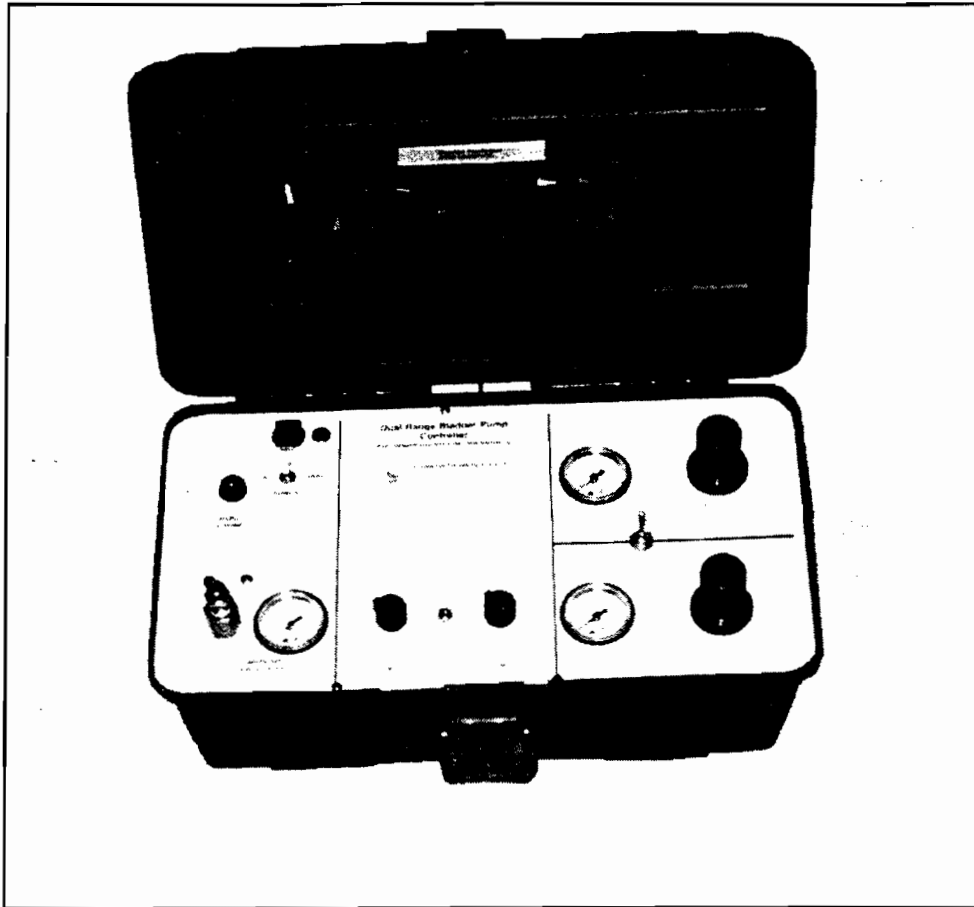


# Innovative Sampling Systems Dual Range Bladder Pump Controller



**Operator's Manual**

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Designed and made by:  
Innovative Sampling Systems  
P.O.Box 58  
7353 Cedar Crest Drive  
Sauk City, WI 53583 USA  
tel/fax: 608-643-4913  
email: [briana@bankpds.com](mailto:briana@bankpds.com)

Distributed by:  
Durham Geo-Enterprises, Inc.  
2175 West Park Court  
Stone Mountain  
Georgia 30087 USA  
tel: 1-800-837-0864  
fax: 770-465-7447

## SETUP

Thank you for purchasing an Innovative Sampling Systems Dual Range Bladder Pump Controller.

Upon receipt, please inspect the package for external damage. Report damage immediately to the freight company and advise Innovative Sampling Systems. After unpacking, open the case and note that an external battery charger and auto power cord are installed inside the lid using Velcro fasteners. A plastic plug is inserted into the "12 volt input" socket.

The controller is shipped fully assembled with the internal lead-acid gel cell battery charged. You may check electronic operation by placing the power switch in the "ON" position. You will hear the solenoid clicking and see the led change color at a frequency dependant on the settings for the pressure and exhaust timers.

The controller is designed for use with 1/4 in. OD plastic tubing for the bladder pump air line using the black push-to connect fitting on the controller front panel marked "Output To Pump". A detachable standard quick connect for the compressed air supply line is already fitted to the brass 1/8 in. to 1/4 in. NPT reducer on the controller front panel, marked "Compressed Air Source".

An air exhaust outlet tube for the built-in automatic drain filter and the pump exhaust is provided on the lower left side of the rear of the case. This should always be unobstructed for proper operation of the controller.

The two adjustable pressure regulators feature a "push to lock". To adjust the pressure it is therefore first necessary to pull the regulator knobs out before turning them.

The pressure range switch toggle points in the direction of the selected range.

## OPERATION

The controller is designed for operation on a constant 100 psi compressed air supply. The controller components are rated for use at a maximum compressed air supply of 160 psi. If higher pressures are in use it is recommended that the compressed air input be regulated to the stated design value of 100 psi.

The controller is provided with a built-in compressed air filter with an automatic drain feature for the compressed air supply. It is recommended that reasonable precautions be taken to ensure that the supplied air is as clean and dry as possible. This is particularly important when the controller will be used in cold conditions. Please note that the timers are all electronic and will not be affected by ambient weather conditions or moisture in the supplied compressed air. In use you may expect to see some moisture emitted from the exhaust/ drain outlet on the lower left rear of the case.

The built -in 12 volt lead acid gel cell battery will provide in excess of 24 hours of continuous use, when fully charged. The timer circuits will continue to operate even when there is insufficient power left in the battery to drive the air assisted solenoid valve. The controller may also be connected to either a 110 volt 60 hz outlet, using the charger or a 12 volt vehicle battery using the power cable with lighter socket plug. The power cable and the controller are provided with 2 amp fuses. In use the controller operates with less than 200 ma current.

### Suggested procedure

Connect the compressed air supply to the controller and note the input pressure on the gauge.

Connect the pump air supply tube to the controller using the push-to-connect fitting.

Switch to the desired pressure range and adjust the regulator to the pressure required to operate the pump. Note that approximately 0.43 psi will be needed for each foot of depth from the ground surface to the water surface in the well. Set the pressure gauge to the theoretical pressure plus about 10-20 psi to ensure good flow to start with. set @ 80 psi

Set the timers to about 2 secs.

Install the pump in the well. Then place the water delivery tube from the pump in a suitable container and secure.

Start the pump by turning the power switch to on and allow the pump to cycle until water is discharged into the container.

Adjust the pressure time to just allow the charge volume of water from the pump to be expelled into the container. Excess time is not necessary and will reduce the pump rate. Too little time will not fully discharge the pump.

Adjust the exhaust time by evaluating the charge volume. Too little time will not allow the pump to completely fill. Excess time will reduce the pump rate.

At a minimum it will be necessary to purge the pump and tubing of water before samples are collected. The following data is provided for the Innovative Sampling Systems Pumps, Models MBP -1000 and MBP-875; 1 in. and 7/8 in. diameter by 17 in. long pumps each with a 12 in. long bladder and using 1/4 in. OD Teflon lined polyethylene tubing for the water line.

- MBP-1000 stroke volume 95 ml
- MBP-875 stroke volume 85 ml
- MBP-750 stroke volume 51 ml
- 1/4 in. OD Teflon lined polyethylene tubing- 4 ml per foot

After the system has been purged the controller exhaust time may be extended and the supply pressure reduced to cut the flow to the desired rate for low flow sampling. Note that the timers provide sequential times from 0.1 to 10 seconds. Very low flow rates may also require the pressure time to be reduced, thereby reducing the charge volume and subsequent flow rate.

**Note:**

The controller features a splash proof front panel with boots provided for the electronic controls and a gasket to prevent water entering the case beneath the front panel. The plug provided for the alternate power socket should always be inserted, unless an external power source is in use.

Never operate the controller with a compressed air source connected and the output to the pump connector open. The high pressure air released from the pump output connector could cause injury.

Always disconnect the compressed air supply first before shutting down the controller.

## MAINTENANCE

The controller is designed for long term use with minimal maintenance. The case and mylar laminated front panel may be cleaned with a water based detergent. Take care to prevent liquids entering the external power socket on the front panel.

Before each use check to ensure that the exhaust/ filter drain outlet located on the lower left of the rear of the case is unobstructed.

In the event of water being pumped into the controller from either the compressed air supply or by mis-connecting the pump tubing, the following steps should be taken:

Turn off the controller power switch.

Disconnect the controller from the air supply and the pump.

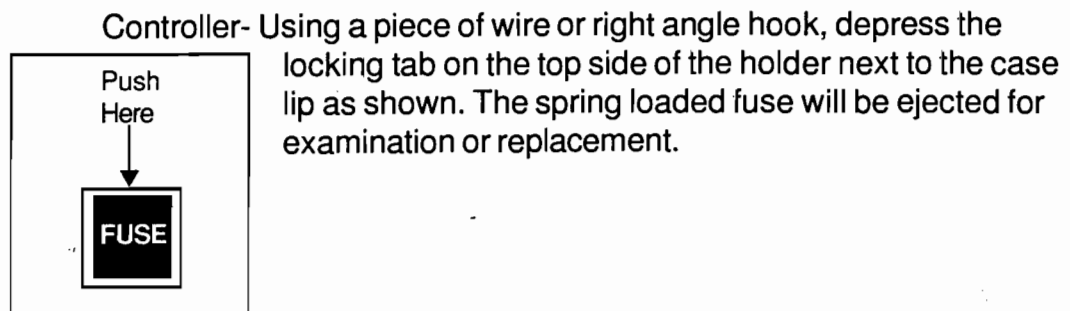
Connect a source of clean compressed air to the controller.

Connect a short, 1-3 ft , tube to the pump output connector and secure the distal end away from personnel.

Turn on the controller and allow it to cycle for a few minutes at short cycle times to remove the water from the controller.

The fuses provided with the controller and 12 volt power cord may be replaced as follows using fuses with a rating of 2 amp or less:

Power Cord- Unscrew the metal end connector and the spring loaded fuse will be ejected for examination or replacement.



In the event that the controller does not operate correctly please contact Innovative Sampling Systems for advice, using the contact information on the inside front cover (page 2).

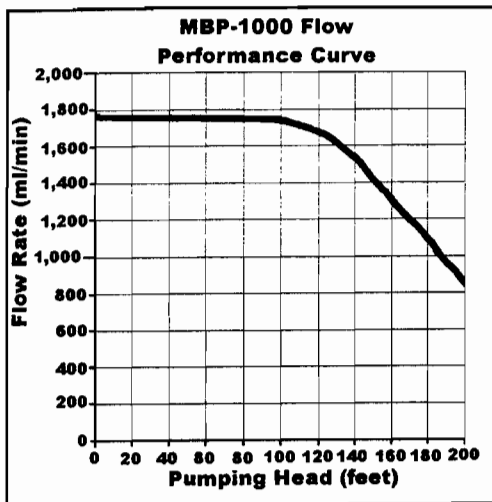
## REFERENCE

The Innovative Sampling Systems Dual Range Bladder Pump Controller incorporates the latest technologies to provide you with a bladder pump controller capable of purging and sampling wells with a head of up to 200 feet. The use of precision electronic timers allows accurate timing of each cycle component. By using two separate pressure regulator circuits close control of applied air pressure from 2 to 100 psi is possible. These features allow the controller to be used for both conventional and low flow sampling from both deep and shallow wells.

### Component Specifications:

Air contacting parts	<ul style="list-style-type: none"><li>- Stainless steel, brass, zinc, aluminum, nylon, nitrile rubber, polyurethane and glass filled nylon.</li></ul>
Pneumatic Components	<ul style="list-style-type: none"><li>- Regulators, adjustable 2-50 psig and 5-100 psig.</li><li>- Solenoid spool valve, air pilot assisted, 0-150 psig inlet and operating pressure, 12 volt 2 watt solenoid.</li><li>- Filter, 5 micron, 18 scfm flow at 100 psig, self draining.</li><li>- Input ¼ in. NPT female with reducer supplied.</li><li>- Output ¼ in. OD push-to-connect tubing fitting</li><li>- Gauges, 1½ in. diameter.</li></ul>
Electronic Components	<ul style="list-style-type: none"><li>- Electronic Timer Module, encapsulated, 0.1-10 sec ±10%, repeat accuracy ±0.1% for on and off times</li><li>- Battery, 12 volt lead acid gel cell rated output 4.5 A.H.</li><li>- Charger, 12 volt 500 ma output, regulated.</li><li>- Fuses, 1 ¼ in., maximum rating 2 amp.</li></ul>
Hardware	<ul style="list-style-type: none"><li>- Polypropylene molded 2 piece hinged and lockable case with fold down handle.</li><li>- Front panel, 0.50 in. aluminum with mylar faced laminate decal.</li><li>- Potentiometers and power switch provided with water resistant boots.</li><li>- Power socket fitted with a removable plug.</li></ul>
Dimensions	<ul style="list-style-type: none"><li>- Length 15 ¾ in., Depth 9 in., Height 7¾ in.</li><li>- Weight with supplied accessories 11½ lb.</li></ul>

## Specifications



### MBP-1000

Construction

- Stainless steel type 304\*, Teflon® and Viton® seals

Dimensions

- Length 17.25 in. (44 cm)
- Diameter 1.00 in. (2.54 cm)

Weight

- Weight 18 oz (510 g)

Stroke Volume

- 95 ml

Inlet Length

- 1.35 in. (3.44 cm)

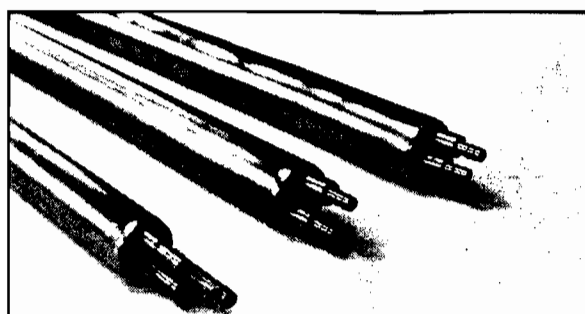
Fittings

- Custom dual barb for ¼ in. tubing

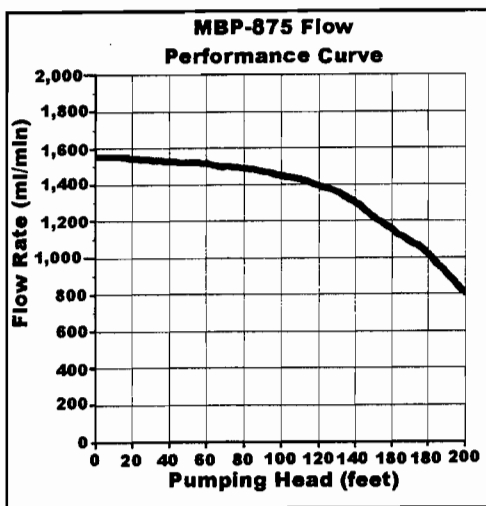
Screen

- 30 mesh stainless steel

\*Type 316 and electropolishing available



▲ MBP-1000, MBP-875 and MBP-750 Mini Bladder Pumps



### MBP-875

Construction

- Stainless steel type 304\*, Teflon® and Viton® seals

Dimensions

- Length 17.25 in. (44 cm)
- Diameter 0.875 in. (2.22 cm)

Weight

- Weight 15 oz (425 g)

Stroke Volume

- 85 ml

Inlet Length

- 1.19 in. (3.02 cm)

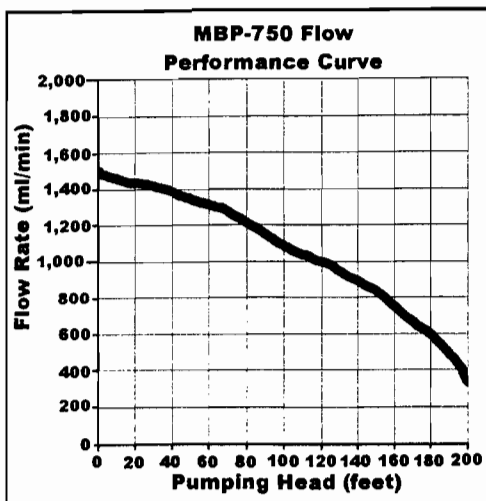
Fittings

- Custom dual barb for ¼ in. tubing

Screen

- 30 mesh stainless steel

\*Type 316 and electropolishing available



### MBP-750

Construction

- Stainless steel type 304\*, Teflon® and Viton® seals

Dimensions

- Length 17.25 in. (44 cm)
- Diameter 0.75 in. (1.91 cm)

Weight

- Weight 12 oz (340 g)

Stroke Volume

- 51 ml

Inlet Length

- 0.75 in. (1.91 cm)

Fittings

- Custom dual barb for ¼ in. tubing

Screen

- 30 mesh stainless steel

\*Type 316 and electropolishing available