

**INDUSTRIAL PUMPS  
SINCE 1982**



WE BEGAN WITH A CLEAR IDEA IN  
OUR MINDS: TO DESIGN  
**INNOVATIVE HIGH-TECH PUMPS**  
WITH COMPONENTS AND MATERIALS  
CAPABLE OF WITHSTANDING **EVEN**  
**THE MOST TESTING AND AGGRESSIVE**  
**CONDITIONS.**



**AND WE DID SO.**

# OVER 30 YEARS EXPERIENCE IN CUSTOMER SATISFACTION

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

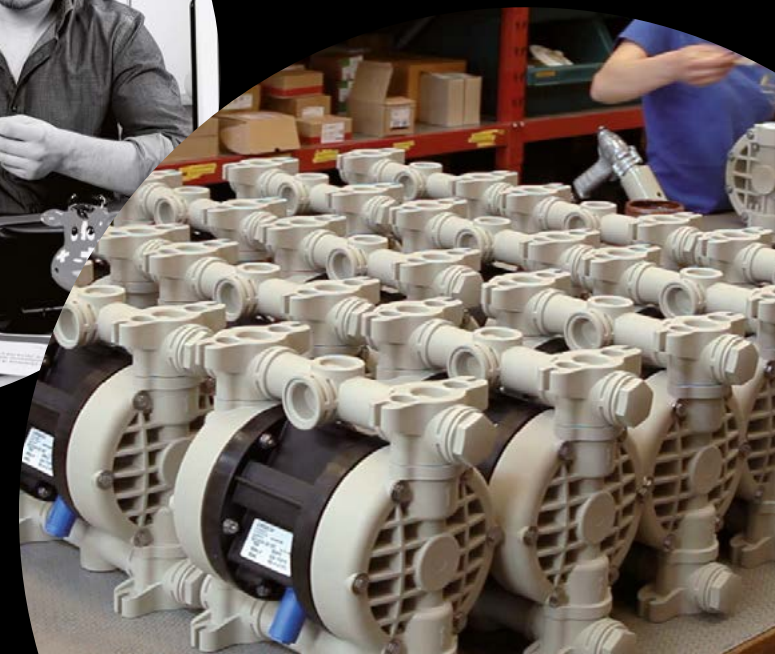
## PHILOSOPHY

A clear idea: design innovative hi-tech pumps using materials and components capable of withstanding the most testing and aggressive conditions, easy to install and highly-efficient for dependable, long-lasting service. This is Debem's vision and this is how we established ourselves as one of the leading players specialising in the manufacture of industrial pumps for highly corrosive and aggressive applications.

## CUSTOMER SERVICE

The entire company philosophy hinges on close cooperation with the end user and customer feedback, thus establishing a highly-effective technological design and development system for products and services that has gained the approval of an increasing number of leading players in various sectors. Debem offers a new range of effective services, supplying customers with technical and sales information that helps to select the right product for every type of use. Customers can phone or e-mail in order to receive advice on technical specifications, pump and system installation and optimisation or the fluid pumping process, or even for advice in making the right choice of product and chemical compatibility.

Debem has been operating in the liquid transfer sector for more than 30 years. A pioneering business specialising in industrial pumps for highly corrosive and aggressive applications. The company has carved a niche for itself in a market where the most distinguished and technologically-advanced competition comes from the leading industrial countries, and it came into being as a result of the insight and desire to expand of its founder and current owner: Marco De Bernardi.



# TECHNOLOGICAL INNOVATION, MODULAR DESIGN, QUALITY AND **A VAST ARRAY**

Our entire range of pumps is exclusively designed, developed and manufactured by our technical staff and we own the patents. Our flagship is a modular pump design that allows custom assembly using components and materials that suit individual customer requirements. We can give information about availability in real time thanks to a computerized system that manages and controls the minimum stock of every component and

preassembled part of all pumps in the catalogue. All our diaphragm pumps are available ready-assembled for immediate delivery. A few minutes are required to configure the pumps for customer specifications. Shipment then follows. Likewise all spares are kept in our warehouse ready for immediate shipment whilst the customer has the option of purchasing individual spares or complete kits.

## ENGINEERING

The BOXER and CUBIC diaphragm pumps, the MB and IM centrifugal pumps, the TR barrel transfer pumps, the EQUAFLUX pulsation dampener are entirely designed and constructed in Italy by Debem who is also the proprietor of their patents. The Debem engineering department, and in particular the research and development department, is continually involved in new projects and product innovation.

The primary objective of customer satisfaction has led to the introduction of modular pump design allowing tailor-made assembly with suitable components and materials for the intended use.



## KNOW-HOW

A management system that controls the minimum stock of every component and preassembled part of all pumps in the catalogue means that, when receiving an order, Debem can give information about product availability in real time with a consequence assembly for delivery. Quality certification procedures specify the tests and inspections to be carried out on each and every pump, therefore no random sampling, either during assembly whilst dry or operation when filled with fluid. The data obtained is used to check compliance with the required parameters.

# OUR PRODUCTS

Debem offers five extensive product ranges designed for specific applications:

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

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

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

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

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



**CUBIC**  
air-operated diaphragm minipumps



**BOXER  
FOODBOXER  
SANIBOXER**  
air-operated double  
diaphragm pumps



**EQUAFLUX**  
automatic pulsation dampeners



**MB - DM**  
horizontal centrifugal pumps



**IM**  
vertical centrifugal pumps



**TR**  
drum transfer pumps



## DIAPHRAGM PUMPS

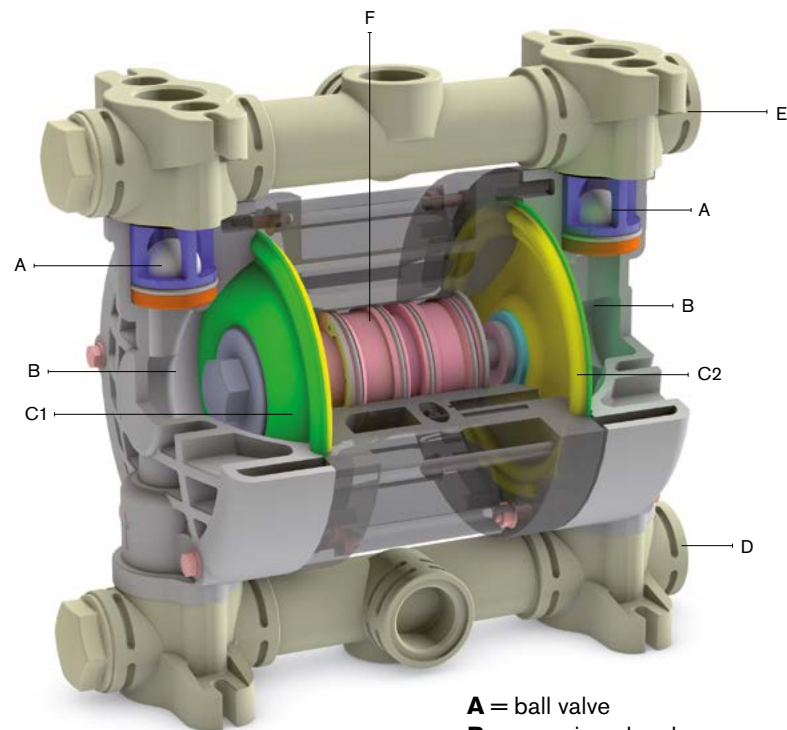
# CUBIC, BOXER

MADE IN ITALY 

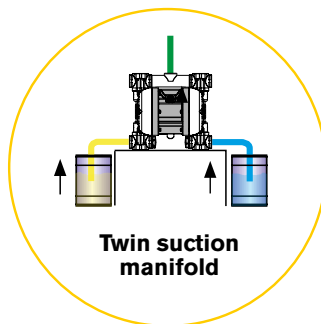
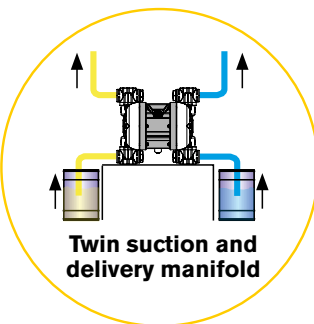
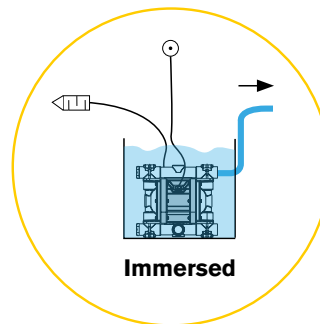
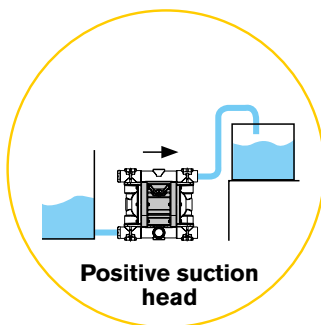
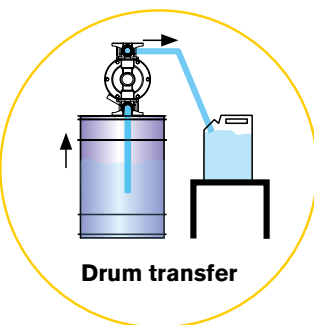
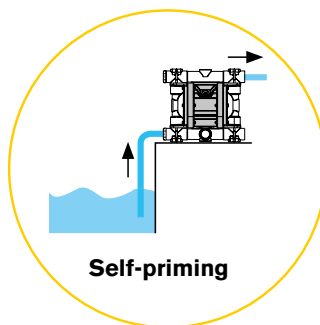
**CUBIC** diaphragm mini pumps and **BOXER** diaphragm pumps are characterized by exceptional performance, power and strength, making them ideal for pumping liquids with high apparent viscosity even if containing suspended solids.

The **stall-prevention** pneumatic system assures a safe pump running and **it does not need lubricated air**.

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



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



### INSTALLATION

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

## MAIN FEATURES

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

### Max. operating temperature:


PP min +3°C/max +65°C

PVDF min +3°C/max +95°C

AISI 316 min +3°C/max +95°C

Alu min +3°C/max +95°C

### BOXER PLASTIC


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

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



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

### BOXER AND FOODBOXER METAL


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

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



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

### CUBIC

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

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



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

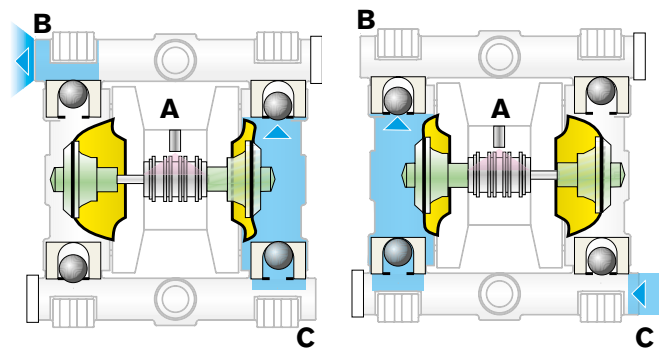
# FOODBOXER

MADE IN ITALY 

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

## HOW IT WORKS


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



## MAIN FEATURES

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

**Max. operating temperature:**  
AISI 316 min +3°C/max +95°C

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

**FDA**  
compliant

**PATENTED PRODUCT**  
- PNEUMATIC EXCHANGER -

# SANIBOXER

MADE IN ITALY 

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

## APPLICATIONS

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

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



**EASY-CLEAN Valve**  
Patent system

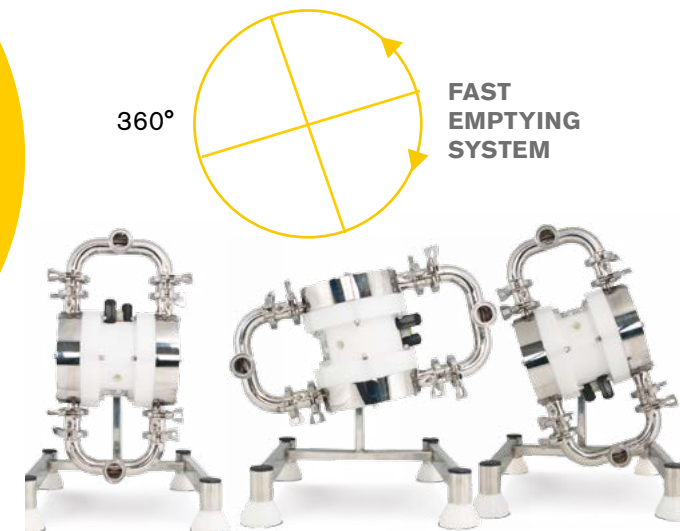


**AISI 316 L**  
Mechanically polished  
**RA < 0,8µm**



360°

**FAST EMPTYING SYSTEM**



**A**  
**3**  
1544

**FDA**  
compliant

## PULSATION DAMPENERS

# EQUAFLUX

MADE IN ITALY 

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

EQUAFLUX dampeners can be used with liquids having high apparent viscosity even if containing suspended solids of considerable size and they automatically adapt to system conditions without the need for manual adjustment or calibration.

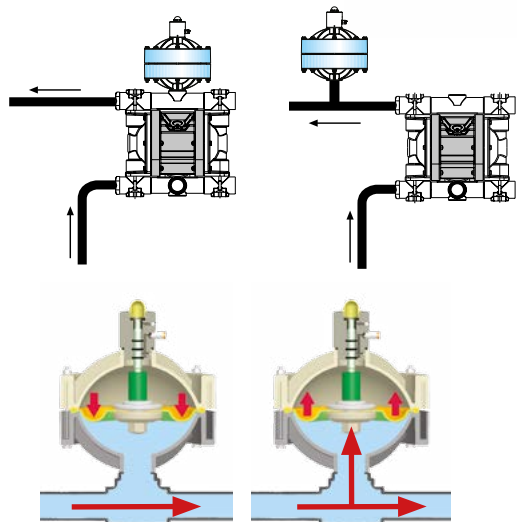
The ability to minimise pulsations, vibrations and water hammer means that this component provides excellent protection and smooth system flow.

The huge choice of construction materials allows selection of optimum chemical compatibility with the fluid and/or environment without neglecting the temperature range. Dampeners are also available for use in potentially explosive atmospheres (ATEX certification).

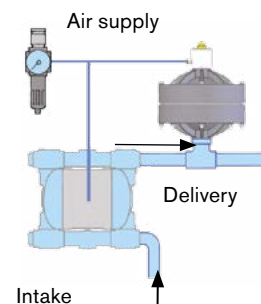


### HOW IT WORKS

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

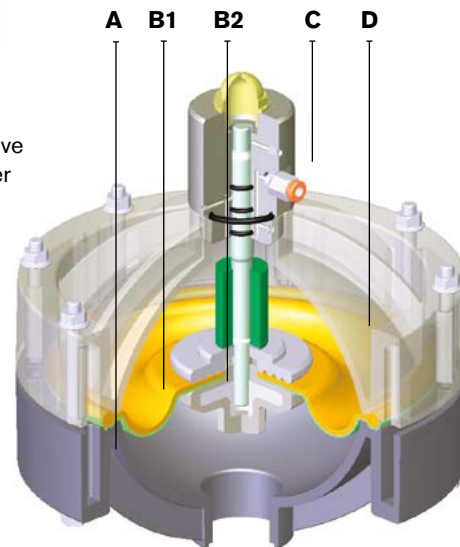


**A** = expansion opening  
**B1** = air-side diaphragm  
**B2** = fluid-side diaphragm  
**C** = automatic pneumatic valve  
**D** = compressed-air chamber



## MAIN FEATURES

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



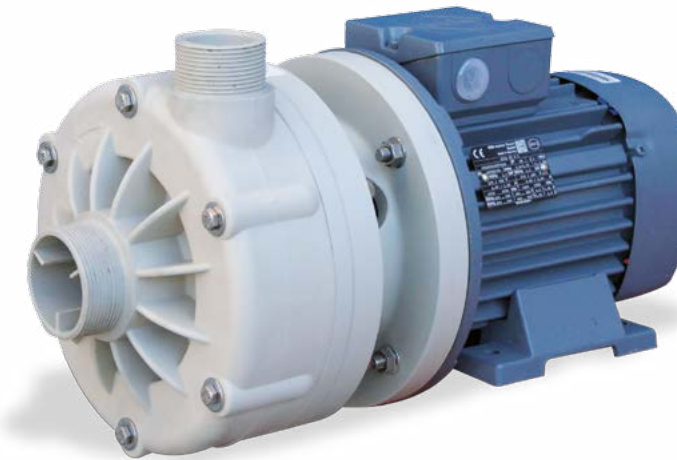
## HORIZONTAL CENTRIFUGAL PUMPS

# MB

MADE IN ITALY 

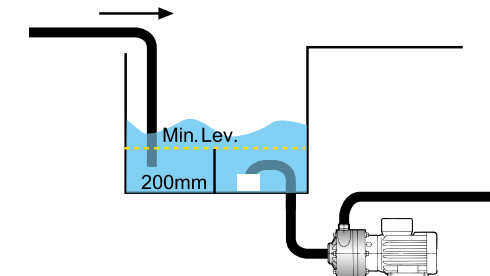
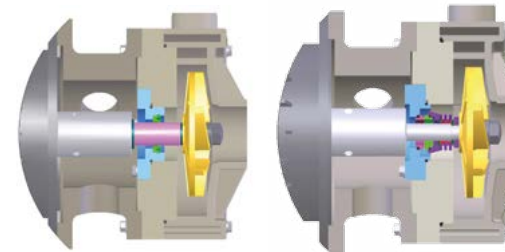
Debem manufactured resin-encased horizontal centrifugal pumps are pumps operated by a direct-drive motor (max 3000 rpm) for fast fluid transfer and/or drainage with flow rates ranging from 6 to 75 m³/h.

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



TL = lip seal

TS = bellow seal

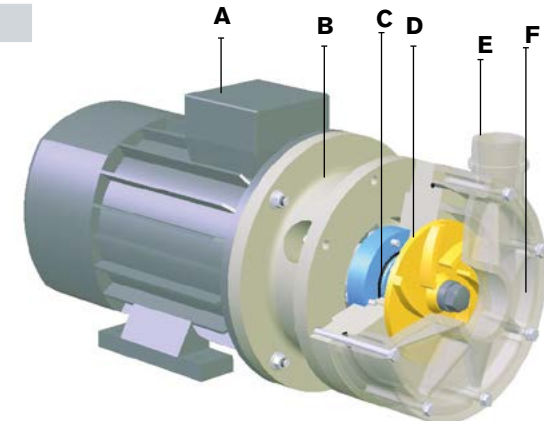


### HOW IT WORKS

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

pump	motor power
MB 80	0.37 Kw - 0.5 HP
MB 100	0.55 Kw - 0.75 HP
MB 110	1.1 Kw - 1.5 HP
MB 120	1.5 Kw - 2 HP
MB 130	2.2 Kw - 3 HP
MB 140	3 Kw - 4 HP
MB 150	4 Kw - 5.5 HP
MB 155	5.5 Kw - 7.5 HP
MB 160	7.5 Kw - 10 HP
MB 180	11 Kw - 15 HP

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



## MAIN FEATURES

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

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



# MAGNETIC DRIVE CENTRIFUGAL PUMPS

# DM

MADE IN ITALY 

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

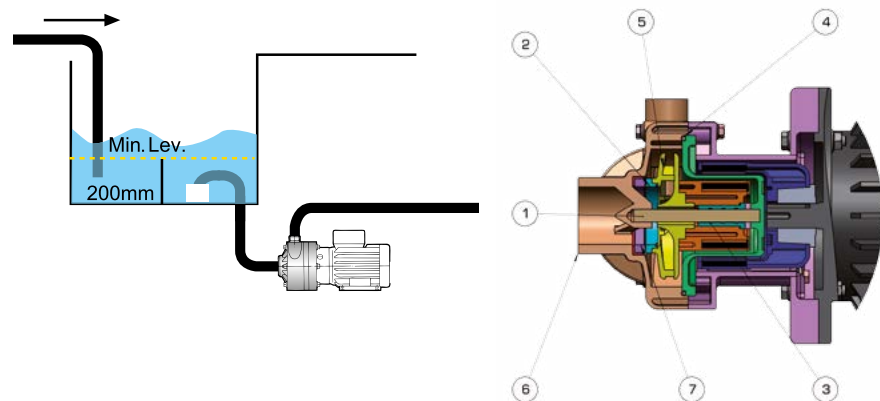
A couple of magnets leads the operation of the pump; the outer magnet placed on the drive shaft transmits the motion to the inner magnet integrated with the impeller that is hermetically insulated. The pump impeller is not physically fixed to the drive shaft, seals are therefore eliminated and this consequently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



## INSTALLATION

DM magnetic drive centrifugal pumps should only be installed with the shaft positioned horizontally in a positive suction head arrangement.

Suitable devices should be fitted to prevent dry running and the formation of a vortex and possible air suction. Horizontal centrifugal pumps should only operate **WHILST FILLED**.



## MAIN FEATURES

- Available in PP, PVDF
- Positive suction head operation
- Weldless
- High flow rates: from 5 to 35 m3/h
- Quick and easy maintenance
- Inexpensive spares
- There is no possibility of fluid leakage
- Head: up to 24 mt
- Viscosity: up to 150 cps
- Motors: standard IEC - IP 55 - F CLASS - 2 POLE  
optional:  
three phase 230/400V 50/60 Hz  
single phase 230V 50/60 Hz
- Max Operating Temperature:  
PP min +3°C/max +65°C  
PVDF min +3°C/max +95°C

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

# VERTICAL CENTRIFUGAL PUMPS

# IM

MADE IN ITALY 

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

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

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

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

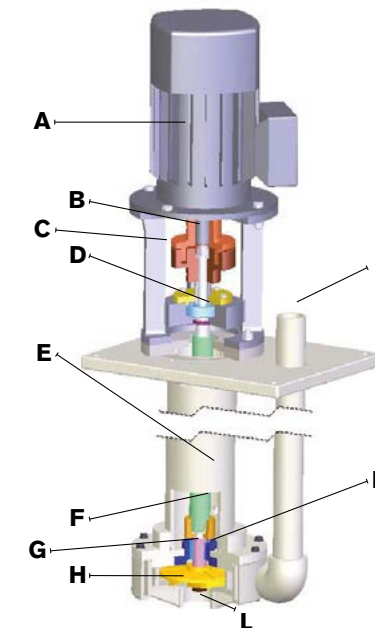
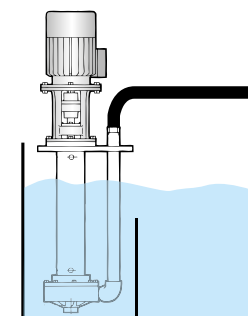


## MAIN FEATURES

- Available in PP, PVDF
- Pump immersed in the tank
- Motor removable even with pump installed
- Weldless
- Usable even with extremely dirty liquids
- High flow rates: from 6 to 75 m3/h
- User-friendly bushing replacement
- Quick and easy maintenance
- Also available without motor
- Head: 7,2 ÷ 38 m
- Viscosity: up to 500 cps
- European voltage motors: IP55 - F Class - 2-pole - 50/60 Hz - three-phase single phase from 0,55 Kw to 2,2 Kw - 50/60 Hz
- Column length (L): 500/800/1000/1250 mm (other sizes available on request)
- Max. operating temperature:  
PP min +3°C/max +65°C  
PVDF min +3°C/max +95°C

## HOW IT WORKS

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



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

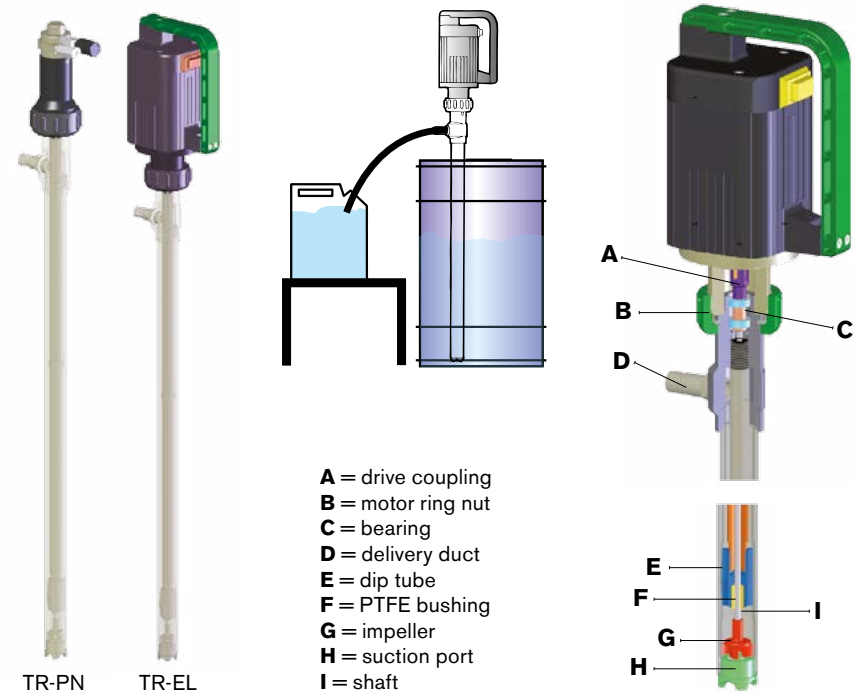
pump	motor power
IM 80	0.37 Kw - 0.5 HP
IM 90	0.55 Kw - 0.75 HP
IM 95	0.75 Kw - 1 HP
IM 110	1.1 Kw - 1.5 HP
IM 120	1.5 Kw - 2 HP
IM 130	2.2 Kw - 3 HP
IM 140	3 Kw - 4 HP
IM 150	4 Kw - 5.5 HP
IM 155	5.5 Kw - 7.5 HP
IM 160	7.5 Kw - 10 HP
IM 180	11 Kw - 15 HP

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



### INSTALLATION

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



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


TR-PN TR-EL

## MAIN FEATURES

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

\* Standard electric motor single-phase 50/60Hz

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

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

### HOW IT WORKS

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

# BASKET STRAINERS

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

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

## MAIN FEATURES

- Available in PP - PVDF
- No metal parts
- Easy to inspect and remove basket
- Operating pressure of 1 bar

