORAGE OF BIODIESEL**
- **CHEMICAL INDUSTRY**
- **GOLD PROCESSING INDUSTRY**

(*) Available with NPT connections (on request)

**The curves and performance are referred 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 81 / BOXER 90

Specifications and types

PVDF

Maximum Dimensions

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>275</td>
<td>308</td>
<td>170</td>
</tr>
</tbody>
</table>

Construction materials (casing and manifolds) and net weight

- PVDF: 6 Kg
  - Max 3°C min.
  - 95°C max

Construction materials (casing and manifolds) available on request

- POMc
- UHMWPE

Electropolished AISI 316 steel

Maximum Dimensions

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>275</td>
<td>308</td>
<td>170</td>
</tr>
</tbody>
</table>

Construction materials (casing and manifolds) and net weight

- Electropolished AISI 316: 10.6 Kg
  - Max 3°C min.
  - 95°C max

Construction materials (casing and manifolds) available on request

- DUPLEX/W.DUPLEX

PP

Maximum Dimensions

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>274</td>
<td>308</td>
<td>170</td>
</tr>
</tbody>
</table>

Construction materials (casing and manifolds) and net weight

- Polypropylene (with glass additive): 5 Kg
  - Max 3°C min.
  - 65°C max

- Conductive polypropylene (with carbon additive): 5 Kg
  - Max 3°C min.
  - 65°C max

Construction materials (casing and manifolds) available on request

- POMc
- UHMWPE

ALU

Maximum Dimensions

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>291</td>
<td>293</td>
<td>170</td>
</tr>
</tbody>
</table>

Construction materials (casing and manifolds) and net weight

- ALU: 7 Kg
  - Max 3°C min.
  - 95°C max
BOXER 100

Specifications and types

**PVDF**
- Boxer 100

**Maximum Dimensions**
- Height: 325 mm
- Width: 329 mm
- Depth: 202 mm

**Construction materials (casing and manifolds) and net weight**
- PVDF: 9.6 Kg
  - Max 3°C min.
  - 95°C max

**Construction materials (casing and manifolds) available on request**
- POMc
- UHMWPE

**ALU**
- Boxer 100

**Maximum Dimensions**
- Height: 324 mm
- Width: 315 mm
- Depth: 202 mm

**Construction materials (casing and manifolds) and net weight**
- ALU: 8.5 Kg
  - Max 3°C min.
  - 95°C max

**Construction materials (casing and manifolds) available on request**
- Electropolished AISI 316 steel
- Polypropylene (with glass additive)
- Conductive polypropylene (with carbon additive)

**Electropolished AISI 316 steel**
- Boxer 100

**Maximum Dimensions**
- Height: 327 mm
- Width: 308 mm
- Depth: 202 mm

**Construction materials (casing and manifolds) and net weight**
- Electropolished AISI 316: 11.7 Kg
  - Max 3°C min.
  - 95°C max

**Construction materials (casing and manifolds) available on request**
- DUPLEX/W.DUPLEX

---

**Suction / delivery connections**
- G 1” or DN 25 (*)

**Air fitting**
- 0 3/8” f

**Max flow rate**
- 160 l/min

**Max supply air pressure**
- 8 bar

**Max head**
- 80 m

**Max negative suction head - dry-running**
- 6 m

**Max negative suction head - pump primed**
- 9.5 m

**Max diameter of suspended solids**
- 4 mm

**Noise level**
- 75 dB

**Volume per stroke**
- 222 cc

---

(*) Available with NPT connections (on request)

*The curves and performance are referred to pumps with submerged suction and 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 Specifications and types

**PVDF**
- **Boxer 150**
  - **Maximum Dimensions**
    - Height: 386 mm
    - Width: 399 mm
    - Depth: 220 mm
  - **Construction materials (casing and manifolds) and net weight**
    - PVDF
      - Net weight: 14 Kg
    - **Max** 3°C min.
    - **95°C max**
    - Construction materials (casing and manifolds) available on request
      - POMc
        - Net weight: 12 Kg
      - UHMWPE
        - Net weight: 12 Kg
      - Conductive polypropylene (with carbon additive)
        - Net weight: 12 Kg
        - Max 3°C min.
        - 65°C max
    - Construction materials (casing and manifolds) available on request
      - DUPLEX/W.DUPLEX

**ALU**
- **Boxer 150**
  - **Maximum Dimensions**
    - Height: 388 mm
    - Width: 394 mm
    - Depth: 220 mm
  - **Construction materials (casing and manifolds) and net weight**
    - ALU
      - Net weight: 15 Kg
    - **Max** 3°C min.
    - **95°C max**
    - Construction materials (casing and manifolds) available on request
      - POMc
        - Net weight: 12 Kg
      - UHMWPE
        - Net weight: 12 Kg
      - Conductive polypropylene (with carbon additive)
        - Net weight: 12 Kg
        - Max 3°C min.
        - 65°C max
    - Construction materials (casing and manifolds) available on request
      - DUPLEX/W.DUPLEX

**PP**
- **Boxer 150**
  - **Maximum Dimensions**
    - Height: 386 mm
    - Width: 399 mm
    - Depth: 220 mm
  - **Construction materials (casing and manifolds) and net weight**
    - Polypropylene (with glass additive)
      - Net weight: 12 Kg
      - Max 3°C min.
      - 65°C max
    - Conductive polypropylene (with carbon additive)
      - Net weight: 12 Kg
      - Max 3°C min.
      - 65°C max
    - **Construction materials (casing and manifolds) available on request**
      - POMc
        - Net weight: 12 Kg
      - UHMWPE
        - Net weight: 12 Kg
      - Conductive polypropylene (with carbon additive)
        - Net weight: 12 Kg
        - Max 3°C min.
        - 65°C max

**Electropolished AISI 316 steel**
- **Boxer 150**
  - **Maximum Dimensions**
    - Height: 390 mm
    - Width: 388 mm
    - Depth: 220 mm
  - **Construction materials (casing and manifolds) and net weight**
    - Electropolished AISI 316
      - Net weight: 23 Kg
      - **Max** 3°C min.
      - **95°C max**
    - Construction materials (casing and manifolds) available on request
      - DUPLEX/W.DUPLEX

**Suction / delivery connections**
- 0 1” 1/4 w DN 32(*)

**Air fitting**
- 0 1/2” f
g

**Max flow rate**
- 220 l/min

**Max supply air pressure**
- 8 bar

**Max head**
- 80 m

**Max negative suction head - dry-running**
- 4 m

**Max negative suction head - pump primed**
- 9.5 m

**Max diameter of suspended solids**
- 5 mm

**Noise level**
- 75 dB

**Volume per stroke**
- 340 cc

---

(*) Available with Clamp or NPT connections (only on request)

The curves and performance are referred 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 / BOXER 252

Specifications and types

Suction / delivery connections
Air fitting
Max flow rate*
Max supply air pressure
Max head*
Max negative suction head - dry-running**
Max diameter of suspended solids
Noise level
Volume per stroke

0 1/2" f or DN 40 [*]
0 1/2" f
340 l/min
8 bar
80 m
6 m
80 dB
552 cc

PVDF

Maximum Dimensions
Height
Width
Depth

Boxer 251
492 mm
493 mm
254 mm

Construction materials (casing and manifolds) and net weight
PVDF
20 Kg
Max 3°C min.
95°C max

ALU

Maximum Dimensions
Height
Width
Depth

Boxer 251
491 mm
417 mm
254 mm

Construction materials (casing and manifolds) and net weight
ALU
19 Kg
Max 3°C min.
95°C max

PP

Maximum Dimensions
Height
Width
Depth

Boxer 251
492 mm
493 mm
254 mm

Construction materials (casing and manifolds) and net weight
Polypropylene (with glass additive) 17.5 Kg
Max 3°C min.
65°C max

Conductive polypropylene (with carbon additive) 20 Kg
Max 3°C min.
65°C max

BOXER 252

Electropolished AISI 316 steel

Maximum Dimensions
Height
Width
Depth

Boxer 252
538 mm
417 mm
254 mm

Construction materials (casing and manifolds) and net weight
Electropolished AISI 316 26.2 Kg
Max 3°C min.
95°C max

Construction materials (casing and manifolds) available on request DUPLEX/W.DUPLEX
**BOXER 522 / BOXER 502**

**Specifications and types**

- **STANDARD**:
  - II 3G Ex h T6 Gc - II 3D Ex h T135°C Ex x - I M2 Ex h I Mb X
  - Conduct II 3G Ex h T135°C Ex x - II 3D Ex h I Mb X

- **CONDUCT**:
  - II 2G Ex h IIib T4 Gb - II 2D Ex h IIIB T135°C Db X - Ex h IIB T4 Gb - Ex h IIIB T135°C Dc

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### Boxer 522

- **Suction / delivery connections**: G 2” f or DN 50 (**)
- **Air fitting**: G 1/2” f
- **Max flow rate**: 600 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 5 m
- **Max negative suction head - pump primed**: 9.5 m
- **Max diameter of suspended solids**: 8 mm
- **Noise level**: 80 dB
- **Volume per stroke**: 1825 cc

- **Maximum Dimensions**
  - **Height**: 621 mm
  - **Width**: 566 mm
  - **Depth**: 404 mm

- **Construction materials (casing and manifolds) and net weight**
  - **PVDF**: 45 Kg
  - **Max** 3°C min. 95°C max

- **Construction materials available on request**
  - **Duplex/W.Duplex**

---

### Boxer 502

- **Suction / delivery connections**: G 2” f or DN 50 (**)
- **Air fitting**: G 1/2” f
- **Max flow rate**: 600 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 5 m
- **Max negative suction head - pump primed**: 9.5 m
- **Max diameter of suspended solids**: 8 mm
- **Noise level**: 80 dB
- **Volume per stroke**: 1825 cc

- **Maximum Dimensions**
  - **Height**: 650 mm
  - **Width**: 590 mm
  - **Depth**: 404 mm

- **Construction materials (casing and manifolds) and net weight**
  - **PVDF**: 45 Kg
  - **Max** 3°C min. 95°C max

- **Construction materials available on request**
  - **Duplex/W.Duplex**

---

### PP

- **Suction / delivery connections**: G 2” f or DN 50 (**)
- **Air fitting**: G 1/2” f
- **Max flow rate**: 600 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 5 m
- **Max negative suction head - pump primed**: 9.5 m
- **Max diameter of suspended solids**: 8 mm
- **Noise level**: 80 dB
- **Volume per stroke**: 1825 cc

- **Maximum Dimensions**
  - **Height**: 650 mm
  - **Width**: 590 mm
  - **Depth**: 404 mm

- **Construction materials (casing and manifolds) and net weight**
  - **Polypropylene (with glass additive)**: 38 Kg
  - **Max 3°C min. 65°C max**
  - **Conductive polypropylene (with carbon additive)**: 34.5 Kg
  - **Max 3°C min. 65°C max**

- **Construction materials available on request**
  - **Electropolished AISI 316**

---

### ALU

- **Suction / delivery connections**: G 2” f or DN 50 (**)
- **Air fitting**: G 1/2” f
- **Max flow rate**: 600 l/min
- **Max supply air pressure**: 8 bar
- **Max head**: 80 m
- **Max negative suction head - dry-running**: 5 m
- **Max negative suction head - pump primed**: 9.5 m
- **Max diameter of suspended solids**: 8 mm
- **Noise level**: 80 dB
- **Volume per stroke**: 1825 cc

- **Maximum Dimensions**
  - **Height**: 650 mm
  - **Width**: 590 mm
  - **Depth**: 404 mm

- **Construction materials (casing and manifolds) and net weight**
  - **ALU**: 37 Kg
  - **Max** 3°C min. 95°C max

---

**MAIN APPLICATION SECTORS**

- Textile and Leather Industry
- Ceramic, Stone, Marble, Glass and Mining Industry
- Chemical Industry
- Oil & Gas
- Mechanical and Metallurgical Industry
- Building Waterproofing Industry
- Paint Industry
- Electrical and Electronic Industry
- Water and Sludge Treatment
- Production and Storage of Biodiesel
- Mechatronics Industry
- Packing, Glue, Paper and Paper Mills
- Food Industry
- Galvanic Industry

---

*Available with NPT connections (on request)

**The curves and performance are referred 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

Specifications and types

Suction / delivery connections: 0 3” f or DN 80 (**)
Air fitting: 0 3/4” f
Max flow rate*: 800 l/min
Max supply air pressure: 8 bar
Max head*: 80 m
Max negative suction head - dry-running**: 4 m
Max negative suction head - pump primed: 9.5 m
Max diameter of suspended solids: 10 mm
Noise level: 80 dB
Volume per stroke: 1825 cc

PVDF

Maximum Dimensions
Height: 826 mm
Width: 546 mm
Depth: 404 mm

Construction materials (casing and manifolds) and net weight
PVDF: 67 Kg
Max 3°C min.
95°C max

ALU

Maximum Dimensions
Height: 726 mm
Width: 585 mm
Depth: 403 mm

Construction materials (casing and manifolds) and net weight
ALU: 66 Kg
Max 3°C min.
95°C max

Electropolished AISI 316 steel

Maximum Dimensions
Height: 826 mm
Width: 566 mm
Depth: 404 mm

Construction materials (casing and manifolds) and net weight
Electropolished AISI 316: 71 Kg
Max 3°C min.
95°C max

(*) Available with NPT connections (on request)
*The curves and performance are referred 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.

MAIN APPLICATION SECTORS

TEXTILE AND LEATHER INDUSTRY
CHEMICAL INDUSTRY
PAINT INDUSTRY
WATER AND SLUDGE TREATMENT
TERRAZZO, STONE, MARBLE, GLASS AND MINING INDUSTRY
PACKING, GLUE, PAPER AND PAPER MILLS
PRODUCTION AND STORAGE OF BIODIESEL
MECHANICAL AND METALLURGIC INDUSTRY

Air supply pressure (bar) Air consumption (Nl/min)
Flow rate (l/min)
BOXXER FPC 100

Specifications and types

STANDARD: II 3G Ex h IIB T4 Sc, II 3D Ex h IIB T135°C Dc (zone 2)
CONDUCT: II 2G Ex h Iib T4 Gb, II 2D Ex h IIIB T135°C Db (zone 1)

Product designed and constructed in Italy
PATENTED stall-prevention pneumatic circuit
Operates with non-lubricated air
Self-priming
Dry operation
Adjustable operating speed
Extremely versatile
Suitable for pumping liquids with high viscosity and demanding applications
Possibility of pumping fluids containing suspended solids
LONG LIFE profile diaphragms for greater resistance and longer life
Suitable for continuous use
Pump made from a solid piece of PTFE
Non-deformable structure in AISI 316 stainless steel

Suction / delivery connections: G 1” flanged ANSI - DN 25
Air fitting: G 3/8” f
Max flow rate: 130 l/min
Max supply air pressure: 8 bar
Max head: 80 m
Max negative suction head - dry-running: 4 m
Max negative suction head - pump primed: 9.5 m
Max diameter of suspended solids: 4 mm
Noise level: 75 dB
Volume per stroke: 250 cc

Maximum Dimensions
Height: 300 mm
Width: 230 mm
Depth: 360 mm

Construction materials (casing and manifolds) and net weight
PTFE: 21.6 Kg
Max 3°C min. 95°C max

The Debem FPC100 double diaphragm pump is constructed entirely from a solid piece of PTFE machined with a numeric control machine tool. The pump casing is reinforced with a non-deformable AISI 316 stainless steel structure. All parts in contact with the liquid are made exclusively of PTFE and pump produces a flow rate of 130 l/min.
DEBEM’s double diaphragm pumps of the RC line have been designed for all applications that require the pump to be controlled remotely or directly by the machine on which the pump is installed, for example, when measuring or dosing the product.

The RC pumps are always operated with compressed air. All the pumps of the RC line are ATEX – IECEx certified, constructed in polypropylene or PVDF in the plastic version or in aluminium or AISI 316 L for the metal versions. BOXER pumps are ideal for pumping liquids with high apparent viscosity, even if containing suspended solids. The vast range of materials available for the parts in contact with the fluid, such as pump casings and manifolds, diaphragms, balls, ball seats and o-rings, makes them compatible with any type of fluid present on the market. They can be used in numerous applications.

- Product designed and constructed in Italy
- Air operation
- Self-priming
- Dry operation
- ATEX certification for ZONE 1 - ZONE 2
- IECEx certification
- Adjustable operating speed
- Extremely versatile
- Suitable for pumping liquids with high viscosity and demanding applications
- Possibility of pumping fluids containing suspended solids
- Possibility of suspended installation
- Manifolds can be supplied with stainless steel reinforcement rings for pumps in PP – PP+CF – PVDF
- LONG LIFE profile diaphragms (available in different elastomers) for greater resistance and longer life
- Suitable for continuous use

**SCUBIC**

**Specifications and types**

**SCUBIC**

| Suction / delivery connections | 0 3/8” f |
| Air fitting rate | 0 3/8” f Max flow rate 17 l/min |
| Max supply air pressure | 8 bar |
| Max negative suction head - dry-running | 3 m |
| Max negative suction head - pump primed | 9.5 m |
| Max diameter of suspended solids | 0.5 mm |
| Noise level | 65 dB |
| Volume per stroke | 10.3 cc |

**PP**

| Maximum Dimensions |
| Height | 105 mm |
| Width | 201 mm |
| Depth | 105 mm |

**Construction materials (casing and manifolds) and net weight**

- Polypropylene [with glass additive] 1.35 Kg
  - Temp. 3°C min. 65°C max
- Conductive polypropylene [with carbon additive] 1.35 Kg
  - Temp. 3°C min. 65°C max

**Construction materials (casing and manifolds) available on request**

- POMc
  - UHMWPE

**ECTFE**

| Maximum Dimensions |
| Height | 105 mm |
| Width | 201 mm |
| Depth | 105 mm |

**Construction materials (casing and manifolds) and net weight**

ECTFE 1.35 Kg
  - Temp. 3°C min. 95°C max
SMICRO

Specifications and types

Suction / delivery connections | 0 1/2" f
Air fitting | 0 1/4" f
Max flow rate | 35 l/min
Max supply air pressure | 8 bar
Max negative suction head - dry-running | 4 m
Max negative suction head - pump primed | 9.5 m
Max diameter of suspended solids | 2 mm
Noise level | 65 dB
Volume per stroke | 30 cc

PVDF

Maximum Dimensions

| Height | 168 mm |
| Width | 165 mm |
| Depth | 120 mm |

Construction materials (casing and manifolds) and net weight

- PVDF 1.9 Kg
- Max 3°C min.
- 95°C max

Construction materials (casing and manifolds) available on request

POMc
- UHMWPE

ALU

Maximum Dimensions

| Height | 172 mm |
| Width | 164 mm |
| Depth | 120 mm |

Construction materials (casing and manifolds) and net weight

- ALU 2 Kg
- Max 3°C min.
- 95°C max

Construction materials (casing and manifolds) available on request

POMc
- UHMWPE

AISI 316 L steel

Maximum Dimensions

| Height | 171 mm |
| Width | 177 mm |
| Depth | 120 mm |

Construction materials (casing and manifolds) and net weight

- AISI 316 L 3.8 Kg
- Max 3°C min.
- 95°C max

Construction materials (casing and manifolds) available on request

DUPLEX/W DUPLEX

STANDARD: II 3G Ex h IIB T4 Gc, II 3D Ex h IIIB T135°C Dc (zone 2)

CONDUCT: II 2G Ex h Iib T4 Gb, II 2D Ex h IIIB T135°C Db (zone 1)
Specifications and types

Suction / delivery connections: 0 1/2” f or DN 15 - Clamp or NPT on request
Air fitting: 0 3/8” f
Max flow rate: 60 l/min
Max supply air pressure: 8 bar
Max negative suction head - dry-running: 4 m
Max negative suction head - pump primed: 9.5 m
Max diameter of suspended solids: 4 mm
Noise level: 70 dB
Volume per stroke: 67 cc

PVDF

Sboxer 50

Maximum Dimensions
- Height: 241 mm
- Width: 247 mm
- Depth: 153 mm

Construction materials (casing and manifolds) and net weight
- PVDF: 1.9 Kg
  - Max 3°C min.
  - 95°C max

Construction materials (casing and manifolds) available on request
- POMc
- UHMWPE

ALU

Sboxer 50

Maximum Dimensions
- Height: 236 mm
- Width: 247 mm
- Depth: 153 mm

Construction materials (casing and manifolds) and net weight
- ALU: 2 Kg
  - Max 3°C min.
  - 95°C max

Construction materials (casing and manifolds) available on request
- POMc
- UHMWPE

PP

Sboxer 50

Maximum Dimensions
- Height: 241 mm
- Width: 247 mm
- Depth: 153 mm

Construction materials (casing and manifolds) and net weight
- Polypropylene (with glass additive): 1.6 Kg
  - Max 3°C min.
  - 65°C max
- Conductive polypropylene (with carbon additive): 1.6 Kg
  - Max 3°C min.
  - 65°C max

Construction materials (casing and manifolds) available on request
- POMc
- UHMWPE

AISI 316 L steel

SMINI

Maximum Dimensions
- Height: 232 mm
- Width: 230 mm
- Depth: 153 mm

Construction materials (casing and manifolds) and net weight
- AISI 316 L: 3.8 Kg
  - Max 3°C min.
  - 95°C max

Construction materials (casing and manifolds) available on request
- DUPLEX/W.DUPLEX

MAIN APPLICATION SECTORS

- CHEMICAL INDUSTRY
- GRAPHIC INDUSTRY
- MAIN APPLICATION SECTORS
**Specifications and types**

**Suction / delivery connections**
- G 1” or DN 25 - NPT on request

**Air fitting**
- G 3/8” f

**Max flow rate**
- 160 l/min

**Max supply air pressure**
- 8 bar

**Max negative suction head - dry-running**
- 4 m

**Max negative suction head - pump primed**
- 9.5 m

**Max diameter of suspended solids**
- 4 mm

**Noise level**
- 75 dB

**Volume per stroke**
- 222 cc

---

**Swing out double diaphragm pumps without distributor**

**PVDF**
- **Sboxer 100**

<table>
<thead>
<tr>
<th>Maximum Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Depth</td>
</tr>
</tbody>
</table>

- **Construction materials (casing and manifolds) and net weight**
  - PVDF
    - 8.5 Kg
    - Max 3°C min.
    - 95°C max

- **Construction materials (casing and manifolds) available on request**
  - POMc
  - UHMWPE

---

**ALU**
- **Sboxer 100**

<table>
<thead>
<tr>
<th>Maximum Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Depth</td>
</tr>
</tbody>
</table>

- **Construction materials (casing and manifolds) and net weight**
  - ALU
    - 8.2 Kg
    - Max 3°C min.
    - 95°C max

---

**PP**
- **Sboxer 100**

<table>
<thead>
<tr>
<th>Maximum Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Depth</td>
</tr>
</tbody>
</table>

- **Construction materials (casing and manifolds) and net weight**
  - Polypropylene (with glass additive)
    - 7.5 Kg
    - Max 3°C min.
    - 65°C max
  - Conductive polypropylene (with carbon additive)
    - 7.5 Kg
    - Max 3°C min.
    - 65°C max

- **Construction materials (casing and manifolds) available on request**
  - POMc
  - UHMWPE

---

**Electropolished AISI 316 steel**
- **Sboxer 100**

<table>
<thead>
<tr>
<th>Maximum Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Depth</td>
</tr>
</tbody>
</table>

- **Construction materials (casing and manifolds) and net weight**
  - Electropolished AISI 316
    - 11 Kg
    - Max 3°C min.
    - 95°C max

- **Construction materials (casing and manifolds) available on request**
  - DUPLEX/W.DUPLEX

---

**MAIN APPLICATION SECTORS**

- Chemical industry
- Pharmaceutical industry
- Food and beverage industry
- Textile industry
- Petrochemical industry
- Mining industry
- Environmental industry
- Agricultural industry
- Construction industry
- Renewable energy industry
- Biotech industry
The new FULLFLOW 502 pump is fitted with flaps instead of balls, allowing the passage of large-sized solids, while reducing crushing normally associated with the passage through balls and cages. Even though the maximum diameter for the passage of solids is 45 mm, this is not exclusive. The uniqueness of these pumps lies in the maximum length of the solids: 600 mm. Similarly, the pump features an exclusive patented flap circuit positioned below, perpendicularly to the fluid chambers instead of being in axis. The fluid dynamics of this choice ensure that the solids transit outside the pump casing, following a linear path at a lower level to the pump. The maximum flow rate of the pump is about 530 litres per minute.

Air-operated double diaphragm pumps with flap circuit

- Polypropylene casing
- Flap in EPDM and NBR, core in AISI 316 steel, always in contact with the fluid
- Can be split in suction and delivery
- Fittings: G 2"1/2 f or DN 65
- Air fitting: ½"
- Supply: min. 2 bar – max 4 bar
- Max. flow rate: 530 l/min
- Max. head: 40 m
- Max. dry suction: 3.5 m
- Max. flooded negative suction: 8 m
- Max. solids diameter: 45 mm
- Max. solid filaments length: 600 mm*  
  *On request it can be configured for greater lengths. Consult the sales office.
Specifications and types

- **Suction / delivery connections**: G 2" 1/2 or DN 65
- **Air fitting**: G 1/2" f
- **Max flow rate**: 530 l/min
- **Max supply air pressure**: 4 bar
- **Max head**: 40 m
- **Max negative suction head - dry-running**: 3.5 m
- **Max diameter of suspended solids**: 45 mm
- **Max length of solids**: 600 mm

*The performance values refer to primed pumps (with water at 20°C) with open outlet and vary based on the construction materials.

**Attention: average values of the different materials configurations for ball and ball seat.

**CERAMIC, STONE, MARBLE, GLASS AND MINING INDUSTRY

**PACKING, GLUE, PAPER AND PAPER MILLS

**TEXTILE AND LEATHER INDUSTRY

**WATER AND SLUDGE TREATMENT

**MAIN APPLICATION SECTORS

- AIR-OPERATED DOUBLE DIAPHRAGM PUMPS WITH FLAP CIRCUIT

**A = CAP
**B = FLAP SEAT
**C = FLAP WEAR RING

**Maximum Dimensions**

- **Height**: 691 mm
- **Width**: 580 mm
- **Depth**: 952 mm

**Construction materials (casing and manifolds) and net weight**

- **Polypropylene (with glass additive)**: 55 Kg
  - Max 3°C min.
  - 65°C max

**PP**
Chemical compatibility

The type of fluid, the temperature and the operating environment are the factors that influence the selection of the pump materials and its correct chemical compatibility.

The table below is included by way of example. For more information don’t hesitate to contact the Debem technical support. We have collected the information from reliable sources. Debem, not having carried any verification of the data, cannot be held responsible for the correctness of the information. The table refers to pure polypropylene and PVDF. Our plastic materials contain glass and carbon additives that could influence the chemical compatibility of the pump. The user, with their in-depth knowledge of their product, can make the most accurate decision regarding the chemical compatibility.

**WARNING**

The information in this table has been supplied to Debem from other reliable sources and must be used EXCLUSIVELY as a guide in selecting the materials for the pump parts in contact with the fluid, such as: Pump casing and manifolds, diaphragms, balls, ball seats and o-rings.

The assessment of the chemical reaction listed in this table refers to an exposure period of 48 hours. Debem has no knowledge of the possible effects after this period.

Debem does not guarantee (neither expressly nor implicitly) that the information contained in this table is accurate or complete or that any material is suitable for any use.

**DANGER**

Changes in the chemical behaviour during handling, due to factors such as temperature, pressure and concentrations, could trigger issues in the pump. Use adequate protections and/or personal protection equipment when installing the pump in the circuit or when performing maintenance on the pump. Read the use and maintenance manual before any operation on the pump.

For more information don’t hesitate to contact the Debem technical support. We have collected the information from reliable sources. Debem, not having carried any verification of the data, cannot be held responsible for the correctness of the information.

Go to www.debem.com and in the RESOURCES section you will find the pumps configurator, which will help you in choosing the most suitable solution from the various products available.

---

**SUBSTANCE**

| 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 | A | - |
| Vinegar      | A | B | D | A | B | A | A | A | A | A | A |
| Acetone      | A | D | A | A | D | A | A | A | A | A | A |
| Fatty acids  | A | A | A | A | B | D | A | A | A | A | A |

A = Excellent  
B = Good  
C = Poor (not recommended)  
D = Serious attack (not recommended)  
- = Information not available  
1 = Satisfactory up to 22°C (72°F)  
2 = Satisfactory up to 48°C (120°F)
Air-Operated Double Diaphragm Pumps

### Technical Specifications

#### Air-Consumption

<table>
<thead>
<tr>
<th>Nl/min</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.5</td>
</tr>
<tr>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>200</td>
<td>2</td>
</tr>
<tr>
<td>250</td>
<td>2.5</td>
</tr>
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<td>350</td>
<td>3.5</td>
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<td>450</td>
<td>4.5</td>
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<td>550</td>
<td>5.5</td>
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<td>850</td>
<td>8.5</td>
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<td>1500</td>
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<td>2000</td>
<td>20</td>
</tr>
<tr>
<td>3500</td>
<td>30</td>
</tr>
<tr>
<td>4000</td>
<td>40</td>
</tr>
</tbody>
</table>

#### Boxer Pumps - Loss of Flow Capacity on the Suction Height

The power effectively absorbed by the compressor is about 70% of the value indicated in the table.

We recommend using a compressor with a tank.

**Attention** when operating with an OPEN OUTLET, the actual flow rate is much higher than the ratio between number of cycles measured and displacement, due to the quantity of movement.
The EQUAFLUX dampers are used with fluids with a high apparent viscosity, also with large suspended solids. They adapt automatically to the system conditions, without any manual adjustments or calibrations. The high capacity of minimising pulsations, vibrations and water hammer renders this component ideal for protecting the system, providing a regular outlet flow.

The EQUAFLUX is operated by the same compressed air that drives the pump. The compressed air, introduced in the counter-pressure chamber (behind the diaphragm), creates a self-adjusting pneumatic damping cushion based on the pressure exerted by the pump.

| Product designed and constructed in Italy |
| Operates with non-lubricated air |
| High performance and strength |
| Suitable for minimising pulsating flows |
| Suitable for minimising vibrations during the operation of the pump |

**EQUAFLUX DAMPERS CODES ENCODING**

<table>
<thead>
<tr>
<th>EQ100</th>
<th>PC</th>
<th>H</th>
<th>T</th>
<th>C</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAMPEN MODEL</td>
<td>DAMPER CASING</td>
<td>AIR-SIDE DIAPHRAGM</td>
<td>PRODUCT-SIDE DIAPHRAGM</td>
<td>CONDUCT VERSION</td>
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<tr>
<td>EQ 51</td>
<td>Equaflux 51</td>
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<tr>
<td>EQ 00</td>
<td>Equaflux 00</td>
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<tr>
<td>EQ 202</td>
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<tr>
<td>EQ 300</td>
<td>Equaflux 300</td>
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</table>

**Specifications and types**

<table>
<thead>
<tr>
<th>Fitting</th>
<th>Product</th>
<th>Air fitting</th>
<th>Operating pressure</th>
<th>Application</th>
<th>Material*</th>
<th>Weight</th>
<th>Operating time</th>
<th>Dim. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 3/4&quot;</td>
<td>G 3/4&quot;</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Midgobox, Cubic15, Boxer7, Boxer15 Microboxer, Boxer35</td>
<td>Polypropylene</td>
<td>0.5 Kg</td>
<td>from +3°C to +65°C</td>
<td>121x117</td>
</tr>
<tr>
<td>G 3/4&quot;</td>
<td>G 3/4&quot;</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Midgobox, Cubic15, Boxer7, Boxer15 Microboxer, Boxer35</td>
<td>PP + CF</td>
<td>0.5 Kg</td>
<td>from +3°C to +65°C</td>
<td>121x117</td>
</tr>
<tr>
<td>G 3/4&quot;</td>
<td>G 3/4&quot;</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Cubic15, Boxer7, Boxer15 Microboxer, Boxer35</td>
<td>PVDF</td>
<td>0.5 Kg</td>
<td>from +3°C to +95°C</td>
<td>121x117</td>
</tr>
<tr>
<td>G 3/4&quot;</td>
<td>G 3/4&quot;</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer7, Boxer15 Microboxer, Boxer35</td>
<td>PPS</td>
<td>0.6 Kg</td>
<td>from +3°C to +95°C</td>
<td>133x117</td>
</tr>
<tr>
<td>G 1/2&quot;</td>
<td>G 1/2&quot;</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer7, Boxer15 Microboxer, Boxer35</td>
<td>AISI 316 L steel</td>
<td>1.33 Kg</td>
<td>from +3°C to +95°C</td>
<td>133x117</td>
</tr>
</tbody>
</table>

**AIR SIDE HALF-CASING MATERIAL**

- PP
- PP+CF
- ALUMINIUM

**DIAPHRAGM MATERIALS**

- NBR
- EPDM
- Hytrel
- Santoprene
- PTFE

**CAPS MATERIALS**

- Polypropylene (with glass additive)
- Conductive polypropylene (with carbon additive)
- PP
- PPS
- PVDF
- Natural ECTFE
- AISI 316 L

---

*Material on request: • UHMWPE • POMc • DUPLEX/S.DUPLEX

**Three-phase asynchronous asynchronous motor fitted as standard (2 poles) 50Hz

**Available only for IM 80/90 pumps
## EQUAFLUX 100

### Specifications and types

<table>
<thead>
<tr>
<th>Fitting Product</th>
<th>Air fitting</th>
<th>Operating pressure</th>
<th>Application</th>
<th>Material* (half-casing in contact with the fluid)</th>
<th>Weight</th>
<th>Operating time</th>
<th>Dim. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1”</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer51, Boxer81</td>
<td>Polypropylene</td>
<td>1.5 Kg</td>
<td>from +3°C to +45°C</td>
<td>177x170</td>
</tr>
<tr>
<td>Ø 1”</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer51, Boxer81</td>
<td>PP+CF</td>
<td>1.5 Kg</td>
<td>from +3°C to +45°C</td>
<td>177x170</td>
</tr>
<tr>
<td>Ø 1”</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer51, Boxer81</td>
<td>PVDF</td>
<td>1.7 Kg</td>
<td>from +3°C to +95°C</td>
<td>177x170</td>
</tr>
<tr>
<td>Ø 1”</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer51, Boxer81</td>
<td>PPS</td>
<td>1.7 Kg</td>
<td>from +3°C to +95°C</td>
<td>177x170</td>
</tr>
<tr>
<td>Ø 1”</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Miniboser, Boxer81</td>
<td>Electropolished AISI 316 steel</td>
<td>2.56 Kg</td>
<td>from +3°C to +95°C</td>
<td>183.2x151</td>
</tr>
</tbody>
</table>

*Material on request: • UHMWPE • POMc • DUPLEX/S.DUPLEX

**Air Side Half-Casing Material**
- PP
- PP+CF

**Diaphragm Materials**
- NBR
- EPDM
- Hypalon
- ECTFE

**Caps Materials**
- Polypropylene (with glass additive)
- Conductive polypropylene (with carbon additive)
- PP+CF
- PPS
- Natural ECTFE
- AISI 316 L

## EQUAFLUX 200

### Specifications and types

<table>
<thead>
<tr>
<th>Fitting Product</th>
<th>Air fitting</th>
<th>Operating pressure</th>
<th>Application</th>
<th>Material* (half-casing in contact with the fluid)</th>
<th>Weight</th>
<th>Operating time</th>
<th>Dim. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1”/2</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer100, Boxer150, Boxer251</td>
<td>POMc</td>
<td>3.8 Kg</td>
<td>from +3°C to +60°C</td>
<td>283.2x254</td>
</tr>
<tr>
<td>Ø 1”/2</td>
<td>Ø 6 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer100, Boxer150, Boxer251</td>
<td>PVDF</td>
<td>4.5 Kg</td>
<td>from +3°C to +95°C</td>
<td>283.2x254</td>
</tr>
</tbody>
</table>

*Material on request: • UHMWPE • POMc • DUPLEX/S.DUPLEX

**Air Side Half-Casing Material**
- PP
- PP+CF

**Diaphragm Materials**
- NBR
- EPDM
- Hypalon
- ECTFE

**Caps Materials**
- Polypropylene (with glass additive)
- Conductive polypropylene (with carbon additive)
- PP+CF
- PPS
- Natural ECTFE
- AISI 316 L
- Alumina
EQUAFLUX 302

Specifications and types

STANDARD: II 3G Ex h IIB T4 Gc, II 3D Ex h IIIIB T135°C Dc (zone 2)
CONDUCT: II 2G Ex h Iib T4 Gb, II 2D Ex h IIIB T135°C Db (zone 1)

<table>
<thead>
<tr>
<th>Fitting Product</th>
<th>Air fitting</th>
<th>Operating pressure</th>
<th>Application</th>
<th>Material* (half-casing in contact with the fluid)</th>
<th>Weight</th>
<th>Operating time</th>
<th>Dim. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 2”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer522</td>
<td>Polypropylene</td>
<td>23 Kg</td>
<td>from +3°C to +65°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 2”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>PP + CF</td>
<td>23 Kg</td>
<td></td>
<td>from +3°C to +65°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 2”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>PVDF</td>
<td>28.5 Kg</td>
<td></td>
<td>from +3°C to +95°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 2”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>ALU</td>
<td>26 Kg</td>
<td></td>
<td>from +3°C to +95°C</td>
<td>356x352</td>
</tr>
<tr>
<td>G 2”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer502</td>
<td>Electropolished AISI 316 steel</td>
<td>32 Kg</td>
<td>from +3°C to +95°C</td>
<td>356x352</td>
</tr>
</tbody>
</table>

*Material on request: • DUPLEX/S.DUPLEX

AIR SIDE HALF-CASING MATERIAL
• Central boxer 502/503 (PP)

DIAPHRAGM MATERIALS
• NBR
• EPDM
• Butyl
• Hypalon
• PVDF

CAPS MATERIALS
• Polypropylene (with glass additive)
• Conductive polypropylene (with carbon additive)
• PVDF
• Aluminium
• AISI 316 L

AIR SIDE HALF-CASING MATERIAL
• Central boxer 502/503 (PP)

DIAPHRAGM MATERIALS
• NBR
• EPDM
• Butyl
• Hypalon
• PVDF

CAPS MATERIALS
• Polypropylene (with glass additive)
• Conductive polypropylene (with carbon additive)
• PVDF
• AISI 316 L
• Alumunium

EQUAFLUX 303

Specifications and types

STANDARD: II 3G Ex h IIB T4 Gc, II 3D Ex h IIIIB T135°C Dc (zone 2)
CONDUCT: II 2G Ex h Iib T4 Gb, II 2D Ex h IIIB T135°C Db (zone 1)

<table>
<thead>
<tr>
<th>Fitting Product</th>
<th>Air fitting</th>
<th>Operating pressure</th>
<th>Application</th>
<th>Material* (half-casing in contact with the fluid)</th>
<th>Weight</th>
<th>Operating time</th>
<th>Dim. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 3”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>Boxer503</td>
<td>Polypropylene</td>
<td>23 Kg</td>
<td>from +3°C to +65°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 3”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>PP + CF</td>
<td>23 Kg</td>
<td></td>
<td>from +3°C to +65°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 3”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>PVDF</td>
<td>28.5 Kg</td>
<td></td>
<td>from +3°C to +95°C</td>
<td>398x516</td>
</tr>
<tr>
<td>G 3”</td>
<td>Ø 8 mm</td>
<td>Min 2 Bar - Max 8 Bar</td>
<td>ALU</td>
<td>29 Kg</td>
<td></td>
<td>from +3°C to +95°C</td>
<td>356x352</td>
</tr>
</tbody>
</table>

*Material on request: • DUPLEX/S.DUPLEX

AIR SIDE HALF-CASING MATERIAL
• Central boxer 502/503 (PP)

DIAPHRAGM MATERIALS
• NBR
• EPDM
• Butyl
• Hypalon
• PVDF

CAPS MATERIALS
• Polypropylene (with glass additive)
• Conductive polypropylene (with carbon additive)
• PVDF
• AISI 316 L
• Alumunium
Debem’s magnetic drive centrifugal pumps are the ideal solution for numerous applications: laboratory machines, medical equipment, photographic developing machines, X-ray processes, silver recovery systems, graphics industry, heat exchangers, aquariums, water treatment, filtering systems, galvanic and chemical industry and the transfer of acids and corrosive fluids.

The pumps are driven by a pair of magnets: the outer magnet is positioned on the motor shaft and transmits the motion to the inner magnet integrated with the hermetically sealed impeller. The pump impeller is not physically fixed to the motor shaft, thereby eliminating the need for seals and consequently any leaks of the liquid being pumped due to wear. The pumping unit is constructed with a low number of components, rendering maintenance extremely easy. The materials used as standard are polypropylene (PP) and polyvinylidene fluoride (PVDF).

The DM pumps must be installed exclusively with the axis horizontal under head. Suitable devices must be included to avoid the dry-operation and the formation of vortices and the possible suction of air.

The DM pumps must operate exclusively with the PUMP FLOODED.

- Product designed and constructed in Italy
- Constructed in polypropylene or PVDF
- Under head use
- Extremely easy to maintain
- Suitable for continuous use

### MAIN APPLICATION SECTORS

- Automotive
- Chemical Industries
- Service and Cleaning Industry
- Water and Wastewater Treatment

**Components**

- Shaft: Alumina ceramic 99.7%
- Impeller thrust bearing: PTFE + 30% Graphite
- Bushing: PTFE + 30% Graphite
- O-Ring: Viton®/EPDM
- Impeller: PP/PVDF+CF
- Pump casing: PP/PVDF+CF
- Head thrust bearing: Alumina ceramic 99.7%
Specifications and types

**DM 06**

**Suction fittings**: Ø 81 mm (Standard)
- Ø 70 mm
- Ø 65 mm

**Delivery fittings**: Ø 98 mm (Standard)
- Ø 85 mm
- Ø 70 mm

**Max flow rate**
- 7 m³/h

**Max head**
- 8.5 m

**Viscosity up to**
- 150 cps

**Operating temperature**: from +3°C to +65°C, 2 Kg

**Electric motors available on request**

<table>
<thead>
<tr>
<th>Motor</th>
<th>kW</th>
<th>RPM</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-phase</td>
<td>0.25 HP 0.35</td>
<td>2900</td>
<td>0.35</td>
</tr>
<tr>
<td>Single-phase</td>
<td>0.37 HP 0.5</td>
<td>2900</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Operating temperature and weights**

<table>
<thead>
<tr>
<th>Material</th>
<th>Temperature</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP</td>
<td>+3°C to +65°C</td>
<td>2 Kg</td>
</tr>
<tr>
<td>PVDF</td>
<td>+3°C to +95°C</td>
<td>2.5 Kg</td>
</tr>
</tbody>
</table>

**DM 10**

**Suction fittings**: Ø 1”/2”- size DN 40 - NPT

**Delivery fittings**: Ø 1”- size DN 25 - NPT

**Max flow rate**
- 13 m³/h

**Max head**
- 14 m

**Viscosity up to**
- 150 cps

**Operating temperature**: from +3°C to +65°C, 2 Kg

**Electric motors available on request**

<table>
<thead>
<tr>
<th>Motor</th>
<th>kW</th>
<th>RPM</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-phase</td>
<td>0.37 HP 0.5</td>
<td>2900</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Operating temperature and weights**

<table>
<thead>
<tr>
<th>Material</th>
<th>Temperature</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP</td>
<td>+3°C to +65°C</td>
<td>2 Kg</td>
</tr>
<tr>
<td>PVDF</td>
<td>+3°C to +95°C</td>
<td>2.5 Kg</td>
</tr>
</tbody>
</table>

*Only pump available, with American flange, for coupling with NEMA motor - the motor is not available in our standard*
**DM 15**

### Specifications and types

**Suction fittings**

G 1”1/2 f or DN 40 - NPT

**Delivery fittings**

G 1”1/2 m or DN 32 - NPT

**Max flow rate**

23.5 m³/h

**Max head**

20 m

**Viscosity up to**

150 cps

---

**Suction fittings**

G 2” f or DN 50 - NPT

**Delivery fittings**

G 1”1/2 m or DN 40 - NPT

**Max flow rate**

35 m³/h

**Max head**

8.5 m

**Viscosity up to**

150 cps

---

**Operating temperature and weights:**

- **PP** from +3°C to +65°C, 4.5 Kg
- **PVDF** from +3°C to +95°C, 5.2 Kg

---

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

**IMPELLER**

- Ø 123 mm (standard)
- Ø 108 mm
- Ø 90 mm

**Kw 1.5 HP 2**

- Casing B3+B5 RPM 2900
- Three-phase 230/400 V - 50/60 HZ
- 2 Polias IE3 Protection IP55
- Ambient temperature -30°C + 45°C

**Kw 2.2 HP 3**

- Casing B3+B5 RPM 2900
- Three-phase 230/400 V - 50/60 HZ
- 2 Polias IE3 Protection IP55
- Ambient temperature -30°C + 45°C

---

**Electric motors available on request:**

- **SINGLE-PHASE**
  - NEMA 145TC
  - (Only pump available, with American flange, for coupling with NEMA motor - the motor is not available in our standard)

---

**DM 30**

### Specifications and types

**Suction fittings**

G 1”1/2 f or DN 40 - NPT

**Delivery fittings**

G 1”1/2 m or DN 32 - NPT

**Max flow rate**

35 m³/h

**Max head**

8.5 m

**Viscosity up to**

150 cps

---

**Operating temperature and weights:**

- **PP** from +3°C to +65°C, 8 Kg
- **PVDF** from +3°C to +95°C, 7 Kg

---

**Electric motors available on request:**

- **SINGLE-PHASE**
  - NEMA 145TC / I B4IC*

---

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

**IMPELLER**

- Ø 134 mm (standard)
- Ø 122 mm
- Ø 110 mm

**Kw 1.5 HP 2**

- Casing B3+B5 RPM 2900
- Three-phase 230/400 V - 50/60 HZ
- 2 Polias IE3 Protection IP55
- Ambient temperature -30°C + 45°C

**Kw 2.2 HP 3**

- Casing B3+B5 RPM 2900
- Three-phase 230/400 V - 50/60 HZ
- 2 Polias IE3 Protection IP55
- Ambient temperature -30°C + 45°C

---

**Operating temperature and weights:**

- **PP** from +3°C to +65°C, 6 Kg
- **PVDF** from +3°C to +95°C, 7 Kg

---

* (Only pump available, with American flange, for coupling with NEMA motor - the motor is not available in our standard)
KM 70

Specifications and types

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction fittings</td>
<td>G 3” f or DN 80 - NPT on request</td>
</tr>
<tr>
<td>Delivery fittings</td>
<td>G 2”1/2 m or DN 65 - NPT on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>65 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>29 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>150 cps</td>
</tr>
</tbody>
</table>

Standard electric motor:

**Kw 4 HP 5.5**
- Casing B3-B5 RPM 2900
- Three-phase 230/400 V - 50/60 Hz
- ATEX available on request

**Kw 5.5 HP 7.5**
- Casing B3-B5 RPM 2900
- Three-phase 400/690 V - 50/60 Hz
- ATEX available on request

**Kw 7.5 HP 10**
- Casing B3-B5 RPM 2900
- Three-phase 400/690 V - 50/60 Hz
- ATEX available on request

Operating temperature and weights:

- **PP**
  - from +3°C to +65°C, 33 Kg
- **PVDF**
  - from +3°C to +95°C, 34,5 Kg

### Flow rate (m³/h)

- Ø 145 mm (Standard)
- Ø 139 mm
- Ø 129 mm
- Ø 119 mm

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and dry based on the composition materials and 50 Hz two-pole motor (2900 rpm).
**HORIZONTAL CENTRIFUGAL PUMPS**

**Product designed and constructed in Italy**

**Constructed in polypropylene or PVDF**

**Under head use**

**Weld-free**

**Usable with fluids containing suspended solids**

**Extremely easy to maintain**

**Suitable for continuous use**

**Available with:**
- Mechanical bellows seal (new generation "Self-locking" system)
- Aisi 304 spring - Seal ring in SILICON CARBIDE + CERAMIC / SILICON CARBIDE + SILICON CARBIDE
- Lip seal: VITON® or EPDM

The horizontal centrifugal pumps with a resin casing, are driven by a direct drive electric motor (max 3000 RPM) to transfer and/or empty liquids quickly, with flow rates from 6 to 75 m³/hour.

Their unique open impeller design allows them to pump even very dirty fluids with an apparent viscosity up to 500 cps (at 20°C) and small-sized suspended solids.

They are available in two version with different internal mechanical seal, based on their use, TL (lip seal) and TS (bellows seal).

They are driven by the impeller that, integrated with the shaft and the electric motor (direct drive), is rotated creating, due to centrifugal effect, a suction on the central duct and a delivery on the peripheral duct.

**Specifications and types**

- **Suction fittings**: 0 1/2" f or DN 40
- **Delivery fittings**: 0 1” m or DN 25
- **Max flow rate**: 6 m³/h
- **Max head**: 7.5 m
- **Viscosity up to**: 500 cps
- **Standard open impeller**: Ø 85 mm H 9 mm *
- **Passing solids**: Ø max 5 mm

* Special versions are available on request for the fluid pumped

**Line introduction**

**MB**

**MB 80**

**Flow rate (m³/h)**

<table>
<thead>
<tr>
<th>Flow rate (m³/h)</th>
<th>Head (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
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<tr>
<td>5</td>
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</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

* The weights refer to the pump without the motor

**Pump casing construction material, operating temperature and net weight**

- **Polypropylene (with glass additive)**: 1.7 Kg*
  - Max 3°C min.
  - 65°C max
- **PVDF (with carbon additive)**: 2.2 Kg*
  - Max 3°C min.
  - 95°C max

* The weights refer to the pump without the motor

**Standard electric motor**

- **HP**: 0.37
- **Box**: B3 + B14
- **RPM**: 2900

**Three-phase 230/400 V 50/60 Hz**

- **2 poles**
- **IE1 efficiency class**
- **IP55 protection rating**
- **Ambient temperature**: -30°C ÷ +40°C
- **Aluminium/Cast iron**

**SINGLE-PHASE**

- **on request**

**ATEX**

- **on request**

**MB PUMPS CODES ENCODING**

<table>
<thead>
<tr>
<th>MB80</th>
<th>P</th>
<th>TLY</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB 80</td>
<td>Polypropylene</td>
<td>TLV</td>
<td>N**</td>
</tr>
<tr>
<td>MB 80-PP</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MB 80-P</td>
<td>Polypropylene FC</td>
<td>TLD</td>
<td>N**</td>
</tr>
<tr>
<td>MB 80-PVDF</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MB 80-TLV</td>
<td>Viton® lip seal</td>
<td>TSV</td>
<td>N**</td>
</tr>
<tr>
<td>MB 80-TLS</td>
<td>Viton® bellows seal</td>
<td>TSD</td>
<td>N**</td>
</tr>
</tbody>
</table>

**MB 80 PP, Viton® lip seal, three-phase motor.**

**Pump casing construction material, operating temperature and net weight**

- **Polypropylene (with glass additive)**: 1.7 Kg*
  - Max 3°C min.
  - 65°C max
- **PVDF (with carbon additive)**: 2.2 Kg*
  - Max 3°C min.
  - 95°C max

* The weights refer to the pump without the motor

**Main application sectors**

- **AUTOMOTIVE**
- **CHEMICAL INDUSTRY**
- **INDUSTRY WATER AND SLUDGE TREATMENT**
- **SUPERMERCATO ELECTRONIC INDUSTRY**

**Standard electric motor**

- **HP**: 0.37
- **Box**: B3 + B14
- **RPM**: 2900

**Three-phase 230/400 V 50/60 Hz**

- **2 poles**
- **IE1 efficiency class**
- **IP55 protection rating**
- **Ambient temperature**: -30°C ÷ +40°C
- **Aluminium/Cast iron**

**SINGLE-PHASE**

- **on request**

**ATEX**

- **on request**

**MB 80 PP, Viton® lip seal, three-phase motor.**

**Pump casing construction material, operating temperature and net weight**

- **Polypropylene (with glass additive)**: 1.7 Kg*
  - Max 3°C min.
  - 65°C max
- **PVDF (with carbon additive)**: 2.2 Kg*
  - Max 3°C min.
  - 95°C max

* The weights refer to the pump without the motor

**Main application sectors**

- **AUTOMOTIVE**
- **CHEMICAL INDUSTRY**
- **INDUSTRY WATER AND SLUDGE TREATMENT**
- **SUPERMERCATO ELECTRONIC INDUSTRY**

**Standard electric motor**

- **HP**: 0.37
- **Box**: B3 + B14
- **RPM**: 2900

**Three-phase 230/400 V 50/60 Hz**

- **2 poles**
- **IE1 efficiency class**
- **IP55 protection rating**
- **Ambient temperature**: -30°C ÷ +40°C
- **Aluminium/Cast iron**

**SINGLE-PHASE**

- **on request**

**ATEX**

- **on request**
MB 100

**Specifications and types**

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>G 1”1/2 f or DN 40</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery fittings</strong></td>
<td>G 1” m or DN 25</td>
</tr>
<tr>
<td><strong>Max flow rate</strong></td>
<td>9 m³/h</td>
</tr>
<tr>
<td><strong>Max head</strong></td>
<td>10.5 m</td>
</tr>
<tr>
<td><strong>Viscosity up to</strong></td>
<td>500 cps</td>
</tr>
<tr>
<td><strong>Standard open impeller</strong></td>
<td>Ø 97 mm H 12 mm *</td>
</tr>
<tr>
<td><strong>Passing solids</strong></td>
<td>Ø max 7 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped

**Pump casing construction material, operating temperature and net weight**

<table>
<thead>
<tr>
<th>Material</th>
<th>Net weight</th>
<th>Operating temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene (with glass additive)</td>
<td>1.7 Kg *</td>
<td>Max 3°C min. 65°C max</td>
</tr>
<tr>
<td>PVDF (with carbon additive)</td>
<td>2.2 Kg *</td>
<td>Max 3°C min. 95°C max</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor.

**Electric motor**

<table>
<thead>
<tr>
<th>Kw</th>
<th>HP</th>
<th>Box</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.75</td>
<td>B3 + B14</td>
<td>2900</td>
</tr>
</tbody>
</table>

**Main application sectors**

- Galvanic and electronic industry
- Water and sludge treatment
- Chemical industry
- Automotive

![Graph](image1)

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

MB 110

**Specifications and types**

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>Ø 2” m or DN 50</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery fittings</strong></td>
<td>Ø 1”1/2 m or DN 40</td>
</tr>
<tr>
<td><strong>Max flow rate</strong></td>
<td>20 m³/h</td>
</tr>
<tr>
<td><strong>Max head</strong></td>
<td>15 m</td>
</tr>
<tr>
<td><strong>Viscosity up to</strong></td>
<td>500 cps</td>
</tr>
<tr>
<td><strong>Standard open impeller</strong></td>
<td>Ø 130 mm H 4 mm *</td>
</tr>
<tr>
<td><strong>Passing solids</strong></td>
<td>Ø max 2 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped

**Pump casing construction material, operating temperature and net weight**

<table>
<thead>
<tr>
<th>Material</th>
<th>Net weight</th>
<th>Operating temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene (with glass additive)</td>
<td>3.6 Kg *</td>
<td>Max 3°C min. 65°C max</td>
</tr>
<tr>
<td>PVDF (with carbon additive)</td>
<td>4.3 Kg *</td>
<td>Max 3°C min. 95°C max</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor.

**Electric motor**

<table>
<thead>
<tr>
<th>Kw</th>
<th>HP</th>
<th>Box</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.5</td>
<td>B3 + B14</td>
<td>2900</td>
</tr>
</tbody>
</table>

**Main application sectors**

- Galvanic and electronic industry
- Water and sludge treatment
- Chemical industry
- Automotive

![Graph](image2)

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).
**MB 120**

**Specifications and types**

- **Suction fittings**: G 2" m or DN 50
- **Delivery fittings**: G 1 1/2" m or DN 40
- **Max flow rate**: 25 m³/h
- **Max head**: 15 m
- **Viscosity up to**: 500 cps
- **Standard open impeller**: Ø 120 mm H 8 mm *
- **Passing solids**: Ø max 6 mm

* Special versions are available on request for the fluid pumped

---

**MB 130**

**Specifications and types**

- **Suction fittings**: G 2" m or DN 50
- **Delivery fittings**: G 1 1/2" m or DN 40
- **Max flow rate**: 30 m³/h
- **Max head**: 20 m
- **Viscosity up to**: 500 cps
- **Standard open impeller**: Ø 130 mm H 8 mm *
- **Passing solids**: Ø max 6 mm

* Special versions are available on request for the fluid pumped

---

**Pump casing construction material, operating temperature and net weight**

<table>
<thead>
<tr>
<th>Material</th>
<th>Net Weight (Kg)</th>
<th>Temp Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene (with glass additive)</td>
<td>3.8 Kg*</td>
<td>3°C min - 65°C max</td>
</tr>
<tr>
<td>PVDF (with carbon additive)</td>
<td>4.9 Kg*</td>
<td>3°C min - 95°C max</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor

**Main application sectors**

- Automation
- Chemical industry
- Water and sewage treatment
- traction
- Textile
- Electronics industry
- Aerospace

---

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).
**MB 140**

**Specifications and types**

- **Suction fittings:** G 2” m or DN 50
- **Delivery fittings:** G 1”1/2 m or DN 40
- **Max flow rate:** 40 m³/h
- **Max head:** 21 m
- **Viscosity up to:** 500 cps
- **Standard open impeller:** Ø 130 mm H 14 mm *
- **Passing solids:** Ø max 2 mm

* Special versions are available on request for the fluid pumped

**Pump casing construction material, operating temperature and net weight**

<table>
<thead>
<tr>
<th>Material</th>
<th>Net weight (Kg)</th>
<th>Operating temperature limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene (with glass additive)</td>
<td>4 Kg *</td>
<td>Max 3°C min., 65°C max</td>
</tr>
<tr>
<td>PVDF (with carbon additive)</td>
<td>5 Kg *</td>
<td>Max 3°C min., 95°C max</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor.

**Standard electric motor:**

- **Power:** 3 HP
- **Box:** B3 + B14
- **RPM:** 2900
- **THREE-PHASE 230/400 V**
- **50/60 Hz**
- **2 poles**
- **IE3 efficiency class**
- **IP55 protection rating**
- **Ambient temperature:** -30°C + 45°C
- **Aluminium/Cast iron**
- **SINGLE-PHASE** on request
- **ATEX** on request

**MAIN APPLICATION SECTORS**

- **AUTOMATION**
- **CHEMICAL INDUSTRY**
- **WATER AND SLUDGE TREATMENT**
- **GALVANIC AND ELECTRONIC INDUSTRY**

**MB 150**

**Specifications and types**

- **Suction fittings:** G 2”1/2 m or DN 65
- **Delivery fittings:** G 2” m or DN 50
- **Max flow rate:** 42 m³/h
- **Max head:** 24 m
- **Viscosity up to:** 500 cps
- **Standard open impeller:** Ø 160 mm H 5.5 mm -10° *
- **Passing solids:** Ø max 2 mm

* Special versions are available on request for the fluid pumped

**Pump casing construction material, operating temperature and net weight**

<table>
<thead>
<tr>
<th>Material</th>
<th>Net weight (Kg)</th>
<th>Operating temperature limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene (with glass additive)</td>
<td>8 Kg *</td>
<td>Max 3°C min., 65°C max</td>
</tr>
<tr>
<td>PVDF (with carbon additive)</td>
<td>11 Kg *</td>
<td>Max 3°C min., 95°C max</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor.

**Standard electric motor:**

- **Power:** 4 HP
- **Box:** B3 + B5
- **RPM:** 2900
- **THREE-PHASE 230/400 V**
- **50/60 Hz**
- **2 poles**
- **IE3 efficiency class**
- **IP55 protection rating**
- **Ambient temperature:** -30°C + 45°C
- **Aluminium/Cast iron**
- **SINGLE-PHASE** on request
- **ATEX** on request

**MAIN APPLICATION SECTORS**

- **AUTOMATION**
- **CHEMICAL INDUSTRY**
- **WATER AND SLUDGE TREATMENT**
- **GALVANIC AND ELECTRONIC INDUSTRY**

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).
**Specifications and types**

**Suction fittings**
0.2” 1/2” or DN 65

**Delivery fittings**
0.2” m or DN 50

**Max flow rate**
50 m³/h

**Max head**
27 m

**Viscosity up to**
300 cps

**Standard open impeller**
Ø 162 mm H 4 mm -10° *

**Passing solids**
Ø max 3 mm

---

**Suction fittings**
0.2” 1/2” or DN 65

**Delivery fittings**
0.2” m or DN 50

**Max flow rate**
55 m³/h

**Max head**
32 m

**Viscosity up to**
300 cps

**Standard open impeller**
Ø 162 mm H 11 mm -10° *

**Passing solids**
Ø max 9 mm

---

* Special versions are available on request for the fluid pumped

---

**Pump casing construction material, operating temperature and net weight**

**Polypropylene (with glass additive)**
9.5 Kg**
Max 3°C min.
65°C max

**PVDF (with carbon additive)**
12.4 Kg**
Max 3°C min.
95°C max

---

**Main application sectors**

**Chemical Industry**

**Water and Sludge Treatment**

**GALVANIC AND ELECTRONIC INDUSTRY**

---

* The weights refer to the pump without the motor.

---

**Standard electric motor:**

<table>
<thead>
<tr>
<th>kW</th>
<th>HP</th>
<th>Box</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>7.5</td>
<td>B3 + B5</td>
<td>2900</td>
</tr>
</tbody>
</table>

**THREE-PHASE 400/690 V**

**90/60 Hz**

2 poles

IE3 efficiency class

IP55 protection rating

Ambient temperature -30°C to +45°C

Aluminum/Cast iron

ATEX on request

---

**Main application sectors**

**Chemical Industry**

**Water and Sludge Treatment**

**GALVANIC AND ELECTRONIC INDUSTRY**

---

**Standard electric motor:**

<table>
<thead>
<tr>
<th>kW</th>
<th>HP</th>
<th>Box</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>10</td>
<td>B3 + B5</td>
<td>2900</td>
</tr>
</tbody>
</table>

**THREE-PHASE 400/690 V**

**90/60 Hz**

2 poles

IE3 efficiency class

IP55 protection rating

Ambient temperature -30°C to +45°C

Aluminum/Cast iron

ATEX on request

---

* The weights refer to the pump without the motor.
**MB 180**

**Specifications and types**

- **Suction fittings**: G 2" 1/2" or DN 65
- **Delivery fittings**: G 2" m or DN 50
- **Max flow rate**: 75 m³/h
- **Max head**: 38 m
- **Viscosity up to**: 500 cps
- **Standard open impeller**: Ø 176 mm H 15 mm -10 °*
- **Passing solids**: Ø max 9 mm

* Special versions are available on request for the fluid pumped.

---

**Pump Motor power**

<table>
<thead>
<tr>
<th>Pump</th>
<th>Motor power</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB 80</td>
<td>0.37 Kw - 0.5 HP</td>
</tr>
<tr>
<td>MB 100</td>
<td>0.55 Kw - 0.75 HP</td>
</tr>
<tr>
<td>MB 110</td>
<td>1.1 Kw - 1.5 HP</td>
</tr>
<tr>
<td>MB 120</td>
<td>1.5 Kw - 2 HP</td>
</tr>
<tr>
<td>MB 130</td>
<td>2.2 Kw - 3 HP</td>
</tr>
<tr>
<td>MB 140</td>
<td>3 Kw - 4.5 HP</td>
</tr>
<tr>
<td>MB 150</td>
<td>4 Kw - 5.5 HP</td>
</tr>
<tr>
<td>MB 155</td>
<td>5.5 Kw - 7.5 HP</td>
</tr>
<tr>
<td>MB 160</td>
<td>7.5 Kw - 10 HP</td>
</tr>
<tr>
<td>MB 180</td>
<td>11 Kw - 15 HP</td>
</tr>
</tbody>
</table>

---

**Pump casing construction material, operating temperature and net weight**

- **Polypropylene (with glass additive)**
  - 9.9 Kg*
  - Max 3°C min.
  - 65°C max
- **PVDF (with carbon additive)**
  - 12.2 Kg*
  - Max 3°C min.
  - 95°C max

*The weights refer to the pump without the motor.

---

**Standard electric motor**

- **Kw**: 11
- **HP**: 15
- **Box**: B3 + B5
- **RPM**: 2900
- **THREE-PHASE 400/690 V 50/60 Hz**
- **2 poles**
- **IE3 efficiency class**
- **IP55 protection rating**
- **Ambient temperature -30°C + 45°C**
- **Aluminium/Cast iron**
- **ATEX** on request

---

**MAIN APPLICATION SECTORS**

- Chemical industry
- Water and sludge treatment
- Electronic industry

---

**Flow rate (m³/h)**

**Head (m)**

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

---

*TL = lip seal*

*TP = bellows seal*
**IM Vertical Centrifugal Pumps**

The IM series vertical centrifugal pumps with a resin casing, are high performance pumps for fixed installations with the pump immersed directly in the tank. They are driven by a direct drive electric motor (max 3000 RPM) to quickly empty the fluid, with flow rates from 6 to 170 m³/hour and head up to 40 m.

The unique construction shape of this type of pump, as well as not using internal mechanical seals (subject to considerable wear), guarantees the collection in the tank of any accidental spillages of fluid. The open impeller design allows them to pump (in continuous flow) even very dirty fluids with an apparent viscosity up to 500 cps (at 20°C) and small-sized suspended solids. The vast range of construction materials available for the pump allows us to select the best chemical compatibility with the fluid and/or the environment, without neglecting the correct temperature range.

They are driven by the impeller that, integrated with the shaft and the electric motor (direct drive), is rotated at a set speed creating, due to centrifugal effect, a suction on the central duct and a delivery on the peripheral duct.

- Product designed and constructed in Italy
- Constructed in polypropylene or PVDF
- Normalised electric motor
- Support lantern and connection between pump and motor with a flexible coupling
- Usable with fluids containing suspended solids
- Suitable for continuous use

**IM Pumps Codes Encoding**

ex.IM140P-V-0800-N

IM140 PP, O-Ring Viton®, altezza colonna 800 mm, motore trifase
IM 90

Specifications and types

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>Delivery fittings</th>
<th>Max flow rate</th>
<th>Max head</th>
<th>Viscosity up to</th>
<th>Standard open impeller</th>
<th>Passing solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 2” m or DN 50 on request</td>
<td>G 1”1/2 m or DN 40 on request</td>
<td>13 m³/h</td>
<td>10.5 m</td>
<td>500 cps</td>
<td>Ø 97 mm H 12 mm *</td>
<td>Ø max 10 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped

Max flow rate: 13 m³/h
Max head: 10.5 m
Viscosity up to: 500 cps
Standard open impeller: Ø 97 mm H 12 mm *
Passing solids: Ø max 10 mm

Standard electric motor:
- Kw: 0.75
- HP: 1
- RPM: 2900
- THREE-PHASE 230/400 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature -30°C + 45°C

Column length: PP* weight-PVDF* weight
- 250: 6.5 Kg - 7 Kg
- 500: 7.5 Kg - 8 Kg
- 800: 10.5 Kg - 11 Kg

* The weights refer to the pump without the motor
** Special version

Operating temperature:
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

Operating temperature:
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).

IM 95

Specifications and types

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>Delivery fittings</th>
<th>Max flow rate</th>
<th>Max head</th>
<th>Viscosity up to</th>
<th>Standard open impeller</th>
<th>Passing solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 2” m or DN 50 on request</td>
<td>G 1”1/2 m or DN 40 on request</td>
<td>13 m³/h</td>
<td>12 m</td>
<td>500 cps</td>
<td>Ø 100 mm H 7 mm *</td>
<td>Ø max 6 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped

Max flow rate: 13 m³/h
Max head: 12 m
Viscosity up to: 500 cps
Standard open impeller: Ø 100 mm H 7 mm *
Passing solids: Ø max 6 mm

Standard electric motor:
- Kw: 0.75
- HP: 1
- RPM: 2900
- THREE-PHASE 230/400 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature -30°C + 45°C

Column length: PP* weight-PVDF* weight
- 500: 15 Kg - 16 Kg
- 800: 19 Kg - 20 Kg
- 1000: 22 Kg - 23 Kg
- 1250: 24 Kg - 25 Kg
- 1400**: 16 Kg - 17 Kg

* The weights refer to the pump without the motor
** Special version

Operating temperature:
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

Operating temperature:
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).
Specifications and types

**IM 110**

**Suction fittings**: G 2” m or DN 50 on request
**Delivery fittings**: G 1”1/2 m or DN 40 on request
**Max flow rate**: 20 m³/h
**Max head**: 15 m
**Viscosity up to**: 500 cps
**Standard open impeller**: Ø 120 mm H 8 mm *
**Passing solids**: Ø max 6 mm

* Special versions are available on request for the fluid pumped

**Standard electric motor**:
- **Kw**
- **HP**
- **Box**
- **RPM**

**IM 120**

**Suction fittings**: G 2” m or DN 50 on request
**Delivery fittings**: G 1”1/2 m or DN 40 on request
**Max flow rate**: 25 m³/h
**Max head**: 15.5 m
**Viscosity up to**: 500 cps
**Standard open impeller**: Ø 125 mm H 8 mm *
**Passing solids**: Ø max 6 mm

* Special versions are available on request for the fluid pumped

**Standard electric motor**:
- **Kw**
- **HP**
- **Box**
- **RPM**

Operating temperature:
- **PP**: from +3°C to +65°C
- **PVDF**: from +3°C to +95°C

**MAIN APPLICATION SECTORS**

- Chemical Industry
- Water and Sludge Treatment
- Galvanic and Electronic Industry
- Petroleum Industry
**IM 130**

**Specifications and types**

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>0.2” m or DN 50 on request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery fittings</td>
<td>0.1”1/2” m or DN 40 on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>30 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>20 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>500 cps</td>
</tr>
<tr>
<td>Standard open impeller</td>
<td>Ø 130 mm H 8 mm *</td>
</tr>
<tr>
<td>Passing solids</td>
<td>Ø max 4 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped.

**IM 140**

**Specifications and types**

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>0.2” m or DN 50 on request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery fittings</td>
<td>0.1”1/2” m or DN 40 on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>40 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>21 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>500 cps</td>
</tr>
<tr>
<td>Standard open impeller</td>
<td>Ø 130 mm H 14 mm *</td>
</tr>
<tr>
<td>Passing solids</td>
<td>Ø max 12 mm</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped.

---

**Operating temperature:**

- **PP**: from +3°C to +65°C
- **PVDF**: from +3°C to +95°C

---

**Column length**

<table>
<thead>
<tr>
<th>PP* weight</th>
<th>PVDF* weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>15 Kg, 16 Kg</td>
</tr>
<tr>
<td>800</td>
<td>19 Kg, 20 Kg</td>
</tr>
<tr>
<td>1000</td>
<td>22 Kg, 23 Kg</td>
</tr>
<tr>
<td>1250</td>
<td>24 Kg, 25 Kg</td>
</tr>
<tr>
<td>1400**</td>
<td>27 Kg, 28 Kg</td>
</tr>
</tbody>
</table>

* The weights refer to the pump without the motor.
** Special version.

---

**Main application sectors**

- Chemical Industry
- Water and Sludge Treatment
- Galvanic and Electronic Industry
- Gold Processing Industry
- Others

---

**Standard electric motor:**

- THREE-PHASE 230/400 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature: -30°C + 45°C
- Aluminum/Cast iron

---

**Main application sectors**

- Chemical Industry
- Water and Sludge Treatment
- Galvanic and Electronic Industry
- Gold Processing Industry
- Others

---

**The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).**

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**The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).**
**IM 150**

### Specifications and types

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>Delivery fittings</th>
<th>Max flow rate</th>
<th>Max head</th>
<th>Viscosity up to</th>
<th>Standard open impeller</th>
<th>Passing solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>0” 1/2” or DN 65 on request</td>
<td>0” or DN 50 on request</td>
<td>42 m³/h</td>
<td>24 m</td>
<td>500 cps</td>
<td>Ø 160 mm H 4 mm -10° **</td>
<td>Ø max 2 mm</td>
</tr>
</tbody>
</table>

**Standard electric motor:**
- Kw: 4
- HP: 5.5
- Box: B5
- RPM: 2900
- THREE-PHASE 230/400 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature: -30°C + 45°C
- Aluminium/Cast iron on request
- ATEX

**Column length**
- 500: 28 Kg
- 800: 31 Kg
- 1000: 33 Kg
- 1250: 36 Kg
- 1400**: 38 Kg

*The weights refer to the pump without the motor
**Special version

**Operating temperature:**
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

---

**IM 155**

### Specifications and types

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>Delivery fittings</th>
<th>Max flow rate</th>
<th>Max head</th>
<th>Viscosity up to</th>
<th>Standard open impeller</th>
<th>Passing solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>0” 1/2” or DN 65 on request</td>
<td>0” or DN 50 on request</td>
<td>42 m³/h</td>
<td>27 m</td>
<td>500 cps</td>
<td>Ø 162 mm H 4 mm -10° **</td>
<td>Ø max 2 mm</td>
</tr>
</tbody>
</table>

**Standard electric motor:**
- Kw: 5.5
- HP: 7.5
- Box: B5
- RPM: 2900
- THREE-PHASE 400/690 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature: -30°C + 45°C
- Aluminium/Cast iron on request
- ATEX

**Column length**
- 500: 28 Kg
- 800: 31 Kg
- 1000: 33 Kg
- 1250: 36 Kg
- 1400**: 38 Kg

*The weights refer to the pump without the motor
**Special version

**Operating temperature:**
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

---

**Main Application Sectors**

- Chemical industry
- Water and Sludge treatment
- Galvanic and Electronic industry
**IM 160**

**Specifications and types**

<table>
<thead>
<tr>
<th>Feature</th>
<th>IM 160 Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction fittings</td>
<td>G 2”1/2 or DN 65 on request</td>
</tr>
<tr>
<td>Delivery fittings</td>
<td>G 2” m or DN 50 on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>75 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>38 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>500 cps</td>
</tr>
<tr>
<td>Standard open impeller</td>
<td>Ø 162 mm H 11 mm -10° *</td>
</tr>
<tr>
<td>Passing solids</td>
<td>Ø max 9 mm</td>
</tr>
</tbody>
</table>

* Special versions are available as request for the fluid pumped

**Operating temperature:**
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

**Standard electric motor:**
- Kw: 160 W
- Hp: 11 W
- Box: B5
- RPM: 2900
- THREE-PHASE 400/690 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature: -30°C to +45°C
- Aluminium/Cast iron
- ATEX

**Column length**
- 500: 31 Kg
- 800: 34 Kg
- 1000: 36 Kg
- 1250: 39 Kg
- 1400**: 41 Kg

**Notes:**
- * The weights refer to the pump without the motor
- ** Special version

---

**IM 180**

**Specifications and types**

<table>
<thead>
<tr>
<th>Feature</th>
<th>IM 180 Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction fittings</td>
<td>G 2”1/2 or DN 65 on request</td>
</tr>
<tr>
<td>Delivery fittings</td>
<td>G 2” m or DN 50 on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>75 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>38 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>500 cps</td>
</tr>
<tr>
<td>Standard open impeller</td>
<td>Ø 176 mm H 13 mm -10° *</td>
</tr>
<tr>
<td>Passing solids</td>
<td>Ø max 11 mm</td>
</tr>
</tbody>
</table>

* Special versions are available as request for the fluid pumped

**Operating temperature:**
- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

**Standard electric motor:**
- Kw: 180 W
- Hp: 15 W
- Box: B5
- RPM: 2900
- THREE-PHASE 400/690 V
- 50/60 Hz
- 2 poles
- IE3 efficiency class
- IP55 protection rating
- Ambient temperature: -30°C to +45°C
- Aluminium/Cast iron
- ATEX

**Column length**
- 500: 31 Kg
- 800: 34 Kg
- 1000: 36 Kg
- 1250: 39 Kg
- 1400**: 41 Kg

**Notes:**
- * The weights refer to the pump without the motor
- ** Special version
**Specifications and types**

<table>
<thead>
<tr>
<th>Suction fittings</th>
<th>0.3”1/2” f or DN 90 on request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery fittings</td>
<td>0.3” m or DN 80 on request</td>
</tr>
<tr>
<td>Max flow rate</td>
<td>170 m³/h</td>
</tr>
<tr>
<td>Max head</td>
<td>41 m</td>
</tr>
<tr>
<td>Viscosity up to</td>
<td>500 cps</td>
</tr>
<tr>
<td>Standard open impeller</td>
<td>ø 175 mm H 18.4 mm *</td>
</tr>
<tr>
<td>Passing solids</td>
<td>ø max 15 mm</td>
</tr>
<tr>
<td>Available column length</td>
<td>800 / 1000 / 1250</td>
</tr>
</tbody>
</table>

* Special versions are available on request for the fluid pumped

**Standard electric motor:**

<table>
<thead>
<tr>
<th>kW</th>
<th>HP</th>
<th>Box</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.5</td>
<td>25</td>
<td>B5</td>
<td>2900</td>
</tr>
</tbody>
</table>

Three-phase 400/690 V, 50/60 Hz, 2 poles, IE3 efficiency class, IP55 protection rating.

**Ambient temperature:**

-30°C to +45°C

**Aluminium/Cast iron** on request

**ATEX** from +3°C to +65°C

**Operating temperature:**

- PP: from +3°C to +65°C
- PVDF: from +3°C to +95°C

**MAX FLOW RATE:**

170 m³/h

**MAX HEAD:**

41 m

**Viscosity up to:**

500 cps

**Passing solids:**

ø max 15 mm

**Available column length:**

800 / 1000 / 1250

**Specifications and types**

- Electric motor: IM 80, 0.37 Kw - 0.5 HP
- Electric motor: IM 90, 0.55 Kw - 0.75 HP
- Electric motor: IM 95, 0.75 Kw - 1 HP
- Electric motor: IM 110, 1.1 Kw - 1.5 HP
- Electric motor: IM 120, 1.5 Kw - 2 HP
- Electric motor: IM 130, 2.2 Kw - 3 HP
- Electric motor: IM 140, 3 Kw - 4 HP
- Electric motor: IM 150, 4 Kw - 5.5 HP
- Electric motor: IM 155, 5.5 Kw - 7.5 HP
- Electric motor: IM 160, 7.5 Kw - 10 HP
- Electric motor: IM 180, 11 Kw - 15 HP
- Electric motor: IM 200, 18.5 Kw - 25 HP

**Main application sectors:**

- Chemical Industry
- Water and sludge treatment
- Surface and electronic industry

**Pump Motor power**

<table>
<thead>
<tr>
<th>Pump</th>
<th>Motor power</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM 80</td>
<td>0.37 Kw - 0.5 HP</td>
</tr>
<tr>
<td>IM 90</td>
<td>0.55 Kw - 0.75 HP</td>
</tr>
<tr>
<td>IM 95</td>
<td>0.75 Kw - 1 HP</td>
</tr>
<tr>
<td>IM 110</td>
<td>1.1 Kw - 1.5 HP</td>
</tr>
<tr>
<td>IM 120</td>
<td>1.5 Kw - 2 HP</td>
</tr>
<tr>
<td>IM 130</td>
<td>2.2 Kw - 3 HP</td>
</tr>
<tr>
<td>IM 140</td>
<td>3 Kw - 4 HP</td>
</tr>
<tr>
<td>IM 150</td>
<td>4 Kw - 5.5 HP</td>
</tr>
<tr>
<td>IM 155</td>
<td>5.5 Kw - 7.5 HP</td>
</tr>
<tr>
<td>IM 160</td>
<td>7.5 Kw - 10 HP</td>
</tr>
<tr>
<td>IM 180</td>
<td>11 Kw - 15 HP</td>
</tr>
<tr>
<td>IM 200</td>
<td>18.5 Kw - 25 HP</td>
</tr>
</tbody>
</table>

**Flow rate (m³/h)**

0 20 40 60 80 100 120 140 160 180

**Head (m):**

10 20 30 40 50 60 70 80 90 100

The curves and the performances refer to pumps with immersed suction and open delivery outlet, with water at 20°C and vary based on the composition materials and 50 Hz two-pole motor (2900 rpm).
The drum transfer pumps consist of a dip tube, at the end of which the open impeller is fitted. It is secured to the drive shaft, connected to the electric or pneumatic motor with a coupling joint. The pump is enclosed in a casing, or pump body, connected to the motor by a shaft. The drive shaft is connected to the impeller with a coupling joint.

The drum transfer pumps are designed and constructed in Italy and with the pump immersed in the fluid. Dry-running or the presence of air bubbles could damage the shaft guide internal bushing. These portable drum transfer pumps are ideally suited for pumping corrosive fluids and work by being immersed in the liquid. Their construction shape has been designed to collect any product spillages in the drum.

**Product designed and constructed in Italy**
- **Portable**
- **Suitable for corrosive fluids**
- **Possibility of adjusting the flow rate (in the version with pneumatic motor)**
- **No mechanical seals**
- **Easy to disassemble**
- **Viscosity up to 900 cps**
- **Max flow rate 90 l/minute**

**TR PUMPS CODES ENCODING**

<table>
<thead>
<tr>
<th>TR</th>
<th>P</th>
<th>H</th>
<th>1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUMP MODEL</td>
<td>MATERIAL</td>
<td>SHAFT</td>
<td>LENGTH</td>
</tr>
<tr>
<td>TR - Drum transfer</td>
<td>Polypropylene</td>
<td>Hastelloy shaft</td>
<td>1200 mm</td>
</tr>
</tbody>
</table>

**Line introduction**

**TR - Polypropylene casing**

<table>
<thead>
<tr>
<th>Dip tube</th>
<th>Ø 42 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose holder</td>
<td>Ø 25 mm</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>65° C</td>
</tr>
<tr>
<td>Total weight in Kg</td>
<td>1.4 for length of 900 mm / 1.7 for length of 1200 mm</td>
</tr>
<tr>
<td>Material Dip tube</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Material Shaft</td>
<td>Hastelloy or AISI 316</td>
</tr>
<tr>
<td>Material Impeller</td>
<td>ECTFE</td>
</tr>
<tr>
<td>Material Suction outlet</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Material Seal gasket in contact with the fluid - MIM</td>
<td>Viton®</td>
</tr>
<tr>
<td>Length mm</td>
<td>900 or 1200</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>from 3°C to 65°C</td>
</tr>
</tbody>
</table>

**TR - PVDF casing**

<table>
<thead>
<tr>
<th>Dip tube</th>
<th>Ø 40 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose holder</td>
<td>Ø 25 mm</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>95° C</td>
</tr>
<tr>
<td>Total weight in Kg</td>
<td>1.6 for length of 900 mm / 1.9 for length of 1200 mm</td>
</tr>
<tr>
<td>Material Dip tube</td>
<td>PVDF</td>
</tr>
<tr>
<td>Material Shaft</td>
<td>Hastelloy</td>
</tr>
<tr>
<td>Material Impeller</td>
<td>ECTFE</td>
</tr>
<tr>
<td>Material Suction outlet</td>
<td>ECTFE</td>
</tr>
<tr>
<td>Material Seal gasket in contact with the fluid - MIM</td>
<td>Viton®</td>
</tr>
<tr>
<td>Length mm</td>
<td>900 or 1200</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>from 3°C to 95°C</td>
</tr>
</tbody>
</table>

**TRA - AISI 316 casing**

<table>
<thead>
<tr>
<th>Dip tube</th>
<th>Ø 42.5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose holder</td>
<td>Ø 25 mm</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>95° C</td>
</tr>
<tr>
<td>Total weight in Kg</td>
<td>4.3 for length of 900 mm / 5.3 for length of 1200 mm</td>
</tr>
<tr>
<td>Material Dip tube</td>
<td>AISI 316 steel</td>
</tr>
<tr>
<td>Material Shaft</td>
<td>AISI 316 steel</td>
</tr>
<tr>
<td>Material Impeller</td>
<td>ECTFE</td>
</tr>
<tr>
<td>Material Suction outlet</td>
<td>ECTFE</td>
</tr>
<tr>
<td>Material Seal gasket in contact with the fluid - MIM</td>
<td>Viton®</td>
</tr>
<tr>
<td>Length mm</td>
<td>900 or 1200</td>
</tr>
<tr>
<td>Max Operating temp.</td>
<td>from 3°C to 95°C</td>
</tr>
</tbody>
</table>
**TR - Drum transfer pumps**

**TR-EL SERIES - Electric motor**
Drum transfer pumps with 800 Watt electric motor and open impeller that allows the continuous pumping of clean corrosive fluids with apparent viscosity up to 900 cps. The pump is fitted with a safety switch to prevent any accidental restarts after a drop in the power supply.

**Electric motors technical specifications**
- **Power**: 800 Watt
- **Voltage**: 230 V single-phase
- **IP54** protection rating
- **Class**: F
- **Flow rate**: 90 l/minute
- **Viscosity**: 900 cps
- **Density**: 1.6 g/cm³
- **Weight in Kg**: 3.8
- **ATEX motor**: on request

(NB: The electric cable is supplied without socket)
Contact the sales office for information on the ATEX motor

**TR-PM SERIES - Pneumatic motor**
Drum transfer pumps with pneumatic motor and open impeller that allows the continuous pumping of clean corrosive fluids with apparent viscosity up to 600 cps. The pump allows the flow rate adjustment.

**Pneumatic motors technical specifications**
- **Pneumatic motor**: Standard
- **Power**: 0.42 HP (300 Watt)
- **Flow rate**: 70 l/minute
- **Viscosity**: 600 cps
- **Density**: 1.2 g/cm³
- **Weight in Kg**: 1.1
- **ATEX motor**: on request

Contact the sales office for information on the ATEX motor
Debem offers a wide range of accessories for all the types of pumps in its catalogue. Accessories from other manufacturers or designed and built directly by the company, which are the result of our technical experience and specific research in pump applications.

**DUST PUMPS**

The special DUST KIT lets you transform a normal BOXER double diaphragm pump (normally used to pump fluids), into a pump that can aspirate various types of dust.

**PRESSURE BOOSTER**

In certain applications the pump has to push the product with a higher pressure than the operating pressure (which normally in a system does not exceed 6-7 bar). For these situations we have designed pressure boosters with different compression ratios, according to their use. The component uses the same compressed air that feeds the pump as driving fluid.

**FOOT VALVES**

Check valves are designed to be installed vertically at the end of the suction pipes of centrifugal and pneumatic pumps. They function as check valves that prevent the suction hose from emptying so that the pumps remain always primed. Sizes available: 1", 1" ¼, 1" ½, 2", 3". Construction material: PP and PVDF.

**REINFORCEMENT RINGS**

Steel rings press-fitted on the manifolds of the PP and PVDF pumps prevent them from breaking or being damaged when connecting the pump to the circuit.

**TRUCK FOR BOXER PUMPS**

Equipment used to move the pump. The pump is blocked with the fixing holes.

**BATCH CONTROLLER**

Mechanical batch controller with 5-digit display and start/stop button. Pneumatically driven it doesn’t require any electrical connection. Designed to control Debem’s air-operated double diaphragm pumps.

**CYCLE COUNTER**

Device that is installed on the pneumatic circuit of diaphragm pumps. It measures the number of strokes performed by the diaphragms and therefore the number of cycles. This device can be used to activate various types of controls, such as for example, the litres of liquid delivered by the pump, according to its displacement capacity, and to remotely control its operation.

**AIR REGULATION KIT**

The kit is designed to regulate and/or set the pressure of the compressed air. It consists of: compressed air reduction filter, fixing bracket, reducer, pressure gauge, Elaston hose (5 m), tap and fittings.
Debem offers a wide range of accessories for all the types of pumps in its catalogue. Accessories from other manufacturers or designed and built directly by the company, which are the result of our technical experience and specific research in pump applications.

**ACCESSORIES**

**MICROVALVES**

Device that is installed on the pneumatic circuit of diaphragm pumps. It measures the number of strokes performed by the diaphragms and therefore the number of cycles. This device can be used to activate various types of controls, such as for example, the litres of liquid delivered by the pump, according to its displacement capacity, and to remotely control its operation.

**ANTI-VIBRATION FEET KIT**

These help to decrease the vibrations produced by the pump during its operation.

**ELECTRICALLY OR PNEUMATICALLY DRIVEN**

**THREE WAY VALVES**

They are used to remotely switch the pump on or off.

**VALVES, FITTINGS AND PIPES**

Valves and fittings in polypropylene, PVC and stainless steel. High-resistance clamps for spiral hoses. Reinforced hoses made with food-grade PVC with metal reinforcement, designed to be installed on the delivery/suction side of pumps with hose holders and locking clamps. Hose made with polyethylene, a high density material, with a spiral, covered in rubber, to be applied on the delivery/suction side of the pump. Flexible and crushproof the hose is supplied complete with swivel fittings and plate type clamps. High chemical resistance.

**FLANGE KIT**

**QUICK FITTINGS**

Designed for the chemical sector, they provide a high level of resistance and can be used with reinforced hoses. Max operating pressure 13 bar.

**IM FILTER**

Filters the suction fluid. For pumps in the IM series Construction material polypropylene and PVDF.

**DISPENSERS**

Built with Polypropylene, aluminium, stainless steel or PVDF. They include a lever used to control the delivery.

**FLOW METERS**

The flow meters are installed exclusively on drum transfer pumps and are used to measure the pump’s instantaneous flow rate, or the total number of litres delivered. They include a display for the reading. They are built in polypropylene or PVDF.

**DIP TUBE FILTER**

Filters the suction fluid. For TR series drum transfer pumps. Construction material polypropylene and stainless steel.
Thanks to the large total passage surface of the basket, pump protection filters are ideally suited to be installed on the suction side of the pump, to protect them from suspended solids, filaments, algae and foreign bodies, without causing excessive drops in capacity. They can be used in industrial applications such as the chemical industry, water treatment, fish farming, galvanic industry, leather and textile industry, paper industry, graphic industry and many more. Built in PP or PVDF. No metal parts. Basket is easy to inspect and remove. Operating pressure 1 bar. Available with the following fittings: 1" ½ f, 2" f, 2" ½ f, 3" f.

- Product designed and constructed in Italy
- No metal parts
- Basket is easy to inspect and remove
- Built in PP and PVDF
- Operating pressure 1 bar

**MAIN APPLICATION SECTORS**

**BOXER - MB FAMILY**

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**MIXERS and PERISTALTIC PUMPS**

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

The compact submerged mixers are designed for a wide range of applications, regardless of the shape and size of the basin. Uses: water treatment plants, biogas plants, production of liquid feedstuffs, transport vehicles, etc.

- Product designed and constructed in Italy
- Built in PP, PVDF, AISI 316
- Great versatility

**MAIN APPLICATION SECTORS**

**PERISTALTIC PUMPS:**

Peristaltic pumps operate with a ‘flowing pressure’ exerted on a flexible hose with rollers, rotating parallel to an axis, and supported by a rollers holder. These types of pumps are ideal in sectors such as water treatment, chemical industry, food and cosmetics industry, mining, ceramic and building industries and in paper mills.

**MAIN APPLICATION SECTORS**
Visit debem.com to keep in contact with us, discover all the latest news and find out technical details of all our products.

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info@debem.it