

GRUNDFOS PRODUCT GUIDE

Domestic water supply

BMQE, MQ, Jets
60 Hz



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1. Grundfos DWS family

The Grundfos Domestic Water Supply (DWS) family of pumps includes:

- BMQE Constant Pressure System
- MQ Flow Based Pressure System
- Jet pumps.

This product guide offers information about each of these product lines.

DWS applications

The Grundfos DWS family includes pumps to fit most applications including:

- Constant pressure systems (BMQE)
- flow-based pressure boosting (MQ)
- rain water harvesting (MQ)
- pressure-switch-based boosting (Jet)
- suction lift (Jet).

Application	Product		
	BMQE	MQ	Jet
Constant pressure system	●	-	-
Flow-based pressure boosting	-	●	-
Rain water harvesting	-	●	-
Suction lift	-	●	●
Pressure-switch-based boosting	-	-	●

Constant pressure systems

In constant water pressure systems, only the required discharge pressure needs setting (fig. 1).

Cut-in and cut-out pressures do not play a role in this system.

Discharge pressure can be set from 40 to 100 psi, according to individual needs and piping system limitations.

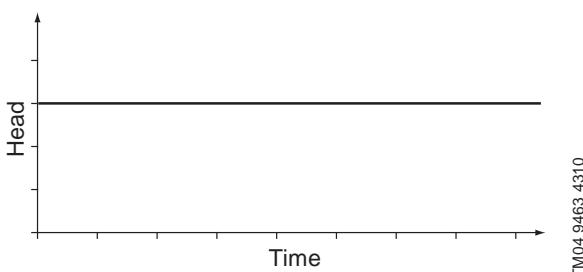


Fig. 1 In a constant pressure system, pressure does not vary in relationship to consumption

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Flow-based pressure boosting

With flow-based pressure boosting, the pump starts automatically when water is consumed and stops automatically when the consumption ceases. This is accomplished via a flow switch connected to a printed circuit board (PCB).

The pump will produce pressure in relation to the flow rate with any incoming pressure cumulative to the total discharge pressure (fig. 2).



Fig. 2 Flow-based pressure boosting

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Rain water harvesting

Rain water harvesting is a way to store rain water for future use — for example, watering a garden. Rain water is collected from the roof of a home and collected into a storage container. Pull a suction lift using a non-collapsible suction line from the storage container or connect the inlet of the pump to a spigot at the bottom of the collection barrel for flooded suction.

Suction lift

High pressure water from the drive pipe passes through the venturi and pulls water from the well into the ejector, then pushes it up to the pump. This makes it possible to push water up to the pump from depths greater than 25 feet or to boost the output from a shallow well pump to higher pressures.

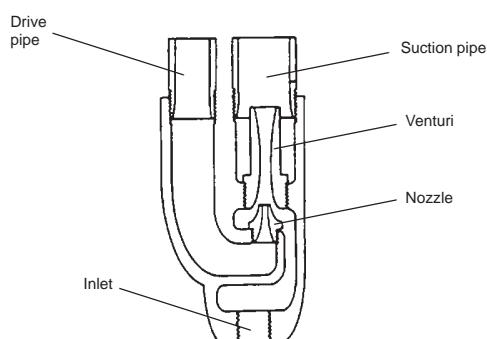


Fig. 3 Suction lift pressure boosting

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Pressure-switch-based boosting

Pressure switches are used to control pump operation. These switches have a cut-in pressure and a cut-out pressure to turn the pump on and off respectively.

DWS product selection

Matching consumption and pump capacity

Selecting the right pump is a matter of matching water consumption with pump capacity. For best performance, avoid installing an undersized or oversized pump. Consumption may vary greatly depending on housing standards and lifestyle. For example, lawn sprinkler systems in the summer can increase consumption.

Pump selection

Pump selection is based on the water demand and required system head.

The water demand depends on the number of consumers connected to the system.

Head can either be expressed in feet or psi. Head refers to static head, pressure head, and friction head.

For assistance with pump selection, refer to the WebCAPS product selection program; a link to CAPS may be found on the Grundfos website.

Piping

In any water supply system, the sizing and choice of materials of the pipework has an impact on the choice of pumps and on the cost. Piping takes into account the system head as referred to in Pump Selection. Static head is the distance from the ground water level to the uppermost tap. Pressure head is the system pressure the user wants to achieve.

In most residential application this pressure is approximately 60 psi. Friction head depends on the pipe size, type and length.

When calculating friction loss remember to allow for deterioration in the piping schematic, since all water pipes will eventually become coated with rust, lime deposits, etc.

Flow velocity in the piping must be kept low as noise can occur due to turbulence in elbows and valves or from water hammer.

Fitting a pressure relief valve in the discharge piping is recommended to protect the piping from over-pressure due to system malfunction.

Pressure tanks

A pressure tank should be installed in order to minimize the number of pump starts and stops in the water supply system, and to reduce problems with water hammer in the pipework.

Tanks are included with the BMQE Constant Pressure System and the MQ. The BMQE system has an external tank. The MQ has an internal tank.

Jet pumps, however, may require the addition of a tank depending upon the application.

Pressure switches

Pressure switches are used to control pump operation. These switches have a cut-in pressure and a cut-out pressure to turn the pump on and off.

The BMQE Constant Pressure System includes a pressure transducer for constant pressure. The MQ has a built-in pressure switch. Jet pumps have an attached pressure switch.

Valves

Check valves

A check valve is a mechanical device which normally allows fluid to flow through in only one direction.

The BMQE Constant Pressure System and the MQ have built-in check valves. For suction lift applications with the MQ, a check valve (provided) is required at the inlet.

Foot Valves

A foot valve is required when pulling a suction lift (shallow or deep well) with a Jet pump. This valve is installed at the end of the suction pipe to prevent back flow. The MQ will also benefit from the use of a foot valve with suction lift applications.

Shut off valves

Shut off valves in the piping system make it possible to drain only the part of the system that needs attention or repair.

Flow control valves

Flow control valves are used in applications where a set flow (gpm) is required; for example, a shower head or an irrigation system.

Pressure reducing valves

Pressure reducing valves are used in applications where the incoming water pressure exceeds the maximum inlet pressure of the pump as is the case with the MQ and city water pressure. The pressure reducing valve (PRV) is used inline after the city water tap and before the pump to ensure a set pressure.

Pressure relief valves

This valve is a spring controlled device that can be adjusted to meet the needs of the pumping system. Pressure relief valves are used in applications where high pressure can result in damage to accessories; for example, tanks with maximum pressure ratings.

2. BMQE

Product introduction

The BMQE Constant Pressure System maintains constant water pressure under varying demand, even with multiple taps running. The BMQE is a complete pressure boosting system that includes:

- pump
- controller
- tank
- mounting brackets
- pressure sensor.



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Fig. 4 Grundfos BMQE Constant Pressure System

High-quality construction and rugged design ensure low maintenance and trouble-free operation. The system is based on the time-tested technology of the Grundfos SQE constant pressure system (for submersible applications).

The pump's MSE 3 motor incorporates solid state electronics and permanent magnet motors which account for high motor efficiencies.

Variable speed is offered through frequency control via the CU 301 remote status box. The system can be set to operate at any duty point in the range between minimum and maximum performance of the pump.

The BMQE has built in safeties in the solid state electronics. The small footprint of the pump allows the system to be positioned either vertically or horizontally depending upon the application. Refer to the BMQE (previously EZ Boost) pages on our web site at www.grundfos.us.

Applications

The BMQE Constant Pressure System is suitable for:

- condos
- restaurants
- homes
- irrigation
- offices
- grocery applications
- many other boosting applications.

Pumped liquids

The BMQE Constant Pressure System is suitable for pumping water or other clean, thin, non-aggressive liquids not containing solid particles or fibers.

Features and benefits

With the Grundfos BMQE Constant Pressure System, constant pressure is as simple as a touch of a button on the accompanying CU 301 control unit.

Features

- Quick and easy installation
- ready-to-use system requires minimal space
- high user convenience (constant pressure regardless of consumption)
- easily adjustable pressure level with push button control
- continuous control and monitoring of pump operation
- integrated dry-running protection
- integrated overload protection
- integrated protection against over-voltage and under-voltage
- soft start feature.

Benefits

The BMQE Constant Pressure System automatically balances water surges and equalizes flow and pressure according to consumption.

In other words, the system maintains a constant water pressure despite varying consumption.

The pressure is registered by means of a pressure sensor and transmitted to the controller. The controller adjusts the BMQE pump performance accordingly.

How the system functions

When a tap is opened, the pressure in the tank will start to drop. The system maintains a constant pressure within the maximum pump performance despite varying water consumption.

The pressure is registered by means of the pressure sensor, which transmits a signal to the controller. The controller adjusts the pump performance accordingly to maintain constant pressure by changing the pump speed.

At low flow the pressure will drop slowly. When the pressure in the tank is 7 psi below the setpoint, the pump will start. When the pressure is 7 psi above the setpoint, the pump will stop.

Even though the BMQE controller is controlling the pressure within + / - 3 psi, larger pressure variations may occur in the system.

If the consumption is suddenly changed — for example, if a tap is opened — the water must start flowing before the pressure can be made constant again. Such dynamic variations depend on the pipe work, but typically they will lie between 7 and 14 psi. If the desired consumption is higher than the quantity the pump is able to deliver at the desired pressure, the pressure follows the pump curve as illustrated in the far right of fig. 5.

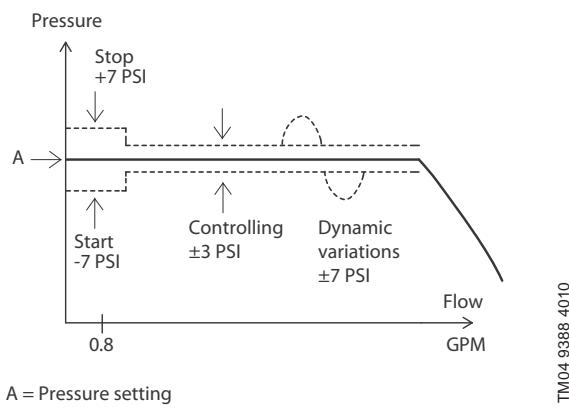


Fig. 5 System function

At large flow rates, the pressure will drop quickly and the pump will start immediately and maintain constant pressure. When the system is running, the controller makes small adjustments to the pressure to detect whether there is consumption. If there is none, the pump will simply refill the tank and stop after a few seconds.

BMQE pump

The pumps used for BMQE system are modified SQE submersible pumps. The BMQE pump is an SQE pump with an MSE 3 motor. The pump and motor are centered in the 4 inch stainless steel sleeve.

BMQE pumps are suitable for both continuous and intermittent operation for a variety of pressure boosting applications.

BMQE controller

The BMQE controller is a control and communication unit specifically developed for the BMQE booster pumps in constant pressure applications.

The controller provides:

- Full control of the BMQE pumps
- Two-way communication with the BMQE pumps
- Possibility of adjusting the pressure
- Alarm indication (LED) when service is needed
- The possibility of starting, stopping and resetting the pump simply by means of a push-button.

The controller communicates with the pump via power line communication, meaning that no extra cables are required between the controller and the BMQE pump.

The controller incorporates external signal input for pressure sensor and a pump status relay for use with devices dependant on pump status.

BMQE motor

The MSE 3 motors are based on state-of-the-art technology within permanent magnets (PM motor), which accounts for the high motor efficiencies. In addition, the motors have a built-in electronic unit with a frequency converter for variable frequency and soft starting.

The MSE 3 motors features high efficiency within a wide load range. The high and flat efficiency curve of the PM motor enables the same motor to cover a wide power range as opposed to conventional AC motors. For BMQE pumps, this means fewer motor variants.

Diaphragm tank

The pre-charge pressure of the diaphragm tank must be set to 70 % of the pressure setting in order to use the tank to the limit of its capacity.

Use the values in the following table. Pre-charge pressure is measured with 0 psi in the pipeline.

Setting (psi)	Pre-charge pressure (psi)
40	28
50	35
60	42
70	49
80	56
90	63
100	70

Only a 2-gallon tank (Grundfos part number 91121984) is recommended in the BMQE system. Use of a different size tank will result in pressure fluctuations.

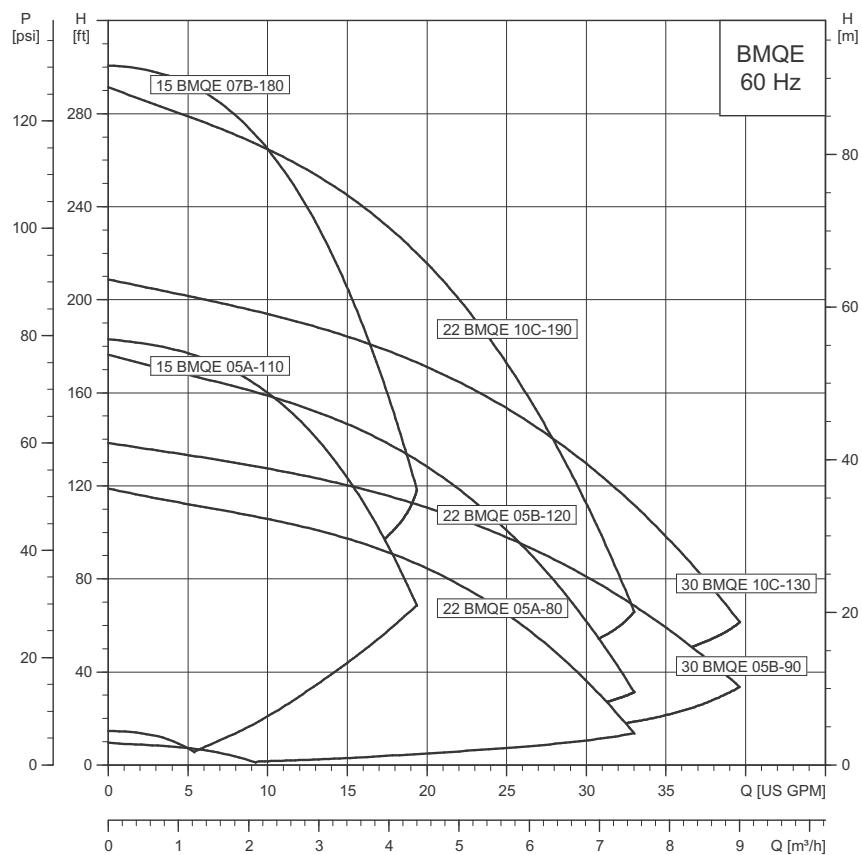
Identification

Type key

Example	22	BMQ	E	05B	120
Rated flow [US gpm]	22				
BMQE pump		BMQ			
Electronically controlled pump via BMQE controller			E		
Motor [Hp]				05B	
Head at rated flow [ft]					120

Product overview

Performance range, BMQE 60 Hz

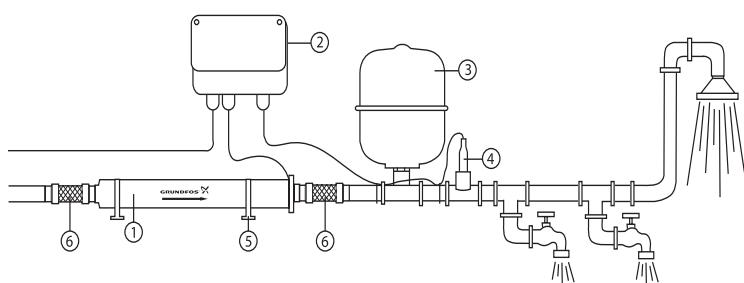


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Product range, BMQE

Range	BMQE 15	BMQE 22	BMQE 30
Nominal flow rate [US gpm (m³/h)]	15 (3.4)	22 (5.0)	30 (6.8)
Liquid temperature range [°F (°C)]		+32 to +95°F (0 to +35°C)	
Maximum inlet pressure [psi (bar)]		217 (15)	
Minimum inlet pressure [psi (bar)]		8 (0.5)	
Maximum working pressure [psi (bar)]		347 (23)	
Maximum efficiency [%]	57	62	60
Flow range [US gpm (m³/h)]	0 to 19 (4.3)	0 to 33 (7.5)	0 to 39 (8.8)
Maximum pump pressure [ft (m)/psi]	300 (91.4)/130	290(88.4)/125	208(63.4)/90
Pipe connection	1.25" NPT inlet / 1" NPT discharge		

System diagram



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Pos. Description

- 1 BMQE pump
- 2 BMQE controller
- 3 Diaphragm tank*
- 4 Pressure sensor
- 5 Mounting brackets
- 6 Flex connector**

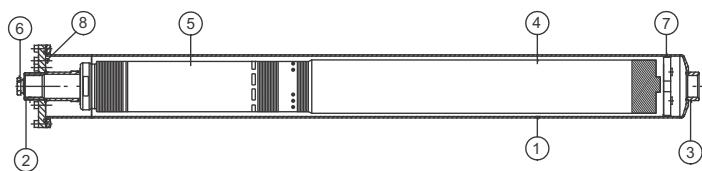
* Recommended size:

2 U.S. gal (8 liter) / 130 psi

** Not sold by Grundfos

Construction

Components, BMQE

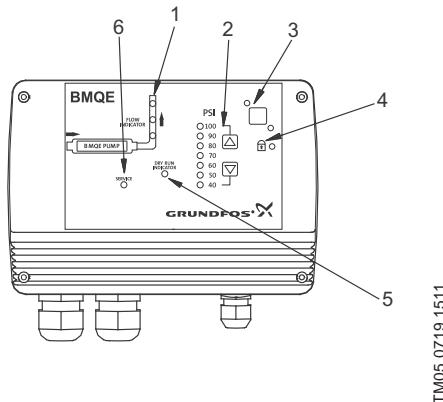


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Pos. Description

- 1 Sleeve
- 2 Discharge connection
- 3 Suction connection
- 4 MSE 3 motor
- 5 SQE pump
- 6 Cable entry
- 7 Centering device
- 8 Air vent screw

Components, BMQE controller



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Pos. Description

- 1 Flow indicator
- 2 System pressure setting
- 3 System ON/OFF
- 4 Button lock indicator
- 5 Dry-running indicator
- 6 Service needed in case of:
 - No contact to pump
 - Over voltage
 - Under voltage
 - Speed reduction
 - Over temperature
 - Overload
 - Sensor defective

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Material specification

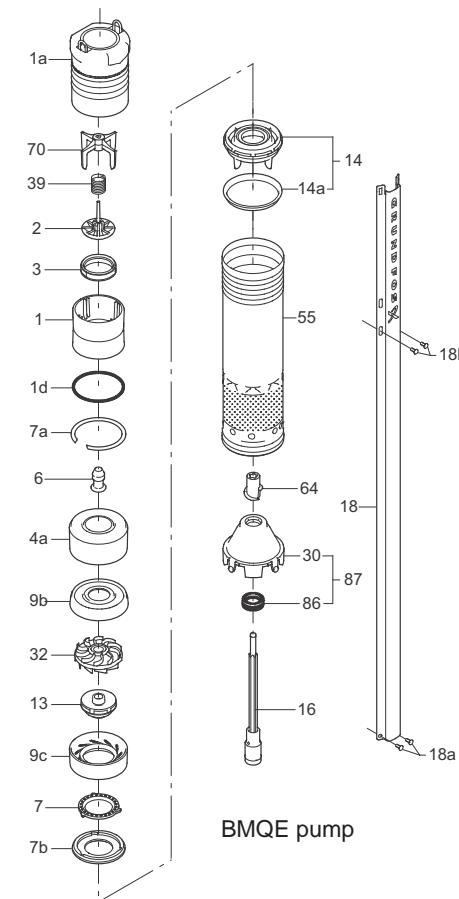
Sleeve			
Pos.	Description	Material	AISI
90	Sleeve	Stainless steel	316
91	Flange	Stainless steel	304
92	Cable entry	Stainless steel/FKM	304
93	Air vent screw	Stainless steel	304
94	O-ring	FKM	

Pump			
Pos.	Description	Material	AISI
1	Valve casing	Polyamide	304
1a	Discharge chamber	Stainless steel	
1d	O-ring	NBR rubber	
2	Valve cup	Polyamide	
3	Valve seat	NBR rubber	
4a	Empty chamber	Polyamide	
6	Top bearing	NBR rubber	
7	Neck ring	TPU / PBT	
7a	Lock ring	Stainless spring steel	310
7b	Neck ring retainer	Polyamide	
9b	Chamber top	Polyamide	
9c	Chamber bottom	Polyamide	
13	Impeller with tungsten carbide bearing	Polyamide	
14	Suction interconnector	Polyamide	
14a	Ring	Stainless steel	304
16	Shaft with coupling	Stainless steel	304
		Sintered steel	
18	Cable guard	Stainless steel	304
18a	Screws for cable guard	Stainless steel	316
18b			
30	Cone for pressure equalization	Polyamide	
32	Guide vanes	Polyamide	
39	Spring	Stainless spring steel	316LN
55	Pump sleeve	Stainless steel	304
64	Priming screw	Polyamide	
70	Valve guide	Polyamide	
86	Lip seal ring	NBR rubber	
87	Cone for pressure equalization complete	Polyamide / NBR rubber	

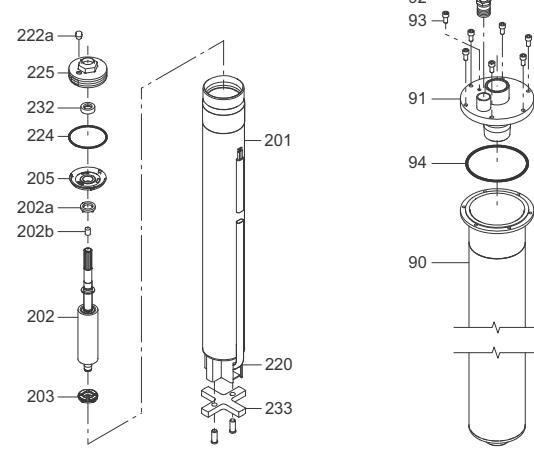
Motor			
Pos.	Description	Material	AISI
201	Stator	Stainless steel	304
202	Rotor	Stainless steel	304
202a	Stop ring	PP	
202b	Filter	Polyester	
203	Thrust bearing	Carbon	
205	Radial bearing	Ceramic	
220	Motor cable with plug	EPR	
222a	Filling plug	MS 3: NBR MSE 3: FKM	
224	O-ring	FKM	
225	Top cover	PPS	
232	Shaft seal	MS 3: NBR MSE 3: FKM	
233	Motor liquid	SML-2	

Key

NBR = Nitrile Butadiene Rubber
 TPU = Thermoplastic Polyurethanes
 PBT = Polybutylene Terephthalate
 PP = Polypropylene
 EPR = Ethylene Propylene Rubber
 FKM = Viton
 PPS = Polyphenylene Sulphide



BMQE pump



BMQE motor

BMQE sleeve

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Fig. 6 BMQE exploded view

Operating conditions

Flow:	Max. 39 US gpm (8.9 m ³ /h)
Head:	Max. 300 ft (91.4 m)
Liquid temperature:	Max. 95°F (35°C)
Operating pressure:	Max. 347 psi (23 bar)
Inlet pressure:	Min. 8 psi (0.55 bar)
Sound-pressure level:	The sound pressure level of the BMQE is lower than 74 db[A] at a distance of 3 ft (1 m).

Installation

Location of installation

The sound pressure level of the BMQE is <74 db[A] at a distance of 3 ft (1 m). It is recommended by Grundfos that the pump be installed with sound and vibration dampening equipment (flexible piping adapters and anti-vibration mounting — not sold by Grundfos).

Like most mechanical equipment, this system can create noises and vibrations. Grundfos recommends that the BMQE pump should not be mounted in or adjacent to living quarters.

Positioning the pump

The GRUNDFOS BMQE pump is supplied with a built-in non-return valve. An arrow on the BMQE sleeve shows the direction of liquid flow through the pump (fig. 7).

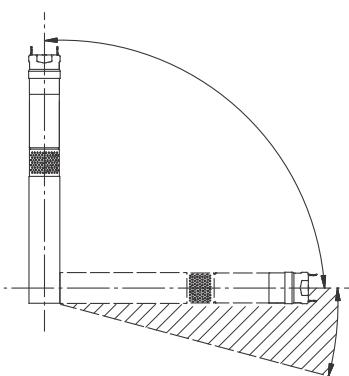
The BMQE is suitable for both vertical and horizontal installation; however, the discharge port should never fall below the horizontal plane. See fig. 8.

The BMQE must be installed with the air relief vent in the 12 o'clock position when installed horizontally and when installed in the vertical position, the air vent must be at the top of the unit.



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Fig. 7 Arrow showing direction of liquid flow through pump

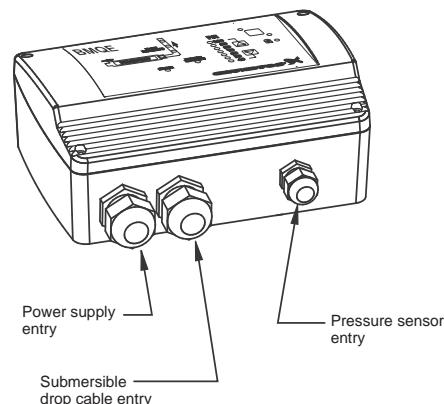


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Fig. 8 Installation positions

Controller installation

All BMQE pumps can be connected to BMQE controllers. Each BMQE pump must be connected to its own BMQE controller.



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Fig. 9 BMQE controller entry ports

Connection of motor

The BMQE incorporates a starter device and can therefore be connected directly to the main power supply. The BMQE incorporates thermal overload protection and requires no additional motor protection.

Cable installation

In situations where multiple BMQE power cables are run parallel in wiring trays or conduit and less than 12 inches apart, the possibility for undesired communication between units exists. When this occurs, intermittent or continuous NO CONTACT is typically seen. Other unexpected errors may also be seen.

The chart shows single-phase 60 Hz maximum cable length motor service to entrance. The maximum cable length with one BMQE controller is 650 ft (198.1 m); the maximum wire size is 10 AWG.

Maximum cable length (one controller)					
Volts	Hp	Motor rating			Copper wire size (AWG)
		14	12	10	Maximum cable length [ft (m)]
115	0.50	100 (30.5)	160 (48.8)	250 (76.2)	
	0.50	400 (121.9)	650 (198.1)	650 (198.1)	
	0.75	300 (91.4)	480 (146.3)	650 (198.1)	
230	1.0	250 (76.2)	400 (121.9)	630 (192)	

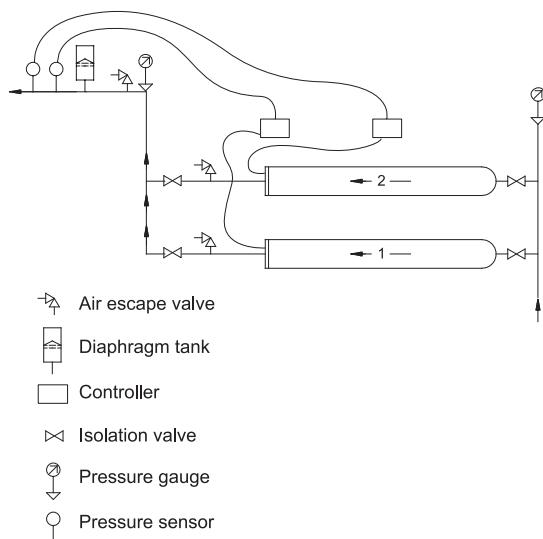
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BMQE pumps connected in parallel

When connecting BMQE pumps in parallel (fig. 10) a separate BMQE controller must be used on each BMQE pump.

Set the pressure on one BMQE 10 psi lower than the other.

For BMQE pumps connected in parallel, mount one above the other; it is recommended to connect the pipes as shown in fig. 10. This layout ensures that the BMQE pumps are filled with water before starting.



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Fig. 10 Booster unit with two BMQE pumps connected in parallel, mounted one above the other

Additional considerations when connecting in parallel:

- All BMQE modules are supplied with a non-return valve.
- BMQE modules connected in parallel may also be installed vertically.
- As venting problems may arise in such installations, it is advisable to install suitable air vent devices.
- The BMQE should be positioned with the discharge and air vent at the top when installed vertically.
- When the maximum flow for BMQE pumps in parallel will exceed 35 gpm, a 4-gallon or two 2-gallon diaphragm tank(s) should be used.

Pressure sensor installation

The BMQE controller keeps the pressure constant in the place where the pressure sensor is positioned.

The maximum shielded cable length for the sensor must not exceed 1600 ft (487.7 m).

Generator operation

Power may be supplied to BMQE pumps by an adequately sized generator. The generator must be sized 50 % above the pumps P1 (input power) values.

Motor Hp	Minimum generator size [watts]	Recommended generator output [watts]
0.33 to 0.50 A	1100	1500
0.50 to 0.75 B	1700	2300
1.0 to 1.5 B	2000	3500

Quick selection guide

Example:

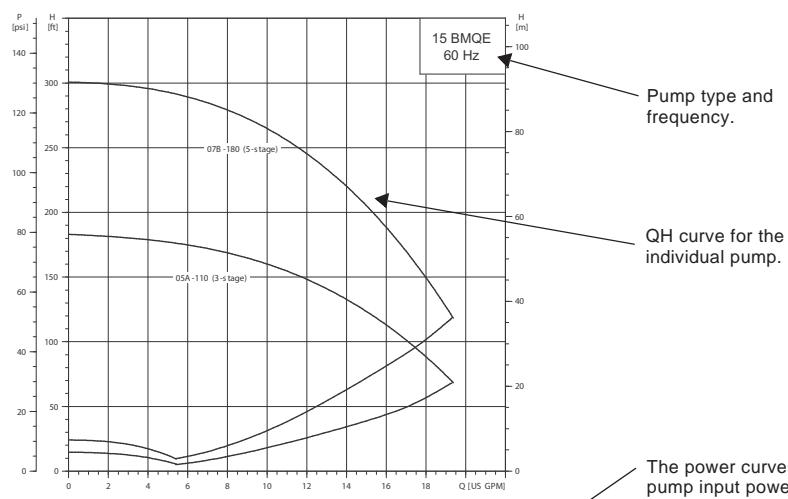
- The maximum demand is 15 gpm (3.4 m³/h).
- The pressure required is 70 psi (4.8 bar) system pressure at the taps in the building.
- The normal minimum inlet pressure (e.g. city pressure) is 20 psi (1.4 bar)
- The additional boost required is 50 psi (3.5 bar) at 15 gpm (3.4 m³/h).
- Select a 15 BMQE 05A-110.

Additional (boost) pressure required [psi]	Flow required [gpm]							
	5	10	15	20	25	30	35	39
90								
80								
70								
60								
50								
40								
30								
20								
10								

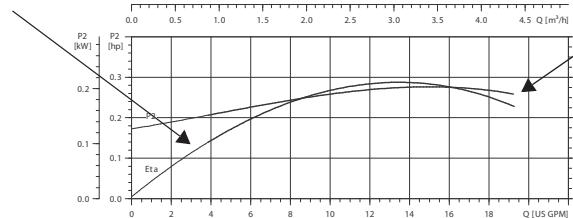
Curve charts and technical data

How to read the curve charts

The efficiency curve shows the efficiency of the pump. The efficiency curve is an average curve of all the pump types shown in the chart.



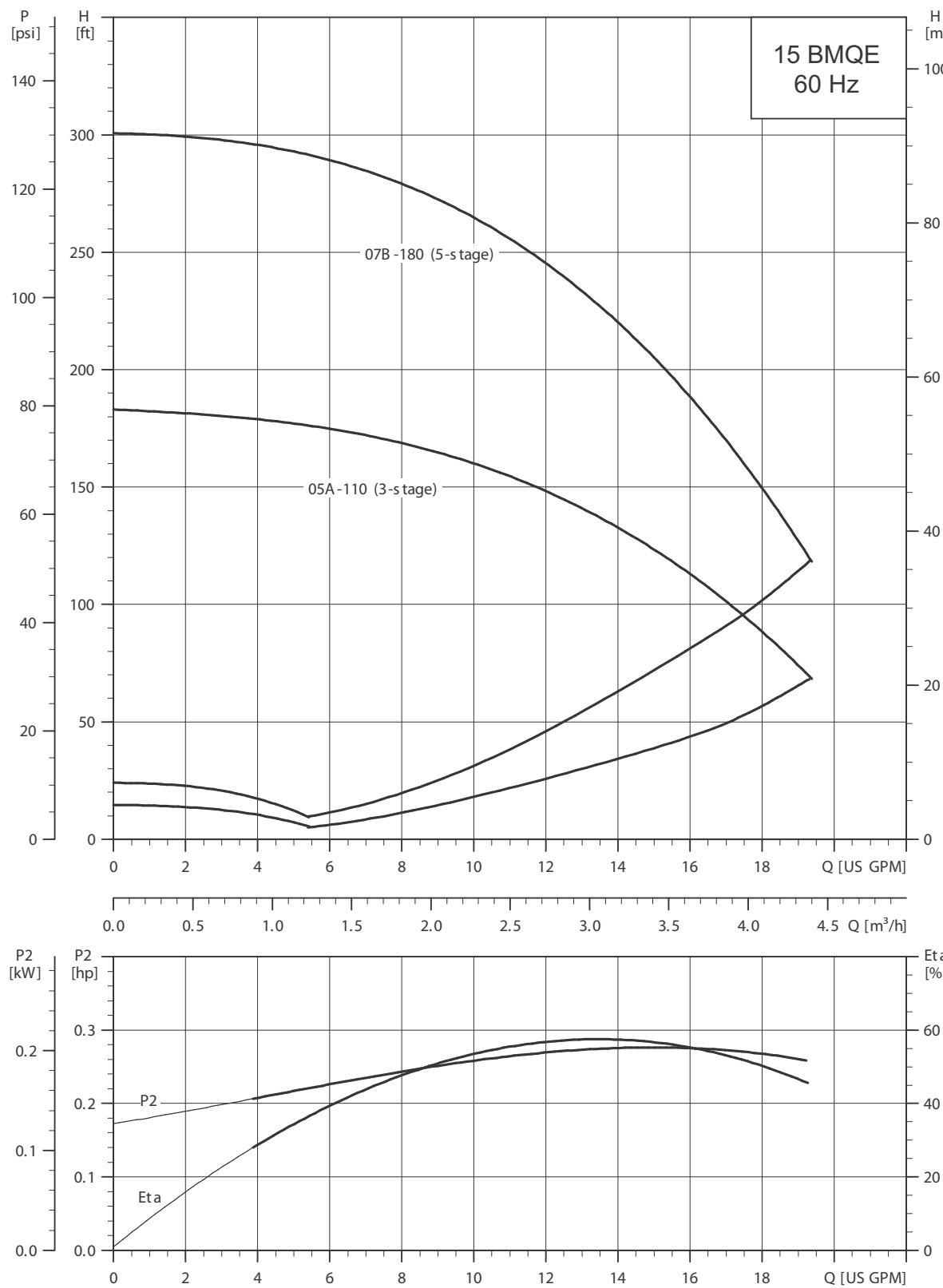
The power curves indicate pump input power **per stage**.



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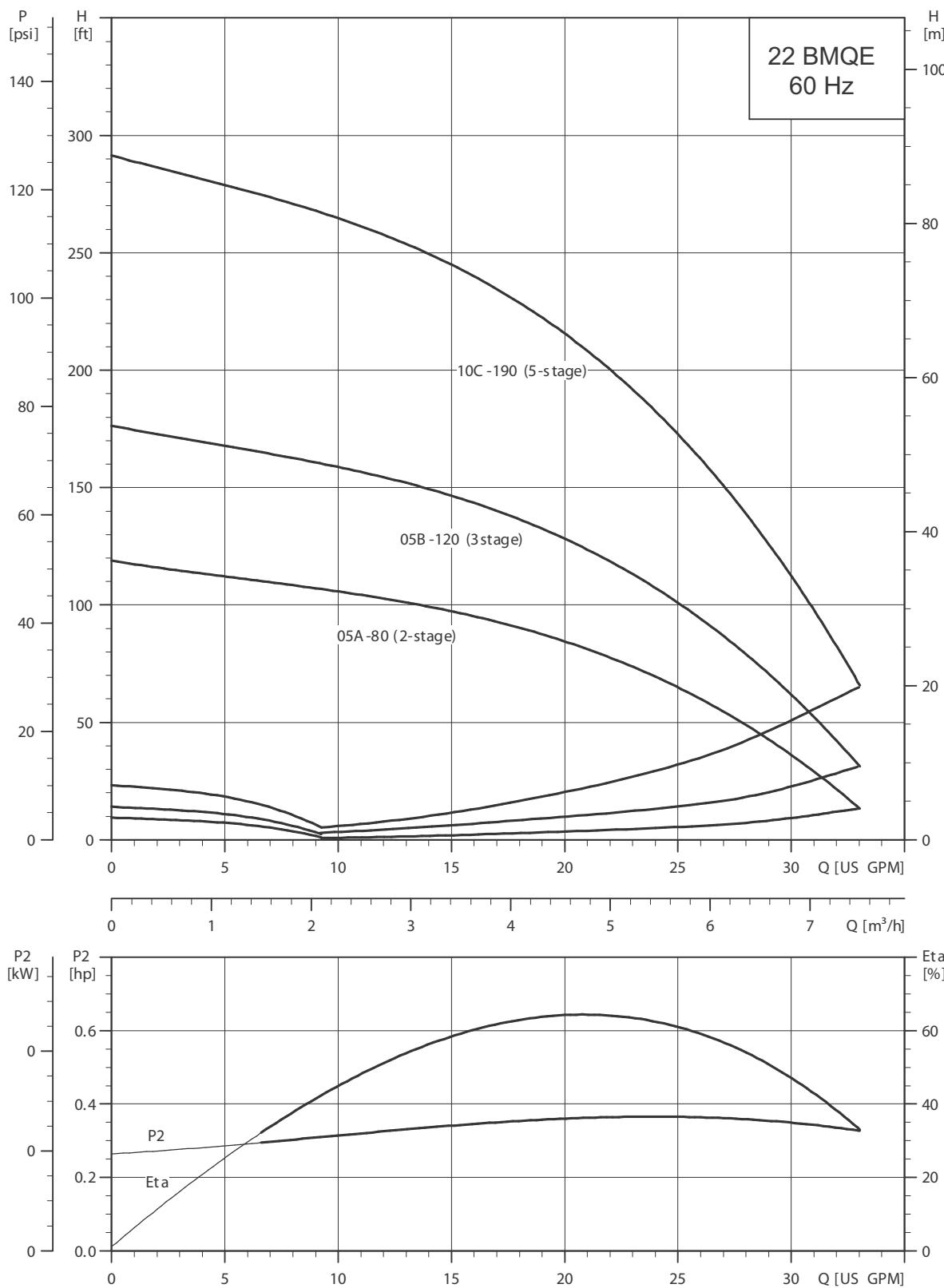
Domestic water supply

15 BMQE 60 Hz



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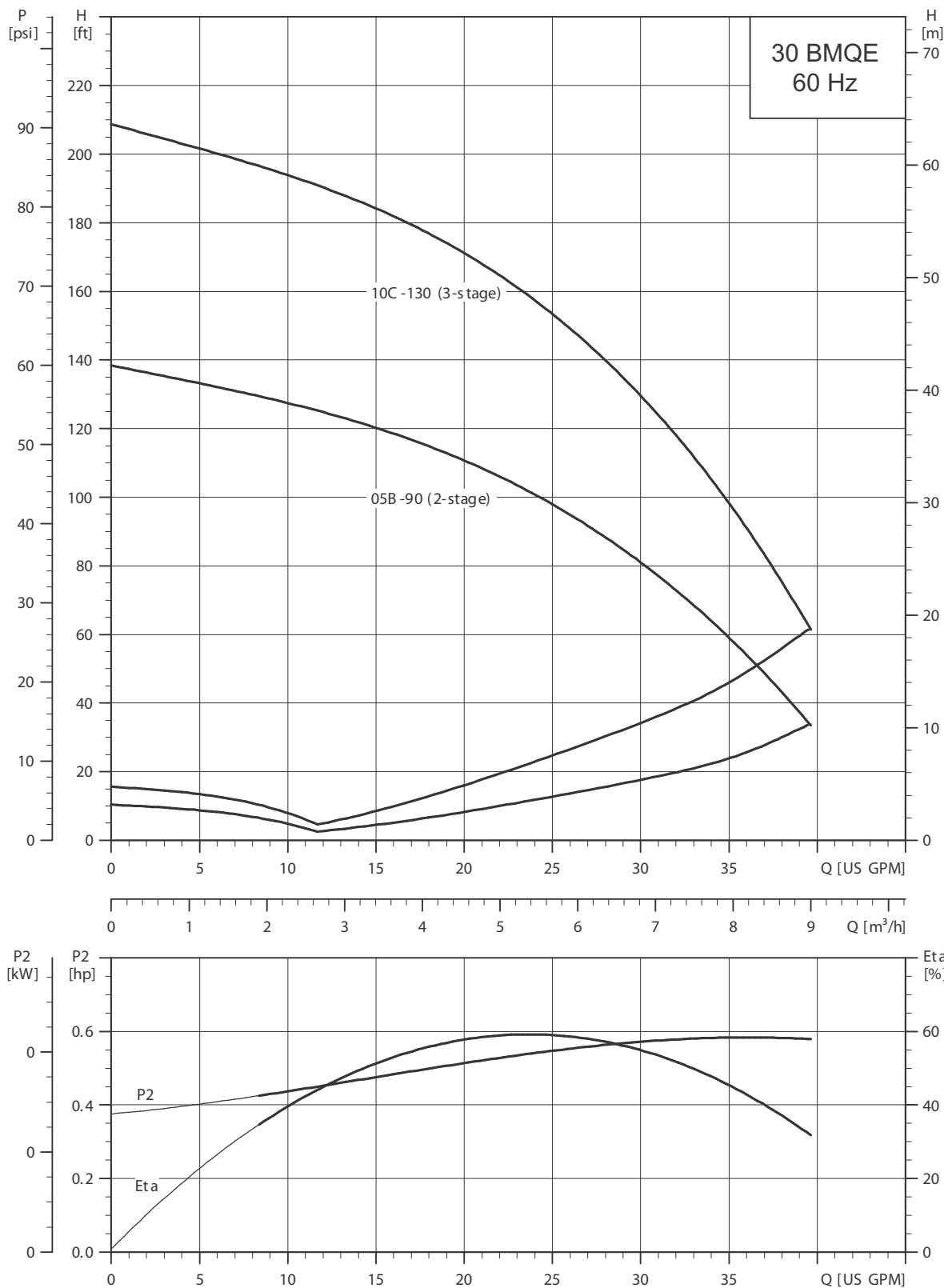
22 BMQE 60 Hz



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Domestic water supply

30 BMQE 60 Hz



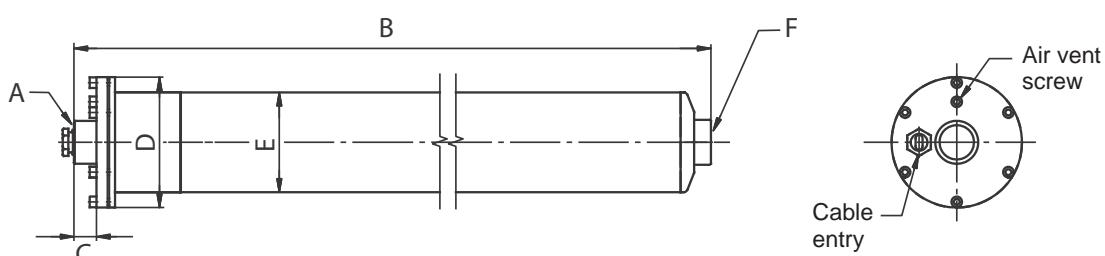
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Weights and electrical data

Model	Product number	Max. motor output [hp]	Rated voltage [V]	Rated current [A]	Locked rotor current [A]	Shipping weight [lb (kg)]	Shipping volume [ft ³ (m ³)]
15 BMQE 05A-110	91128524	0.845	110-115	9.2	11.1	26 (11.8)	
22 BMQE 05A-80	91128527	0.845	110-115	7.8	11.1	26 (11.8)	
15 BMQE 05A-110	91128525	0.845	200-240	4.6	5.0	26 (11.8)	
15 BMQE 07B-180	91128526	1.408	200-240	7.1	8.0	29 (13.2)	
22 BMQE 05A-80	91128528	0.845	200-240	3.9	5.0	26 (11.8)	
22 BMQE 05B-120	91128529	1.408	200-240	5.6	8.0	29 (13.2)	
22 BMQE 10C-190	91128530	2.320	200-240	9.9	11.1	31 (14.1)	
30 BMQE 05B-90	91128531	1.408	200-240	6.0	8.0	31 (14.1)	
30 BMQE 10C-130	91128533	2.320	200-240	9.5	11.1	31 (14.1)	

0.9 (0.025)

Dimensional sketch, BMQE pump

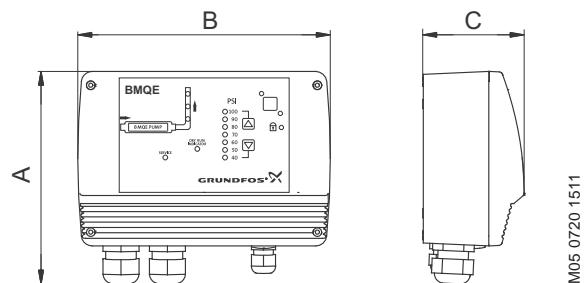


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Dimensions

A	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	F
1.0" NPT	43.3 (1100)	0.8 (20.5)	Ø 4.6 (116)	Ø 3.5 (88.9)	1.25" NPT

Dimensional sketch, BMQE controller



Dimensions [in (mm)]

A	B	C
7.68 (195)	9.13 (232)	4.49 (114)

Technical data, BMQE pump

Main power supply to pump	1 x 200-240 V -10 % / +6 %, 60 Hz 1 x 110-115 V -10 % / +6 %, 60 Hz
Starting	Soft starting. The motor starting current is equal to the highest value stated on the BMQE nameplate.
Stopping	Soft stopping when stopped by the BMQE controller
Run-up time	Maximum: 2 seconds. No limitation to the number of starts/stops per hour.
Motor protection	Built into the pump. Protection against: <ul style="list-style-type: none"> • Dry running • Over voltage and under voltage <ul style="list-style-type: none"> 230 V cuts out at < 150 V and > 280 V 115 V cuts out at < 75 V and > 150 V • Overload • Over temperature
Sound pressure level	The sound pressure level is < 74 db[A] at a distance of 3 feet (1 meter).
Reset function	BMQE pumps can be reset via BMQE controller
Power factor	PF = 1.
Operation via generator	It is recommended that the generator output is equal to the motor input power P1 [kW] plus 50 %; min. P1 +10 %, however.
Pipe connection	1.25" NPT inlet / 1" NPT discharge
Strainer	Holes of the strainer: ø0.09" (2.3 mm)
Approvals	UL Listed, CE (SQE Pump with MSE 3 motor only)
Weight	31 lbs. (14.1 kg)
Voltage	1 x 100-240 V -10 % / +6 %, 60 Hz

* Not sold by Grundfos.

Technical data, BMQE controller

Voltage	1 x 100-240 V -10 % / +6 %, 60 Hz
Power consumption	5 W
Current consumption	Maximum 130 mA
Motor cable	<ul style="list-style-type: none"> • 2-wire w/ground, 12 AWG Teflon • B: Black (Line, Neutral) • G: Green (Ground)
Enclosure class	NEMA 3R (IP 55)
Ambient temperature	In operation: -22 to +122 °F (-30 to +50 °C). During storage: -22 to +140 °F (-30 to +60 °C)
Relative air humidity	95 %
Pump cable	Maximum length between BMQE controller and pump: 650 ft (198 m)
Back-up fuse	Maximum: 16 A
Load	Max. 100 mA
Approvals	UL Listed, CE

Accessories, BMQE

BMQE constant pressure kit

Description	Rating	Product number
BMQE controller and pressure sensor	Setting range 40 to 100 psi (2.8 to 6.9 bar)	91128636

BMQE controller

Description	Rating	Product number
BMQE controller	Setting range 40 to 100 psi (2.8 to 6.9 bar)	91121987

Sensor

Description	Rating	Product number
Pressure sensor for BMQE controller	0 to 120 psi (0 to 8.3 bar), 1/2" NPT	96437852

Diaphragm tank

Description	Weight [lbs (kg)]	Product number
Diaphragm tank, 2 gal.	5 (2.3)	91121984

Dimensions

G connection	D [in (mm)]	H [in (mm)]
3/4" NPT	8 (203)	12.63 (321)

Specifications

Duty range

Pre-charge pressure: 40 psi (2.8 bar)

Max. operating pressure: 150 psi (10.3 bar)

Max. liquid temperature: 200 °F (93 °C)

Materials

Liner: Polypropylene

Connection: Lead-free brass

Tank: Stainless steel, AISI 304

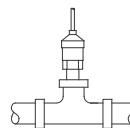
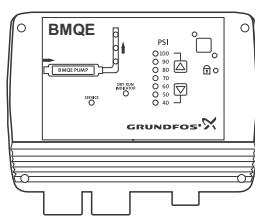


Fig. 11 BMQE constant pressure kit

TM05 0732 / TM05 0733

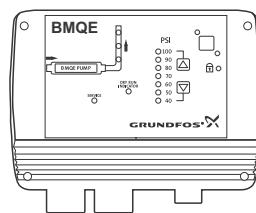


Fig. 12 BMQE controller

TM05 0732 1511

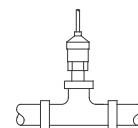


Fig. 13 Pressure sensor for BMQE controller

TM05 0733 1511

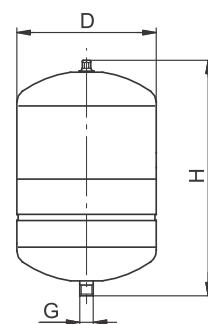


Fig. 14 Diaphragm tank

TM05 0734 1511

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-primes 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.

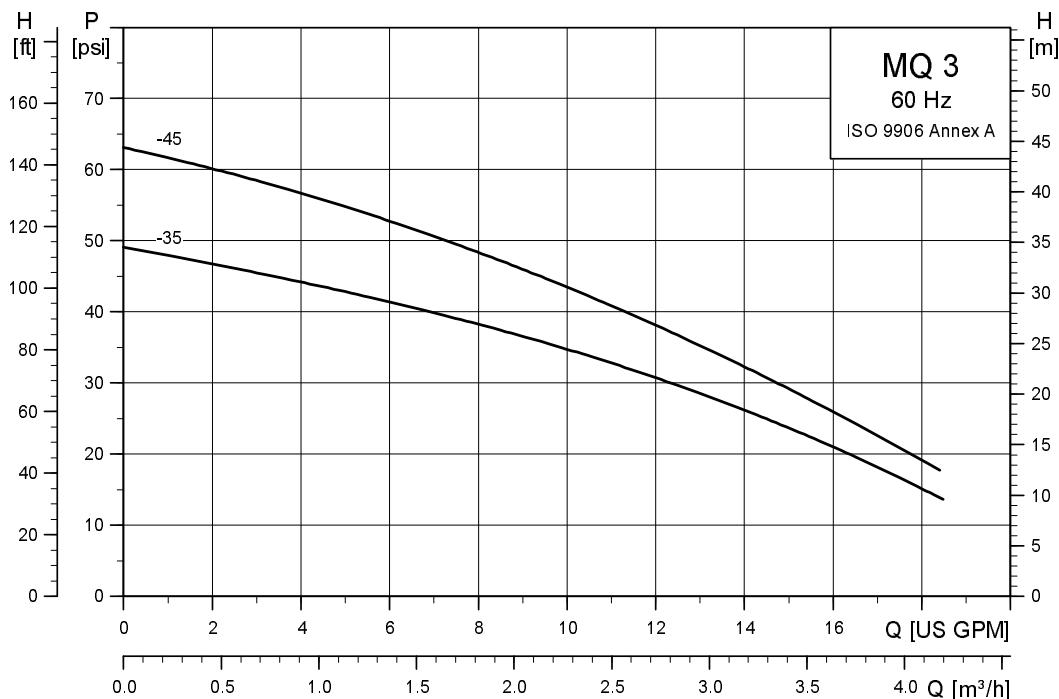
Identification

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



TM04 4141 0909

Product range, MQ

Range	MQ 3-35	MQ 3-45
Maximum flow rate [gpm (m³/h)]	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

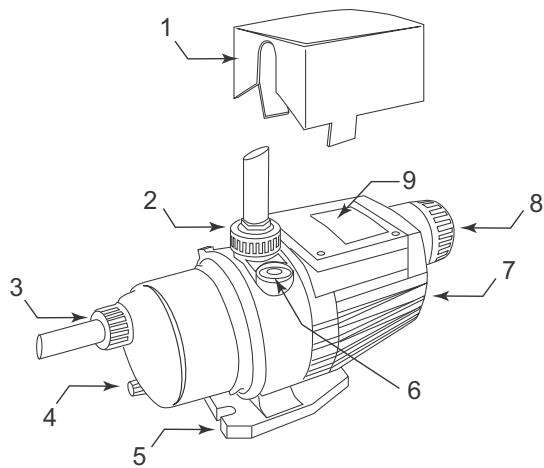
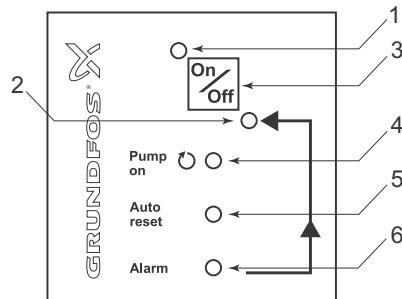


Fig. 16 MQ pump components

TM05 0691 1411

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

MQ control panel



TM05 0769 1511

Fig. 17 MQ control panel

Pos.	Description
1	Power indicator light Indicates the pump is ready for operation (green).
2	On/Off button Indicates the pump is on standby (red).
3	Pump ON (green) Pump is started and stopped by pressing On/Off button.
4	Pump ON (red) Indicates pump is running.
5	Auto reset Indicates auto reset function is active. After an alarm, restarting will be attempted every 30 minutes, for a period of 24 hours.
6	Alarm (red) Indicates pump is in alarm state. Manual resetting is possible by pressing On/Off button.

Domestic water supply

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

POM: Polyoximetylen

NR-rubber: Natural Rubber

PPO: Polyphenylene Oxides

PP: Polypropylene

NBR-rubber: Nitrile-Butadiene Rubber

Pos.	Components	Material
101	Suction port	PPO + 20 % glass fiber
103	Shaft seal: Stationary and rotating part	Carbon/ceramics/NBR rubber
104		
149	Insulation disc	PA 5VA (Polyammide)
	Shaft	Stainless steel, DIN W.-Nr 1.4005, AISI 416
150	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

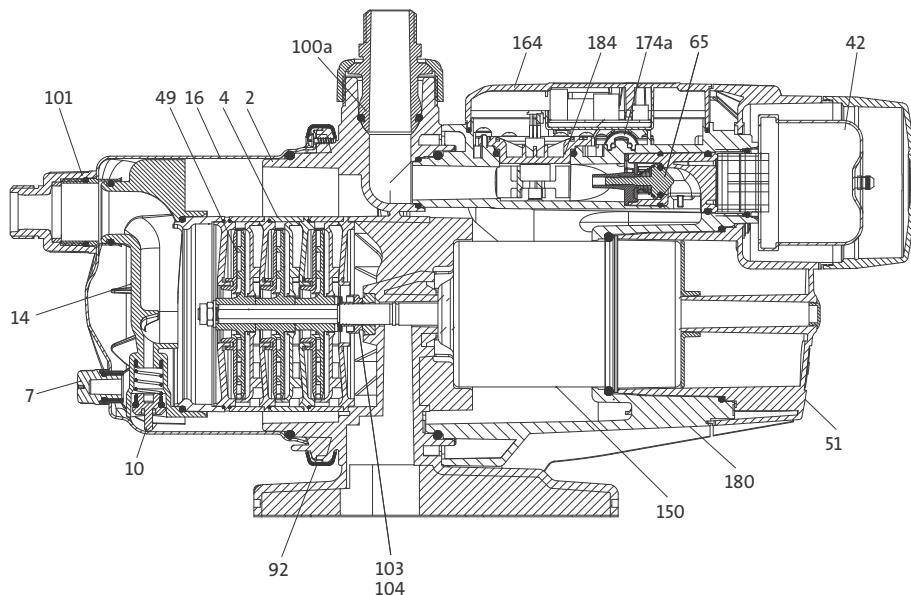


Fig. 18 MQ exploded view

TM01 9733 1411

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.

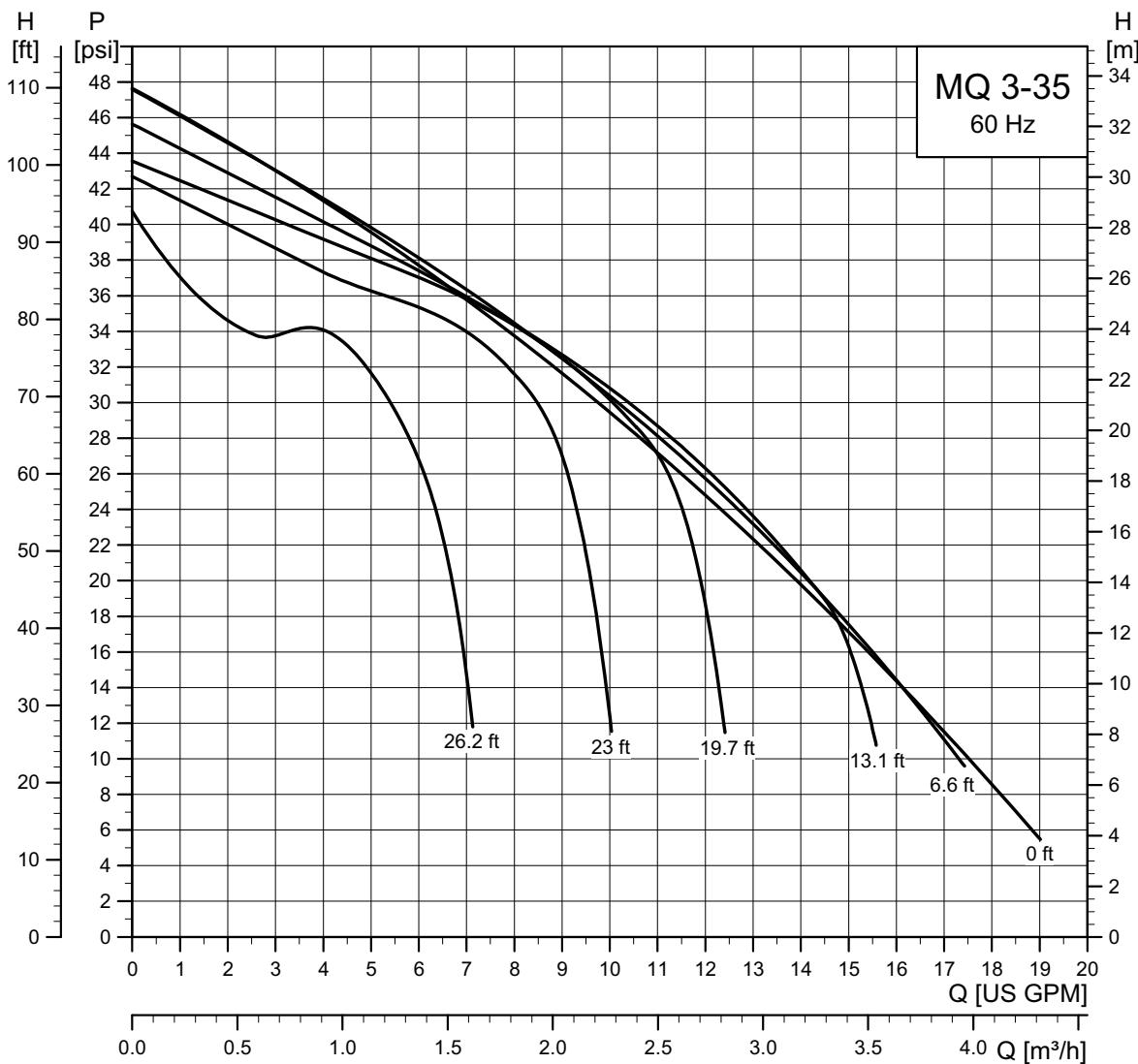
Selection of product

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

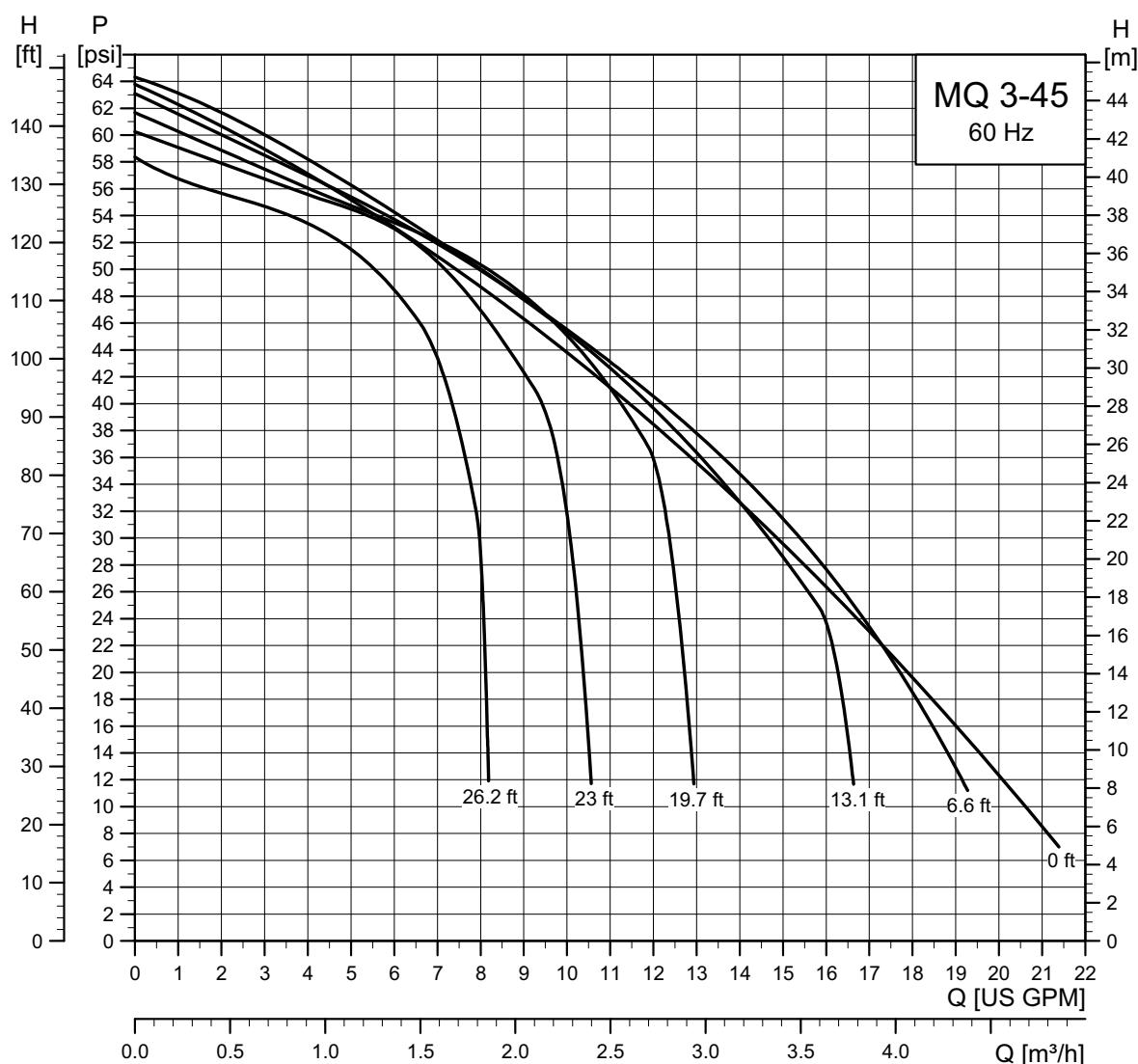


TM05 2056 4311

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

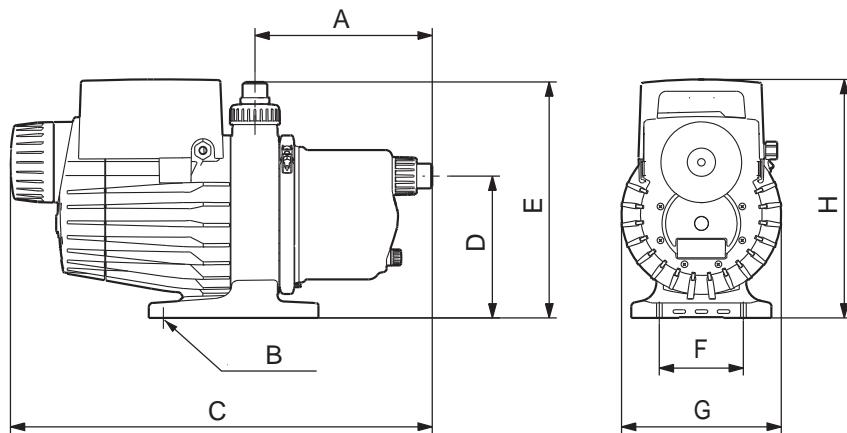


TM05 2057 4311

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



TM01 9799

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

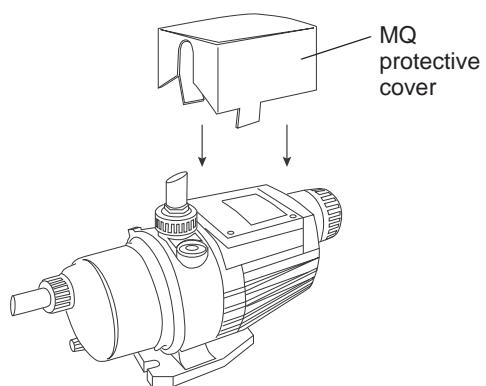


Accessories, MQ

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



TM05 0787 1511

4. JP Jet Pumps

Product introduction

The Grundfos JP line of self-priming centrifugal jet pumps is designed for shallow well, deep well, and convertible shallow well pump applications.

JP pumps provide excellent suction capacity.



Fig. 19 Grundfos JP line (from left to right: JP shallow well; JP deep well; and JP convertible shallow well)

Applications

Grundfos JP pumps are particularly suitable for:

- domestic water supply systems
- light agricultural
- industrial water transfer
- home and market gardens.

Features and benefits

Shallow well - cast iron

JP05S-CI, JP07S-CI, JP10S-CI, JP30S-CI

Single-stage, shallow well self-priming centrifugal pumps. Features:

- Rugged cast iron construction
- end suction, top discharge arrangement
- technopolymer impeller
- built-in ejector complete with clean-out port to clear blockages from nozzle
- convenient priming plug for ease of priming and air elimination
- ceramic-carbon bellows mechanical seal ensures trouble-free operation
- high quality pressure switch.

Shallow well convertible - cast iron

JP15S-CI, JP20S-CI

Single stage, convertible, self-priming centrifugal pumps. Features:

- Rugged cast iron construction
- end suction, top discharge arrangement
- detachable ejector assembly for deep well applications

- technopolymer impeller
- convenient priming plug for ease of priming and air elimination
- ceramic-carbon bellows mechanical seal ensures trouble-free operation
- high quality pressure switch.

Deep well - cast iron

JP05D-CI, JP07D-CI, JP15D-CI, JP20D-CI

Single-stage, deep well, self-priming centrifugal pumps. Features:

- Rugged cast iron construction
- end suction, top discharge arrangement
- technopolymer impeller
- separate deep well port for connection to Deep Well Ejector Kit
- convenient priming plug for ease of priming and air elimination
- ceramic-carbon bellows mechanical seal ensures trouble-free operation
- high quality pressure switch.

Shallow well - stainless steel

JP05S-SS, JP07S-SS, JP10S-SS

Single-stage, shallow well self-priming centrifugal pumps constructed of stainless steel. Features:

- Corrosion-resistant stainless steel
- end suction, top discharge arrangement
- technopolymer impeller
- built-in ejector complete with clean-out port to clear blockages from nozzle
- ceramic-carbon bellows mechanical seal ensures trouble-free operation
- high quality pressure switch.

Motors

All Grundfos JP motors are Totally Enclosed and Fan-Cooled (TEFC) for quiet operation and superior protection in harsh environments. Features:

- Stainless steel motor shaft offers excellent corrosion resistance
- Double, oversized grease ball bearings are maintenance-free; sealed for life
- Built-in thermal overload protection
- Capacitor-run, with no switches to fail
- Drive end motor bearing protected by durable lip seal
- Insulation class F
- Motor protection IP44
- Terminal box protection IP55.

Identification

Type key

Example	JP	05	S	CI
Jet pump				
Horsepower				
03: 1/3 Hp				
05: 1/2 Hp				
07: 3/4 Hp				
10: 1 Hp				
15: 1-1/2 Hp				
20: 2 Hp				
30: 3 Hp				
Well type				
S: Shallow Well				
D: Deep Well				
Material				
CI: Cast Iron				
SS: Stainless Steel				
EC: Engineered Composite				

Product overview

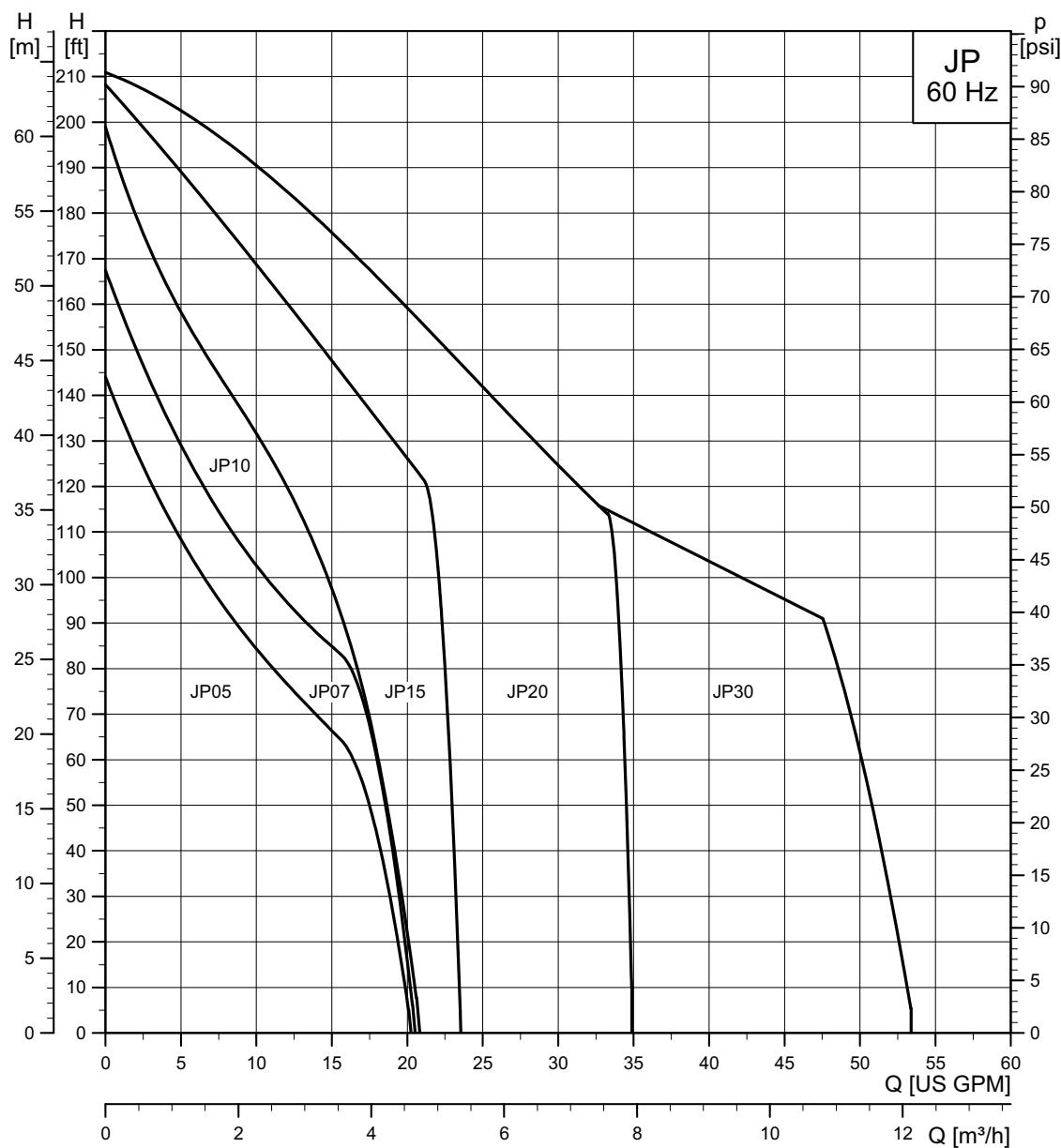
Conversion chart

Old JPF Shallow Well Cast Iron Jet Pumps						New Shallow Well Cast Iron Jet Pumps					
Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number	Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number
JPF3	1/2	1	115	30-50	96430412	JP05S-CI (JP4-47ASA)	1/2	1	115/230	30-50	97855073
JPF3	1/2	1	230	30-50	96430413	JP07S-CI (JP4-54ASA)	3/4	1	115/230	30-50	97855081
JPF4	3/4	1	115	30-50	96430414	JP10S-CI (JP4-61ASA)	1	1	115/230	30-50	97855085
JPF4	3/4	1	230	30-50	96430415	JP15S-CI (JP5-61ASA)	1-1/2	1	230	40-60	97855091
JPF5	1-1/2	1	230	50-70	96430416	JP20S-CI (JP8-62ASA)	2	1	230	40-60	97855094
JPF7	2	1	230	50-80	96457277	JP30S-CI (JP12-51ASA)	3	1	230	40-60	97855095
Old JPF Shallow Well Stainless Steel Jet Pumps						New Shallow Well Stainless Steel Jet Pumps					
Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number	Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number
JPS2	1/2	1	115	30-50	96430421	JP05S-SS (JP4-47ASI)	1/2	1	115/230	30-50	97855075
JPS2	1/2	1	230	30-50	96430422	JP07S-SS (JP4-54ASI)	3/4	1	115/230	30-50	97855083
JPS4	1	1	115	30-50	96430423	JP10S-SS (JP4-61ASI)	1	1	115/230	30-50	97855088
JPS4	1	1	230	30-50	96430424	Old JPF Deep Well Cast Iron Jet Pumps*					
Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number	Type	Hp	Ph	Volts	Pressure switch setting [psi]	Material number
JDF2	1/2	1	115	30-50	96430417	JP05D-CI (JP4-47DSA)	1/2	1	115/230	30-50	97855072
JDF2	1/2	1	230	30-50	96430418	JP07D-CI (JP4-54DSA)	3/4	1	115/230	30-50	97855080
JDF4	3/4	1	115	30-50	96430419	JP15D-CI (JP5-61DSA)	1-1/2	1	230	40-60	97855090
JDF4	3/4	1	230	30-50	96430420	JP20D-CI (JP8-62DSA)	2	1	230	40-60	97855093

*Ejector not included

*Ejector not included

Performance range



TM05 1230 4511

Domestic water supply

Product range

Shallow well

Model	Shallow well cast iron						Shallow well stainless steel		
	JP05S-CI	JP07S-CI	JP10S-CI	JP15S-CI	JP20S-CI	JP30S-CI	JP05S-SS	JP07S-SS	JP10S-SS
Max. flow [gpm (m ³ h)]	21 (4.7)	20 (4.5)	20 (4.5)	23 (5.2)	34 (7.7)	52 (11.8)	21 (4.7)	20 (4.5)	20 (4.5)
Max. pump head [ft (m)]	145 (44.2)	170 (51.2)	200 (61.0)	210 (64.0)	210 (64.0)	170 (51.2)	145 (44.2)	170 (51.2)	200 (61.0)
Max. working pressure [psi (bars)]				116 (8)				116 (8)	
Motor power [hp]	1/2	3/4	1	1 1/2	2	3	1/2	3/4	1
Fluid temp range [°F (°C)]				+32 to +95 (0 to +35)				+32 to +95 (0 to +35)	
Max. lift [ft suction lift at sea level]				25				25	
Max. ambient temp [°F (°C)]				+104 (+40)				+104 (+40)	
Factory pressure switch setting [psi (bars)]	30/50 (2.1/3.5)	30/50 (2.1/3.5)	30/50 (2.1/3.5)	40/60 (2.8/4.1)	40/60 (2.8/4.1)	40/60 (2.8/4.1)	30/50 (2.1/3.5)	30/50 (2.1/3.5)	30/50 (2.1/3.5)
Storage temp range [°F (°C)]				+14 to +104 (-10 to +40)				+14 to +104 (-10 to +40)	
Relative humidity				95%				95%	
Max. starts per hour				20				20	

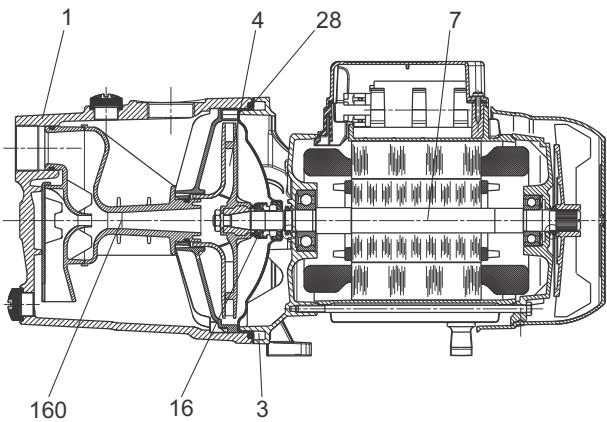
Deep well

Model	Deep well cast iron			
	JP05D-CI	JP07D-CI	JP15D-CI	JP20D-CI
Max. flow [gpm (m ³ h)]	18 (4.0)	18 (4.0)	21 (4.7)	32 (7.2)
Max. pump head [ft (m)]	145 (44.2)	170 (51.2)	195 (59.4)	200 (61.0)
Max. working pressure [psi (bars)]		116 (8)		
Motor power [hp]	1/2	3/4	1 1/2	2
Fluid temp range [°F (°C)]		+32 to +95 (0 to +35)		
Max. lift [ft suction lift at sea level]	50	70	90	90
Max. ambient temp [°F (°C)]		+104 (+40)		
Factory pressure switch setting [psi (bars)]	30/50 (2.1/3.5)	30/50 (2.1/3.5)	40/60 (2.8/4.1)	40/60 (2.8/4.1)
Storage temp range [°F (°C)]		+14 to +104 (-10 to +40)		
Relative humidity		95%		
Max. starts per hour		20		

Construction

Materials of construction

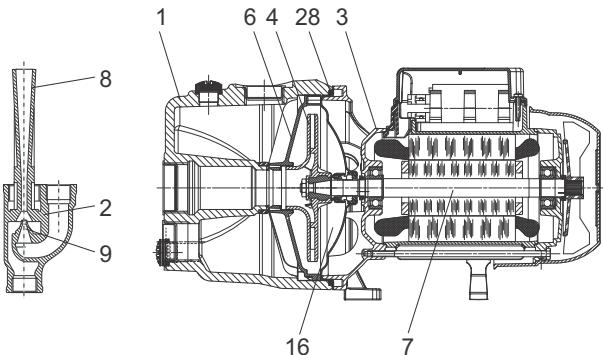
Shallow well - cast iron, stainless steel



TM05 2216 4611

Pos.	Descriptions: in contact with liquid	Materials	Cast iron models	Stainless steel models
1	Pump Body	Cast Iron 200 UNI ISO 185 Stainless Steel AISI 304	All -	- All
3	Support	Cast Iron 200 Uni ISO 185	JP15, JP20, JP30	-
3	Support	Aluminum + AISI304	JP05, JP07, JP10	All
4	Impeller	Technopolymers	All	All
7	Shaft with Rotor	Stainless Steel AISI 416 Stainless Steel AISI 303	All -	- All
16	Mechanical Seal	Carbon / ceramic	All	All
28	OR Gasket	NBR Rubber	All	All
160	Nozzle-Venuri Diffuser Assembly	Technopolymers	All	All

Deep well - cast iron



TM05 2215 4611

Pos.	Descriptions: in contact with liquid	Materials	Cast iron models
1	Pump Body	Cast Iron 200 UNI ISO 185	All
3	Support	Cast Iron 200 UNI ISO 185	All
4	Impeller	Technopolymer	All
6	Diffuser	Technopolymer	All
7	Shaft with Rotor	Stainless Steel ANSI 416 Stainless Steel ANSI 303	JP05 & JP07 JP15 & JP20
16	Mechanical Seal	Carbon/Ceramic	All
28	OR Gasket	NBR Rubber	All
2	Ejector Body	Cast Iron 200 UNI ISO 185	E20, E25, E30
8	Venturi Tube	Technopolymer	E20, E25, E30
9	Nozzle	Brass	E20, E25, E30

Domestic water supply

Operating conditions

Max. operating pressure:	116 psi (8 bar)
Liquid temp range:	+32 °F to +95 °F (0 °C to +35 °C)
Max. relative humidity of air	95%
Storage temp range:	+14 °F to +104 °F (-10 °C to 40 °C)

Selection

Pumped liquids

JP pumps are suitable for pumping clean, non-viscous, non-aggressive, non-explosive liquids, free of solid particles or fibers.

Selection of pumps

Shallow well - cast iron					
Pump type	Hp	Ph	Volts [V]	Pressure switch setting [psi]	Product number
JP05S-CI	1/2	1	115/230	30-50	97855073
JP07S-CI	3/4	1	115/230	30-50	97855081
JP10S-CI	1	1	115/230	30-50	97855085
JP15S-CI	1-1/2	1	230	40-60	97855091
JP20S-CI	2	1	230	40-60	97855094
JP30S-CI	3	1	230	40-60	97855095

Shallow well - stainless steel					
Pump type	Hp	Ph	Volts [V]	Pressure switch setting [psi]	Product number
JP05S-SS	1/2	1	115/230	30-50	97855075
JP07S-SS	3/4	1	115/230	30-50	97855083
JP10S-SS	1	1	115/230	30-50	97855088

Deep well - cast iron*					
Pump type	Hp	Ph	Volts [V]	Pressure switch setting [psi]	Product number
JP05D-CI	1/2	1	115/230	30-50	97855072
JP07D-CI	3/4	1	115/230	30-50	97855080
JP015D-CI	1-1/2	1	230V	40-60	97855090
JP020D-CI	2	1	230V	40-60	97855093

* Ejector not included

Deep well ejectors

Type	Product number
E20 NPT	96654382
E25 NPT	96654383
E30 NPT	96654384

Installation

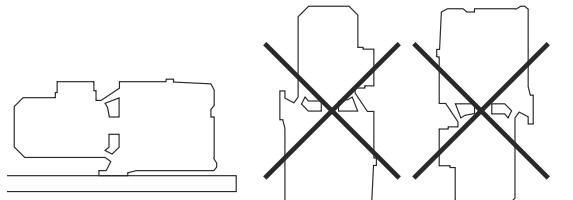
Pump location

The pump must be located in a well-ventilated place, protected from unfavorable weather conditions and with an environmental temperature not exceeding 104 °F (40 °C).

It is always good practice to place the pump as close as possible to the liquid to be pumped.

Pump position

Allowable positions



TM05 1232 2411

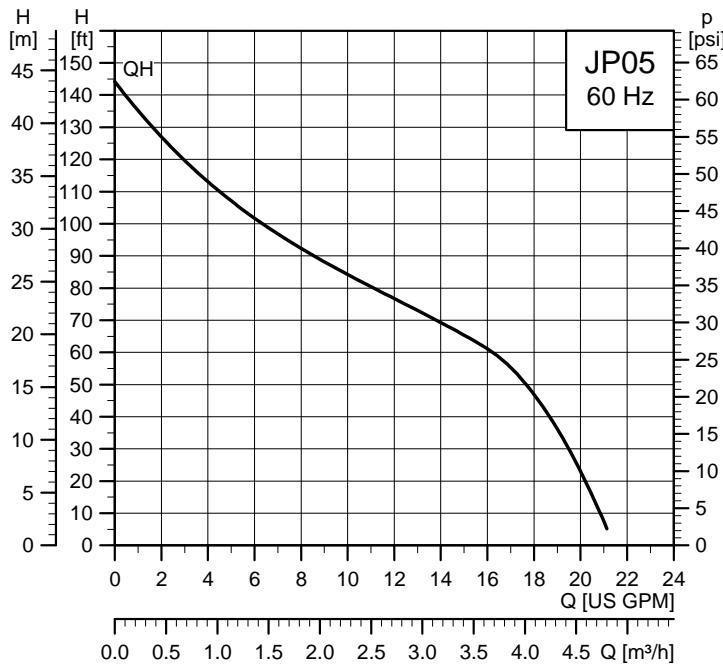
Fig. 20 Pump must be installed in horizontal position only

The pump must be installed only in horizontal position. To prevent movement and vibrations, anchor the pump firmly to a horizontal surface.

Curve charts and technical data

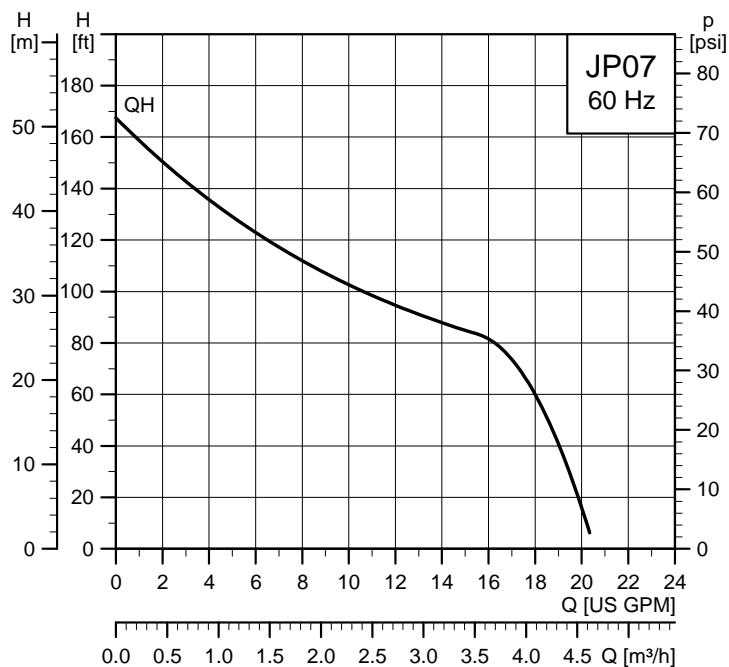
Performance curves

Models JP05S-CI, JP05S-SS



TM05 1137 5111

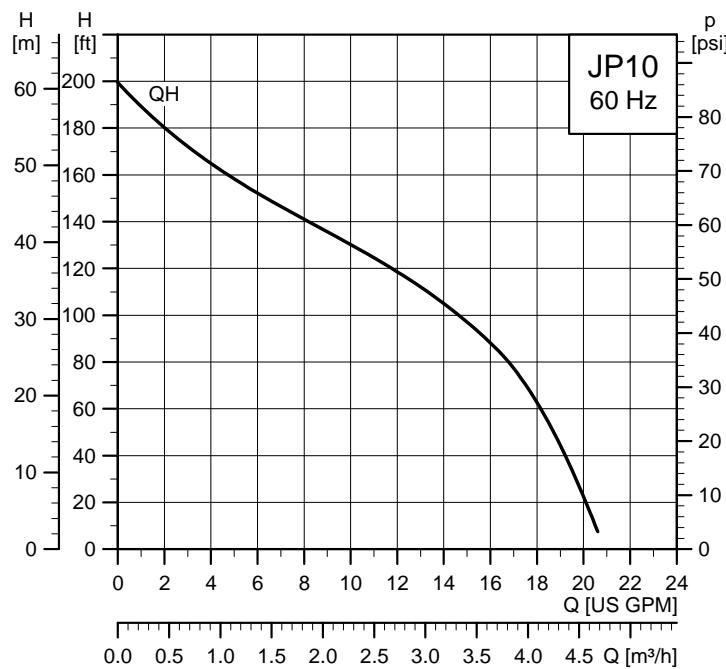
Models JP07S-CI, JP07S-SS



TM05 1139 5111

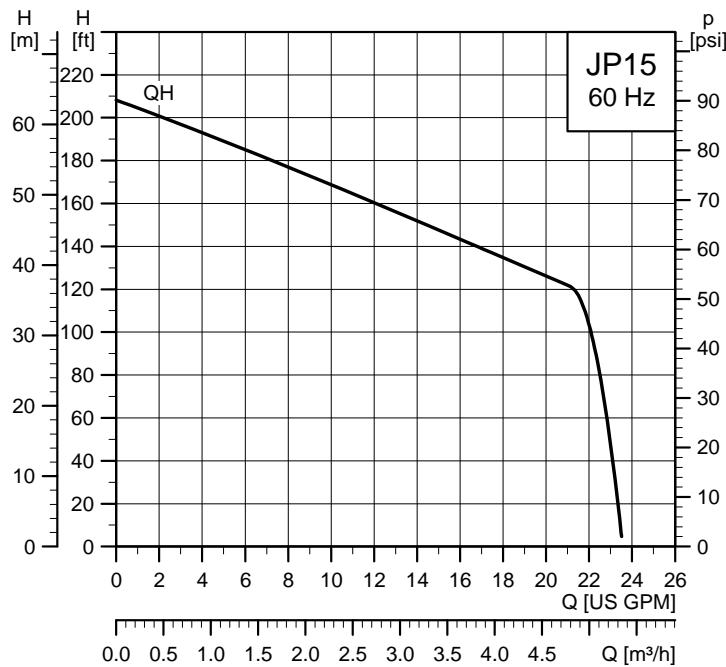
Domestic water supply

Models JP10S-CI, JP10S-SS



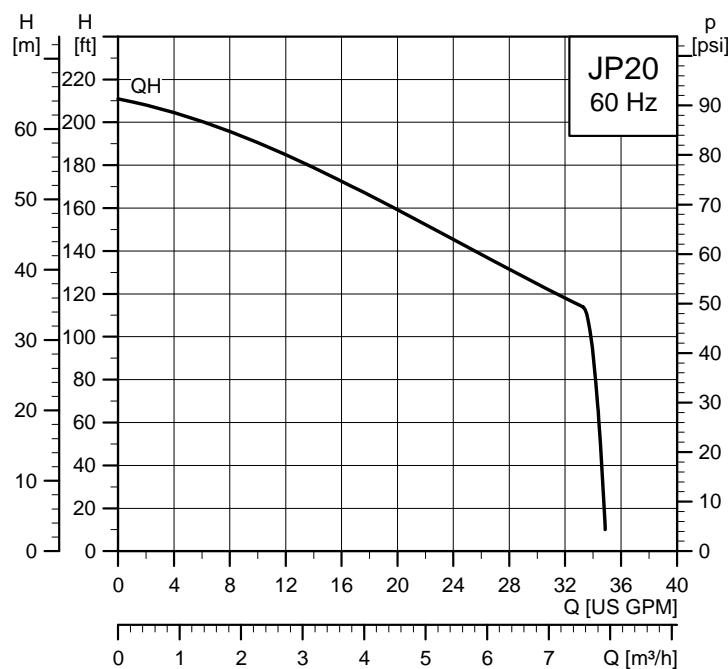
TM05 1141 5111

Model JP15S-CI



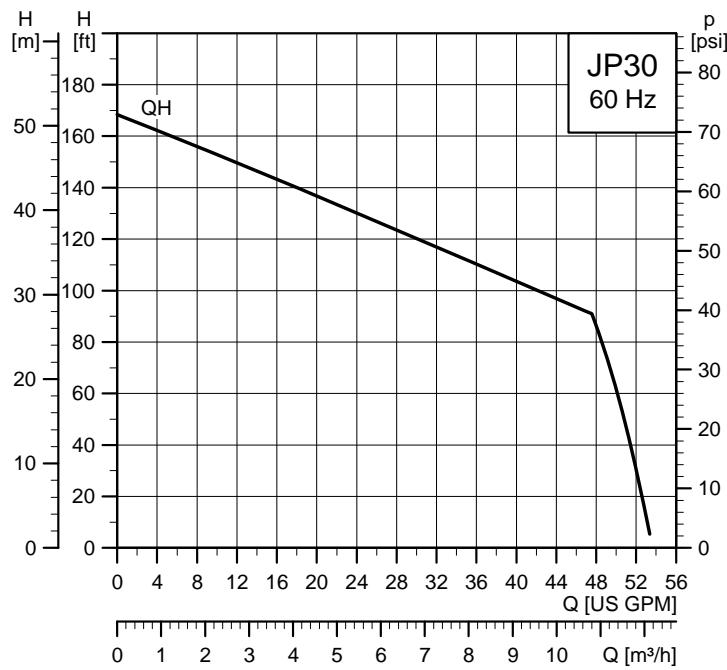
TM05 1147 5111

Model JP20S-CI



TM05 1148 5111

Model JP30S-CI



TM05 1150 5111

Domestic water supply

Shallow well performance data

Pump type	Part number cast iron	Part number stainless steel	Pressure switch setting on/off	Suction depth [ft]	Delivery pressure [psi]										Max. pressure [psi]	Shut off pressure [psi]	
					15	20	25	30	35	40	45	50	55	60	65		
Flow table [gpm]																	
JP05S	97855073	97855075	30/50	5	14.8	14.8	14.7	13.6	-	-	-	-	-	-	-	62	59
				10	13.2	13.2	13.1	12.8	-	-	-	-	-	-	-		57
				15	-	10.8	10.8	10.7	10.1	-	-	-	-	-	-		55
				20	-	-	8.9	8.9	8.8	7.6	-	-	-	-	-		53
				25	-	-	7.0	7.0	7.0	6.9	5.5	-	-	-	-		51
JP07S	97855081	97855083	30/50	5	-	-	14.3	14.3	14.2	12.6	-	-	-	-	-	75	73
				10	-	-	13.1	13.1	13.0	12.3	-	-	-	-	-		70
				15	-	-	-	11.0	11.0	11.0	10.0	-	-	-	-		68
				20	-	-	-	9.2	9.1	9.1	9.0	-	-	-	-		66
				25	-	-	-	-	7.0	7.0	7.0	6.9	-	-	-		64
JP10S	97855085	97855088	30/50	5	-	-	-	14.5	14.4	14.3	14.2	-	-	-	-	86	84
				10	-	-	-	-	13.1	12.8	12.7	12.4	-	-	-		82
				15	-	-	-	-	-	11.8	11.6	11.4	10.9	-	-		80
				20	-	-	-	-	-	9.9	9.8	9.7	9.4	-	-		77
				25	-	-	-	-	-	-	-	7.9	7.8	7.7	7.3		75
JP15S	97855091	-	40/60	5	-	21.0	20.9	20.7	20.6	20.3	20.2	19.9	-	-	-	87	85
				10	-	19.0	18.8	18.5	18.2	17.9	17.8	17.5	17.3	-	-		82
				15	-	-	15.7	15.5	15.4	15.2	15.1	15.0	14.8	14.5	-		80
				20	-	-	-	13.3	13.1	12.9	12.7	12.5	12.4	12.1	11.9		78
				25	-	-	-	-	9.7	9.5	9.3	9.1	8.9	8.6	8.5		76
JP20S	97855094	-	40/60	5	-	31.8	31.6	31.2	30.8	30.5	30.1	29.1	-	-	-	85	83
				10	-	28.0	27.7	27.6	27.2	26.9	26.7	26.0	25.1	-	-		81
				15	-	23.6	23.3	23.2	23.1	22.8	22.5	22.3	22.1	20.9	-		79
				20	-	-	20.2	19.9	19.8	19.7	19.4	19.3	19.0	18.5	17.3		76
				25	-	-	-	-	14.3	14.2	14.1	13.8	13.7	13.4	13.2		74
JP30S	97855095	-	40/60	5	-	49.5	49.3	48.9	47.9	46.8	-	-	-	-	-	73	71
				10	-	46.0	45.4	45.0	44.5	43.6	42.0	-	-	-	-		69
				15	-	37.1	36.8	36.5	36.1	35.5	34.7	33.5	-	-	-		67
				20	-	32.1	31.8	31.6	31.2	30.6	30.4	29.3	25.9	-	-		64
				25	-	20.9	20.7	20.6	20.4	20.0	19.5	18.8	18.0	16.5	13.8		62

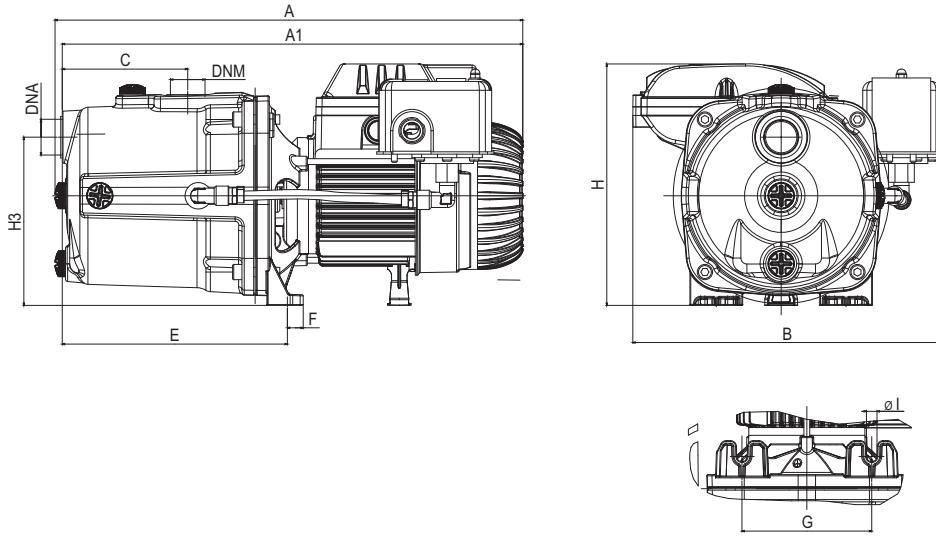
Deep well performance data

Pump type	Pump part number	Ejector type NPT	Ejector part number	Pressure switch on/off	Suction depth [ft]	Delivery pressure [psi]								
						20	30	40	50	60	70	80	90	
Flow table [gpm]														
JP05D	97855072	E 25	96654383	30/50	30	8	5	-	-	-	-	-	-	-
					40	6	3	-	-	-	-	-	-	-
					50	4	1.5	-	-	-	-	-	-	-
		E 30	96654384	30/50	30	7.7	5.8	2.5	1.3	-	-	-	-	-
					40	5.9	4.3	1.6	-	-	-	-	-	-
					50	5	3.4	1	-	-	-	-	-	-
		E 25	96654383	30/50	30	10.5	7.9	2.5	-	-	-	-	-	-
					40	8.5	5.4	-	-	-	-	-	-	-
					50	6.4	3.5	-	-	-	-	-	-	-
JP07D	97855080	E 30	96654384	30/50	40	-	5.6	2.8	1.7	-	-	-	-	-
					50	-	4.6	2.2	1.3	-	-	-	-	-
					60	-	3.5	1.5	-	-	-	-	-	-
		E 25	96654382	40/60	70	-	2.9	-	-	-	-	-	-	-
					30	-	-	15	12.2	9.2	2.6	-	-	-
					40	-	-	13.5	10.6	7.6	-	-	-	-
JP15D	97855090	E 20	96654382	40/60	50	-	-	11.6	8.8	5.5	-	-	-	-
					60	-	-	10	7	3.6	-	-	-	-
					50	-	-	12	9.8	7.7	3.5	-	-	-
		E 25	96654383	40/60	60	-	-	10.8	8.6	6.5	2.5	-	-	-
					70	-	-	9.7	7.5	5.3	1.7	-	-	-
					70	-	-	7.9	7.1	6	3.8	2	-	-
JP20D	97855093	E 30	96654384	40/60	80	-	-	7.2	6.5	5.3	3.2	1.6	-	-
					90	-	-	6.7	5.8	4.7	2.8	1.2	-	-
					30	-	-	-	15	9	2	-	-	-
		E 20	96654382	40/60	40	-	-	-	13.4	6.8	-	-	-	-
					50	-	-	-	11.7	5	-	-	-	-
					60	-	-	-	9.9	2.9	-	-	-	-
		E 25	96654383	40/60	50	-	-	-	12.5	7.9	3.7	2	-	-
					60	-	-	-	11.1	6.7	2.8	1.2	-	-
					70	-	-	-	9.9	5.5	1.8	-	-	-
		E 30	96654384	40/60	80	-	-	-	8.6	4.3	1	-	-	-
					70	-	-	-	7.9	6.2	4	3	2.3	-
					90	-	-	-	7.3	5.6	3.4	2.7	1.9	-

Domestic water supply

Dimensions and weights

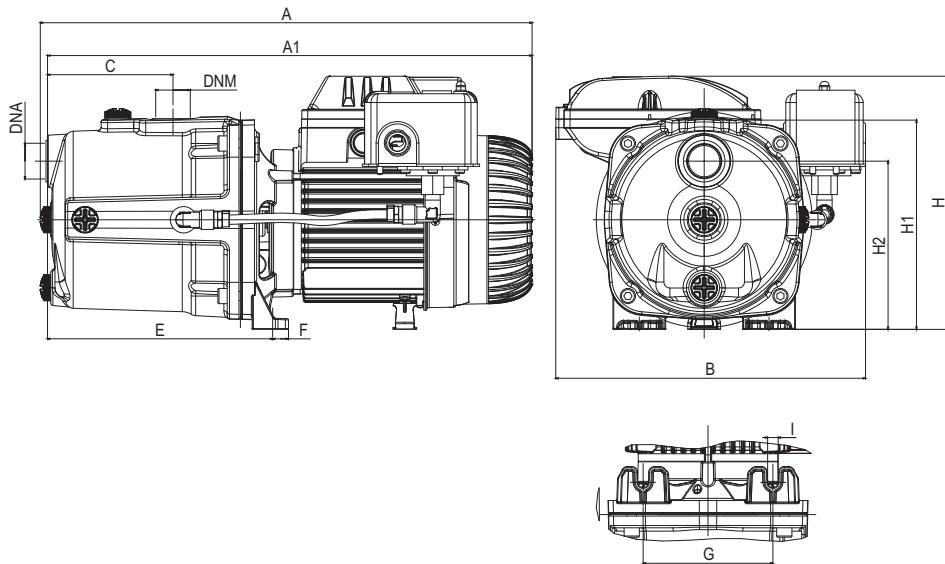
Cast iron shallow well, model JP05S-CI



TM05 2222 4611

Model	Part number	Dimensions [in]												Weight [lbs]
		A	A1	B	C	E	F	G	H	H3	I	DNA	DNM	
JP05S-CI	97855073	15.7	15.5	10.4	4.2	7.6	0.5	4.4	8.1	5.6	0.4	1	1	24

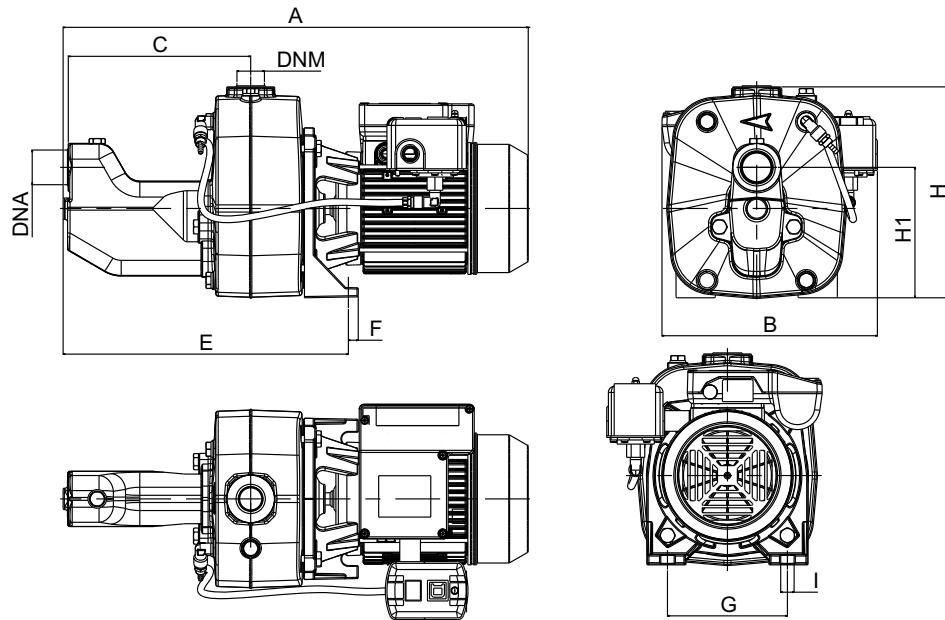
Cast iron shallow well, models JP07S-CI, JP10S-CI



TM05 2222 4611

Model	Part number	Dimensions [in]												Weight [lbs]	
		A	A1	B	C	E	F	G	H	H1	H2	I	DNA	DNM	
JP07S-CI	97855081	16.5	16.3	10.4	4.2	7.6	0.5	4.4	8.5	7	5.6	0.4	1	1	28
JP10S-CI	97855085	16.5	16.3	10.4	4.2	7.6	0.5	4.4	8.5	7	5.6	0.4	1	1	30

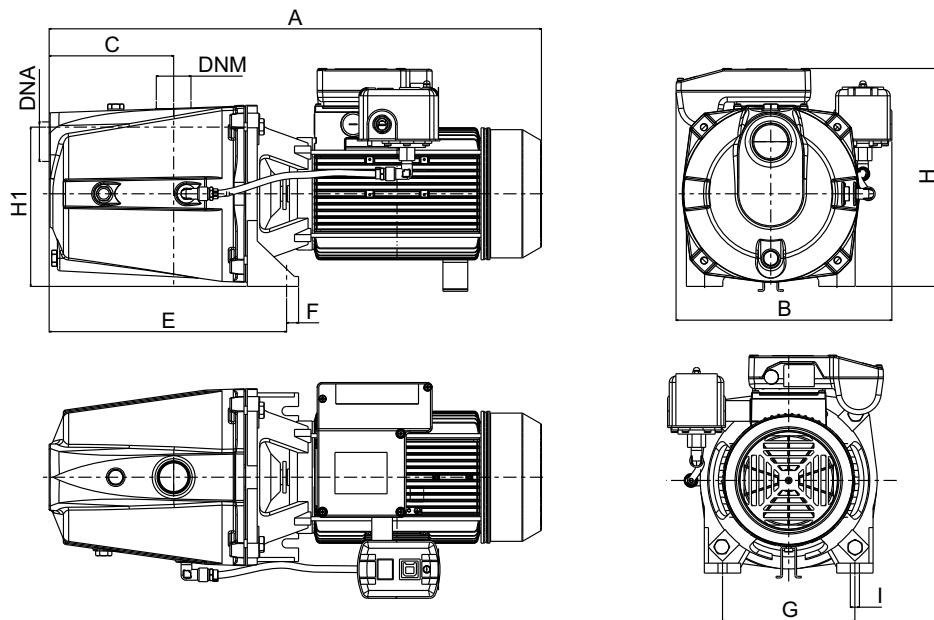
Cast iron shallow well, models JP15S-CI, JP20S-CI



TM05 2365 5011

Model	Part number	Dimensions [in]											Weight [lbs]
		A	B	C	E	F	G	H	H1	I	DNA	DNM	
JP15S-CI	97855091	21.8	10.2	8.7	13.5	0.5	5.7	10	6.2	0.6	1.25	1	68
JP20S-CI	97855094	21.9	10.2	8.7	13.5	0.5	5.7	10	6.2	0.6	1.25	1	77

Cast iron shallow well, models JP30S-CI

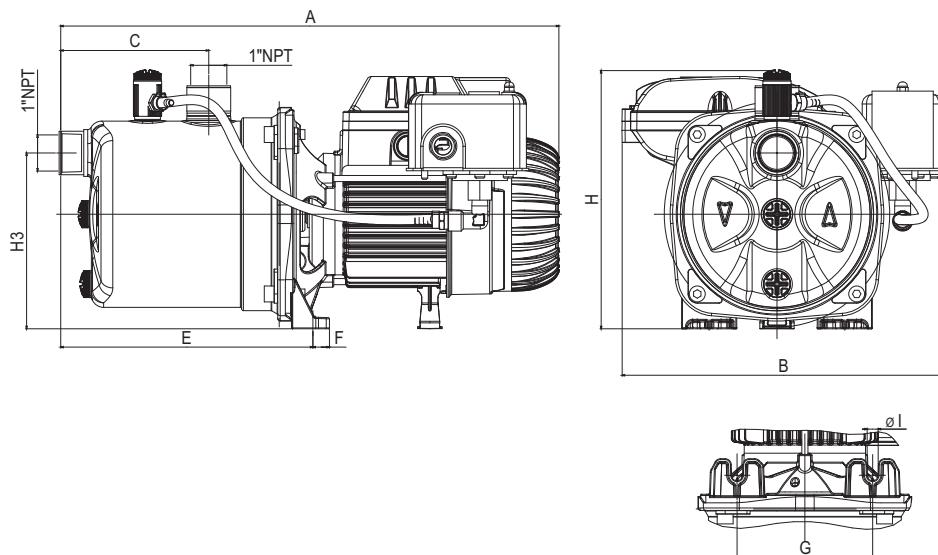


TM05 2366 5011

Model	Part number	Dimensions [in]											Weight [lbs]
		A	B	C	E	F	G	H	H1	I	DNA	DNM	
JP30S-CI	97855095	23.4	10.3	5.9	11.3	0.6	6.3	10.4	7.6	0.4	1.5	1.25	71

Domestic water supply

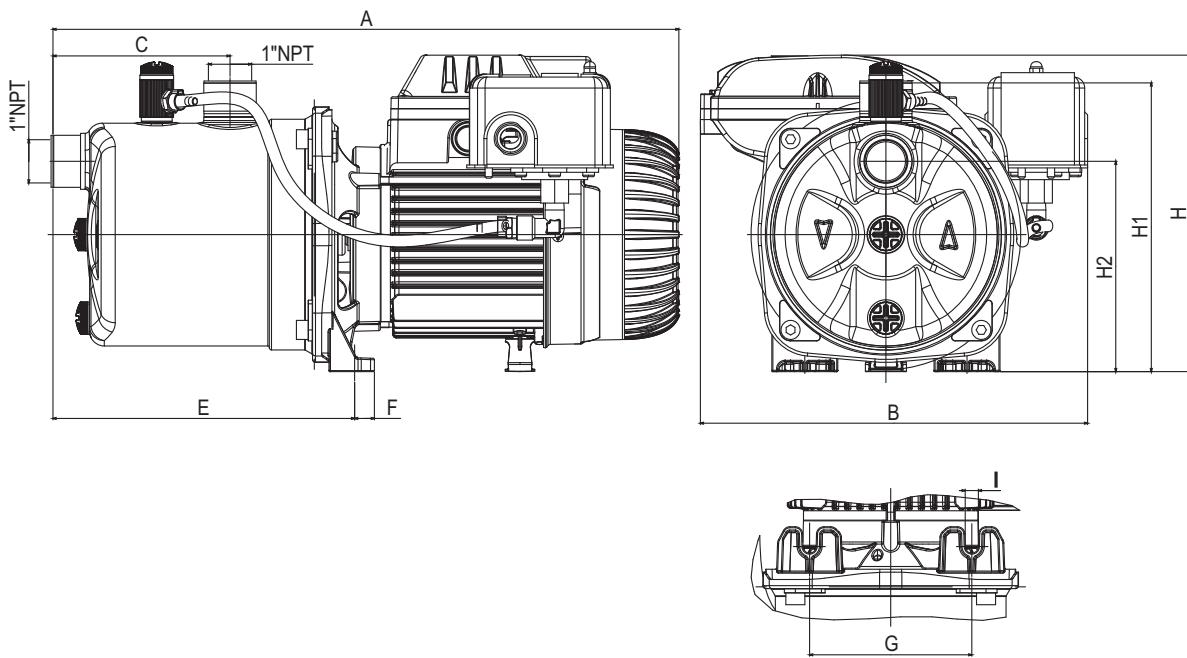
Shallow well stainless steel, model JP05S-SS



Model	Part number	Dimensions [in]									Weight [lbs]
		A	B	C	E	F	G	H	H3	I	
JP05S-SS	97855075	16	10.4	4.7	8.1	0.6	4.4	8.3	5.6	0.4	18

TM05 2219 4611

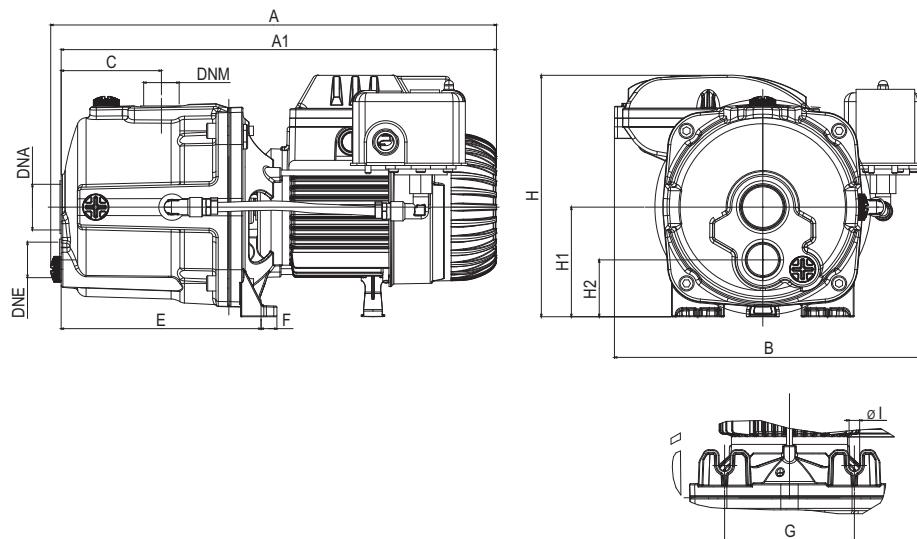
Shallow well stainless steel, models JP07S-SS, JP10S-SS



TM05 2220 4611

Model	Part number	Dimensions [in]										Weight [lbs]
		A	B	C	E	F	G	H	H1	H2	I	
JP07S-SS	97855083	16.8	10.4	4.7	8.1	0.6	4.4	8.5	7.7	5.7	0.4	22
JP10S-SS	97855088	16.8	10.4	4.7	8.1	0.6	4.4	8.5	7.7	5.7	0.4	24

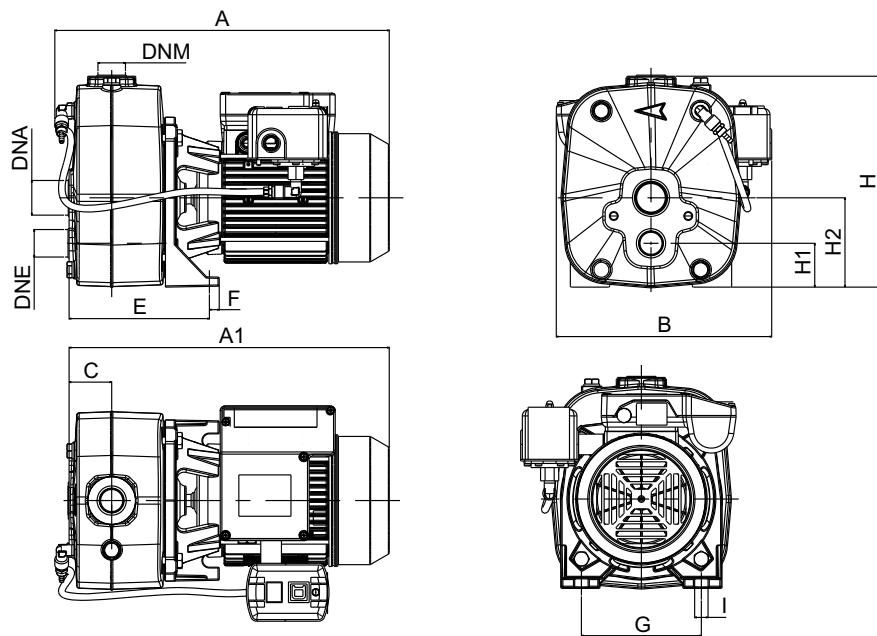
Cast iron deep well, models JP05D-CI, JP07D-CI



TM05 2218 4611

Model	Part number	Dimensions [in]													Weight [lbs]	
		A	A1	B	C	E	F	G	H	H1	H2	I	DNA	DNE	DNM	
JP05D-CI	97855072	15	14.6	10.4	3.4	6.7	0.5	4.4	8.1	3.7	1.9	0.4	1.25	1	1	25
JP07D-CI	97855080	15.8	15.4	10.4	3.4	6.7	0.5	4.4	8.5	3.7	1.9	0.4	1.25	1	1	25

Cast iron deep well, models JP15D-CI, JP20D-CI



TM05 2367 5011

Model	Part number	Dimensions [in]													Weight [lbs]	
		A	A1	B	C	E	F	G	H	H1	H2	I	DNA	DNE	DNM	
JP15D-CI	97855090	15.9	15.2	10.2	2	6.7	0.5	5.7	10	2.1	4.2	0.6	1.25	1	1	63
JP20D-CI	97855093	18.9	18.2	10.2	2	6.7	0.5	5.7	10	2.1	4.2	0.6	1.25	1	1	72

Domestic water supply

Electrical data

Supply voltage:

1 X 115/230V 60Hz

1 X 230V 60Hz

Voltage tolerance + / - 6 %

Electrical data 60 Hz								
Pump Model	Part Number	P2 Power Out [Hp]	Service factor [Hp]	Phase & voltage	I [amps]	Phase & voltage	I [amps]	Capacitor [uF]
JP05D-CI	97855072	1/2	1.60	1x115	7.09	1x230	3.61	50
JP05S-CI	97855073	1/2	1.60	1x115	8.21	1x230	4.22	50
JP05S-SS	97855075	1/2	1.60	1x115	8.21	1x230	4.22	50
JP07D-CI	97855080	3/4	1.5	1x115	9.2	1x230	4.67	50
JP07S-CI	97855081	3/4	1.5	1x115	10.3	1x230	5.25	50
JP07S-SS	97855083	3/4	1.5	1x115	10.3	1x230	5.25	50
JP10S-CI	97855085	1	1.40	1x115	13.8	1x230	7.1	80
JP10S-SS	97855088	1	1.40	1x115	13.8	1x230	7.1	80
JP15D-CI	97855090	1-1/2	1.3	-	-	1x230	7.6	31.5
JP15S-CI	97855091	1-1/2	1.3	-	-	1x230	8	31.5
JP20D-CI	97855093	2	1.25	-	-	1x230	8.5	40
JP20S-CI	97855094	2	1.25	-	-	1x230	11	40
JP30S-CI	97855095	3	1.15	-	-	1x230	12	40

Note: Refer to pump nameplate.

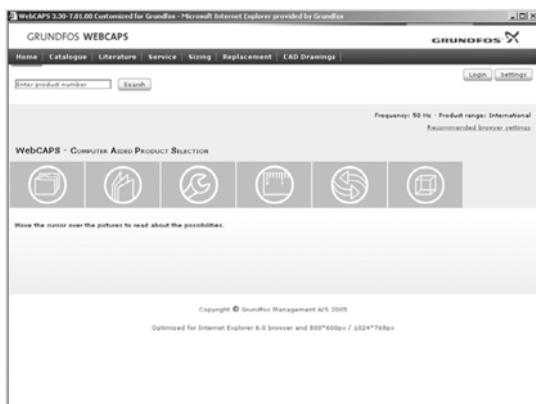
Approvals



Subject to alterations.

5. Further documentation

WebCAPS

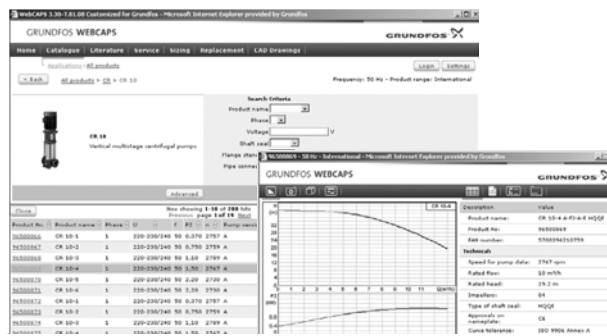


WebCAPS is a **Web-based Computer Aided Product Selection** program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

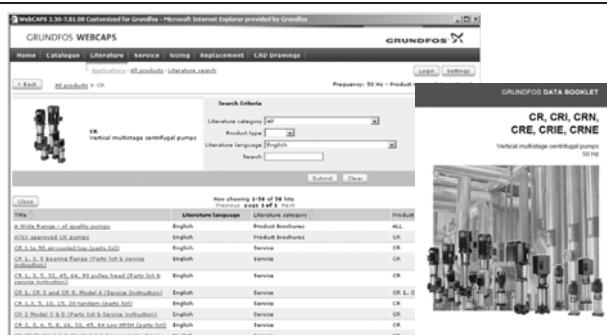
- Catalog
- Literature
- Service
- Sizing
- Replacement
- CAD drawings



Catalog

This section is based on fields of application and pump types, and contains

- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

- product guides
- installation and operating instructions
- service documentation, such as Service kit catalog and Service kit instructions
- quick guides
- product brochures, etc.



Service

This section contains an easy-to-use interactive service catalog. Here you can find and identify service parts of both existing and discontinued Grundfos pumps. Furthermore, this section contains service videos showing you how

Domestic water supply



Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyze your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, etc.

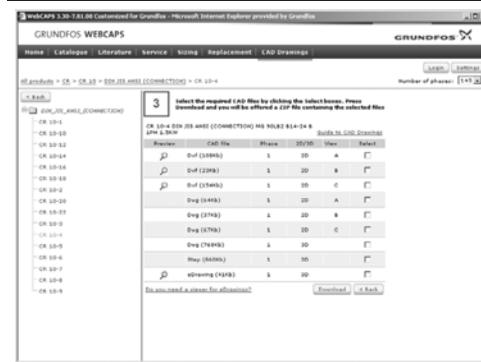


Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.

The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dwf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.



WinCAPS



Fig. 21 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

BE > THINK > INNOVATE >

Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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ECM: -

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