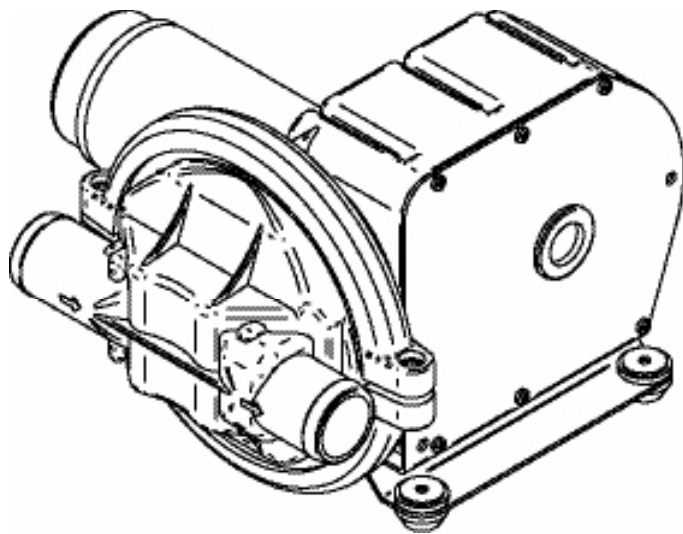


*Instruction Manual*  
*Viking Power 32*  
*Viking Power Vacuum*

*12/24 V DC*



# Viking Power 16 mounted to DC motor 12/24 V

Please follow all instructions before attempting an installation.

## Typical applications

Viking Power 32/Vacuum is the ideal diaphragm pump for toilet drain, wastewater and bilge pumping. Its compact design gives a very adaptable mounting and installation in the boat. Viking Power Vacuum has a large self-priming capability and is very suitable for installation in a vacuum system.

## Model number

Viking Power 32 12V	10-13373-03
Viking Power 32 24V	10-13373-04
Viking Power Vacuum 12V	10-13373-07 (double anti-drainback valves)
Viking Power Vacuum 24V	10-13373-08 (double anti-drainback valves)

## Features

- 32 L/min at open flow – Viking Power 32
- 30 L/min at 0.1 bar pressure – Viking Power 32
- 24 L/min at open flow – Viking Power Vacuum
- 22 L/min at 0.1 bar pressure – Viking Power Vacuum
- Compact design
- Connection: 1½" hose
- Quiet operation
- Self-priming to 2,5 m – Viking Power 32
- Self-priming to 5 m – Viking Power Vacuum
- Pump head can be rotated 360°
- Dry running without damage
- No filter required
- Ball-bearing supported transmission
- Low power consumption (40W at 0.1 bar pressure)
- Hand-cranked
- Meets ISO15083 (Small Craft Bilge Pump standard for boats from 12 m/40 ft

## Working principle

Single-chamber, self-priming diaphragm pump. To obtain good self-priming ability and a filter-less solution, the pump is designed with a large single diaphragm and a long stroke. This way a lot of water is pushed through the pump house in each stroke and any debris is flushed through (compare rubber sink cleaner)

## Technical description

<b>Body:</b>	Nylon
<b>Valves:</b>	Nitrile
<b>Diaphragm:</b>	Reinforced Nitrile
<b>Screws:</b>	Stainless steel
<b>Stand:</b>	Painted galvanized steel
<b>Connection:</b>	1½" hose
<b>Max. discharge height:</b>	4 m
<b>Max. suction lift:</b>	2,5 and 5 m respectively (Viking Power Vacuum)
<b>Max discharge+ lift:</b>	5 m
<b>Motor:</b>	40 W at 0.1 bar pressure 12/24V (with built-in thermal protection)
<b>Fuse size:</b>	12A – 12V / 6 A – 24V

The pump is CE marked according to the following standards:

- EN55014-1:2000/Radio disturbance
- ISO8846: Small Craft – Electrical devices – Protection against ignition of surrounding flammable gases
- ISO8849:2003/ Small craft – Electrically operated bilge pumps
- ISO10133: 2001/Small Craft – Electrical systems – Extra-low voltage DC installations

## Drawing

See page 27

### Pressure and Capacity data

Pressure			Flow		Amp. draw	
Bar	kPa	Psi	L/min	USGPM	12V	24V
0	0	0	34.4	9.1	2.5	1.2
0.1	10	1.5	30.8	8.1	3.3	1.6
0.2	20	2.9	27.1	7.2	4.2	2.1
0.3	30	4.4	23.5	6.2	5.0	2.5
0.4	40	5.8	20.0	5.3	5.6	2.8
0.5	50	7.2	16.7	4.4	6.1	3.1
<b>Fuse required</b>					<b>12 A</b>	<b>6 A</b>

### Installation and maintenance

#### Installation

- Mount the pump in a dry location.
- If the pump is mounted vertically, the motor must be above the pump house.
- Mark screw positions and drill pilot holes.
- Mount the pump using stainless steel screws and the enclosed washers. Make sure that the plastic spacers are in their correct position. NOTE: Take care not to fasten the vibration-damping rubber feet too much.
- Mount the outlet anti-drainback valves and screw the connections - Viking Power Vacuum.  
NOTE: The anti-drainback valves are mounted with the pointed end towards the flow direction. See the drawing.
- Reinforced flexible tubing is recommended.
- Use stainless steel hose clamps to secure tubing to connections and other hose barbs in the system.

#### Electrical installation

The pump must be installed according to ISO 10133 (Small craft – Electrical system – Extra low voltage DC installation).

NOTE: The fuse must be ignition protected.

The motor is equipped with built-in thermal protection to prevent overheating. The protection is automatically restored when the motor is cooled. See the wiring diagram for correct installation. Negative wire must be black.

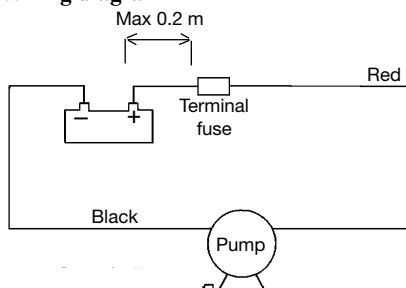
Choose wire size in accordance with total wire length (see table). The wire connections must be sealed with a marine sealant.

NOTE: Before installation with electrical control systems, check that equipment to be used is of sufficient rated capacity to accept amperage draw of motor. Low voltage can cause the motor to overheat.

#### Maintenance

The pump valves inside the pump house should be regularly cleared from debris to prevent reduced performance and poor self priming capability. This is done by unscrewing the house clamp and opening the house. The outlet anti-drainback valves are located above the connections. (Viking Power Vacuum.)  
NOTE: Make sure the pump is disconnected from the power supply.

#### Wiring diagram



Other electrical devices such as circuit breaker and relays must be installed between the pump and the positive (+) lead on the battery (on the red wire).

#### Wiring dimensions

(Based on 10% voltage drop)

Wire size		Max wire length* in m	
		12V	24V
1.5 mm <sup>2</sup>	#16 AWG	18	71
2.5 mm <sup>2</sup>	#14 AWG	30	118

\* The wire length is the total distance from the battery to the pump and back to the battery. It is recommended to use a relay with a light wire from the main cable to shorten the main leaders.

### Self-priming

The pump is self-priming up to 2,5 and 5 m respectively (Viking Power Vacuum)

### Dry running

The pump can be run dry without any harm. It will however unnecessary reduce your battery power.

### Hand cranked power



The pump can in case of emergency such as power failure be run with the enclosed hand-cranked power source.

**NOTE:** Make sure that the pump is disconnected from the power supply while the motor is working as a power generator.

**NOTE:** Do not run the pump with power supply and the crank mounted at the same time.

### Winterizing

Drain the pump from water by pumping it until it primes air and there is no fluid coming from the outlet.

## Service instructions

### Change of diaphragm

1. Remove the two screws that hold the clamps and remove the clamps.
2. Remove the pump housing.
3. Remove the screw that holds the diaphragm and the diaphragm washer.
4. Remove the diaphragm and the diaphragm washer.
5. Mount the new diaphragm and the new diaphragm washer with the new screw.
6. Assemble the pump housing and the clamps.

### Change of pump housing

1. Remove the two screws that hold the clamps and remove the clamps.
2. Remove the pump housing.
3. Assemble the new pump housing and the clamps.

### Cleaning the anti-drainback valve(s)

1. Remove the two screws that hold the clamps and remove the clamps.
2. Remove the pump housing.
3. Inspect the rubber anti-drainback valve and remove any debris.
4. Unscrew the connections and inspect the outlet anti-drainback valves (Viking Power Vacuum).
5. Assemble the connections, the pump housing and the clamps.

### Waste management / Recycling

Dispose of the product in accordance with existing regulations.

Where appropriate, dismantle and sort the product by its material fractions.

## Troubleshooting

### Symptom

1. The pump doesn't run.

### Cause

1.1 Tripped thermal protector or blown fuse.

1.2 Faulty wire connection or power supply.

1.4 Motor malfunctioning.

1.5 Pump/motor frozen.

### Solution

1.1.1 Check the fuse. Let the motor cool down before restart if it is overheated.

1.2.1 Check the battery/power supply, main switch and wiring.

1.4.1 Change pump.

1.5.1 Thaw pump and system and check for damage. There is a risk of damage if a frozen pump/motor is started.

2. The pump does not prime.

2.1 The water tank is empty.

2.2 Debris under/in the valves.

2.1.1 Fill up the tank.

2.2.1 Open the pump by body by unscrewing the two screws and clean the valves. Clean the outlet valves. (Viking Power Vacuum.)

2.3 Perforated diaphragm.

2.3.1 Replace the diaphragm.

2.4 Leak on inlet side of pump.

2.4.1 Check tightness of hose connections.

2.5 Inlet or outlet plumbing restricted.

2.5.1 Check the plumbing and the valves.

3. Low flow/pressure.

3.1 Lean on outlet side of pump.

3.1.1 Check the tightness of the connections. Check the hose for possible damage.

3.2 Perforated diaphragm.

3.2.1 Replace the diaphragm.

3.3 Motor malfunctioning.

3.3.1 Replace the pump.

3.4 Debris under/in the valves.

3.4.1 Open the pump body by unscrewing the two screws and clean the valves. Clean the outlet valves. (Viking Power Vacuum.)

4. Pump is excessively noisy.

4.1 Inlet or outlet plumbing restricted.

4.1.1 Check the hoses and the plumbing.

4.2 Restriction on outlet side of the pump/too high pressure

4.2.1 Ensure that the valves are open.

4.3 Defective motor.

4.3.1 Replace the pump.