

3. MQ

Product introduction

The Grundfos MQ is a compact pump and pressure boosting unit, purpose-designed for domestic water supply and other applications where a compact and reliable, easy-to-install pump is advantageous. The MQ is a self-priming multistage centrifugal pump; it self-priming from a well depth of down to 26 ft (8 m) within 5 minutes.

The MQ is a complete, all-in-one unit, incorporating pump, motor, diaphragm tank, pressure and flow sensor, controller and check valve.



TM01 9873

Fig. 15 Grundfos MQ

Applications

MQ is suitable for pressure boosting of potable water and rain water for:

- water pressure boosting (max. inlet pressure 40 psi (2.8 bar))
- water supply from wells (max. suction lift: 26 ft (8 m)).

Examples of ideal applications for MQ are:

- private homes
- farms
- market gardens and other large gardens.

Pumped liquids

The MQ is suitable for pumping potable water, rain water, or other clean, thin, non-aggressive liquids not containing solid particles or fibers.

Features and benefits

Complete system

The MQ is a compact, "plug and pump" or all-in-one solution; there is no need for a separate pressure tank, pressure switch, electrical connections, fittings, or any other separate items. No maintenance of the pump is required. Two versions are available to choose from.

Installation

Installation of the MQ is simple and can be done in a matter of minutes, which means greatly reduced installation costs.

Outlet connection can be angled up to 5° to fit existing pipework.

Simple operation

The MQ features a user-friendly control panel with ON/OFF button and indicator lights for indication of the operational state of the pump.

Compact design

Compact, horizontal design fits even where space is limited (outdoor applications require the use of the Protection Cover, sold separately); no space around the pump is required.

Self-priming

As it is self-priming, the MQ is able to pump water from a level below the pump. Provided it is filled with water, the pump is able to lift water from a depth of 26 ft (8 m) in less than 5 minutes. This facilitates installation and start-up of the pump and provides more reliable water supply in installations where there is a risk of dry running and leakages in suction hose or pipes.

Built-in protective functions

Built-in protective functions; if exposed to dry running, excessive temperature, or any overload condition the pump will stop automatically, thus preventing a motor burnout.

Automatic reset

In case of dry running or a similar alarm, the pump will stop. Restarting will be attempted every 30 minutes for a period of 24 hours. The reset function can be deactivated.

Low noise level

Superior hydraulics and internal cooling combined result in very quiet operation, which makes it suitable for many applications.

Pressure tank

The built-in pressure tank reduces the number of starts and stops in case of leakages in the pipe system, causing less wear on the pump.

How the MQ functions

The MQ pump has a small built-in pressure tank, sufficient to ensure that water is readily available from the tap. When water is required, the pump automatically starts. A non-return valve prevents backflow.

The controller ensures that the pump starts automatically when water is consumed and stops automatically when the consumption ceases. In addition, the controller protects the pump in case of faults.

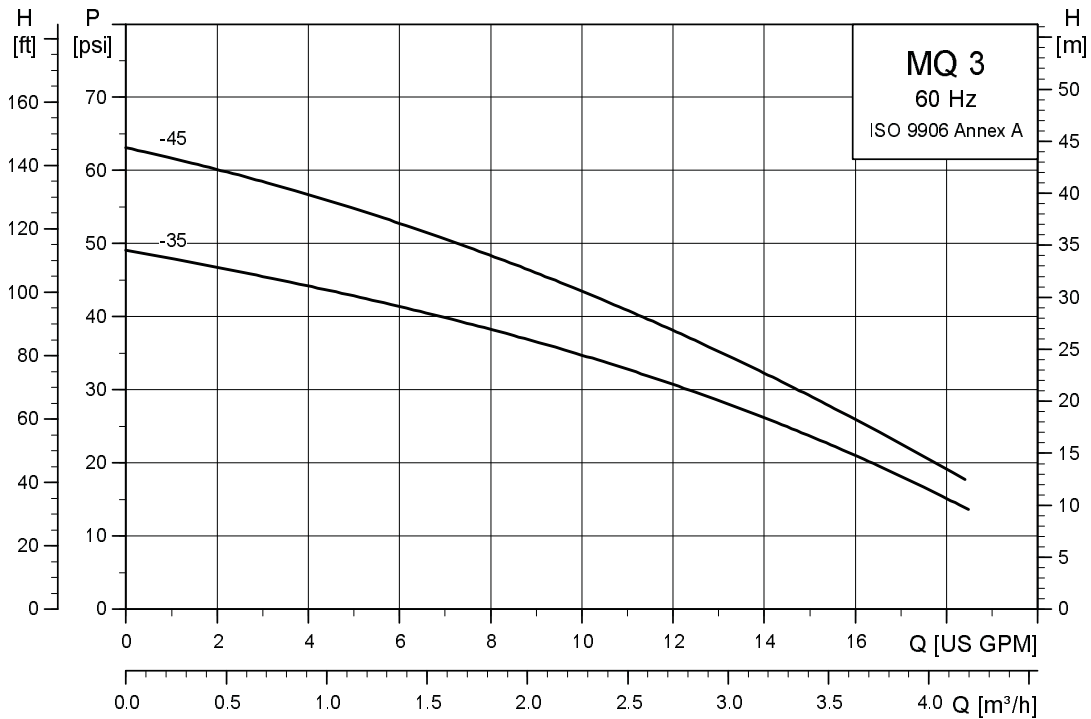
Identification

Type key, MQ

Example	MQ	3	- 35	A	- B	- A	- BVBP
Pump range							
Rated flow [m ³ /h]							
Max. head [m]							
Code for pump version							
A: standard							
Code for pipework connection							
B: External thread							
Code for materials							
A: Standard							
Code for shaft seal							
B: Bellow seal, rubber							
V: Ceramic							
B: Carbon, resin-impregnated							
P: NBR (nitrile rubber)							

Product overview

Performance range, MQ 60 Hz



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Product range, MQ

Range	MQ 3-35	MQ 3-45
Maximum flow rate [gpm (m³h)]	19 (4.3)	
Maximum pressure [psi (bar)]	49 (3.4)	63 (4.3)
Maximum system pressure [psi (bar)]	109 (7.5)	
Maximum inlet pressure [psi (bar)]	40 (2.7)	
Maximum suction lift [ft (m)]	26 (8)	
Minimum ambient temperature [°F (°C)]	32 (0)	
Maximum ambient temperature [°F (°C)]	113 (45)	
Minimum liquid temperature [°F (°C)]	32 (0)	
Maximum liquid temperature [°F (°C)]	95 (35)	
Net weight [lbs (kg)]	29 (13.2)	
Sound pressure level [dB(A)]	< 60	
Tank volume [oz (ml)]	13.5 (399)	
Air pressure in tank [psi (bar)]	22 to 25 (1.5 to 1.7)	
Connections	1" NPT	
Priming and drain plugs	3/8" GAS	

Construction

Components, MQ

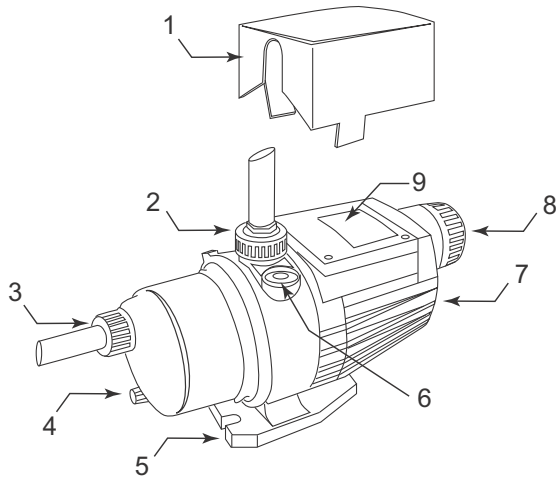
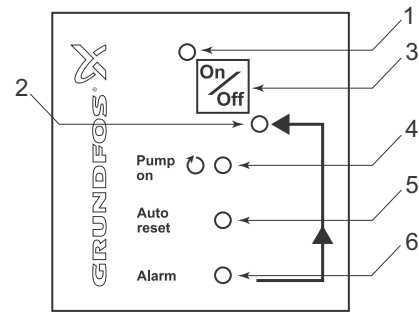


Fig. 16 MQ pump components

Pos.	Description
1	Protective cover (accessory)
2	Discharge port
3	Suction port
4	Drain plug
5	Baseplate
6	Priming plug
7	Shaft access port plug
8	Pressure tank
9	Control panel

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MQ control panel



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Fig. 17 MQ control panel

Pos.	Description
1	Power indicator light
2	Pump ON (green)
3	Auto reset
4	Alarm (red)
5	On/Off button
6	Pressure tank

Material specification, MQ

Pos.	Components	Material
2	Support flange	PP + 30 % glass fiber
4	Chamber	PPO + 20 % glass fiber
7	Drain and priming plug	PPO + 20 % glass fiber
10	Self-priming valve	PP + 30 % glass fiber
14	Self-priming part	PPO + 20 % glass fiber
16	Pump sleeve	Stainless steel, DIN W.-Nr. 1.4301, AISI 304
42	Tank cover	PP + 30 % glass fiber HB (f1)
49	Impeller	PPO + 20 % glass fiber-PTFE
51	Motor cover	PP + 30 % glass fiber HB (f1)
65	Non-return valve	POM + 25 % glass fiber
92	Clamp	Stainless steel, DIN W.-Nr 1.4301, AISI 304
100a	Discharge port	PPO + 20 % glass fiber

Pos.	Components	Material
101	Suction port	PPO + 20 % glass fiber
103 104	Shaft seal: Stationary and rotating part	Carbon/ceramics/NBR rubber
149	Insulation disc	PA 5VA (Polyamide)
150	Shaft	Stainless steel, DIN W.-Nr 1.4005, AISI 416
	Motor sleeve	Stainless steel, DIN W.-Nr 1.4301, AISI 304
164	Terminal box cover	PP + 30 % glass fiber 5VA (f1)
174a	Pressure switch	POM + 25 % glass fiber / SIL Rubber (Silicone Rubber)
	Pressure switch membrane	SIL Rubber - Silicone Rubber.
180	Motor body	PP + 30 % glass fiber 5VA (f1)
184	Flow sensor	POM + 25 % glass fiber
	O-rings	NBR-rubber

POM: Polyoximetylen
 NR-rubber: Natural Rubber
 PPO: Polyphenylene Oxides
 PP: Polypropylene
 NBR-rubber: Nitrile-Butadiene Rubber

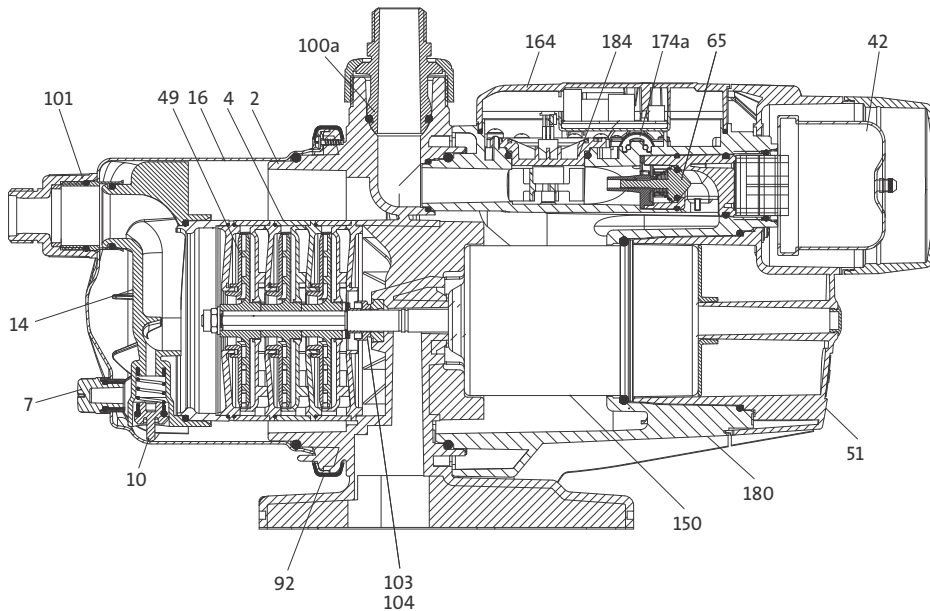


Fig. 18 MQ exploded view

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Operating conditions

System pressure:	Max. 109 psi (7.5 bar)
Inlet pressure:	Max. 40 psi (2.8 bar)
Suction lift:	Max. 26 ft (8 m)
Liquid temperature:	32°F to +95°F (0°C to +35°C)
Ambient temperature:	32°F to +113°F (0°C to +45°C)

Installation

Location

The pump is suitable for indoor and outdoor installation. It is resistant to sunlight. For outdoor installation, the pump must be fitted with a protective cover (accessory). Should the unlikely event of an internal leakage occur, pumped liquid will be drained out from the base and/or end cover instead of damaging the pump. Install the pump in such a way that no undesirable collateral damage can arise.

Positioning the pump

Mount the pump on the base plate with horizontal suction port and vertical discharge port.

The pump must be installed horizontally.

The maximum permissible inclination angle is +/- 18 °.

To prevent movement and vibrations, the pump and base plate can be secured to a solid foundation by means of the bolt holes in the base plate.

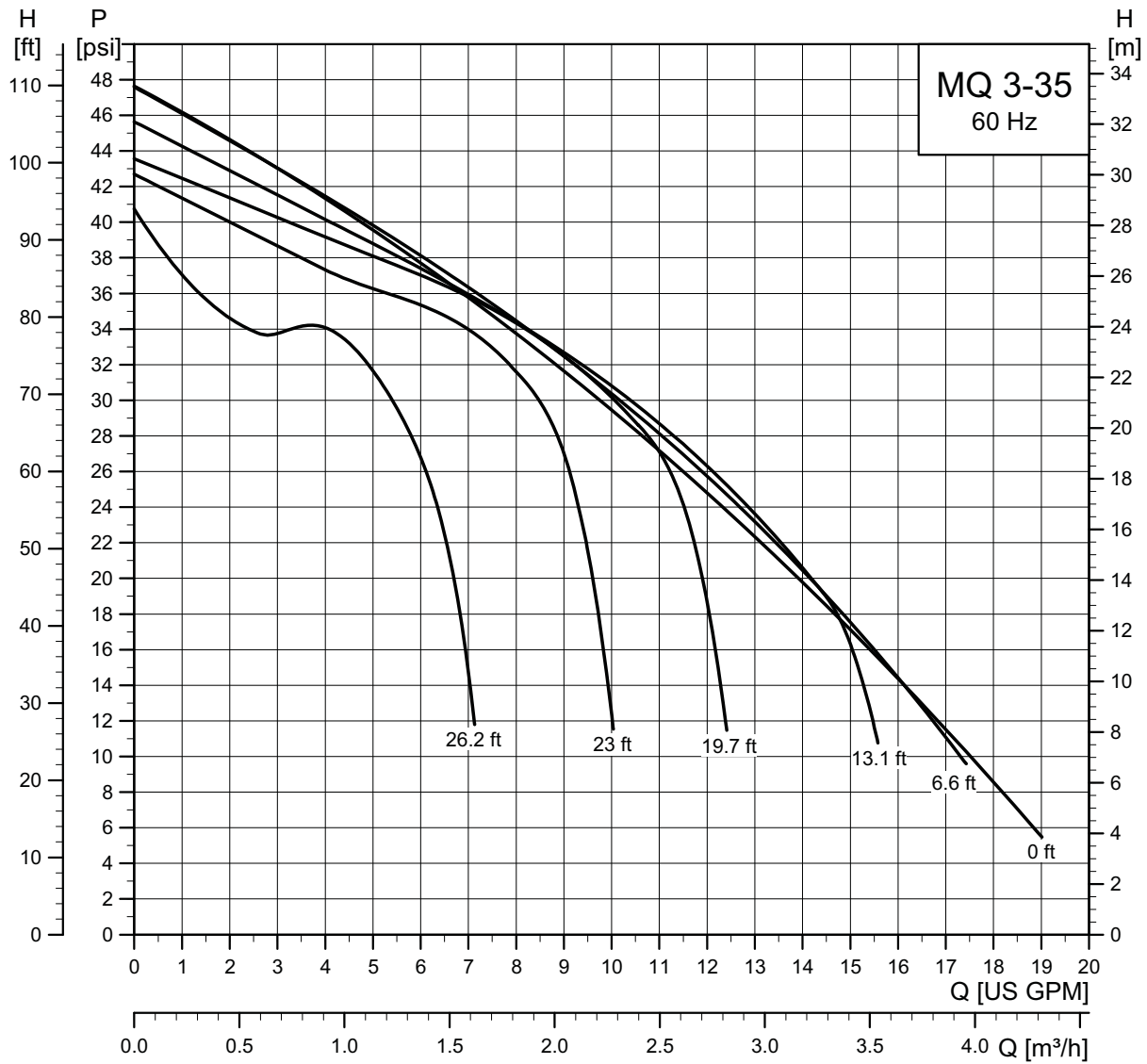
Selection of product

MQ is available in two sizes and two voltages.

Model	Voltage [V]	Product number
MQ 3-35	115	96860172
	230	96860201
MQ 3-45	115	96860195
	230	96860207

Curve charts and technical data

MQ 3-35 60 Hz, suction lift performance curve

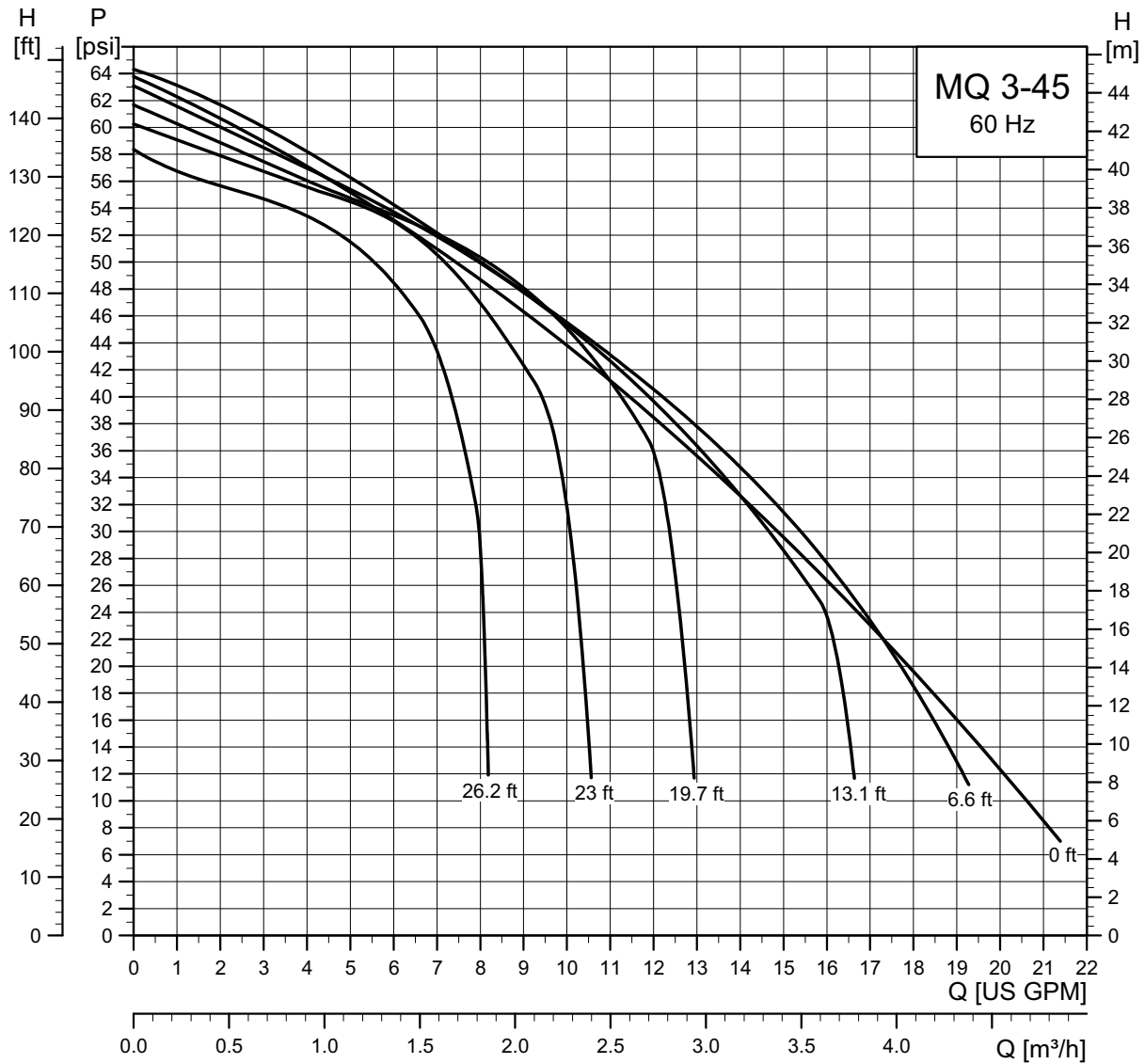


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Provided it is filled with water, the pump is able to lift water from a depth of 26 ft (8 m) in less than 5 minutes.

Note: Use with a foot valve in suction lift applications.

MQ 3-45 60 Hz, suction lift performance curve

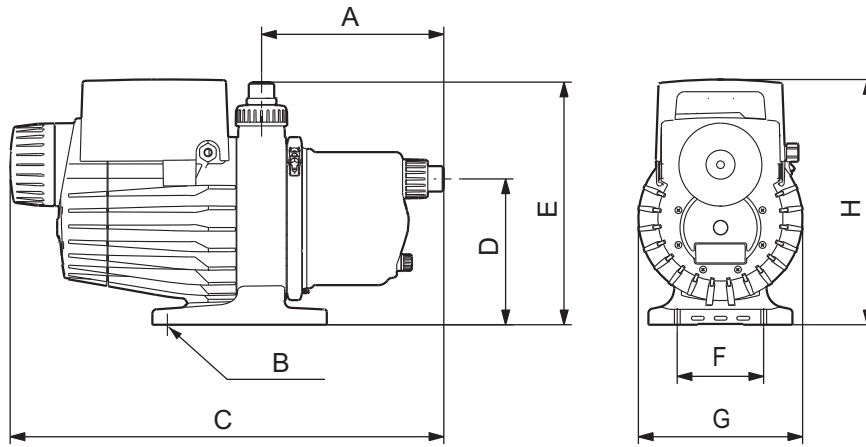


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Provided it is filled with water, the pump is able to lift water from a depth of 26 ft (8 m) in less than 5 minutes.

Note: Use with a foot valve in suction lift applications.

Dimensional sketch - MQ



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Dimensions [in (mm)]

A	B	C	D	E	F	G	H
9.45 (240)	2 x 3/8 (2 x 9.6)	22.44 (570)	7.56 (192)	12.60 (320)	4.49 (114)	8.58 (218)	12.74 (324)

Weights and electrical data

-10/+6 % voltage tolerance
7.5 ft. power cord with plug

Model	Part Number	Phase, Volts	Amps		P2		Net wt. [lb (kg)]
			Run	Start	W	Hp	
MQ 3-35	96860172	1X110-120V	8	29	585	0.75	30.1 (13.7)
MQ 3-45	96860195	1X110-120V	10	29	725	1	30.2 (13.7)
MQ 3-35	96860201	1X220-240V	4	15	565	0.75	30.1 (13.7)
MQ 3-45	96860207	1X220-240V	4.8	15	716	1	30.2 (13.7)

Approvals

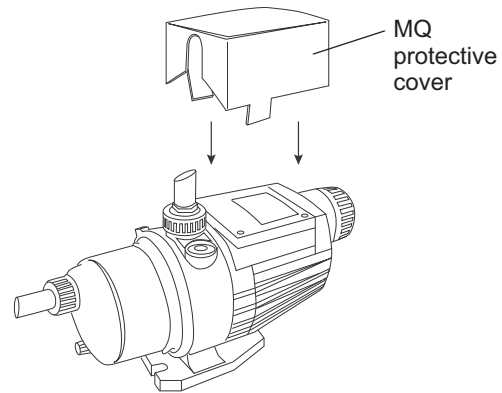


Accessories, MQ

MQ protective cover

Protects keypad and electronics in outdoor applications. Required for outdoor applications where MQ is exposed to the elements. Two Velcro tabs are included to help adhere back end of cover to pump.

Description	Material	Product number
MQ protective cover	Polypropylene with Velcro tabs	96693071



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