

# HYDRO-GUARD®

a MUELLER brand

## OPERATING INSTRUCTIONS MANUAL

# HG-4 Sub-Surface Discharge Unit

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### 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.

F 12775 1/21

Customer Service Center  
Decatur, Illinois  
800.798.3131  
[www.muellercompany.com/hydro-guard](http://www.muellercompany.com/hydro-guard)  
[moreinfo@muellercompany.com](mailto:moreinfo@muellercompany.com)

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# HG-4 SUB-SURFACE DISCHARGE UNIT

## Installation Instructions

### GENERAL

#### Overview

The Hydro-Guard® HG-4 Sub-Surface Discharge Unit, the industry's premium patented, programmable flushing apparatus, is suitable for year-round use in cold to extreme cold climates. This Automatic Flushing System has been designed, engineered, and manufactured to provide outstanding dependability and performance.

Please read and retain this manual for future training, reference, troubleshooting, and maintenance.

#### Site Evaluation

Each Hydro-Guard® 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® Unit. Discharged water flushed from the Hydro-Guard® Unit must be routed away from the device. It is recommended that a 6" catch pipe (by others) be installed inside of the HG-4's external cabinet. The catch pipe

shall be mounted at least 3" under the discharge piping of the HG-4 (see Typical Installation illustration). The 6" pipe shall be installed a minimum of 24" below grade before a 90-degree bend or pipe size reduction. If desired, the 6" pipe can be reduced to a 3" or 4" pipe to continue the routing of the flow to a final discharge point. The recommended final discharge points may include a storm drain, drainage or retention pond, or a storm swale.

In the event static pressure is routinely above 110 psi, Mueller recommends installing a Pressure Reducing Valve ahead of the Hydro-Guard Flushing System."

### INSTALLATION

#### Hydro-Guard® HG-4 Unit

**1.** Remove the Hydro-Guard® Unit from its packaging and inspect for possible damage during shipping.

**2.** Turn off service line feed. 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 approximately 1-1/2 to 2 feet of #57 stone below the base of the HG-4 to allow for drainage. Then install non-compacted clean bedding material within the bottom of the hole.

**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 top of the black base of the enclosure 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.

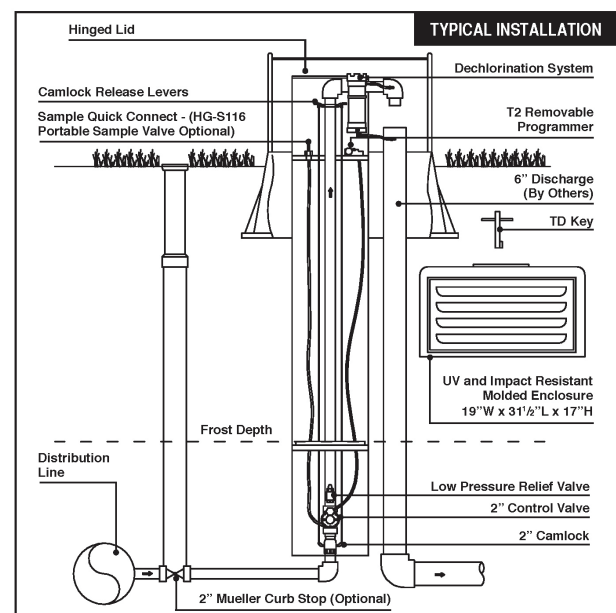
**5.** Backfill the hole around under, and inside of the Unit's below grade base with clean fill and/or #57 stone. Backfilling should be accomplished in 6" compacted lifts. Check that the Unit is level.

**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 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-4 (Requires 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: 

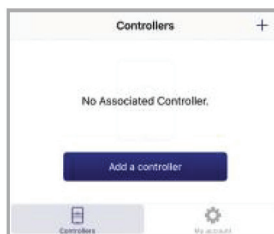
**2. Install a 9 Volt Battery in the Controller:** – Unscrew the cap, remove the seal and fasten the battery to the correct terminals. Replace the seal and cap and hand-tighten the cap to ensure it seals.

**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

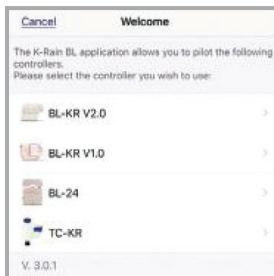
connect to the BL-KR device.

**3.** Launch the application on your Smartphone or Tablet.

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



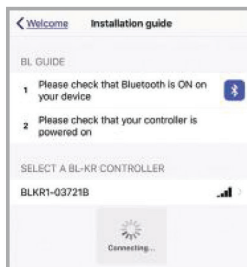
**5.** The app will now ask what type of Bluetooth device you would like to add:



**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

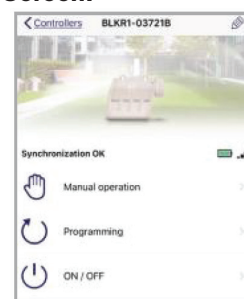
you launch the Application.

#### 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-4 SUB-SURFACE DISCHARGE UNIT

## Disassembly and Reassembly Instructions

### HG-4 DISASSEMBLY AND REASSEMBLY INSTRUCTIONS

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

Although the Hydro-Guard® Sub-Surface Unit was delivered completely assembled, it may be necessary and/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.

#### HG-4 Battery Replacement

1. Remove protective external cover and unlatch the cover of the Internal protective sleeve.
2. Unscrew the cap off the watertight housing of the integrated Bluetooth programming interface. Pull the battery box out of the watertight housing. Replace 9-volt battery with a 9-volt lithium battery.
3. Place the battery back into the watertight integrated Bluetooth programming interface making certain to tighten the screw-on lid until snug.
4. Relatch the cover of the internal in-ground, protective sleeve and return the external housing to its proper location.

#### Disassembly

1. Shut off water supply to unit and remove the green housing cover.
2. Unlatch hasp on hinged cover of HG-4 protective ground sleeve.
3. Push both handles down to release banjo coupling from the bottom plate.
4. Pull straight up to remove the Internal assembly.

#### Electrical System Check

1. Disassemble unit.
2. Unscrew Solenoid and be careful NOT TO LOSE THE O-RING.
3. Using the a standard iOS and Android cellular phone, and the K-Rain App (free), begin programmable procedure.

4. Conduct a system test upon completion of installation. Run a two minute manual flush test.

**NOTE: Plunger inside solenoid should be down when running and up when off.**

5. To prevent the loss of the solenoid plunger and spring, place an object or have a finger over the plunger of the solenoid. Allow the plunger enough space to kick out of the solenoid body into the object or finger hovering over it.

6. If test is successful re-assemble unit.

**If everything checks out, the electrical system is in working order.**

#### Valve Disassembly and Check

1. Remove six (6) bolts from top cover.
2. Slowly pull cover off the valve.
3. Remove rubber diaphragm and inspect for holes or worn areas.
4. Be certain to avoid contacting the EPDM rubber diaphragm with pipe putty. Pipe putty can cause the rubber to thin out and leak.
5. Remove the valve screen plug on the lower half of the valve body. Be careful not to exert too much force when pulling plug out.
6. Check for debris in the valve screen on the inlet side with the lower half of the valve body by removing the valve screen plug.
7. Return valve plug to its proper location when debris screen is cleared.
8. Replace the top cover back onto the diaphragm - make sure to line up the openings in both.

9. Match up the top cover of the valve with the bottom portion. The arrows have to align on both portions.

10. Replace the bolts and tighten down.

#### Reassembly

1. Install internal assembly into body, handles facing down. Set unit straight down until it rests on the male banjo coupling. Pull handles up to lock into place.
2. Return hinged cover to its correct position and relatch the hasp lock. Secure with a padlock if so desired.
3. Turn on the water supply to the unit. Using the a standard iOS or Android phone (recommend phone be two years old or newer), and the K-Rain App, conducted a 2 minute manual flush test.
4. Install the housing cover over the unit and lock in place.

### HYDRO-GUARD® FEATURES, OPTIONS AND UPGRADES

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

#### **Integrated Sample Station (Included)**

A standard feature on the HG-4 Sub-Surface Discharge Unit, Hydro-Guard's Sample Port allows the end user to collect the sample. You may wish to run a brief manual mode flush prior to the collection in order to ensure water indicative of the main-line water quality is being sampled. Generally a two-minute flush is sufficient. Track your residual levels and alter flushing frequency and/or duration in order to maximize water conservation.

#### **Dechlorination (Included)**

All Hydro-Guard® Units include dechlorination systems. Dechlorination takes place as a portion of the discharged water passes through a housing containing either sodium sulfite or ascorbic acid tablets. This action creates a concentrated dechlorination solution that then mixes with the non-directly treated portion of the discharge to effectively dechlorinate the entire discharge volume. This option is available to be retrofitted onto the HG-4 Sub-Surface Discharge Unit.

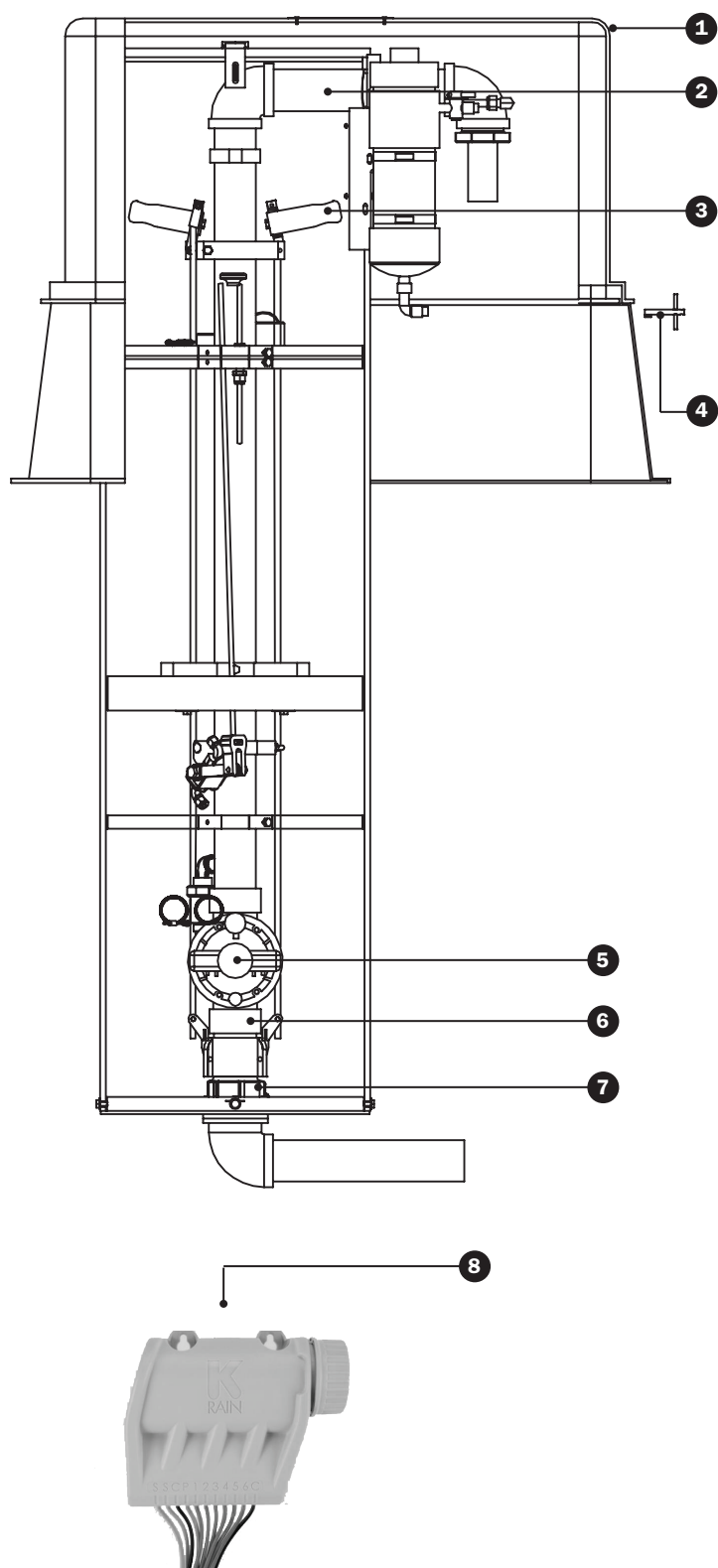
#### **S.M.A.R.T. Upgrade**

The HG-4 is not upgradeable to Smart technology; however, call 800.423.1323 and ask about upgrading to a HydroGuard® S.M.A.R.T. flushing system that:

- 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® .

# HG-4 SUB-SURFACE DISCHARGE UNIT

## Parts



ID	PART #	DESCRIPTION
1	HG-2201	UV Protective Housing
2	546553	Dechlorination Sub Assembly
3	HG-S124	Latching Sub Assembly
4	HG-A2006	TD Key
5	HG-123100	Low-Pressure Relief Valve
6	HG-S125	2" Cam-lock
7	HG-S106	Bottom Plate Sub Assembly
8	HGA-BL	Bluetooth Controller

## REPLACEMENT PARTS

HG-S106	HG-4 Bottom Plate Sub Assembly
HG-S124	Latching Sub Assembly
545729	Centering Star
HG-02125	1/4" x 1-1/4" Hex Bolt
HG-13176	1/4" x 3/4" Phil Pan Screw
HG-S128	Relief Valve Sub Assembly
HG-S126	Insulation Star Sub Assembly
546549	HG-4 Top Plate Sub Assembly
HG-2201	DIV 1021-R
HG-21088	HG-4 Name Plate
HG-V129	Silver Thermal Insulation
HG-A2006	TD Key
546372	HG-4 Sample Port
HG-V116	Bulkhead Union Brass
HG-13198	1/4 - 20 Threaded Knob
HG-V105	1/4 Polyurethane tube
HG-123108	1/4" x 1/4" NPT Adaptor
546531	HG4 Sample Rod
HG-V105	1/4 Polyurethane tube
HG-S325	HG-4 Valve Sub Assembly
546550	HG-4 Outlet Sub Assembly
HG-S117	HG-4 Bottom Plate Connection
546522	HG-4 Below-Grade Housing
546526	HG-4 Latching Rod
HG-S318	HG-4 Latching Solenoid
546535	HG-4 Main Nipple
546553	HG-4 Dechlor Sub Assembly

## NOTES



#### 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 800.423.1323 during regular business hours, or contact Hydro-Guard at [www.HydroMGuard.com](http://www.HydroMGuard.com) for details on warranty service.

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800.423.1323 – [www.muellercompany.com](http://www.muellercompany.com) – [moreinfo@muellercompany.com](mailto:moreinfo@muellercompany.com)

**INTERNATIONAL** - 1.423.490.9555 - [www.mueller-international.com](http://www.mueller-international.com) - [international@muellercompany.com](mailto:international@muellercompany.com)

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