

## APPLICATIONS

FOOD, PROCESSING,  
BEVERAGE, BIOTECH  
AND PHARMACEUTICAL



CHEMICAL AND  
PETROCHEMICAL



PAINTS, RESINS  
INKS AND COATINGS



OIL, GAS AND  
AUTOMOTIVE



SURFACE  
TREATMENT



CERAMIC  
SLIP/GLAZE



SEWAGE  
TREATMENT



DRY POWDER  
HANDLING



MINING AND  
CONSTRUCTION



PAPER  
INDUSTRY



## PUMP FEATURES

- ▶ Compact, solid design - minimum space required
- ▶ Excellent for abrasive and shear-sensitive materials - low internal velocities mean abrasive liquids do not damage the pump and low shear for fragile applications like chemicals
- ▶ Can be used to pump water, viscous liquids with solids and even powders
- ▶ Sealless - no seals or packing to leak
- ▶ Safe in hazardous areas - air driven and non-sparking
- ▶ Can run dry without damage
- ▶ Self-priming to over 8 meters
- ▶ Variable flow - simply regulate the inlet air supply to adjust from zero to maximum flow
- ▶ Pump virtually stalls if discharge is closed and restarts when discharge is opened (no heat build-up or wear)
- ▶ Expensive systems for pressure relief are not required
- ▶ Composite, long life diaphragms (no discs) are smooth and not interrupted by seals
- ▶ Operates without lubrication
- ▶ Fully groundable
- ▶ Easy maintenance
- ▶ Internationally recognised certification



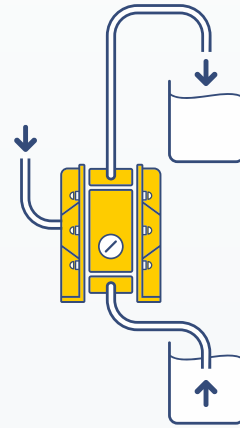
Management  
System  
ISO 9001:2008

www.tuv.com  
ID 9105038609

## HOW TO INSTALL DELLMECO PUMPS

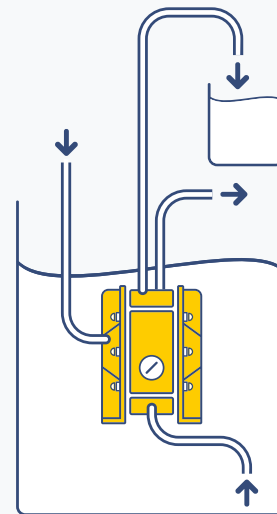
### SELF-PRIMING APPLICATION

The suction lift range is up to 8 meters. This will vary according to construction materials and application parameters. All data are based upon pumping water at 20°C.



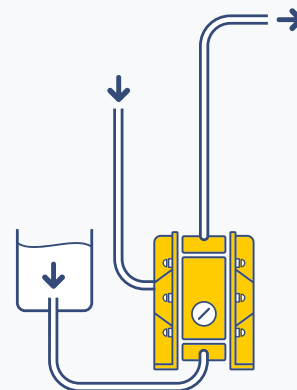
### SUBMERGED OPERATION

Our pumps can operate under full submersion. The construction materials must be suitable for the surrounding liquid and the outlet must be positioned above the liquid level.



### POSITIVE SUCTION HEAD

As a method for completely emptying holding tanks, clarifiers or similar containers. Optimum inlet pressure should be kept at 0.2-0.3 bar.



## PUMP CODE

e.g. DM 15/55 PTS-DM1

<p><b>DM - Dellmeco Pump</b>  <b>15 - Port dimension, DN</b>  <b>55 - Max capacity l/min at 8 bar</b></p>	<p><b>DM 1 - Optional equipment</b></p> <p>BC1 - Barrier Chamber with sensors (Namura)          Bc2 - Barrier Chamber as BC1 with controllers          BC3 - Barrier Chamber as Bc2 + ATEX          DM1 - Diaphragm Monitoring, Namur – ATEX          DM2 - Diaphragm Monitoring with controller          F1 - Flange Connection PN 10 with EPDM O-ring          F2 - Flange Connection PN 10 with NBR O-ring          F3 - Flange Connection PN 10 with FEP/FPM O-ring          F4 - Flange Connection JIS B2220          F7 - Flange Connection DIN 2576 PN10          F8 - Flange Connection ANSI 150 RF-SO          F9 - Flange Connection PN10/16 DIN 2277/2278          NPT - NPT Thread Connection          SC1 - Stroke sensor, ATEX          SC2 - SC1 plus stroke counter          SC3 - SC1 plus stroke counter - ATEX          SC5 - Stroke counting pneumatical with pressure transmitter          SC6 - SC5 plus stroke counter          BF1 - Back flushing system, hand operated, EPDM seals          BF2 - Back flushing system, hand operated, PTFE seals          BF3 - Back flushing system, hand operated, FPM seals          BF4 - Back flushing system, pneumatical, EPDM seals          BF5 - Back flushing system, pneumatical, PTFE seals          AF1, AF2 - Air filter, regulator, valve, nipple, connector          D - Drum pump          HJ - Heating/Cooling Jacket          HP - High Pressure          MV - pump with solenoid valve          P - Powder pump          Ra - Additional polishing to Ra= 0,5 µm (Hygienic series only)          S - Sleeve with split connections          T - Trolley          CLEAN - Class 100 Clean-Room assembly for special pump applications (to meet added purity requirements)</p>
<p><b>P - Housing material:</b></p> <p>A - Aluminium          B - Aluminium coated with PTFE          C - Cast Iron          H - AISI 316L Hygienic          P - PE (Polyethylene)          R - PE conductive          S - AISI 316 Industrial          T - PTFE (Polytetrafluoroethylene)          Z - PTFE conductive</p>	
<p><b>T - Diaphragm material (all conductive):</b></p> <p>E - EPDM          F - TFM/PFA          N - NBR          T - TFM/PTFE</p>	
<p><b>S - Material and type of valve:</b></p> <p>C - Ceramic, ball valve          E - EPDM, ball valve          F - PTFE, cylinder valve          N - NBR, ball valve          P - PE, cylinder valve          S - AISI 316, ball valve          T - PTFE, ball valve          U - Polyurethane, ball valve</p>	

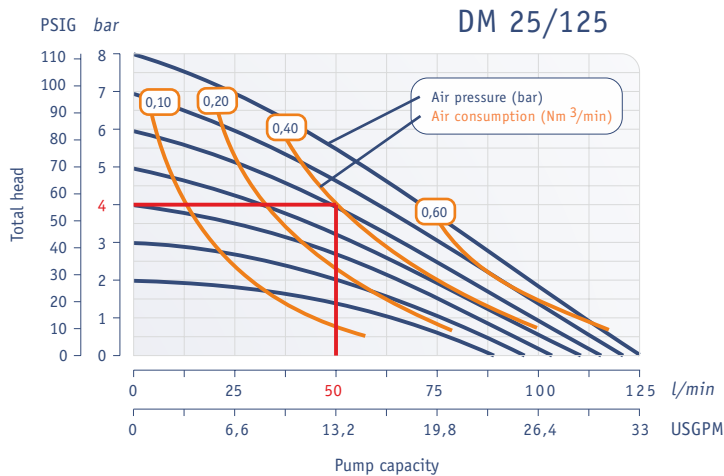
## MATERIALS PROFILE

DIAPHRAGMS	OPERATING TEMPERATURES MIN    MAX	WETTED PARTS
<p>NBR General purpose, shows good solvent, oil, water, and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and ketone (MEK), ozone, chlorinated hydrocarbons or nitro-hydrocarbons</p>	-30°C    +90°C	<p>PE (polyethylene) is very tough and resistant to wear, its water absorption capacity is low and it displays good general resistance to chemicals. Only such strong oxidants such as nitric acid, oleum and halogens can damage PE.</p>
<p>EPDM Shows very good water and chemical resistance. However, poor resistance to oil and solvents and medium resistance to ketones and alcohols.</p>	-40°C    +120°C	<p>PE competes with PP (polypropylene) and both are used in manufacturing pumps. They are thermally and chemically similar. However, the mechanical properties are different. Trials show that the abrasive resistance of PE is 7 times higher than that of PP and even 1.6 times higher than that of steel. It is also more resistant than, for example, cast iron or aluminum. This high resistance to abrasion plays a vital role in many applications (e.g. pickling baths in the electroplating industry, printing inks, lime slurry for wet desulphurisation, ceramics and glazing).</p>
<p>Virgin PTFE. Chemically inert, virtually impervious. Very few chemicals are known to react with PTFE e.g. molten alkali metals, gaseous fluorine and some fluoro-chemicals readily liberate free fluorine at elevated temperatures.</p>	-37°C    +120°C	<p>PTFE (polytetrafluoroethylene) is a thermoplastic polymer. It has a smooth surface, very low friction coefficient and can be used over a wide range of temperatures. It also displays virtually universal resistance to chemicals. However, pure PTFE has a low resistance to abrasives and tends to 'cold-flow'.</p>

The temperature ranges given above are the limits for which these materials can be safely used. Both temperature and working pressure affects the longevity of AODD components. 'Preventive maintenance planning' (PMP) will increase the working lifespan at the extreme limits.

## HOW TO SELECT THE PUMP SIZE

- 1) Enter Flow (l/min) and Head  
(example: 50 l/min at 4bar)
- 2) Read off the approximate energy requirements in Volume and Pressure  
(example: 0.40 Nm<sup>3</sup>/min at 6bar)

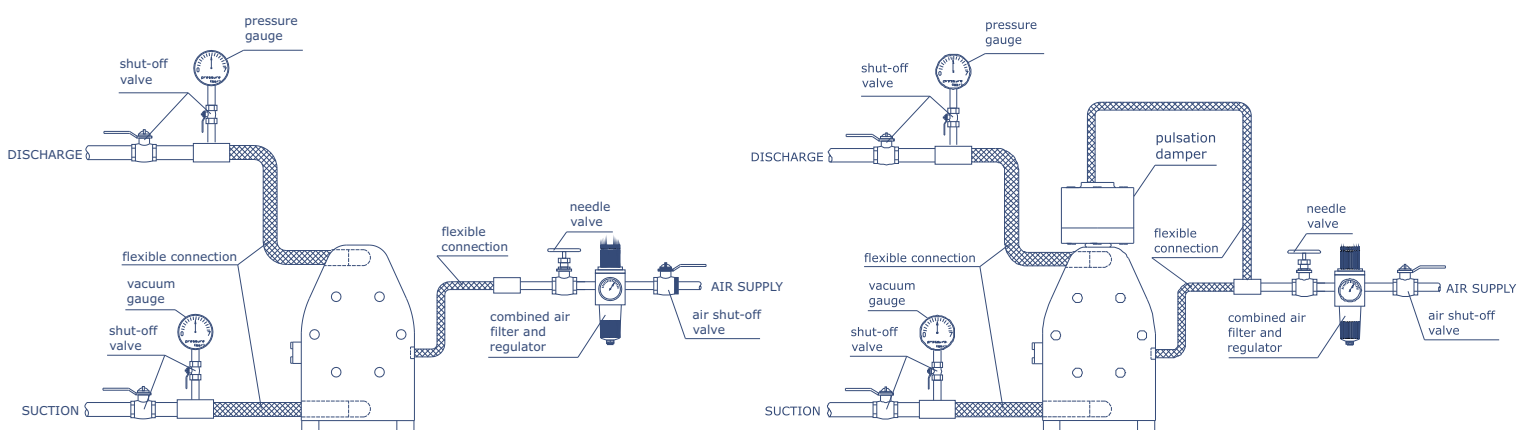


1" Pump - Performance Curve  
Performance based on water at 20°C

## RECOMMENDED INSTALLATION GUIDELINES

To reduce piping and pump connection stresses, we recommend flexible connections on both the inlet and outlet pipes and air inlet connections.

For best results DELLMECO recommends installing the pulsation dampener on the discharge side of the pump.



More detailed installation information is available upon request by our DELLMECO Technical Team

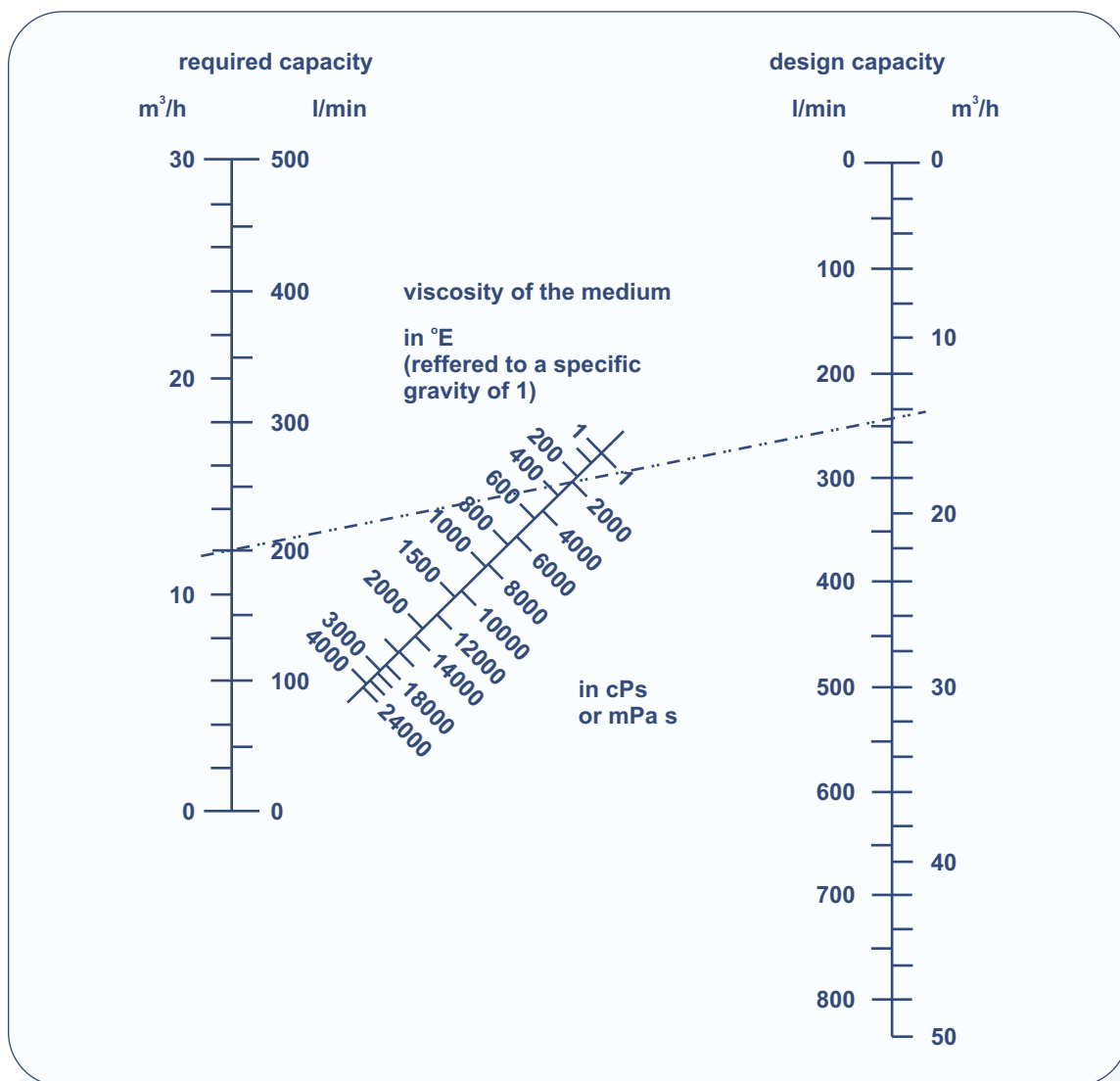
## REDUCTION OF FLOW RATE

The viscosity of the media affects pump capacity.

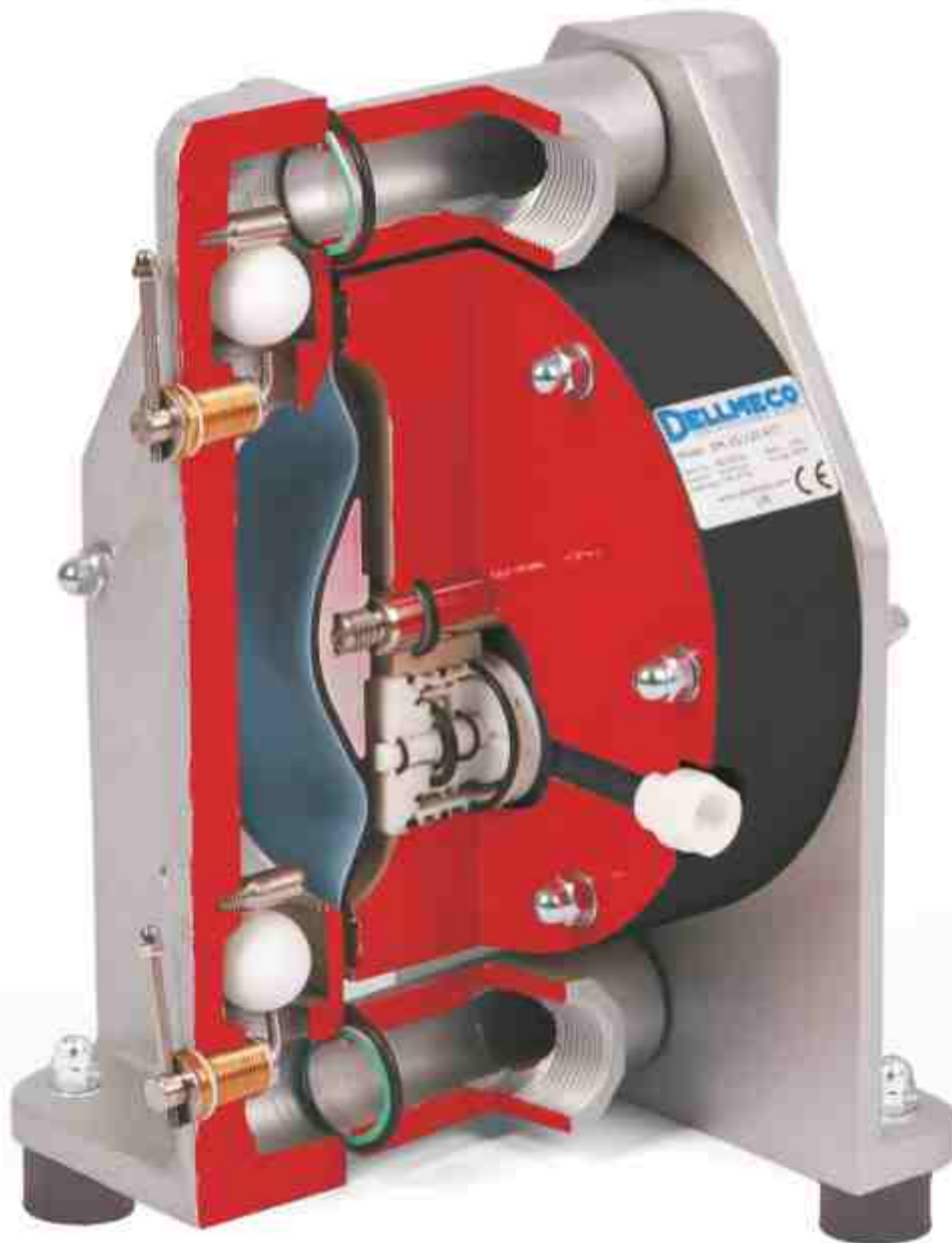
The capacities specified in the pump performance charts generally refer to water (1cPs).

The volume must be reduced accordingly when pumping media with higher viscosities. The design capacity can be read directly from the graph below and the corresponding pump size selected.

The example shown here is based upon a required capacity of 200 l/min with a product viscosity of 2000 cPs. The dotted line intersects the design capacity at 248 l/min.



## METAL PUMPS



1. Designed to succeed

- temperatures up to 120°C
- pressure up to 14bar
- lubrication-free operation
- low air consumption

2. Flexible installation

- BSP as standard
- PN10, PN16, ANSI, NPT, split manifold configurations available
- connections may rotate 180°

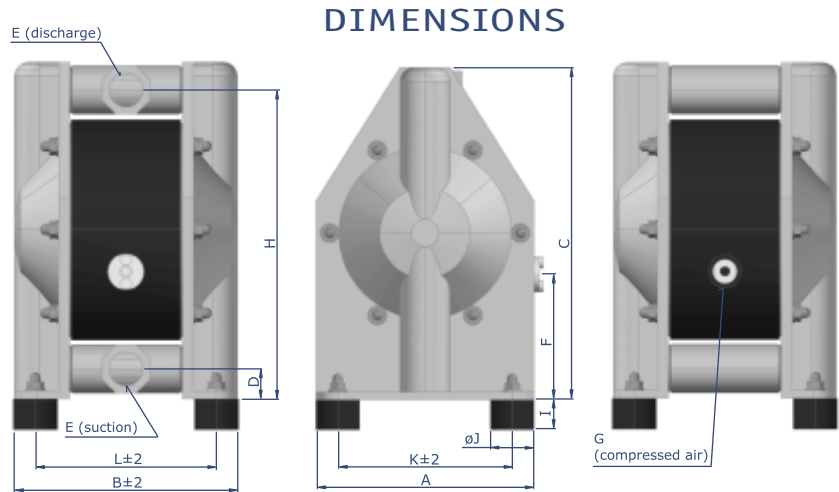
3. Solid, compact and strong

- gentle pumping action
- viscous media transfer
- the valve seat made of AISI 316 is integrated with the pump housing

4. Perfect diaphragm

- completely smooth liquid-side surface (no holes)
- no metal in contact with the media
- materials match the application

## ALUMINIUM, ALUMINIUM WITH PTFE, CAST IRON

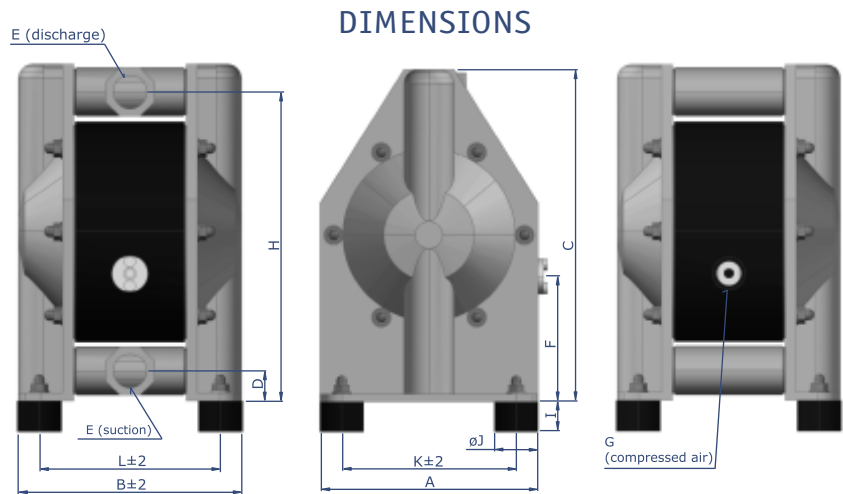


DIMENSIONS	A	B	C	D	E	F	G	H	I	øJ	K	L
DM 15/25	104	122	166	17	G 1/2"	85	R 1/8"	153	10	15	84	98
DM 20/75	150	171	230	21	G 3/4"	84	R 1/4"	212	18	30	116	133
DM 25/125	200	202	305	27	G 1"	115	R 1/4"	280	28	40	160	164
DM 40/315	273	267	417	34	G 1 1/2"	110	R 1/2"	382	28	40	220	213
DM 50/565	352	345	546	48	G 2"	165	R 1/2"	501	30	60	282	281
DM 80/850	485	530	833	72	G 3"	364	R 3/4"	760	40	75	410	449

## TECHNICAL DATA

	15/25	20/75	25/125	40/315	50/565	80/850
Max capacity (l/min)	25	75	125	315	565	850
Max pressure (bar)	8					
Nominal port size	1/2"	3/4"	1"	1 1/2"	2"	3"
Air connection	R 1/8"	R 1/4"	R 1/4"	R 1/2"	R 1/2"	R 3/4"
Suction lift dry (mWC)	2.0	3.0	4.0	4.0	5.0	5.0
Suction lift wet (mWC)	8.0					8.0
Max diameter solids (mm)	3	4	7	10	12	15
Temperature limits - NBR, EPDM (°C)	80					
Temperature limits - PTFE (°C)	120					110
Weight - Alu (kg)	1.9	4.9	8	18	33	118
Material of pump housing	Aluminium, Aluminium Coated with PTFE, Cast Iron					Aluminium
Diaphragm options	NBR, EPDM or TFM/PTFE					
Valve balls	NBR, EPDM, PTFE, AISI 316, PU					NBR, EPDM, PTFE
O-rings	NBR, EPDM, or FEP/FPM					

## STAINLESS STEEL AISI 316 - INDUSTRIAL



DIMENSIONS	A	B	C	D	E	F	G	H	I	ØJ	K	L
DM 20/75	150	171	230	21	G 3/4"	86	R 1/4"	212	18	30	118	139
DM 25/125	200	202	306	29	G 1"	117	R 1/4"	282	28	40	160	164
DM 40/315	270	267	412	34	G 1 1/2"	110	R 1/2"	380	28	40	213	213
DM 50/565	350	345	538	48	G 2"	165	R 1/2"	493	30	60	286	285
DM 80/850	590	600	1310	129	G 3"	688	R 3/4"	1257	30	60	565	575

## TECHNICAL DATA

	20/75	25/125	40/315	50/565	80/850
Max capacity (l/min)	75	125	315	565	850
Max pressure (bar)	8				
Nominal port size	3/4"	1"	1 1/2"	2"	3"
Air connection	R 1/4"	R 1/4"	R 1/2"	R 1/2"	R 3/4"
Suction lift dry (mWC)	3.0	4.0	4.0	5.0	5.0
Suction lift wet (mWC)	8.0				
Max diameter solids (mm)	4	7	10	12	15
Temperature limits - NBR, EPDM (°C)	80				
Temperature limits - PTFE (°C)	120				110
Weight - AISI 316 (kg)	9.5	14	31	70	97
Material of pump housing	AISI 316				AISI 316L
Diaphragm options	NBR, EPDM or TFM/PTFE				
Valve balls	NBR, EPDM, PTFE, AISI 316, PU				NBR, EPDM, PTFE
O-rings	NBR, EPDM, or FEP/FPM				

\* PU (polyurethane) ball valves are not available for DM 80/850 pump



## SPECIAL MATERIAL VERSIONS (I)



Aluminium coated with PTFE is an alternative solution for AISI 316 pumps.  
Pump connections are made of AISI 316.  
Especially suitable for the print and ink industry.



Cast iron pump with conductive PE center section.

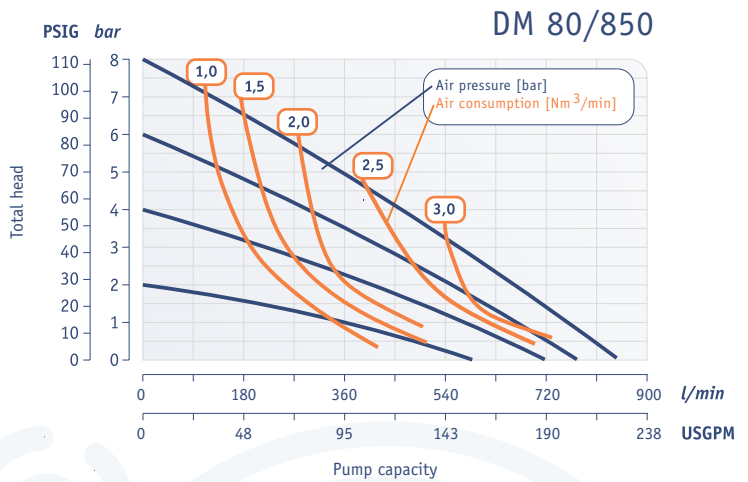
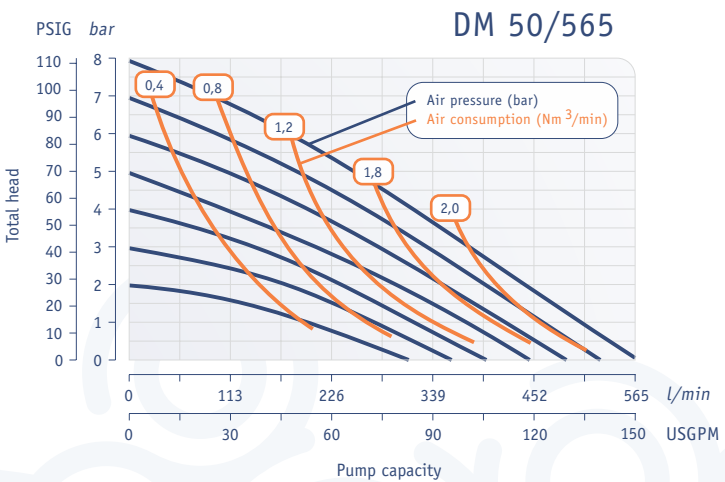
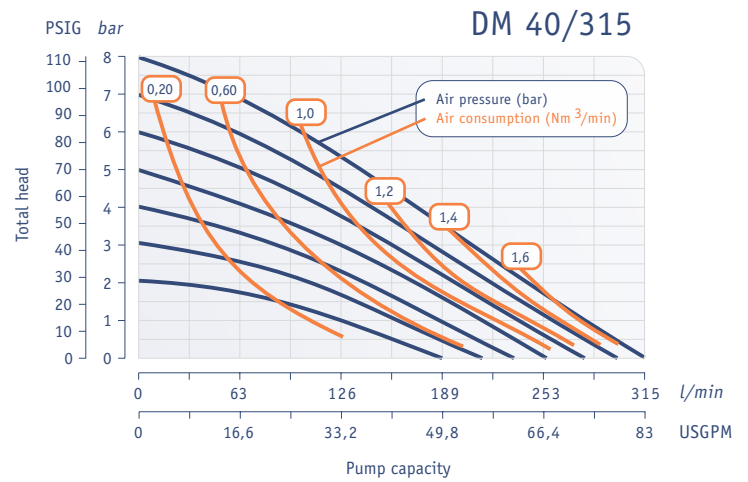
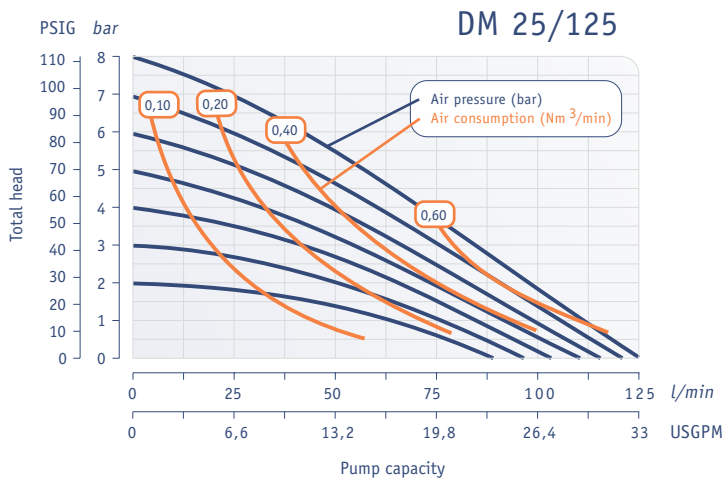
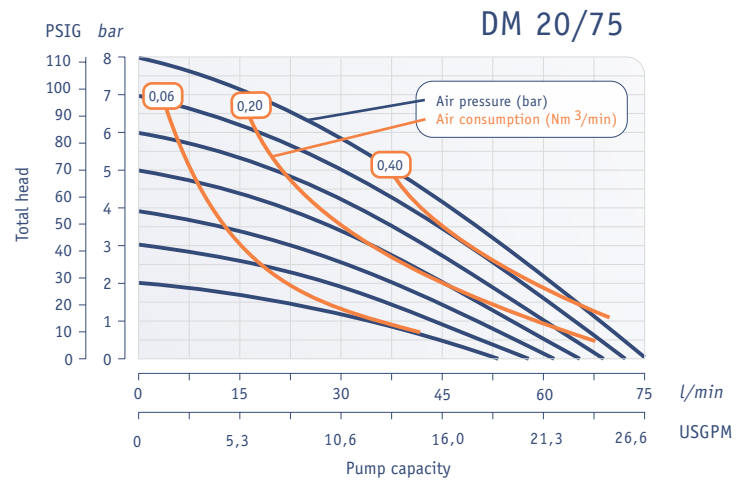
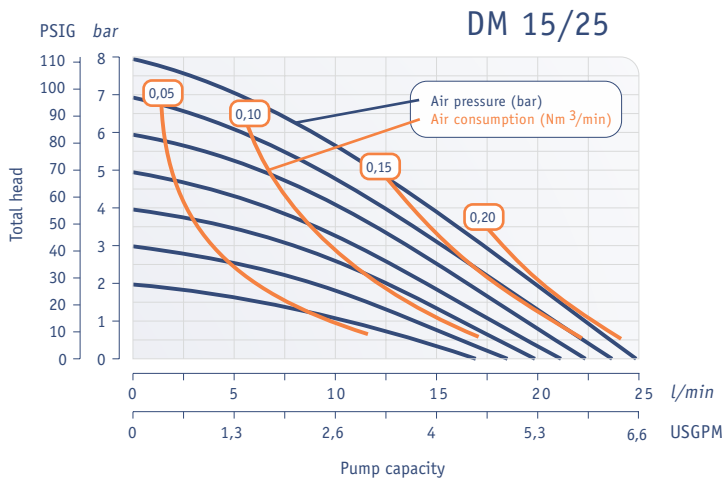
## SPECIAL MATERIAL VERSIONS (II)



Metal pump with heating/cooling jacket. This jacket can be used when the media need to maintain a specific temperature, high or low, throughout the process. A heating or cooling medium is continuously circulated inside of the jacket. The jacket covers the wetted parts of the pump. Available for all our industrial pump series.



Metal pump fitted with handles for the drum option (code D)



## POWDER PUMPS



DELLMECO pumps can also be used to transfer dry powders more quickly, cleanly and at a fraction of the cost than many other systems.

### Key features

Replaces manual powder transfer processes

Reduces airborne contamination - transfers powders directly and in a closed system

Economical and simple - the opposite of large, complex systems

Portable - can be moved from site to site

### Applications for transferring powders up to 800 kg/m<sup>3</sup> (50 lb/ft<sup>3</sup>)

A reliable, efficient and trouble-free transfer of powders including:

- Various types of dried food
- Limestone
- Pharmaceuticals
- Talcum
- Expanded mica
- Silicones and silicas
- Carbon black
- Acrylic resins

## PULSATION DAMPENERS

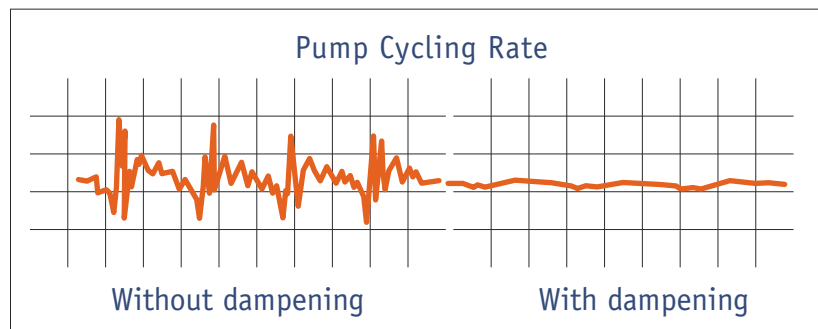
In general, a pulsation dampener is used when one or more of the following criteria are required:

- to prevent potential pipe vibration;
- to reduce the load on the pump;
- to minimise or eliminate pulsations for the benefit of downstream instrumentation;
- to minimise or eliminate pulsations which may interfere with the pumping process.

It works by means of an air cushion created by the pressure of the media pushing the diaphragm upward. This allows air to enter the chamber keeping the diaphragm center at mid-stroke.

During operations the diaphragm flexes thus absorbing and equalising the pressure surge.

Properly sized and installed these dampeners provide virtually surge-free discharge flow.



- Simple installation
- Virtually surge-free flows
- Less vibration and noise
- Stable pressures
- Automatically self-charging and self-venting
- Available in a variety of sizes and materials

## PULSATION DAMPENER CODE

DM 15 PTP DM - Dellmeco Pulsation Dampener 15 - Size, nominal connection size	DM 15 PTP P - Dampener housing material	DM 15 PTP T - Diaphragm material (all conductive)	DM 15 PTP P - Dampener head material
08 - 3/8"; 10, 15 - 1/2" 20 - 3/4"; 25 - 1"; 40 - 1 1/2"; 50 - 2"; 65 - 2 1/2"; 80 - 3"	A - Aluminium H - AISI 316L Hygienic P - PE R - PE conductive S - AISI 316 Industrial T - PTFE Z - PTFE conductive	E - EPDM F - TFM/PFA N - NBR T - TFM/PTFE	P - PE R - PE conductive
<p><b>Air supply connection:</b> DM 08, DM 10: R 1/8"            DM 15, DM 20, DM 25: R 1/8"            DM 40, DM 50, DM 65: R 1/4"            DM 80: R 1/2"</p> <p><b>Max. operating pressure:</b> 8bar (higher on demand)</p> <p><b>Max. operating temperature:</b> PE dampener housing 70 °C            PTFE dampener housing 120 °C            Metal dampener housing 120 °C</p>			

### Plastic dampeners

For inflammable liquids as well as applications in explosion protected zones, only dampeners made from conductive polymer materials (code Z and R) may be used. It is not necessary to electrically ground the dampener separately as it is conductive and the pump itself will be grounded.

In general, the pump and dampener are delivered already mounted. However, if the customer wishes they can be separately packed. The dampener then has to be screwed into the thread at the top of the pump discharge port.

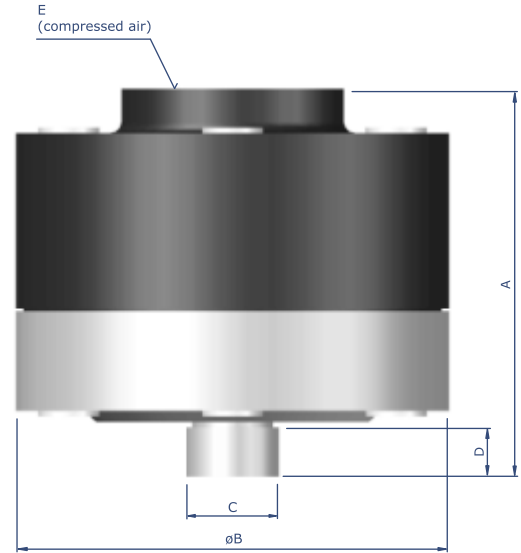
### Metal dampeners

Also for inflammable liquids as well as applications in explosion protected zones but where only dampeners made from PE conductive (code R) may be used.

In general, both the pump and dampener are delivered separately. It is then necessary to electrically ground the dampener as in this case it is not connected to the pump.

## METAL DAMPENER

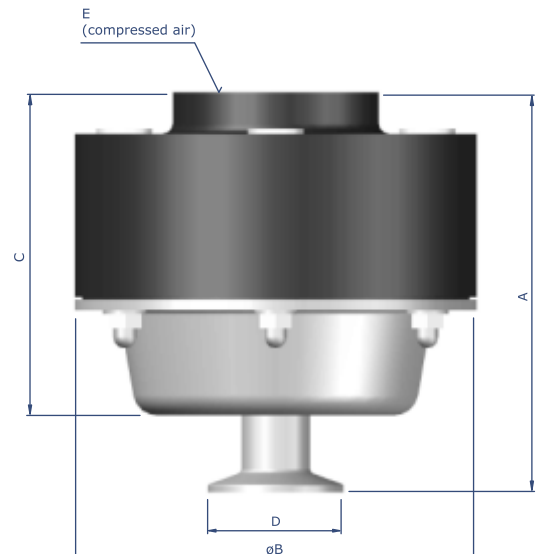
Material	Aluminium					
Type	DM 15	DM 20	DM 25	DM 40	DM 50	DM 80
A	98	98	138	170	216	287
ØB	110	110	156	204	273	365
C	G 1/2"	G 3/4"	G 1"	G 1 1/2"	G 2"	G 3"
D	13	13	18	17	30	32
E	R 1/8"	R 1/8"	R 1/8"	R 1/4"	R 1/4"	R 1/2"



Material	AISI 316L (for Industrial series)				
Type	DM 20	DM 25	DM 40	DM 50	DM 80
A	141	141	171	230	265
ØB	156	156	204	273	365
C	G 3/4"	G 1"	G 1 1/2"	G 2"	G 3"
D	18	18	20	32	35
E	R 1/8"	R 1/8"	R 1/4"	R 1/4"	R 1/2"

## HYGIENIC AISI 316L - POLISHED DAMPENER

AISI 316L						
Type	DM 15	DM 25	DM 40	DM 50	DM 65	DM 80
A	108	149	149	178	220	265
ØB	110	156	156	204	273	365
C	77	124	124	150	198	240
D	TC	1/2"	1"	1 1/2"	2"	2 1/2"
	DIN	15	25	40	50	65
	SMS	-	25.0	38.0	51.0	63.5
E	R 1/8"	R 1/8"	R 1/8"	R 1/4"	R 1/4"	R 1/2"



## STROKE COUNTER



### STROKE COUNTER (OPTION CODE SC1, SC2, SC3, SC5, SC6)

A sensor is installed in the central pump housing to count the strokes. The diaphragm movement is scanned without physical contact by this sensor - a safe form of monitoring totally independent of external influences and the pump's mode of operation. The signal from the sensor can be sent as output data to either existing detectors or to a digital counter (also supplied). When the pre-set value is reached the stroke counter can be shut down with, for example, a solenoid valve.

The stroke counting system is available in five options:

- SC 1: Stroke sensor (NAMUR type) also for explosion-proof zones
- SC 2: Stroke counting system complete with sensor and counter
- SC 3: Stroke counting system complete with sensor, counter and controller for explosion-proof zones
- SC 5: Pneumatic stroke counting system with pressure transmitter
- SC 6: Pneumatic stroke counting system with pressure transmitter and counter

In cases where only the sensor is required (code SC1), it has to be connected to an existing controller with a Namur type inlet. For explosion-proof applications, the stroke counting option requires an intrinsically safe controller (code SC3), which has to be installed between the sensor and counter. The wiring diagram and technical data is supplied with the electric units. The controllers have to be installed in a suitable cabinet.



## BACK-FLUSHING

### OPTIONS BF1, BF2, BF3, BF4, BF5



The DELLMECO pump can be completely emptied (flushed) either manually or pneumatically without dismantling or moving the unit. It consists of a bypass in the pump side housing which can be activated manually (code BF1, BF2, BF3) or pneumatically (code BF4, BF5). In the manual system the pump should be kept in operation and the valves opened (BF1, BF2) by approx. 10 mm. Attention is needed to ensure the valves are not blocked. The pump is then slowed down by decreasing the air inlet pressure and finally stopped. The side housing O-rings can be made of EPDM (BF1, BF4), PTFE (BF2, BF5) or FPM (BF3).



The pneumatic back-flushing system (code BF4 and BF5) requires a minimum air pressure of 3bar. By attaching a 4-2-way valve (available as an additional option), the back-flushing can be activated automatically when the media flow is stopped.



A metal pump with ball lift system (BF2 option) is when the valves are opened manually by turning the steel blocking pins situated on both side housings of the pump. The pump can then be completely drained on the suction side.

## PNEUMIXERS

How it functions

The Pneumixer works both as a pump and as a mixer. It uses the container to both mix and transfer the media and it fits securely yet simply into the hole used for filling. With this ingenious system there is no need for rolling, shaking or pumping to mix the media. Valuable time and costs are thus saved whilst waste and mess are avoided.

Available in stainless steel AISI 316L.

Mixing mode

The discharge valve is closed and the re-circulation valve opened to allow the media to mix in the container.

Transfer mode

To both mix and pump the media out of the container the discharge valve is opened and the re-circulation valve partially opened.

The length of pipe can be ordered to fit any container size



## DRUM PUMPS

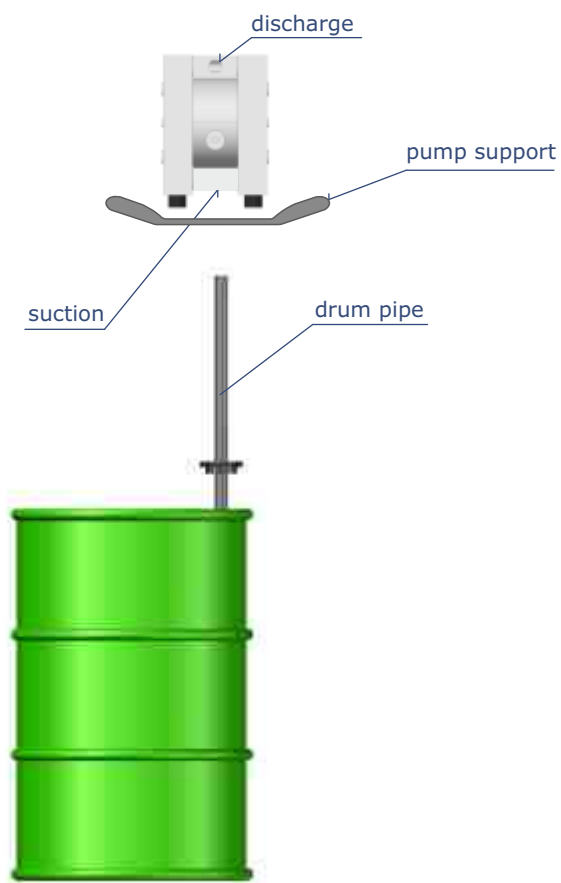


DELLMECO drum pumps are available in both standard and conductive PE, PTFE, aluminium and AISI 316L for optimum media compatibility. The sizes range up to 1" and they can work with media of different viscosities.

Converting 3/8", 1/2", 3/4" or 1" plastic or metal pumps to a drum or rail application is easy. The adaptor kits are constructed of chemically resistant materials to handle any job. And the drum pipe assembly also comes complete with all the hardware needed. Simply attach the adaptor to the drum and then fix the pump with the pipe connected into the drum.

The standard length of drum pipe is 1.0m or 1.2m but orders can be made to fit any container size.

## INSTALLATION



Drum pipe material:

- Polypropylene
- Aluminium
- AISI 316