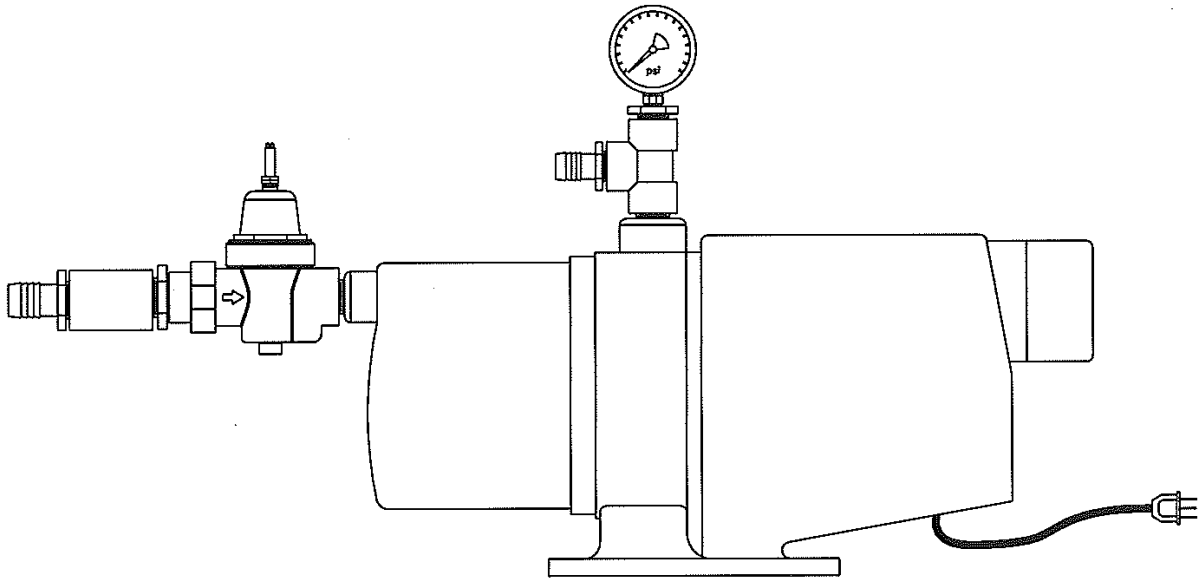




BOOSTER PUMP SYSTEM
OPERATION & MAINTENANCE MANUAL
GRUNDFOS MQ PUMPS



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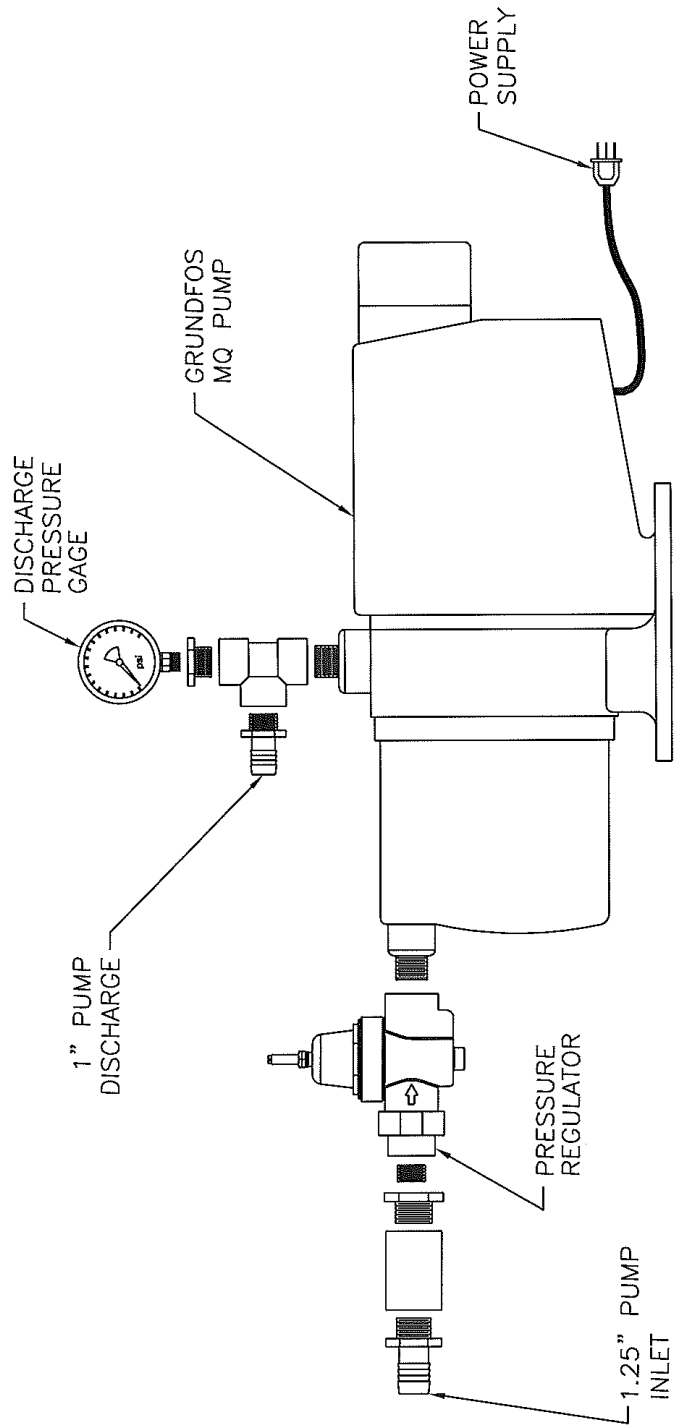
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SYSTEM DRAWING

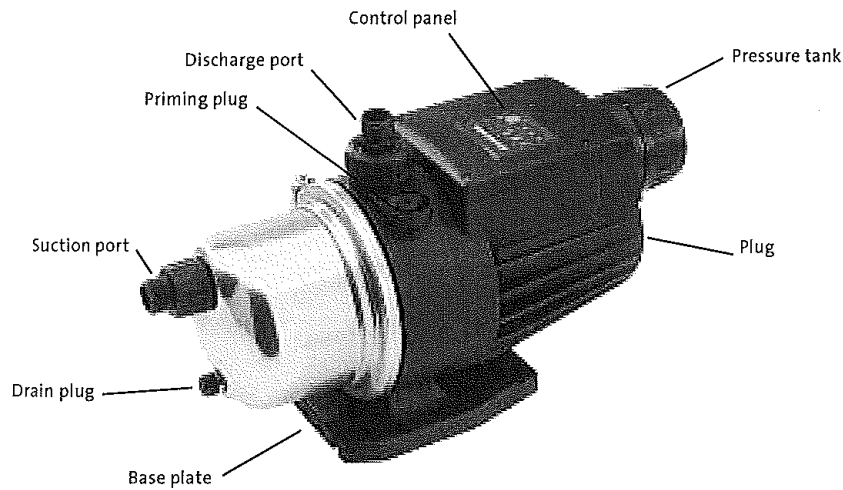


BOOSTER MQ PUMP SYSTEM

THEORY OF OPERATION

The MQ pump is a compact water supply system consisting of a pump, motor, pressure tank, and controller combined in an integral unit. The pump starts automatically when water is used and stops when it is not. The pump pressurizes water from a storage tank to the use point. A pressure regulator maintains an inlet pressure of less than 40 PSI.

MQ PUMP COMPONENTS



Technical data

Operating conditions

	MQ 3-35	MQ 3-45
Maximum flow rate [gpm]		22
Maximum pressure [psi]	51	65
Maximum system pressure [psi]		108
Maximum suction lift [ft], see page 35		25
Minimum ambient temperature [°F]		32
Maximum ambient temperature [°F]		113
Minimum liquid temperature [°F]		32
Maximum liquid temperature [°F]		95
Net weight [lbs]		29
Sound pressure level [dB(A)]		< 70
Tank volume [oz]		5
Air pressure in tank [psi]		22 to 25
Connections		1" NPT

Electrical data

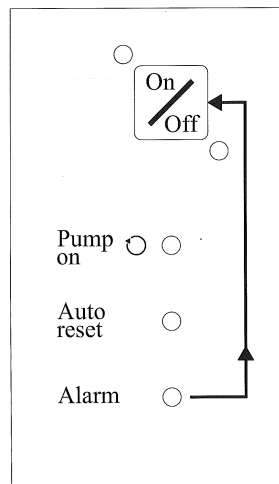
	MQ 3-35	MQ 3-45	
Enclosure class		IP 54	
Insulation class		B	
Supply cable		6.56 ft H07RN-F with/without plug	
Voltage, power consumption, P ₁ [W]	1 x 110-120 V -10/+6%, 60 Hz	800/7.2 A	1000/9.2 A
	1 x 220-240 V -10/+6%, 60 Hz	850/3.7 A	1050/4.5 A

PUMP GENERAL DESCRIPTION & CONTROL PANEL FUNCTIONS

The MQ is a low-noise pump. The pump is self-priming and has a check valve incorporated in the discharge port. This prevents backflow during priming and operation.

The pressure tank incorporated in the pump reduces the number of starts and stops in case of leakage in installation.

The MQ pump has a built-in over temperature and dry-running protection. It is operated entirely by means of the control panel shown below. The control panel offers the possibility of starting/stopping the pump. The pump settings and operating conditions are indicated by indicator lights.



CONTROL PANEL

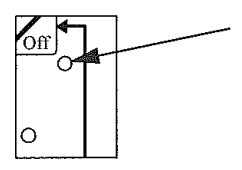
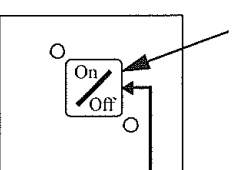
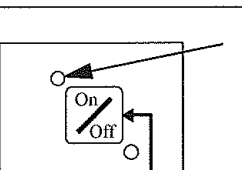
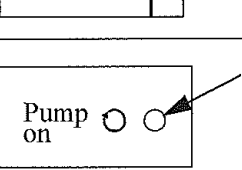
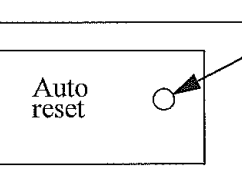
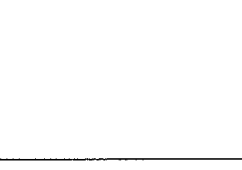
PUMP STOP

The pump incorporates an electronic protective function which will stop the pump in case of dry running, over temperature, overloaded motor or seized-up motor/pump.

The pump will restart automatically after 30 minutes (for 24 hours) in case of any type of fault if the Auto reset function is activated (the green indicator light on the control panel is on).

PUMP CONTROL PANEL FUNCTIONS

The functions of the control panel are described in the following table:

	Illustrated	Description
1		<p>Indicator light (red): When the indicator light is on, the pump is on standby.</p>
2		<p>On/off button: The pump is started/stopped by means of the on/off button. The on/off button can also be used for manual resetting in case of an alarm condition:</p> <ul style="list-style-type: none"> • press once for resetting and • press once more for starting.
3		<p>Indicator light (green): Indicates that the pump is ready for operation. When the indicator light is on, the pump will start automatically when water is consumed. The pump will stop a few seconds after the water consumption has ceased.</p>
4		<p>Pump on (green): The indicator light is on when the pump is running.</p>
5		<p>Auto-reset (green): As standard, this function is activated on delivery.</p> <p>When the indicator light is</p> <ul style="list-style-type: none"> • on, the Auto-reset function is activated. The pump will automatically attempt to restart every 30 minutes after an alarm/fault over a period of 24 hours. After this period, the pump will remain in the alarm condition. • off, the Auto-reset function is deactivated. The pump will not restart after an alarm/fault.
		<p>The Auto-reset function can be activated/deactivated by pressing the on/off button for 5 seconds.</p>
		<p>Note: When water is consumed, the pump will start and stop automatically, whether the Auto-reset light is on or off.</p>
6		<p>Alarm (red): The indicator light is on when the pump is in alarm condition. The alarm condition may have been caused by:</p> <ul style="list-style-type: none"> • dry running. • over temperature, • overloaded motor or • seized-up motor/pump. <p>See section, (PUMP STOP).</p>

Note: The pump settings are stored. After supply failure, the pump will automatically revert to its previous operating condition when the electricity supply is connected again.

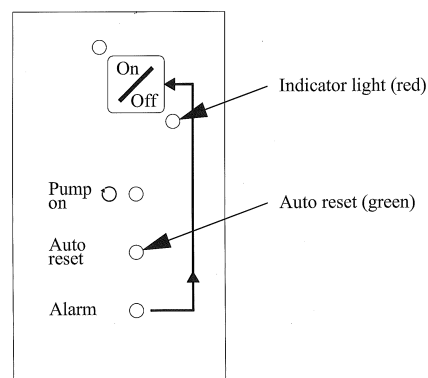
INSTALLATION

WARNING:

The installation and operation should be in accordance with local regulations and accepted codes of good practice.

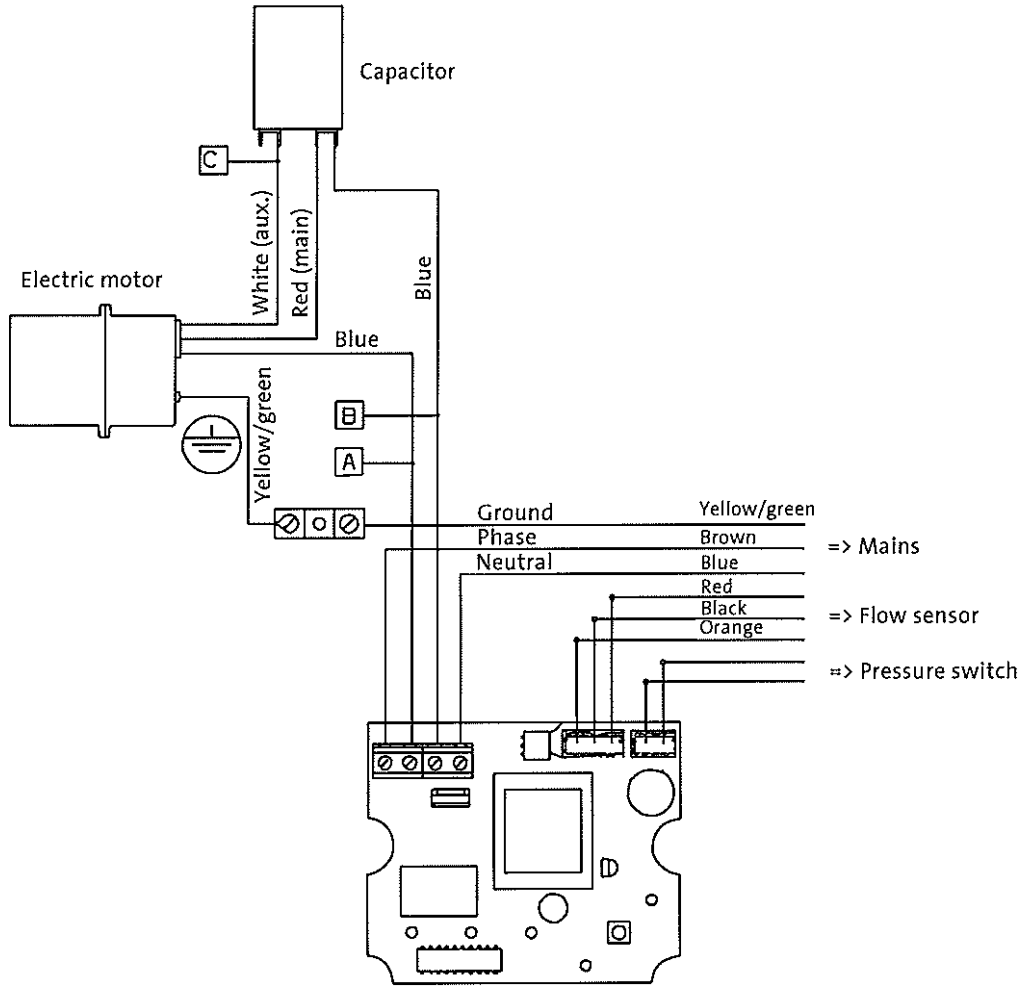
The following guidelines should be met at installation.

1. Always mount the pump on the base plate with horizontal suction and vertical discharge port.
2. The pump must be mounted horizontally.
3. Place the pump system on solid, level foundation and secure with bolts through the holes in the base plate.
4. Never make any connections in the pump terminal box unless the electricity supply has been switched off for at least 5 minutes.
5. Risk of electric shock: This pump is supplied with a grounding conductor and grounding type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded electrical circuit equipped with a ground fault interrupter device.
6. Do not start the pump until it has been filled with water.
7. The operating voltage and frequency are marked on the nameplate. Make sure that the motor is suitable for the electricity supply on which it will be used.
8. Connect the mains supply cable of the pump to the electricity supply. When the cable is connected, a red and a green indicator light on the control panel will be on. See figure below.



CONTROL PANEL

PUMP WIRING DIAGRAM



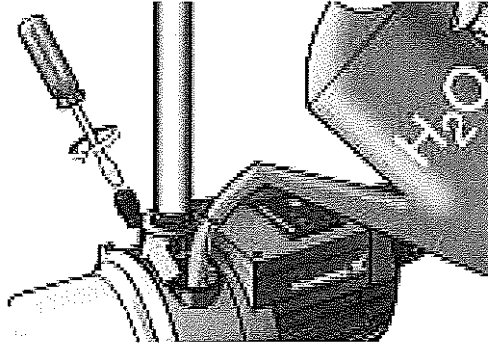
Winding resistance measurement

Motor [V/Hz]	Measuring point	Winding	Resistance [$\Omega \pm 10\%$]	Ambient temperature	
				[°C]	[°F]
230/50	A-B	Main	6.4		
230/60	A-C	Aux	16.7		
120/60	A-B	Main	1.5	21	70
	A-C	Aux	6.1		

The measurement can be done with or without cables connected to the PCB and the capacitor.

PUMP START-UP

Before start-up, the pump must be filled with 1.2 to 1.5 gallons of water to enable it to self-prime. See figure below.



When the pump is started, it will begin to self-prime. When the pump has been primed, it will automatically change over to normal operation. If the Priming has not been completed within 5 minutes, the pump will stop automatically and attempt to restart after 30 minutes. It is possible to reset the pump manually by pressing the On/Off button on the control panel once. See Control Panel Functions point 2 on page 3.

START-UP AFTER A LONG TIME OF INACTIVITY

The end cover incorporates a plug which can be removed by means of a suitable tool. It is then possible to free the pump rotor if it has seized up as a result of inactivity. If the pump has been drained, it must be filled with liquid before start-up.

PUMP MAINTENANCE

Under normal operating conditions, the pump is maintenance-free. However, it is recommended to keep the pump clean.

WARNING:

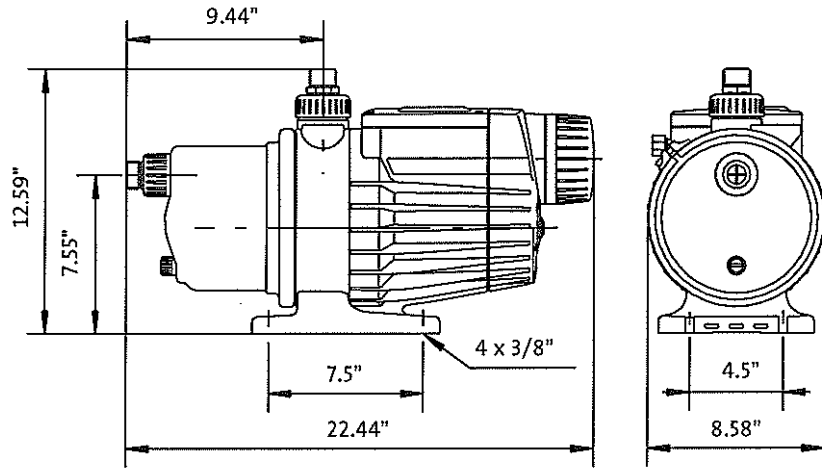
Do not remove the pressure tank from the pump unless it has been vented through the air escape valve.

Never touch the electronics unless the pump has been switched off for at least 5 minutes

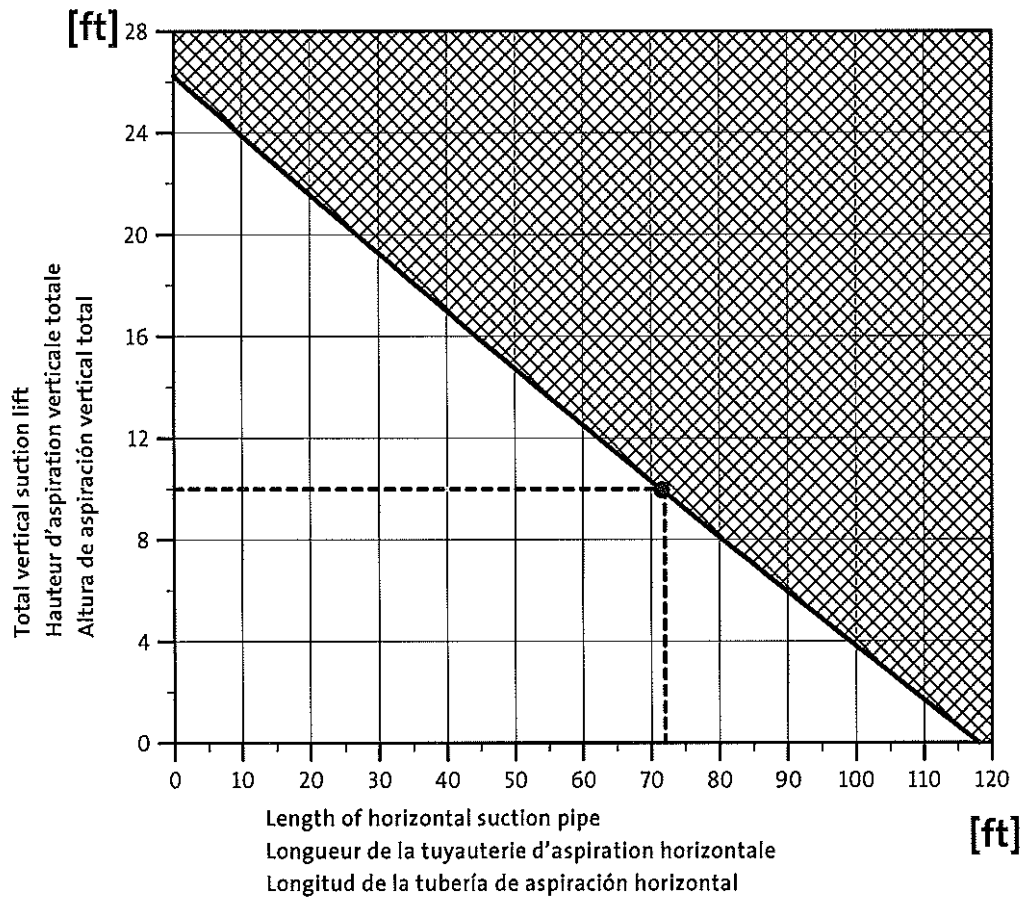
PUMP FAULT FINDING CHART

Fault	Cause	Remedy
1. The pump does not start.	a) Insufficient water	Check the water supply/suction pipe.
	b) Overheating due to excessive liquid temperature (above +95°F).	Supply cold liquid to the pump.
	c) Overheating due to seized-up/choked-up pump.	Contact your pump supplier.
	d) Too low or too high supply voltage.	Check the supply voltage and correct the fault, if possible.
	e) No electricity supply.	Connect the electricity supply.
	f) No water consumption.	Open a tap. Check that the height between the top point of the discharge pipe and the pump does not exceed 50 ft.
	g) The pump is in alarm condition.	Reset the pump by means of the on/off button. See Control Panel Functions, point 2 on page 3.
2. The pump does not stop.	a) The existing pipework is leaking or defective.	Repair the pipework.
	b) The check valve is blocked or missing.	Clean the valve or fit a new check valve.
3. The pump cuts out during operation.	a) Dry running.	Check the water supply/suction pipe.
	b) Overheating due to excessive liquid temperature (above +95°F).	Supply cold liquid to the pump.
	c) Overheating caused by: - high ambient temperature (> 113°F), - overloaded motor or - seized-up motor/pump.	Contact your pump supplier.
	d) Too low supply voltage.	Check the supply voltage and correct the fault, if possible.
4. The pump starts and stops too frequently.	a) Leakage in suction pipe or air in the water.	Check the water supply/suction pipe.
	b) Too low or too high pressure in pressure tank.	Check pressure in pressure tank, see section Operating Conditions on page 2.
5. The pump gives electric shocks.	a) Defective ground connection.	Connect the ground connection to the pump in accordance with local regulations.
6. The pump starts when no water is consumed.	a) Defective check valve or the existing pipework is leaking or defective.	Clean the valve or fit a new check valve.

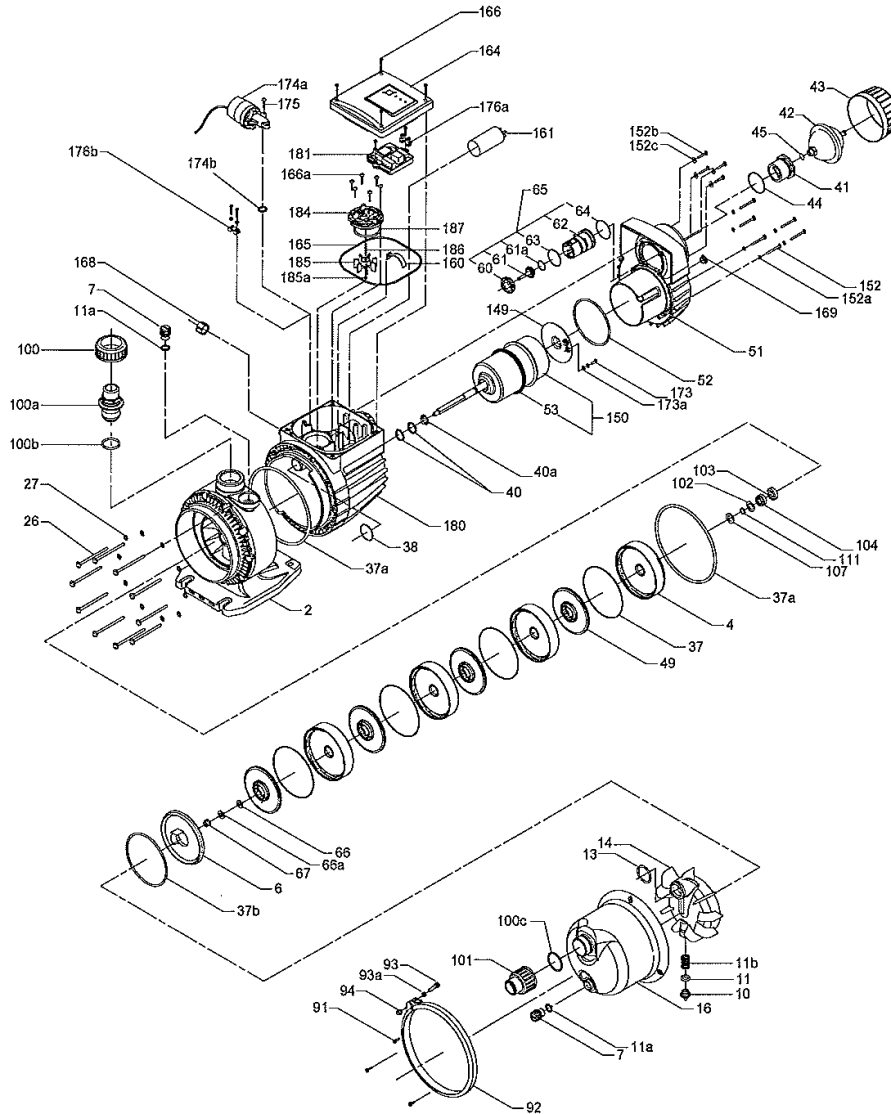
Dimensions



Suction lift/suction pipe



Exploded view



Pos.	Description (US)	Description (F)	Descripción (E)
2	Motor stool with base plate	Lanterne moteur avec socle	Soporte del motor con base
7	Priming plug	Bouchon d'amorçage	Tapón de cebado
14	Self-priming part	Pièce d'auto-amorçage	Pieza de autocebado
16	Pump sleeve	Chemise de pompe	Camisa de la bomba
42	Pressure tank	Réservoir sous pression	Tanque de presión
43	Cover	Couvercle	Tapa
51	End cover	Extrémité de la carcasse	Tapa final
53	O-ring	Joint torique	Junta tórica
65	Check valve	Clapet anti-retour	Válvula de retención
100a	Discharge connection	Raccord de refoulement	Conexión de descarga
101	Inlet connection	Raccord d'aspiration	Conexión de aspiración
161	Capacitor	Condensateur	Condensador
174a	Pressure switch	Contacteur manométrique	Presostato
181	Circuit board	Carte de circuit imprimé	Carta de circuito impreso
184	Flow switch cover	Couvercle de l'interrupteur de débit	Tapa del interruptor de caudal
185	Flow switch wheel	Roue de l'interrupteur de débit	Rueda del interruptor de caudal

PRESSURE REGULATOR

The pressure regulator is designed to reduce incoming water pressure.

This regulator has a built-in thermal expansion bypass feature. This feature prevents downstream pressure from rising to more than 10 psi above the supply pressure.

The pressure regulator has been factory preset to 40 psi.

“DO NOT ADJUST PRESSURE”. Failure to comply using a higher pressure will result in damage to the pump.

SYSTEM REPLACEMENT PARTS

