



## Electric Diaphragm Pump EMP140B

### 1 Introduction

The VETUS electric diaphragm pump has been designed for use as a pump for contaminated fluids (with large particles) such as waste, shower and bilge water.

The pump is self-priming. Therefore it is possible to install the pump at a higher position than the holding tank or above the bilge water level.

Running dry of the pump is allowed. However, unnecessary running dry will shorten the service life of both the motor and the diaphragm.

Always shut off all seacocks when leaving the ship.

#### **WARNING**

Obstructions in pressure and/or suction hose may be harmful to pump and/or electric motor.

By using a fuse with the recommended amperage in the plus cable, the fuse will blow if there are any blockages or when the outboard shut-off valve is closed.

This will prevent damage to the pump or electric motor.

### 2 Installation

#### 2.1 Setting up

The space where the pump is installed must be dry and well ventilated.

When selecting a place for the installation enough room for carrying out maintenance work must be kept in mind.

The pump can be mounted in all positions without impairing the correct operation.

The pump is self-priming; the maximum suction height is 3-metre (10 ft). It is recommended to install the pump **below the minimum fluid level** in the holding tank. Possible contaminants, remaining inside the pump during stand-still, will then be flushed out easily during the next operation of the pump.

When increasing suction height and/or head the capacity of the pump will decrease.

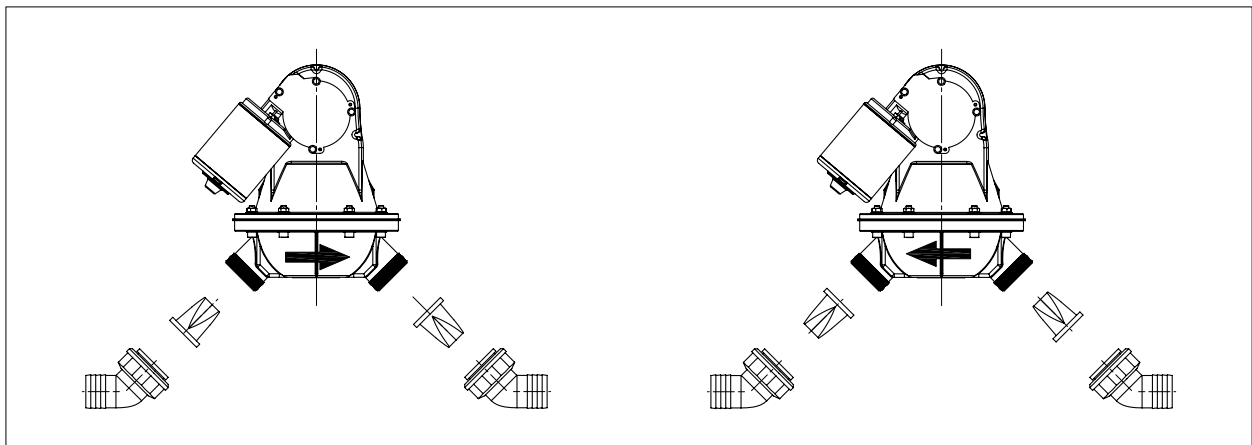
Keep the length of the tubes as short as possible; a longer length of the tubing will diminish the capacity of the pump.

Every bend, valve and connection in the system will also diminish the capacity of the pump.

The maximum head is 5 metre (16 ft).

#### 2.2 Flow direction

The desired flow direction relative to the foot determines how the valves should be fitted.





## Electric Diaphragm Pump EMP140B

### 2.3 Piping

For piping diagrams see next page.

For the piping use internally reinforced hose with an inside diameter of 38 mm (1 1/2"). Non-reinforced hose will easily kink or possibly even become 'strangled' when used at the inlet side.

Keep the length of the hoses, especially near the pump, of sufficient length, so that both the pump and the suction hose can be brought above the fluid level in the tank.

Avoid sharp bends in the hoses.

Mount all connections with a good quality type of hose clamps and use 2 per connection; each leakage will result in an unpleasant odour!

To prevent an unpleasant odour the through-hull fitting must be positioned **below the waterline**. Always fit a seacock on top of any through-hull fitting which is positioned below the water line.

Installation of a U-bend with air vent (or vent line) in the outlet hose is necessary if (at any angle of heel):

- the level of the fluid to be pumped is below the waterline
- the outlet through-hull fitting is installed below the waterline

Such installation prevents siphoning.

Interchanging the inlet and outlet valve is not possible !

Changing the flow direction, compared to the position of the mounting base, is only possible by re-installation of the pump housing to the bell housing in the other position.

### 2.4 Electrical installation

Make sure that the voltage stamped on the electric motor is identical as the ship's power supply voltage.

The minimum cross-section for the connecting cables is 2.5 mm<sup>2</sup> (AWG 14). The voltage drop between the battery and the pump should not exceed 10% of the supply voltage. For a 12 Volt installation with a total cable length (positive and negative wiring added together) of more than 19 m use cable with a cross-section of 4 mm<sup>2</sup>. (or more than 50 ft: use AWG 12).

Connect the power supply as shown in the wiring diagram. See drawing last page.

A main switch\* and a fuse\*\* must be incorporated in the positive cable.

\*) The switch must be rated for 10 Amps.

\*\*) Fuse: 10 Amps for 12 Volt system  
7.5 Amps for 24 Volt system

 **WARNING**

The electric motor may become hot when used for a longer period of time! Make sure that electric wiring etc. does not get in contact with the motor housing.

### 3 Maintenance

- Always flush a holding tank connected to the electric diaphragm pump after discharge. Pump the flush water away by switching on the pump; remaining contaminants in pump and hoses will also be flushed.
- Contaminants left behind in the valves of the pump this may result in a decreased capacity of the pump.
- Clean the valves if necessary. Thereto remove the relevant hose pillar, remove the valve and clean it. Re-assemble in reverse order.
- If the installation is not used for a longer period of time, the pump must be operated regularly. By doing so a proper functioning of the valves is ensured.

### 4 Winterising

The whole waste system should always be drained to prevent damage caused by freezing.

#### Draining

Remove the suction hose and run the pump for a few minutes until it is dry.

### 5 Technical data

Electric motor		
Type	:	Permanent magnet DC motor
Voltage	:	12 V DC      24 V DC
Current (maximum)	:	8 A              5 A
Pump		
Type	:	Self-priming diaphragm pump
Capacity,		
at 0 m head	:	27 l/min (5.9 Imp. Gal/min, 7.1 US Gal/min)
Max. suction height	:	3 metres column of water (10')
Max. head	:	5 metres column of water (16'5")
Max. suction height + head	:	5 metres column of water (16'5")
Material		
Pump housing	:	Plastic
Hose pillars	:	Plastic
Diaphragm	:	Neoprene rubber
Valves	:	Natural rubber 60-65°SH.
Bell housing	:	Aluminium, coated
Connections		
For hose	:	38 mm ID (1 1/2")
Weight	:	3.7 kg (8.1 lbs)

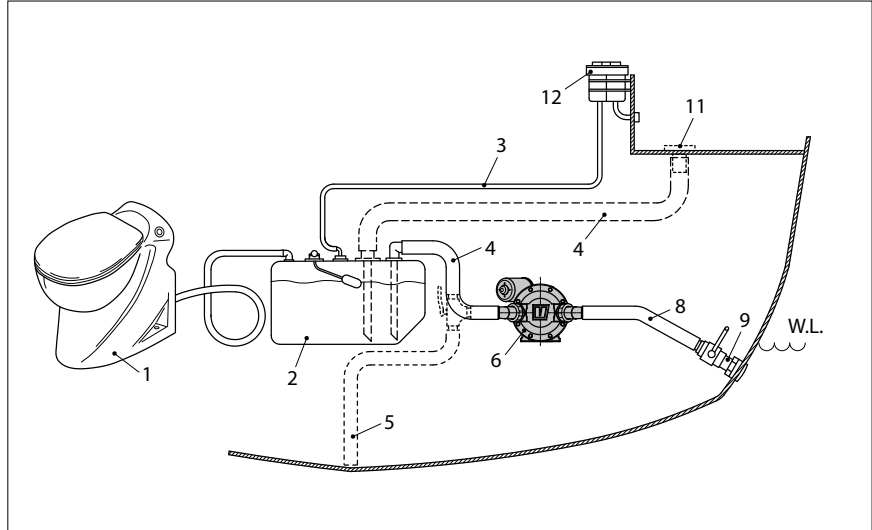




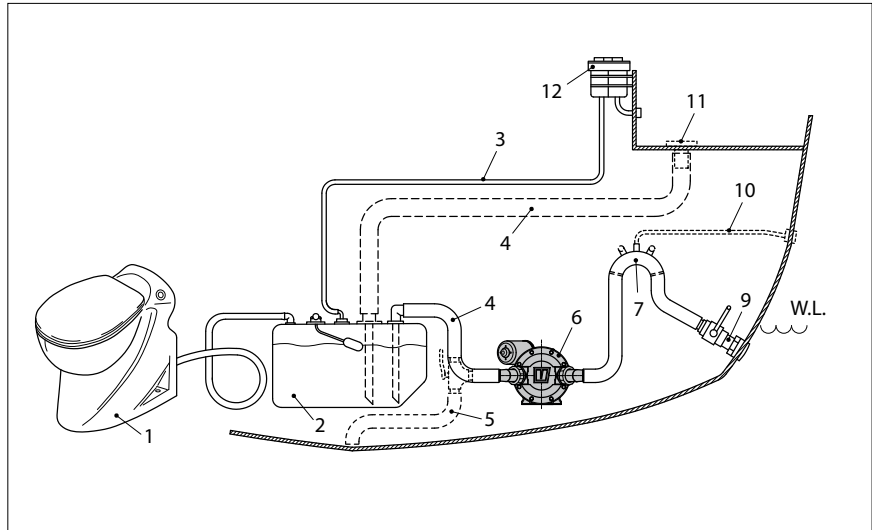
## Electric Diaphragm Pump EMP140B

### 6 Piping diagrams

Installation with holding tank installed **above** the waterline



Installation with holding tank installed **below** the waterline



- 1 Marine toilet
- 2 Holding tank
- 3 Vent line
- 4 Suction line
- 5 Bilge discharge
- 6 Pump
- 7 Discharge line with anti-siphon bend
- 8 Discharge line without anti-siphon bend
- 9 Through-hull fitting with seacock
- 10 Air vent
- 11 Deck fitting
- 12 No-smell filter



GENERAL  
*Marine*  
SERVICES

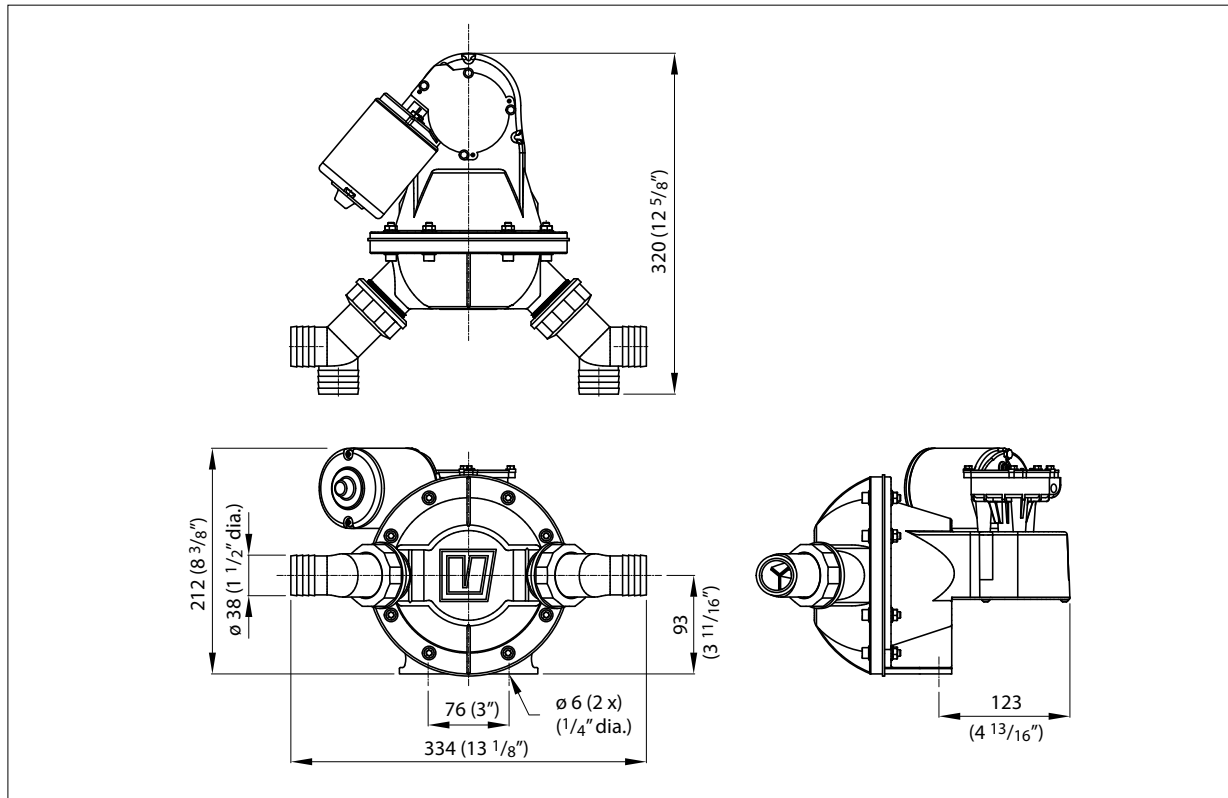
156 Beaumont Street · Westhaven · Auckland · New Zealand  
Sales Ph +64 9 309 0048 · sales@generalmarine.co.nz  
Service Ph +64 9 368 0938 · service@generalmarine.co.nz

[www.generalmarine.co.nz](http://www.generalmarine.co.nz)

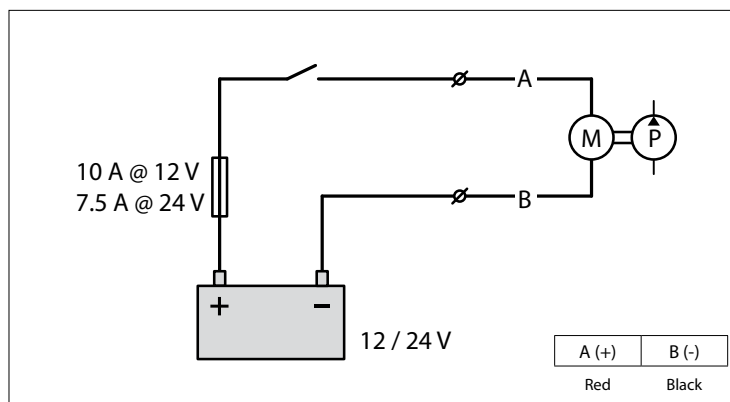


## Electric Diaphragm Pump EMP140B

### 7 Principal dimensions



### 8 Wiring diagram



GENERAL  
*Marine*  
SERVICES

156 Beaumont Street · Westhaven · Auckland · New Zealand  
Sales Ph +64 9 309 0048 · sales@generalmarine.co.nz  
Service Ph +64 9 368 0938 · service@generalmarine.co.nz

[www.generalmarine.co.nz](http://www.generalmarine.co.nz)