

HG-2-HIGH PROFILE DIRECT DISCHARGE UNIT FOR ABOVE-GROUND INSTALLATIONS

HYDRO-GUARD®

Automatic Water Distribution Flushing Equipment With Bluetooth Programming (App managed, iOS or Android)

1. GENERAL DESCRIPTION

- 1.1 The equipment furnished under this Section shall be automatic water distribution flushing equipment designed to be temporarily installed on above-ground water distribution lines.
- 1.2 The primary purpose of this equipment shall be to automatically flush the desired amounts of water from water distribution systems for the purpose of improving water quality.

2. PERFORMANCE

- 2.1 This equipment shall be connected to a water distribution line as required by the plans or above-ground installation detail. The unit is designed for automatic flushing of the water distribution line through the opening of a control valve that is an integral part of the unit.
- 2.2 This equipment shall be capable of being programmed to activate up to 12 times daily on the days desired at a minimum of one (1) minute to six (6) hour increments (on a continually rotating 7-day cycle or on an interval between every 1 to 30 days).
- 2.3 All programming shall be accomplished by means of an integrated programmer powered by a single 9-volt Alkaline battery with the ability to install a secondary 9-volt Alkaline battery for redundancy and extended life or a Bluetooth equipped smart phone.
- 2.4 Additional programming capabilities shall include activation at the desired time of day and for the desired duration (durations ranging from one minute to four hours per flush event).
- 2.5 All programming capabilities shall be accomplished by means of an integrated programmer with a minimum of eight (8) possible flush events, or a S.M.A.R.T. Management controller with the capacity to flush the associated distribution line at the installation point when the disinfectant residual level falls below the user-defined acceptable level and must offer a minimum of ten (10) independent flush events with a minimum range of one minute to 24 hours per event.
- 2.6 The Bluetooth controlled programmer must be capable of receiving management data transmissions from up to 25 feet, line of sight.
 - a. The Bluetooth controller must be capable of being programmed up to 24 times per day and offer flush durations of one minute to 24 hours per event.
 - b. The Bluetooth controller must be capable of providing up to 5,000 separate on/off functions over the life of a single 9-volt Alkaline battery.
 - c. The Bluetooth controller must be capable of being programmed by a standard Android or iOS smart phone and the K-Rain and password protected App.

3. ACCEPTABLE MANUFACTURERS

Automatic water distribution flushing equipment to be supplied under this specification shall be **Hydro-Guard®** as manufactured by the Mueller Company or approved equal.

3.1 Controller/Programming

- a. Programming for the HG-2 High Profile Direct Discharge Device shall be managed by a KR-BL Bluetooth controller with a single 9-volt battery and an iOS or Android App-based management system.

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4. AUTOMATIC WATER DISTRIBUTION FLUSHING SYSTEM COMPONENTS

The automatic water distribution flushing system is composed of the automatic flushing unit, a multi-event programmable controller, and a portable sampling device.

5. AUTOMATIC FLUSHING UNIT

The automatic flushing unit shall be a single unit consisting of the major components described below:

5.1 Integral Piping and Control Valve – The piping and control valve components shall include the following:

- a. The unit's internal control valve shall be capable of being activated by an internal alkaline or lithium battery with an operating life of 6-to-12 months under normal operating conditions (unless a S.M.A.R.T. Management System upgrade is requested; S.M.A.R.T requires a 120VAC power source) or a Bluetooth equipped smart phone (Android or iOS).
- b. The control valve shall be a globe style valve with a straight pass design capable of passing sand and other debris up to 3/4" in diameter without obstructing the valve's throat.
- c. The unit's standard internal piping shall be either schedule 80 PVC or No-Lead Brass (customer preference).
- d. The unit's internal piping and control valve shall have a static pressure rating of 150 psi with an operational rating of 100 psi.
- e. Internal piping and control valve shall be capable of being removed from the housing by means of a quick-disconnect, permitting easy maintenance and repairs.
- f. The control valve shall be constructed of a non-corrosive, glass-reinforced nylon, brass, or equal, and shall be fitted with stainless-steel hardware. The valve shall be of the type that can be easily rebuilt.
- g. The unit shall be supplied with a standard 2" male NPT water supply connection.
- h. The unit shall be equipped with a backflow prevention device [i.e., Air Gap, Reduced Pressure Zone (RPZ), Double Check Valve]; RPZ or Double Check Valve must be a 2" design and be constructed of brass.

5.2 Housing

- a. The unit shall be supplied with a vented 17-inch by 24-inch by 35-inch above ground enclosure and an 18-inch by 25-inch by 16-inch below grade base, each constructed of superior quality HDPE or other non-corrosive, polyethylene material.
- b. The unit's components shall be constructed of a non-corrosive maintenance-free material and shall be permanently colored light green to blend with typical residential and commercial environments. The material shall be specifically designed for direct exposure to the sun and weather and have a minimum life expectancy of 15 years.
- c. All mounting brackets and hardware shall be constructed of stainless-steel and/or anodized aluminum.

5.3 System Sampling – The sampling system shall include the following features:

- a. The sampling system shall be constructed of polyethylene or other material with equal or greater resistance to bacterial regrowth and be connected with brass fittings.

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- b. The sampling system shall be designed in such a way to reduce the potential for sampling system contamination by allowing access and inspection of the internal piping compartment and components without disassembly or depressurization of the sampling system.
- c. Connection to the unit's sampling system shall be by means of a quick-disconnect. The unit's sampling connection shall be housed in a secure weather-tight area to minimize contamination of the sampling connection.
- d. The sampling connection itself shall be provided with a protective sanitary cover.

5.4 Electrical/Electronic System - The Electrical/Electronic System shall include the following features and capabilities:

- a. Capable of operating the unit's internal control valve using a replaceable alkaline or lithium battery power supply or a Bluetooth equipped smart phone (unless customer preference requires a AA-alkaline powered integrated programmer or a 120VAC powered S.M.A.R.T. Management System upgrade).
- b. The Bluetooth-equipped device must be powered by a single 9-volt Alkaline battery that can power up to 5,000 on/off events over the life of the battery.
- c. The Bluetooth-equipped device must allow for up to 24 flush events daily with durations of one minute to 24 hours.
- d. The Bluetooth controller interface shall be capable of being managed from a maximum distance of 25 feet (line of sight/no obstructions) by way of a standard Android or iOS smart phone.
- e. The Bluetooth controller interface module must be password protected to prevent unauthorized operation.
- f. Be provided with a secured, waterproof, quick-connection programming port.
- g. Have heavy-duty power cable with 18-gauge wire.
- h. Use a waterproof latching solenoid to operate the control valve (unless the device is upgraded to be controlled by S.M.A.R.T. technology; whereas, the device would be operated by a waterproof 24vac solenoid).
- i. Device must be field upgradable to a S.M.A.R.T. managed system capable of flushing when chlorine residual levels fall below the user-defined acceptable standards and capable of two-way communication with system managers via a secure web portal and/or SCADA.

5.5 Winterization

The unit shall have available as an upgrade a self-actuating thermal control valve for use in automatically acting to prevent water from freezing within the assembly.

5.6 Dechlorination System

The unit shall have available as an upgrade an inline, above-ground dechlorination device comprising a water inlet, an inlet baffle, feed tubes containing dechlorination tablets, a weir plate and water outlet as manufactured by Exeltec or approved equal.

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5.7 Execution

- a. Remove rock or other debris from the installation area.
- b. Turn off the water supply to the above-ground lines.
- c. Connect the above-ground lines to the unit's inlet using a 2" female-threaded coupling. Use a 4" coupling to connect the discharge line to the water outlet on the dechlorination device.
- d. Use heavy duty hardware to secure the unit and dechlorination device in position.
- e. Return the water supply and program the unit as required.
- f. The automatic flushing valve shall be disinfected in accordance with ADH and AWWA standards.
- g. Backflow device should be checked annually in accordance with AWWA standards.



Water (U.S.) 1.800.423.1323
www.muellercompany.com
moreinfo@muellercompany.com

Mueller Canada 1.705.719.9965
www.muellercanada.com
more-info@muellercanada.com

International 1.423.490.9555
www.mueller-international.com
international@muellercompany.com

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