

HYDRO-GUARD®

a **MUELLER** brand

OPERATING INSTRUCTIONS MANUAL

HG-3 Automatic Flushing System

TABLE OF CONTENTS	PAGE
Installation Instructions	2
Programming Unit	3
Assembly, Disassembly & Maintenance Instructions	4
Troubleshooting	5
Parts	6
Options and Upgrades	7

WARNING:

1. Each person involved in the assembly, installation and/or maintenance of the Hydro-Guard Automatic Flushing Device must read this manual carefully and follow all instructions prior to performing any installation or maintenance procedures involving the Unit.
2. Verify the drainage path prior to installation to ensure that pedestrian and vehicular hazards will not be created by the installation and use of the Hydro-Guard Automatic Flushing Device (In areas in which freezing may occur, special attention should be given to this procedure).
3. Never assemble, disassemble, or perform Hydro-Guard maintenance unless the influent supply valve has been closed, verified and secured, and internal piping pressure has been relieved.
4. Always use all necessary safety equipment and follow all recommended procedures when installing, operating and maintaining the Hydro-Guard Automatic Flushing Device.
5. Perform annual safety inspections and replace worn or defective parts.
6. Operate the Hydro-Guard Automatic Flushing Device only when fully installed and correctly assembled.

CAUTION:

The recommended optimal operating pressure for a Hydro-Guard® Automatic Flushing System is between 20psi and 120psi. In the event pressure may exceed 120psi it is recommended that a Pressure Regulating Valve be installed ahead of the Hydro-Guard flushing system.

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GENERAL

Overview

The Hydro-Guard® HG-3 Automatic Flushing System, the industry's premium patented, programmable flushing apparatus, is suitable for year-round use in moderate to severe cold climates. This Automatic Flushing System has been designed, engineered, and manufactured to provide outstanding dependability and

performance. Please read and retain this manual.

Site Evaluation

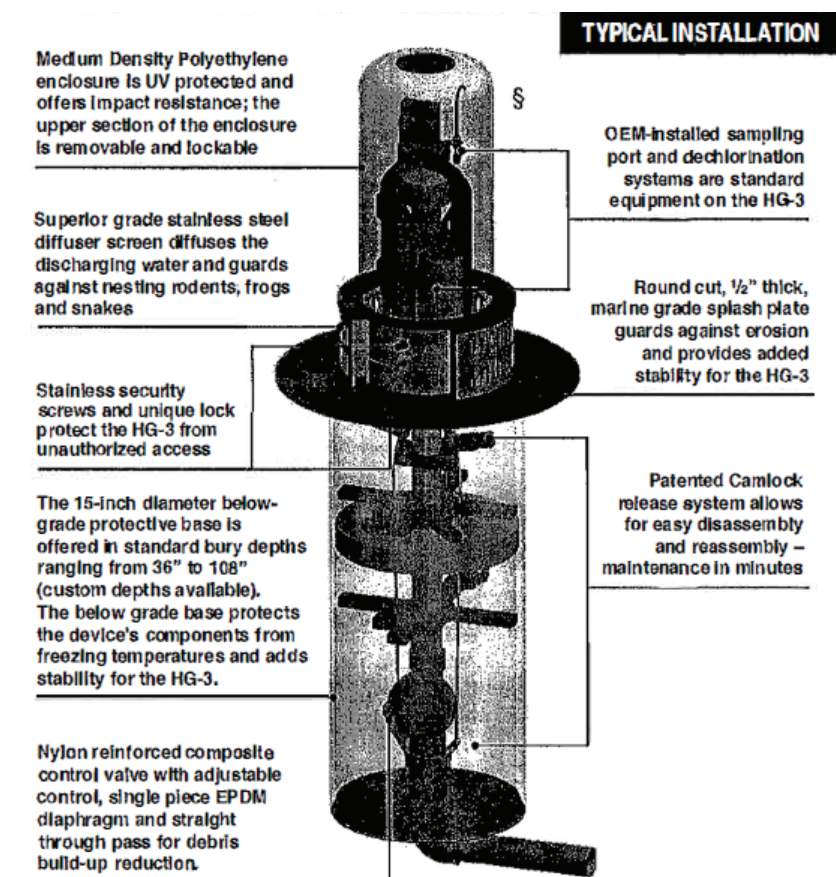
Each Hydro-Guard® Flushing System installation is unique and will require a minimum of advance planning. Prior to the installation of the device, the drainage patterns for the intended installation location should be reviewed. The drainage

pattern must permit discharged water to flow away from the Hydro-Guard® Flushing Unit or to be absorbed by the surrounding soil.

INSTALLATION

Hydro-Guard HG-1 Atmospherically Discharged Flushing Unit

1. Remove the Hydro-Guard® Unit from its packaging and inspect for possible damage during shipping.
2. Excavate a suitably-sized ditch ensuring it is connected on one side to the utility's service line trench. Remove any debris that might create uneven pressure on the Unit. Compact the bottom of the hole in order to minimize settling after installation. Place #57 stone, then non-compacted clean bedding material within the bottom of the hole. Turn off service line feed.
3. Slowly lower the Hydro-Guard® Unit into place, pressing it firmly into the noncompacted bedding material until it is fully seated. Ensure that the Unit is level before beginning the backfilling operation (The bottom of the ground plate should be approximately 1" above the final grade).
4. Connect the utility's water system to the Hydro-Guard® Unit by means of the 2" threaded connection.
5. Backfill the hole around the Unit with clean fill and/or #57 stone. Backfilling should be accomplished in 6" compacted lifts. Check that the Unit is level.
6. After installation is complete, sod the area around the Hydro-Guard® Unit or take other steps in order



- to prevent erosion. Inspect the area immediately around the Unit in order to ensure that the existing ground cover is not subject to severe erosion. You may opt to pour a concrete pad or create a custom installation to best suit your needs.
7. Disinfect the Hydro-Guard® Flushing Device in accordance with the utility's policy. DO NOT

- exceed the dosage and contact times recommended by the AWWA.
8. The Hydro-Guard® Automatic Flushing Device may now be programmed and placed into service.

PROGRAMMING HYDRO-GUARD UNIT FOR OPERATION

HG-3 (Requires Bluetooth Controller)

The BL-KR battery powered irrigation module communicates with the K-Rain BL Application on a Smartphone or Tablet by using Bluetooth SMART 4.0, (low energy) on an iPhone with iOS version 7 minimum or an Android phone/tablet with Marshmallow version 6.0 or higher.

Important

CAUTION: For use only with **9V DC Latching Solenoids**. As some solenoids will come from the manufacturer with the plunger already magnetically latched open, some zones will default to **OPEN**. Follow the start-up procedure for systems with DC Latching Solenoids. (Page 09)

CAUTION: For every change to the program in the Mobile App, you must exit back to the home screen and tap the blue TRANSMIT button (bottom right corner). The Application aggregates changes and transmits them to the controller when you have finished programming.

CAUTION: Programs A, B, and C are independent programs, including start times, run times, watering days, and water budget.

1. Install the App: – From the App Store or Google Play Install the free K-RainBL App:

2. Install a 9 Volt Battery in the Controller: – Unscrew the cap,

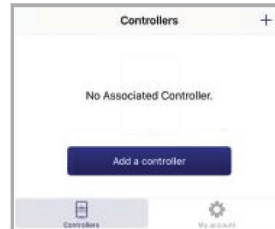
remove the seal and fasten the battery to the correct terminals. Replace the seal and cap and hand-tighten the cap to ensure it seals.

NOTE: Before you launch the App, you will need to enable location services on your phone/tablet in order for the App to geolocate your device during installation. On Android, location services must

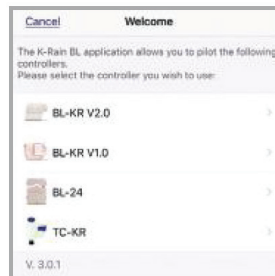
be enabled in order for the App to connect to the BL-KR device.

3. Launch the application on your Smartphone or Tablet.

4. Associate the controller with your phone by tapping the Add a Controller button.



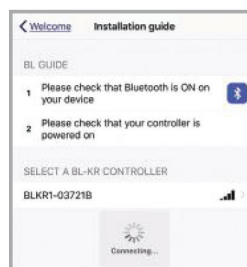
5. The app will now ask what type of Bluetooth device you would like to add:



NOTE: The BL-KR V1.0 and BL-KR V2.0 have identical hardware and software configurations. The only distinction is the outside plastic housing.

6. The App will now search for devices in range.

7. Choose the Controller. The serial numbers that populate the device list can be found on the label located on the back of the controller housing with the designation “Default name.” The App will indicate that it is in the process of connecting.



8. Once the device is connected, it

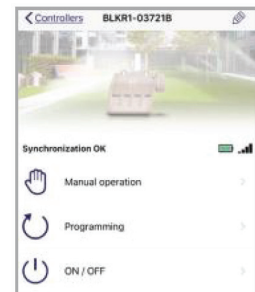
will appear on the home screen when you launch the Application.

Application Home Screen:

To add another controller, tap the plus sign in the upper right hand corner of the home screen.



Device Home Screen:



NOTE: You can associate up to 400 devices with the K-Rain BL-KR App. The number of devices is limited to the internal memory on the Smartphone/Tablet.

HG-3 DISASSEMBLY AND REASSEMBLY INSTRUCTIONS

 **TOOLS NEEDED:** HG-A 104 Security Wrench, HG-A2023 Security Tool, Philips screwdriver, flat-head screwdriver

Although the Hydro-Guard® Unit was delivered completely assembled, it may be necessary or desirable to disassemble portions of the Unit, or the Unit in its entirety, in order to allow for required service and maintenance. If disassembly is necessary, please follow the directions below. Always close the curb stop before working on the unit making sure the supply line is shut off and secured.

HG-3 Battery Replacement

1. Shut off water supply to unit.
2. Use HG-A2023 Security Tool to unlock and remove protective Exterior Housing Cover.
3. Unscrew protective cap from gray Programming Interface, which is located at top of unit.
4. Extract battery harness and remove old battery (dispose of battery appropriately).
5. Connect fresh industrial grade 9-volt lithium or alkaline battery and reinsert it with harness into Programmer.
6. Screw protective cap back into place and hand tighten securely.
7. Use Hand held Controller to reset all programs and assure flushing sequence is correct prior to returning the HG-3 Unit to service.
8. Reinstall Exterior Housing Cover and restore water supply to unit.

Disassembly

1. Shut off water supply to unit.
2. Use HG-A2023 Security Tool to unlock and remove protective Exterior Housing Cover.
3. Loosen, DO NOT remove, two stainless steel nuts in Bracket holding Dechlorination Chamber Covers in place.
4. Remove Black Knob from Push Rod that is part of Sampling Valve assembly and observe hole


where rod passes through Erosion Controlling Ground Plate so that rod can be properly guided through hole when reassembling unit.

5. Use HG-A104 Security Wrench to remove four security bolts from Erosion Controlling Ground Plate.

6. Lift upper assembly up and off pipe leading down into lower in-ground part of unit, taking care not to stretch wiring and poly-tube sampling line.

7. Rotate downward two handles of Cam-Lock Release mechanism to disengage and remove internal assembly.

Reassembly

1. Return internal assembly to proper location and lock the Cam-Lock handles in place on the female side of the Cam-Lock.
 2. Pull up on internal assembly to be sure it is locked in place (recommendation: use a zip-tie to hold two Cam-Lock handles in position to assure they remain locked in place during operation of the unit).
 3. Gently lift upper section, making certain to not stretch wires or polytube, and place it over pipe and lower it onto top of In-ground section of unit.
 4. Line up four holes of Ground Plate with brackets of in-ground Protective Sleeve.
-  **CAUTION: DO NOT rotate the plate more than 90° in either direction, which could stretch wiring or poly-tube.**
5. Reinstall four Security Screws and use HG-A 104 Security Wrench to tighten them securely.
 6. Lower Dechlorination Chamber Bracket to original position and retighten two nuts securely.
 7. Reinstall Knob onto Sampling Valve Push Rod.

8. Check battery life of Battery in Programming Interface or onboard Programmer (according to model of unit), replace and restore programming if necessary.

9. Align Lock on Exterior Housing Cover with Locking Bracket on lower assembly of unit and reinstall Exterior Housing Cover (lock will engage when cover is properly seated).

10. Restore water supply to unit.

Reloading Dechlorination Chambers

1. Follow Instructions "HG-3 Machine Disassembly, steps 1-3.
2. Slide Bracket upward as far as possible and remove Dechlorination Chamber Covers.
3. Check for partially dissolved chlorine tablets or residues and clean the chamber as needed.
4. Insert up to four 3" chlorine tablets in each chamber.
5. Reinstall chamber covers, lower bracket to secure them and retighten two nuts securely.
6. Follow Instruction #9 above to reinstall Exterior Housing Cover, and restore water supply to unit.

TROUBLESHOOTING THE CONTROLLER

PROBLEM	CAUSE	SOLUTION
Controller does not flush as desired	Water at main water supply is shut off	Check main supply valve
	Battery dead	Replace battery
	Controller set to OFF	Set controller to desired program
Blank display	Controller improperly programmed	Check program and clock settings
	Battery dead	Replace battery
Water does not turn off	Overlapping programming	Review all programming and edit any program that is in conflict with desired off schedule Clear all programming in memory and reset
	Programmer not communicating	Check Programming Run Manual On/Off with solenoid removed from valve (hold finger or object over solenoid plunger to prevent plunger from dislodging from solenoid body) Check wiring for damage and connectors to ensure proper connection (red to red & black to black)

TROUBLESHOOTING THE UNIT

If your Hydro-Guard® Unit does not activate:

Possible Causes

- Water pressure off or low.
- Batteries weak or dead.
- Connection loss from controller to solenoid.
- Solenoid not working properly.
- Obstruction in flow of water.

Try this Correction

- Check if curb stop is open.
- Change batteries.
- Check connections for corrosion, breaks, or lack of connection.
- Run a manual flush and confirm the solenoid plunger is kicking out and pulling back in by listening for a click.
- Check to make sure the flow control knob is open on the valve OR Check the pipes for obstructions OR Check the valve.

The Hydro-Guard® Unit will not shut off:

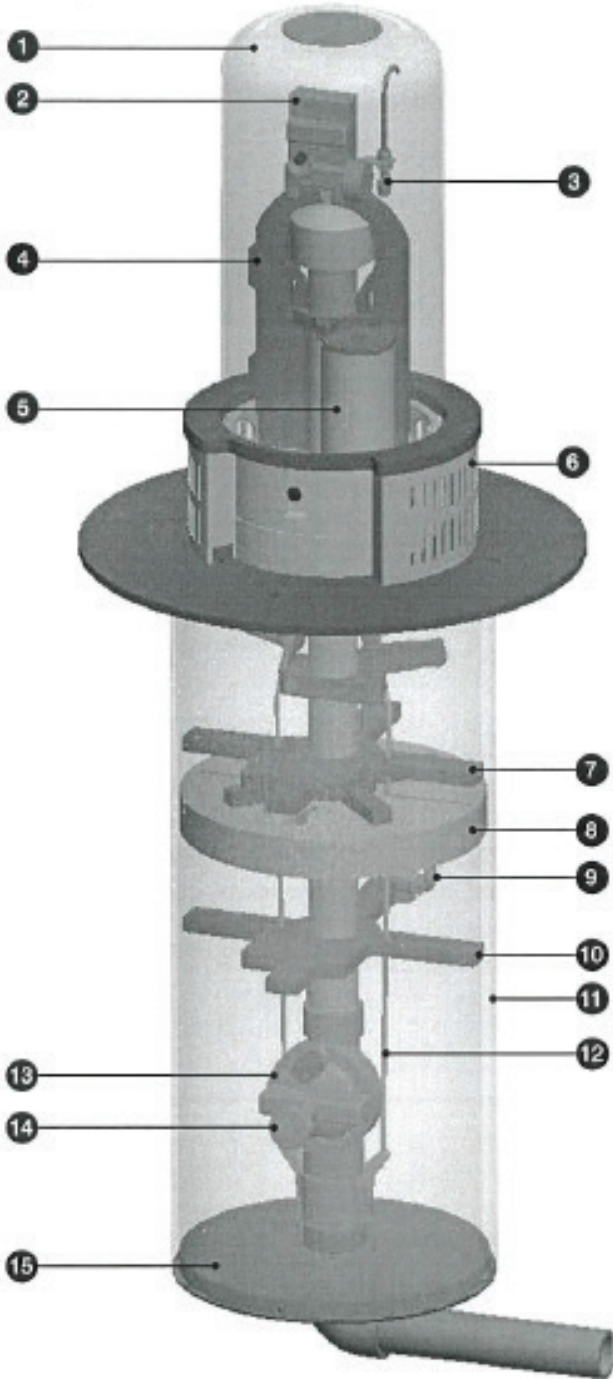
Possible Causes

- The solenoid is stuck in the open position or debris is interfering with operation of plunger.
- Batteries weak or dead.
- Connection loss from battery box to solenoid.
- The solenoid is loose or there is debris in the plunger.
- There is a hole in or debris around the diaphragm or in the valve screen.

Try this Correction

- Run a manual flush for 1 minute.
- Change batteries.
- Check connections for corrosion, breaks, or lack of connection.
- Check the adapters and solenoid for debris- Run the electrical systems check.
- Refer to valve troubleshooting for possible corrective measures.

PROGRAMMING HYDRO-GUARD UNIT FOR OPERATION



REPLACEMENT PARTS

ID	PART #	DESCRIPTION
1	546284	UV Protective Housing
2	HG3-BL	Bluetooth Controller Assembly
3	546521	Sample Valve Assembly
4	546329	Riser Assembly
5	546519	Dechlorination System
6	HG-S316	Stainless Steel Housing Bracket
7	545729	Centering Star
8	HG-S126	Insulation Star Sub-Assembly
9	HG-S128	Freeze Protection System Sub-Assembly
10	545729	Centering Star
11	545738	Splash Pad
12	HG-13105	Latching Rods 1/4" x 26"
13	HG-S124	Latching Solenoid Sub-Assembly
14	HG-S325	Control Valve Sub-Assembly
15	546330	Bottom Plate Sub-Assembly

HYDRO-GUARD® OPTIONS AND UPGRADES

The following is a brief overview and introduction to Hydro-Guard® Options.

LOW LEAD BRASS INTERNAL COMPONENTS AND PIPING

S.M.A.R.T. Monitoring and Flush Management

The Hydro-Guard HG-3 can be a variety of water quality sensors. The S.M.A.R.T. equipped HG-3 will allow a utility to remotely monitor, in real-

time, the water quality at a specific flush point and automatically initiate a flush event when water quality conditions warrant.

The Hydro-Guard® S.M.A.R.T. flushing system:

Possible Causes

- Monitors chlorine levels (total or free).
- Flushes distribution line when residual disinfectant drops below acceptable levels.

- Monitoring of pH, flow, temperature or turbidity available.
- Two-way real-time communication via cellular, wifi, ethernet or Blue Tooth® .

LIMITED WARRANTY

This Hydro-Guard™ Automatic Flushing Device is warranted for one year from the date of delivery. Mueller Co. will repair or replace any defective part or component as long as the Unit is installed and operated in accordance with the procedures described within this manual. Damage or failure caused by the improper installation, assembly, disassembly, maintenance or operation of the Hydro-Guard Automatic Flushing Device is not covered by the terms of this warranty. Call Mueller Co. at 877.864.8500 during regular business hours, or contact HydroGuard at www.HydroGuard.com for details on warranty service.

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