



DuraMAC™ Dual-Mode Commercial WATER PRESSURE BOOSTER SYSTEM



The **DuraMAC™ Water Pressure Booster System** is the first booster system of its kind to be designed for virtually all commercial boosting applications.

- In **Pressure Mode**, the pump starts with pressure drop and stops on low flow.
- In **Flow Mode**, the pump starts and stops by sensing flow.

A single speed, 2 HP, totally enclosed fan cooled motor drives the DuraMAC™ booster pump with single phase power. It is controlled with one dial, and tells you it is working properly by illuminating a single status light.

ATTENTION!

Important information for installers of this equipment!

This equipment is intended for installation by technically qualified personnel. Failure to install it in compliance with national and local electrical codes and with motor suppliers recommendations, may result in electrical shock or fire hazard, unsatisfactory performance, and equipment failure.

WARNING!

Serious or fatal electrical shock may result from failure to connect the motor, control enclosures, metal plumbing, and all other metal near the motor or cable, to the power supply ground terminal using wire no smaller than motor cable wires. To reduce risk of electrical shock, disconnect power before working on or around the water system.



WARNING: It is unlawful in **CALIFORNIA & VERMONT** (effective 1/1/2010); **MARYLAND** (effective 1/1/2012); **LOUISIANA** (effective 1/1/2013) and the **UNITED STATES OF AMERICA** (effective 1/4/2014) to use any product in the installation or repair of any public water system or any plumbing in a facility or system that provides water for human consumption if the wetted surface area of the product has a weighted average lead content greater than 0.25%. This prohibition does not extend to service saddles used in California, Louisiana or under USA Public Law 111-380.

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Before installation, read the following instructions carefully. Each DuraMAC™ pump is individually factory tested to insure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

1. GROUNDING & ELECTRICAL INSTALLATION



The pump and control is supplied with a 3-conductor grounded cord. Connect the pump and control only to a properly grounded, dedicated GFCI protected circuit. Do not lift the pump by the electrical cord.

Follow local and national plumbing, building and electrical codes when installing the pump.

Maintain this pump in compliance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC) and with all local codes and ordinances that apply. Consult your local building inspector for local code information.



Use copper conductors only, and be certain wire and fuses of the correct size are installed.

DO NOT GROUND TO GAS OR FUEL LINES

2. INSTALLATION & LOCATION

The pump should be installed in a dry, accessible area protected from freezing temperatures. Proper ventilation must be provided for proper cooling of the electrical equipment.

Follow local plumbing codes. In some cases a dual check valve, reduced pressure zone device, or other equipment may be required.



If your new boosted pressure is greater than 80 psi*, you must install a pressure reducing valve before your pump. Consult local plumbing codes and pressure ratings on your water appliances.









*See table on Page 3 for maximum incoming pressure.

The DuraMAC™ booster pump should be installed after the water meter, and before the water softener. If debris is present in the water, a strainer should be installed before the pump and cleaned regularly.

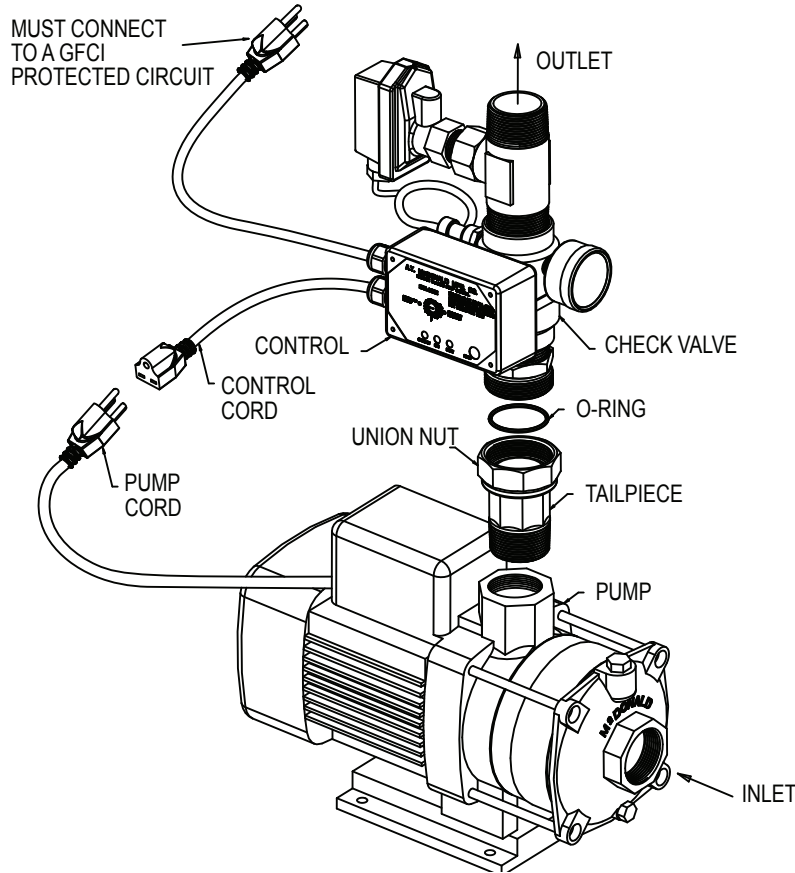
Water treatment equipment to increase pH (potential of hydrogen), must be done before the pump.

DuraMAC™ Model	Pump Boost	Amps	Voltage	Power	Pressure Reducing Valve recommended for installation with incoming pressure greater than:
17044C070PC2	44 psi	7.0	230V	2 HP	36 psi
17060C070PC2	60 psi	8.0	230V	2 HP	20 psi

Pump Boost	+44 PSI BOOST	+60 PSI BOOST
Model #	17044C070PC2	17060C070PC2
Cord Connection	 230V	 230V
Power	2 HP	2 HP
Max Incoming Pressure	36 psi	20 psi

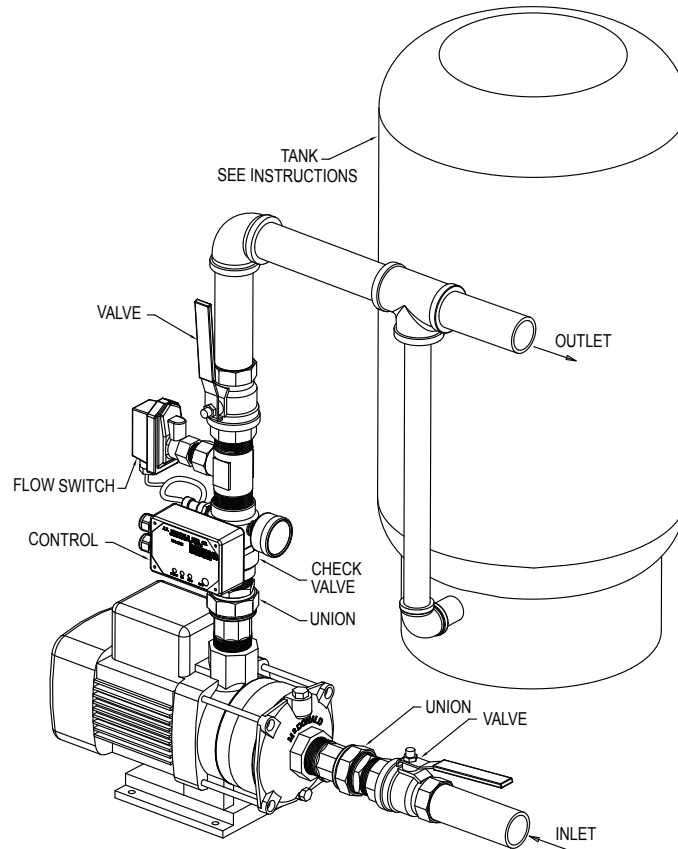
-  Do not spray water on or near the electric motor or control.
-  Pump only water with this pump. Do not pump flammable liquids or chemicals. Do not use the pump near gas pilot lights or where chemical or gas fumes are present.
-  Use of an electric pump with liquids other than water or in an atmosphere containing chemical or gas fumes may ignite those liquids or gases and cause injury or death due to an explosion and/or fire.
-  Always install near a floor drain where leakage will not cause damage to homes or property.

3. PUMP ASSEMBLY



1. Mount the pump firmly to the floor in a dry accessible location with good ventilation for cooling. The pump and control must be protected from freezing temperatures.
2. Apply pipe sealant on the male threads of the tailpiece, then slide the tailpiece through the union nut and then thread the tailpiece into the pump. DO NOT apply any pipe sealant on pump threads.
3. An O-ring should be installed in groove on the top of the tailpiece. Tighten the union nut to the control body, rotating the control and pressure gauge so they are visible and accessible.
4. Connect the pump cord to the control cord. Do not energize the control with power yet. Energizing the control with power prior to filling with water will cause the pump to run dry and void warranty.

4. PIPING



1. Install a shut off valve and a union before and after the pump as shown. This will enable you to easily test or disconnect the system if required.
2. Install a pressure tank. A pressure tank is required for this product to work properly. The air pressure in the tank must be set 2-5 psi less than the start pressure of the pump.

5. PRESSURE TANK SIZING

The Dual-Mode Commercial booster has been designed to be installed with a minimum of a 20 gallon tank such as the A.Y. McDonald model number 16020MV4F.

6. PUMP CONTROL - STANDARD MODE



STANDARD MODE

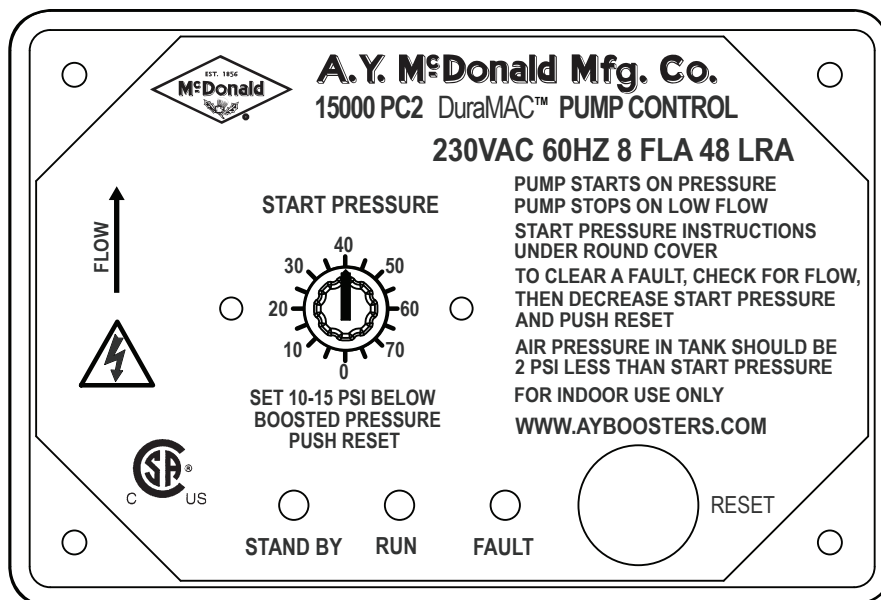
START METHOD: Pressure Drop

STOP METHOD: Low Flow

This control measures pressure with a pressure transducer and starts the pump at the pressure set on the pressure start dial. The pump will stop when the flow is approximately 3 GPM or less.

This smart system will only run the pump when water is in use. There is a preset 7 second delay after water is not flowing to fully pressurize your system and eliminate water hammer. The blue light will flash for 7 seconds before stopping.

If the pump fails to build pressure, there is an automatic feature that will try to restart the pump every 15 minutes after a failure. This will occur automatically 4 times, flashing red one time for every failed restart, then a rapidly flashing RED fault light will be on. This will protect your pump from running dry if the water supply is inadequate.



Boosting- Start Up



Do not plug in the control power cord into the wall outlet until Step 2 below is complete.

Complete all the pipe connections as shown in Section 4 then:

1. Open water main shutoff valve slowly and check for leaks.
2. Open a nearby faucet and let water flow through for about 2 minutes or until all the air is purged from the pipes. This is necessary to prime the pump.
3. With the faucet open, plug in the control power cord (or energize the control power). The pump should run, if not press the **RESET** button, the blue light should be on and the pressure gauge should increase.
4. Close faucet, the pump will run for 7 seconds after the flow has stopped with the blue light flashing. Then the green stand by light should be on.
5. Remove the round dial cover and adjust dial on the control 10 – 15 psi less than the pressure shown on gauge. Push the **RESET** button, the pump will run for 5 seconds with a solid blue light, then the pump will stop and the green stand by light will be on.
6. The air pressure in the tank should be set 2 psi less than the start pressure on the control dial. The tank should be no further than 10 feet away from the pump.
7. In order to check the air pressure in the tank, shut off the water supply main valve, open a faucet. The pressure gauge on the control should be reading zero. With a tire pressure gauge check the pressure in the top of the tank. Pressurize the tank as required with a tire pump or air compressor.
8. Open the main shut off valve then close the faucet. Check for leaks.

NOTE: Not all modes are ideal for every application.

7. ALTERNATIVE PUMP CONTROL MODES



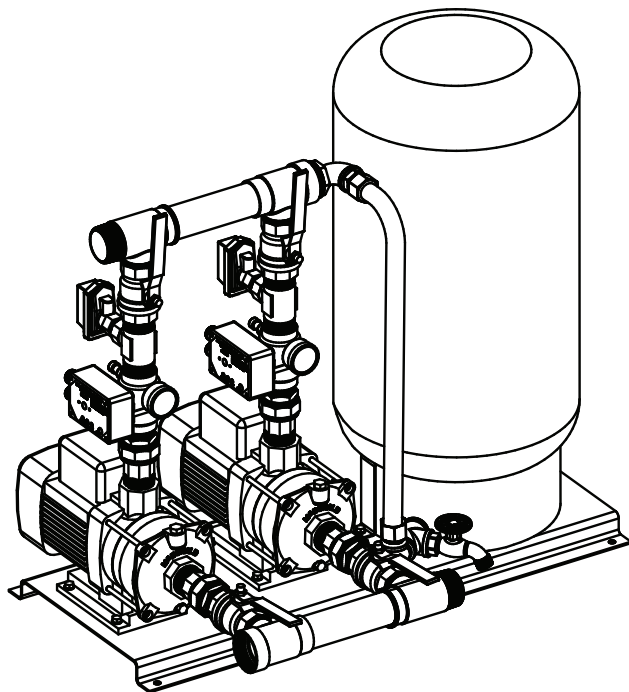
FLOW MODE

START METHOD: Water Flow

STOP METHOD: Low Flow

Your pump controller can also be setup to start and stop on flow only. This is not intended to work in suction lift applications. This method can be used for situations such as minor leaking or when incoming pressure is varying or higher incoming pressures. The starting flow rate is approximately 5 GPM. The stopping flow rate is about 3 GPM. There must be at least 25 psi incoming pressure at the highest fixture for this to work properly. Once the pressure in the tank has dropped to the incoming pressure there is a 3 second delay until the pump starts. The green light will be flashing. This is to prevent a false start caused by fluctuating pressure in the supply line.

1. Turn the Start Pressure dial to “0” and push RESET. Now the pump will start and stop with flow.
2. Adjust air pressure in tank. The tank pressure should be 2 psi lower than the start pressure. You will need to watch your pressure gauge when water is flowing to see the pressure where the pump starts.



The DuraMAC™ Dual-Mode Commercial Booster System can be installed in multiple pump configurations to increase the flow capacity. In this arraignment one pump will be the Lead pump and the other pump will be the Lag pump.

Follow the pressure setting instructions on page 6 for the Lead Pump. The Lag pump Pressure Start Dial should be set 10-15 psi less than the Lead pump Pressure Start Dial.

This will allow the Lag pump to start when the demand is greater than the Lead pump can deliver.

This air pressure in the tank must be set 2-5 psi less than the pressure setting of the Lag Pressure Start Dial.

For example, the Lead pump Pressure Start Dial could be set at 50 psi, then the Lag pump Pressure Start Dial would then be set at 40 psi, and the air pressure in the tank would be set at 35 psi.

9. TROUBLESHOOTING

RED light on (or flashing) and pump will not start:

1. Start pressure set too high. Remove round cover on control and adjust start pressure dial 10 – 15 psi less than maximum boosted pressure as shown on pressure gauge, and push RESET. This unit is factory set at 40 psi.
2. Water cannot flow through pump to build pressure. Make sure all valves are open and the check valve is in the correct orientation.
3. If installed in a suction lift application, prime could be lost. Re-prime and check for leaks on suction side. Push the RESET button, the pump will run for 5 seconds, watch pressure gauge to make sure that the pressure is increasing.
4. Make sure all filters are installed after the pump, change the filter cartridges regularly.
5. This can occur if the water supply has been interrupted or the incoming pressure drops. The pump will automatically try a restart 15 minutes after a failure. This will occur automatically 4 times, flashing one time for every failed restart, and then a rapidly flashing RED light will be on. Try turning the start pressure dial 15-20 psi less than boosted pressure as shown on pressure gauge.

BLUE light on and pump will not stop:

1. Pump stops at a flow rate less than approximately 3 GPM. It is normal for the pump to run if the flow is higher.
2. Check for water leakage, close the valve after pump. If pump stops, then water is leaking somewhere after this valve. Fix leaks and open valves again.
3. If the pump has a bypass valve installed, make sure it is closed for normal operation.

Pump starts and stops without obvious use:

1. Small leaks in the system can cause this. Reduce Start Pressure by turning dial to a lower pressure. Then adjust air pressure in tank (see #7 on page 6).

GREEN light on and pump will not start:

1. Start pressure dial set lower than incoming pressure. Adjust start pressure dial 10 – 15 psi less than maximum boosted pressure as shown on pressure gauge, and push reset. Then adjust air pressure in tank see #7 on page 7.

Pump stops at a pressure higher than 80 psi.

1. This can happen if your incoming pressure is higher than the value in the table on page 3.
A Pressure reducing valve must be installed before the pump.