



# Model e-HM

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# 1 Introduction and Safety



## 1.1 Introduction

### Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance



#### CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

#### NOTICE:

Save this manual for future reference, and keep it readily available at the location of the unit.

## 1.2 Inexperienced users



#### WARNING:

This product is intended to be operated by qualified personnel only.

Be aware of the following precautions:

- Persons with diminished capacities should not operate the product unless they are supervised or have been properly trained by a professional.
- Children must be supervised to ensure that they do not play on or around the product.

## 1.3 Safety terminology and symbols

### Hazard levels

Hazard level	Indication
<b>DANGER:</b>	A hazardous situation which, if not avoided, will result in death or serious injury
<b>WARNING:</b>	A hazardous situation which, if not avoided, could result in death or serious injury
<b>CAUTION:</b>	A hazardous situation which, if not avoided, could result in minor or moderate injury
<b>NOTICE:</b>	<ul style="list-style-type: none"> <li>• A potential situation which, if not avoided, could result in undesirable conditions</li> <li>• A practice not related to personal injury</li> </ul>

### Hazard categories

Hazard categories can either fall under hazard levels or let specific symbols replace the ordinary hazard level symbols.

Electrical hazards are indicated by the following specific symbol:



#### Electrical Hazard:

### Hot surface hazard

Hot surface hazards are indicated by a specific symbol that replaces the typical hazard level symbols:



#### CAUTION:

### Description of user and installer symbols

	Specific information for personnel in charge of installing the product in the system (plumbing and/or electrical aspects) or in charge of maintenance.
	Specific information for users of the product.

## 1.4 Warranty

For information about warranty, see the sales contract.

## 1.5 Spare parts



#### WARNING:

Only use original spare parts to replace any worn or faulty components. The use of unsuitable spare parts may cause malfunctions, damage, and injuries as well as void the guarantee.

For more information about the product's spare parts, refer to the Sales and Service department.

## 1.6 Declaration of Conformity

We at,

Xylem Inc./Goulds Water Technology

1 Goulds Drive

Auburn, NY 13021

Declare that the following products: NPE, MCS, MCC, 3642/3752, 3656, 3656 SP, GB, e-SV, SVI, NPO, Prime Line SP, HB, e-HM, HMS, LC, NPV, LB, LBS comply with Machine Directive 06/42/EC. This equipment is intended to be incorporated with machinery covered by this directive, but must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the actual provisions of the directive.

Nick Daddabbo

Industrial Product Engineer

# 2 Transportation and Storage



## 2.1 Inspect the delivery

1. Check the outside of the package.
2. Notify our distributor within eight days of the delivery date, if the product bears visible signs of damage.
3. Remove the staples and open the carton.
4. Remove the securing screws or the straps from the wooden base (if any).
5. Remove packing materials from the product. Dispose of all packing materials in accordance with local regulations.
6. Inspect the product to determine if any parts have been damaged or are missing.
7. Contact the seller if anything is out of order.

## 2.2 Transportation guidelines

### Precautions



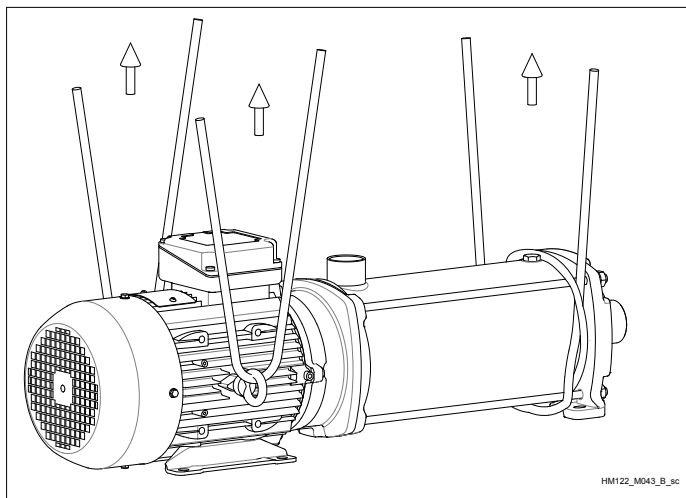
#### WARNING:

- Observe accident prevention regulations in force.
- Crush hazard. The unit and the components can be heavy. Use proper lifting methods and wear steel-toed shoes at all times.

Check the gross weight that is indicated on the package in order to select proper lifting equipment.

### Position and fastening

The unit can be transported either horizontally or vertically. Make sure that the unit is securely fastened during transportation, and cannot roll or fall over.



## 2.3 Storage guidelines

### Storage location

#### NOTICE:

- Protect the product against humidity, dirt, heat sources, and mechanical damage.
- The product must be stored at an ambient temperature from -40°C to +60°C (-40°F to 140°F).

## 3 Product Description



### 3.1 Pump design

The pump is a multistage, non-self priming pump. The pump can be used to pump:

- Cold water
- Warm water

#### Intended use

The pump is suitable for:

- Civil and industrial water distribution systems
- Irrigation (for example, agriculture and sporting facilities)

#### Improper use



#### DANGER:

Do not use this pump to handle flammable and/or explosive liquids.



#### WARNING:

Improper use of the pump may create dangerous conditions and cause personal injury and damage to property.

#### NOTICE:

Do not use this pump to handle liquids containing abrasive, solid, or fibrous substances, toxic or corrosive liquids, potable liquids other than water, or liquids not compatible with the pump construction material.

An improper use of the product leads to the loss of the warranty.

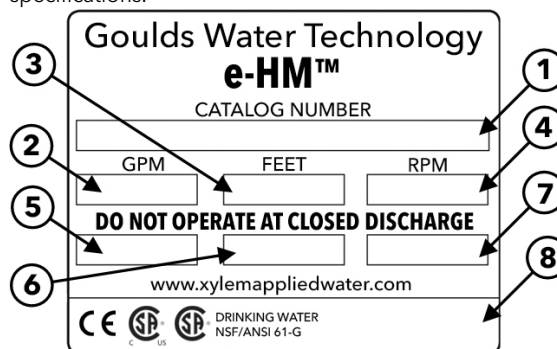
## 3.2 Application limits

**Table 1: Pressure and temperature limits**

Seal Code	1HM, 3HM		5HM		10HM, 15HM, 22HM
	2-6 Stages	7+ Stages	2-5 Stages	6+ Stages	All Stages
BQE	147PSI at 248F	235PSI at 248F	147PSI at 248F	235PSI at 248F	235PSI at 248F
BQV	147PSI at 248F	235PSI at 248F	147PSI at 248F	235PSI at 248F	235PSI at 248F
QQE	147PSI at 248F	235PSI at 194F	147PSI at 248F	235PSI at 194F	235PSI at 194F
QQV	147PSI at 248F	235PSI at 194F	147PSI at 248F	235PSI at 194F	235PSI at 194F
BVE	147PSI at 194F	Not Available	147PSI at 194F	Not Available	Not Available

## 3.3 The data plate

The data plate is a label on the pump. The data plate lists key product specifications.



1. Goulds Water Technology Catalog Number
2. Capacity range
3. TDH range
4. Rated speed
5. Rated horsepower
6. Maximum operating pressure
7. Maximum fluid temperature
8. Pump serial number

#### IMQ or other marks (for electric pump only)

Unless otherwise specified, for products with a mark of electrical-related safety approval, the approval refers exclusively to the electrical pump.

4 Installation



Precautions



**WARNING:**

- Observe accident prevention regulations in force.
- Use suitable equipment and protection.
- Always refer to the local and/or national regulations, legislation, and codes in force regarding the selection of the installation site, plumbing, and power connections.

4.1 Facility requirements

4.1.1 Pump location



**DANGER:**

Do not use this unit in environments that may contain flammable/explosive or chemically aggressive gases or powders.

Guidelines

Observe the following guidelines regarding the location of the product:

- Make sure that no obstructions hinder the normal flow of the cooling air that is delivered by the motor fan.
- Make sure that the installation area is protected from any fluid leaks, or flooding.
- If possible, place the pump slightly higher than the floor level.
- The ambient temperature must be between -30°C (-22°F) and +40°C (+104°F) unless otherwise specified in the data plate.
- The relative humidity of the ambient air must be less than 50% at +40°C (+104°F).

Installation above liquid source (suction lift)

The theoretical maximum suction height of any pump is 34 ft. In practice, this is not achieved due to the following conditions affecting the suction capability of the pump:

- Temperature of the liquid
- Elevation above the sea level (in an open system)
- System pressure (in a closed system)
- Resistance of the pipes
- Own intrinsic flow resistance of the pump
- Height differences

NOTICE:

Do not exceed the pumps suction capacity as this could cause cavitation and damage the pump.

4.1.2 Piping requirements

Precautions

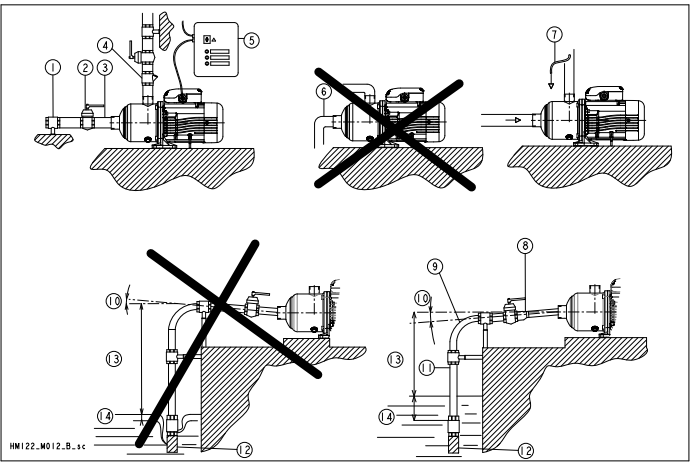


**WARNING:**

- Use pipes suited to the maximum working pressure of the pump. Failure to do so can cause the system to rupture, with the risk of injury.
- Make sure that all connections are performed by qualified installation technicians and in compliance with the regulations in force.
- Do not use the on-off valve on the discharge side in the closed position for more than a few seconds. If the pump must operate with the discharge side closed for more than a few seconds, a bypass circuit must be installed to prevent overheating of the water inside the pump.

Piping checklist

- Pipes and valves must be correctly sized.
- Pipe work must not transmit any load or torque to pump flanges.



4.2 Electrical requirements

- The local regulations in force overrule these specified requirements. In the case of fire fighting systems (hydrants and/or sprinklers), check the local regulations.

Electrical connection checklist

Check that the following requirements are met:

- The electrical leads are protected from high temperature, vibrations, and collisions.
- The power supply line is provided with:
  - A short-circuit protection device
  - A main disconnect switch.

The electrical control panel checklist

NOTICE:

The control panel must match the ratings of the electric pump. Improper combinations could fail to guarantee the protection of the motor.

Check that the following requirements are met:

- The control panel must protect the motor against overload and short-circuit.
- Install the correct overload protection (thermal relay or motor protector).

Pump Type	Protection
Single phase standard electric pump up to 3 HP	<ul style="list-style-type: none"><li>• Built-in automatic reset thermal-overload protection</li><li>• Short circuit protection (must be supplied by the installer)</li></ul>
Three-phase electric pump	<ul style="list-style-type: none"><li>• Thermal protection (must be supplied by the installer)</li><li>• Short circuit protection (must be supplied by the installer)</li></ul>

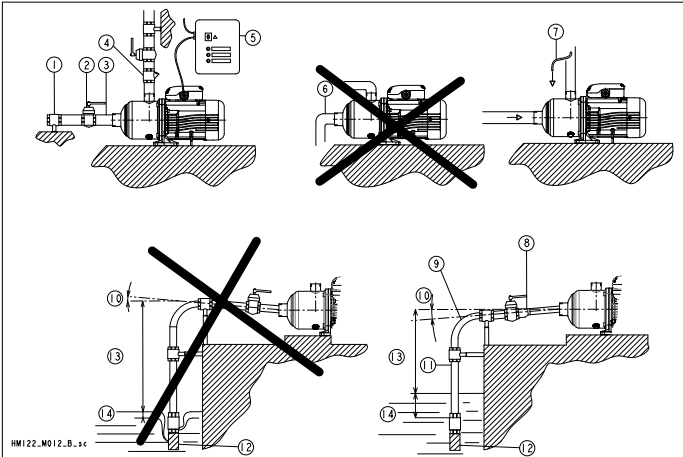
- The control panel must be equipped with a dry-running protection system to which a pressure switch, float switch, sensors, or other suitable device is connected.
- The following devices are recommended for use on the suction side of the pump:
  - When the liquid is pumped from a water system, use a pressure switch.
  - When the liquid is pumped from a storage tank or reservoir, use a float switch or sensors.
- When thermal relays are used, relays that are sensitive to phase failure are recommended.

The motor checklist

Use cable according to rules with 3 leads (2+earth/ground) for single phase versions and with 4 leads (3+earth/ground) for three-phase version.

## 4.3 Install the pump

### 4.3.1 Install the pump on a concrete foundation



1. Piping support
  2. On-off valve
  3. Flexible pipe or joint
  4. Check valve
  5. Control panel
  6. Do not install elbows close to the pump
  7. Bypass circuit
  8. Eccentric reducer
  9. Use wide bends
  10. Positive gradient
  11. Piping with equal or greater diameter than the suction port
  12. Use foot valve
  13. Do not exceed maximum height difference
  14. Ensure adequate submersion depth
1. Anchor the pump onto the concrete or equivalent metal structure.
    - If the liquid temperature exceeds 50°C, the unit must be anchored only by the motor bracket side and not also by the side of the inlet supporting bracket
    - If the transmission of vibrations can be disturbing, then provide vibration-damping supports between the pump and the foundation.
  2. Remove the plugs covering the ports.
  3. Assemble the pipe to the pump threaded connections.  
Do not force the piping into place.

### 4.3.2 Electrical installation

#### Precautions



#### Electrical Hazard:

- Make sure that all connections are performed by qualified installation technicians and in compliance with the regulations in force.
- Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized.

#### Grounding (earthing)



#### Electrical Hazard:

- Always connect the external protection conductor to ground (earth) terminal before making other electrical connections.

#### Connect the cable

1. Connect and fasten the power cables according to the wiring diagram under the terminal box cover.
  - a) Connect the ground (earth) lead.  
Make sure that the ground (earth) lead is longer than the phase leads.
  - b) Connect the phase leads.

#### NOTICE:

Tighten the cable glands carefully to ensure the protection against the cable slipping and humidity entering the terminal box.

2. If the motor is not equipped with automatic reset thermal protection, then adjust the overload protection according to the nominal current value of electric pump (data plate).

## 5 Commissioning, Startup, Operation, and Shutdown



#### Precautions



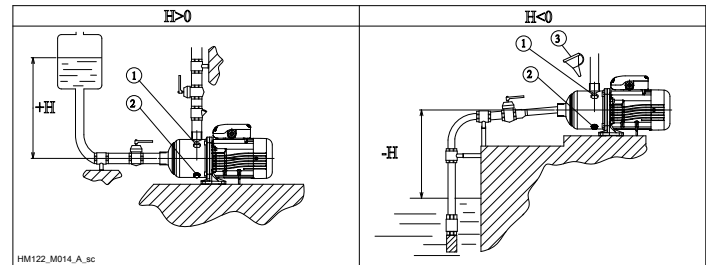
#### WARNING:

Make sure that the drained liquid does not cause damage or injuries.

#### NOTICE:

- Never operate the pump below the minimum rated flow.
- Never operate the pump with the delivery ON-OFF valve closed for longer than a few seconds.
- Do not expose an idle pump to freezing conditions. Drain all liquid that is inside the pump. Failure to do so can cause liquid to freeze and damage the pump.
- The sum of the pressure on the suction side (water mains, gravity tank) and the maximum pressure that is delivered by the pump must not exceed the maximum working pressure that is allowed (nominal pressure PN) for the pump.
- Do not use the pump if cavitation occurs. Cavitation can damage the internal components.

### 5.1 Prime the pump



1. Fill plug
2. Drain plug
3. Funnel

#### Installations with liquid level above the pump (suction head)

Close the on-off valve located downstream from the pump.

#### Installations with liquid level below the pump (suction lift)

Open the on-off valve that is located upstream from the pump and close the on-off valve downstream.

### 5.2 Check the rotation direction (three-phase motor)

Follow this procedure before start-up.

1. Start the motor.
2. Stop the motor.
3. If the rotation direction is incorrect, then do as follows:
  - a) Disconnect the power supply.
  - b) In the terminal board of the motor or in the electric control panel, exchange the position of two of the three wires of the supply cable.
  - c) Check the direction of rotation again.

### 5.3 Start the pump

1. Start the motor.
2. Gradually open the on-off valve on the discharge side of the pump.  
At the expected operating conditions, the pump must run smoothly and quietly. If not, refer to [Troubleshooting](#) (page 6).
3. If the pump does not start in correctly in 30 seconds, then do the following:
  - a) Switch off the pump.
  - b) Reprime the pump.
  - c) Start the pump again.
4. Switch off and on the pump (for about 30 seconds of continuous running) and make sure that all the trapped air is bled out by repeating this 2-3 times.

#### NOTICE:

Make sure that the pump has bled away all the trapped air. Failure to do so can harm the product.

## 6 Maintenance



#### Precautions



#### Electrical Hazard:

Disconnect and lock out electrical power before installing or servicing the unit.



#### WARNING:

- Maintenance and service must be performed by skilled and qualified personnel only.
- Observe accident prevention regulations in force.
- Use suitable equipment and protection.

### 6.1 Service

The pump does not require any scheduled routine maintenance. If the user wishes to schedule regular maintenance deadlines, they are dependent on the type of pumped liquid and on the operating conditions of the pump.

Contact the local sales and service representative for any requests or information regarding routine maintenance or service.

## 7 Troubleshooting



#### Introduction

Always specify the exact pump type and identification code when requesting information or spare parts from the Sales and Service department.

For other situation not mentioned in the table, refer to the Sales and Service department.

### 7.1 Troubleshooting table

Problem	Cause and solution
The pump does not start.	<ul style="list-style-type: none"> <li>• The thermo-overload protection in the single-phase motor has tripped; it will automatically reset when the motor cools down.</li> <li>• Check the power supply wiring to see that the connections are all tight</li> <li>• Check to see that the circuit breaker or ground-fault protection device has tripped. Or replace any fuses that may have blown.</li> <li>• Check to see if any protection device installed for dry running protection has tripped or hung up.</li> </ul>

Problem	Cause and solution
The pump starts up but the thermal protector is triggered after a short time or the fuses blow.	<ul style="list-style-type: none"> <li>• The power supply cable is damaged, the motor short circuits or thermal protector or fuses are not suited for the motor current. Check and replace the components as necessary.</li> <li>• The thermo-overload protection (single phase) or of the protection device (three-phase) trips due to excessive current input. Check the pump working conditions.</li> <li>• A phase in the power supply is missing. Check the power supply.</li> <li>• The pump is clogged with solids and the impeller becomes bound. Clean the pump.</li> </ul>
The pump starts but does not deliver any liquid.	<ul style="list-style-type: none"> <li>• Air is entering the suction piping, check the liquid level, the tightness of the suction pipes and the operation of the foot valve.</li> <li>• The pump is not correctly primed. Repeat the instructions in <a href="#">Prime the pump</a> (page 5).</li> </ul>
The pump's delivery is reduced.	<ul style="list-style-type: none"> <li>• Check for restrictions in the piping system.</li> <li>• Wrong rotation of the impeller (three-phase). Check the direction of rotation.</li> <li>• The pump is not correctly primed. Repeat the instructions in <a href="#">Prime the pump</a> (page 5).</li> </ul>

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to [xyleminc.com](http://xyleminc.com)



Xylem Inc.  
2881 East Bayard Street, Suite A  
Seneca Falls, NY 13148  
USA  
Tel: (866) 325-4210  
Fax: (888) 322-5877

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