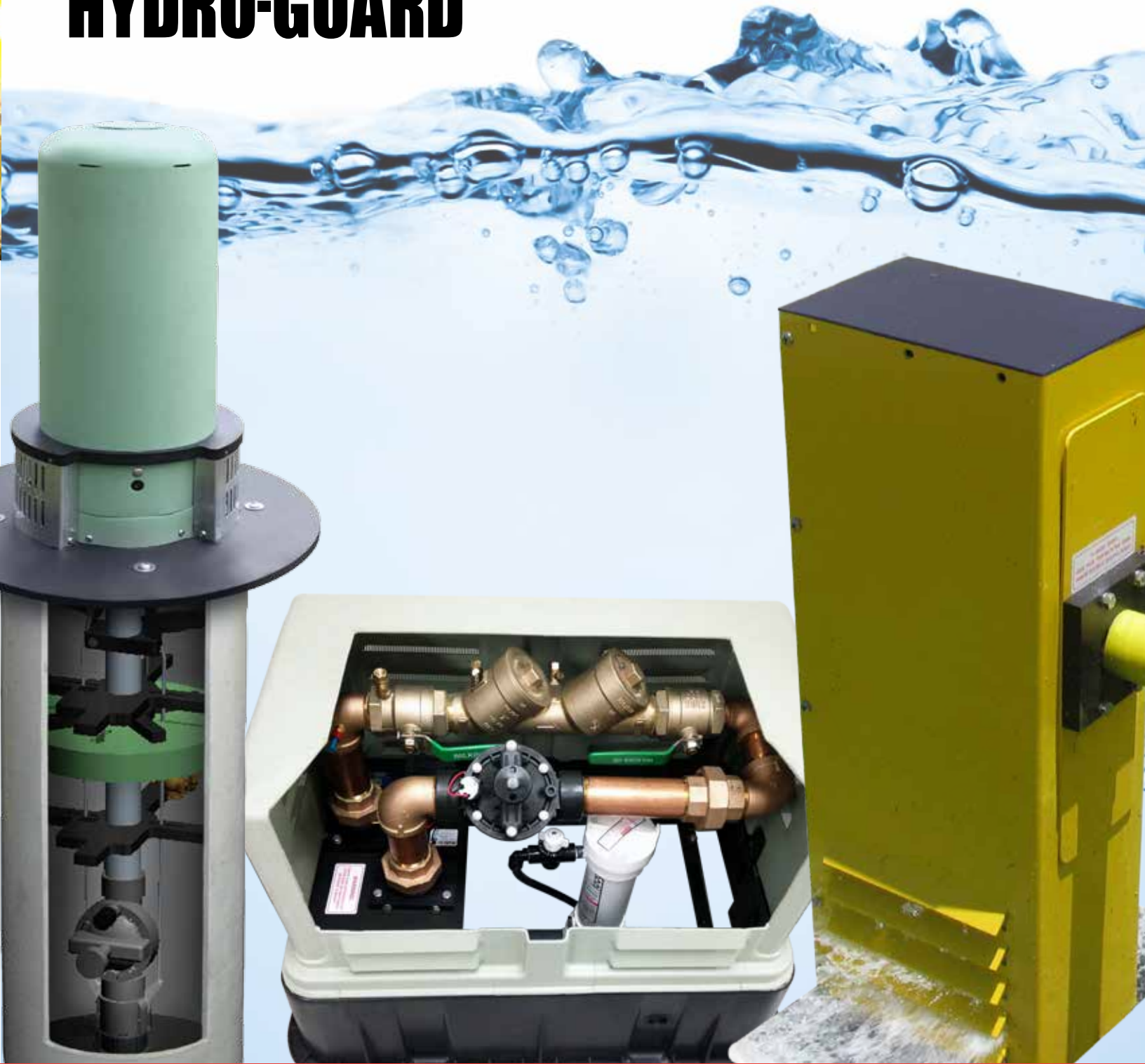


HYDRO-GUARD[®]



Hydro-Guard[®] Automated Flushing
Full-line product offering

Mueller Co.
Reliable Connections[™]

Hydro-Guard® Automatic Flushing Systems

Stop water quality complaints.



Why Flush Distribution Lines?

Most water distribution systems have areas with insufficient demands to keep the detention time short enough to maintain minimum disinfectant residuals. Failure to maintain a minimum disinfectant residual in water lines, in addition to being a violation of State and Federal standards, contributes to the conditions that favor growth of biofilms within the distribution lines.

Long-term exposure to low disinfectant residual conditions within a water pipeline not only favors the potential for biofilm growth, it increases the demand for disinfectant and makes it more difficult for operators to maintain desired minimum disinfectant residual levels.

A recognized solution for water age and water quality related problems is periodic flushing of the pipelines. This process allows for the turn-over of water in the line; flushing the water that has a low disinfectant residual and the biofilm from the inside surface of the pipe.

Hydrant and unidirectional flushing are the conventional methods used for controlling biofilm. However, automated flushing systems have become a widely accepted method, and in many cases the preferred method, to unidirectional flushing.

Maintain Water Quality & Consistency

By way of automatic and programmable flushing systems such as the Hydro-Guard® line of products, the process of automatic flushing has proven to be a far more economical alternative to traditional flushing processes that have included the use of fire hydrants.

- Reduce Complaints
 - Increase customer satisfaction
 - Reduce costs associated with fielding and solving complaints
- Improve Compliance
 - Monitor remotely
 - Respond immediately to issues
 - Improve consistency of water quality
 - Improved management of DBP's (Disinfectant Byproducts) and compliance with USEPA DPB Stage 2
- Lower Operational Costs
 - Conserve water
 - Save time
 - Reassign field crews
 - Monitor remotely and interface with SCADA

Manual Flushing

- Requires planning
- Labor intensive and costly
- Wastes water
- Interrupts traffic
- Performed infrequently

Vs.

Automatic Flushing

- Programmable
- Low operational expense
- Conserves water
- Safe and less visible to public
- Performed only as needed



Hydro-Guard® Systems Improves Water Quality and Saves Staff-Hours for Central Texas Vacation Community

The City of Horseshoe Bay, Texas installed ten (10) Hydro-Guard® HG-1 Signature automatic flushing units and seven (7) Safety Guard® sampling stations. According to Steve Hawley, Plant Operations Supervisor, "We've freed up staff-hours and seen improvement in trouble areas. In some areas, a single HG-1 is saving us four to five hours of labor every week." To review the entire case study, please visit www.muellercompany.com.



Overview

The Hydro-Guard® product line revolutionized the water distribution industry in 1998. As a pioneer in automated programmable flushing, Hydro-Guard allows public and private water distribution utilities to maintain more consistency in the level of chlorine residual, especially at dead ends. The Hydro-Guard® automatic flushing system utilizes a time-based schedule to flush when water usage is traditionally lower or when the residual level is at its lowest.

Temporary (Portable)

Hydro-Guard® HG-6 automatic flushing system takes automatic and programmable flushing capabilities anywhere in the water distribution system where a fire hydrant is available. It's portable and adjustable so it can be connected to the hose nozzle of any brand of fire hydrant. It is the perfect solution for temporary or emergency flushing needs.



HG-6 Temporary (Portable) Flushing System

Permanent

Hydro-Guard® permanent flushing systems fully automate the process for flushing water distribution lines. The units can be designed to operate reliably in warm, moderately cold, and cold climates. Designed for use with an integrated multi-event programmer, Hydro-Guard systems can flush a water line multiple times per day, seven days per week, with flush durations ranging from one minute to four hours per program. Water can be discharged atmospherically or direct into a pond or storm sewer.



HG-2 Low Profile Flushing System



HG-3 Flushing System

Product Selection Guide

Installation Parameters	Temporary	Permanent				
	HG-6	HG-1	HG-2	HG-3	HG-4	HG-8
Climate	-	Warm	Warm	Cold	Cold	Cold
Discharge Type	On Ground	On Ground	Direct	On Ground	Direct	Direct
Backflow Prevention	Air Gap	Air Gap	Air Gap, Double Check, or RPZ	Air Gap	Air Gap	Double Check
Programming	Varies*	Built-In (NODE) Removable (T-2), or SMART Controller (upgrade)				
Inlet Size	2"	1" or 2"				
Pipe Material	PVC or No Lead Brass	PVC, No Lead Brass, or Stainless Steel				
Bury Depth	Hydrant mount	0" - 18"	18"	18" to 108"		
Enclosure Type	Unpainted, Red, or Yellow	Low Profile Green; High Profile Other Colors		Low Profile Green; High Profile Other Colors; Unpainted		Below Grade

* Available with either Air Gap, Double Check, or RPZ.



Temporary (Portable) Flushing Systems

The Hydro-Guard® HG-6 Automatic Flushing System is portable and adjustable so it can be connected to the hose nozzle of any brand of hydrant. It is available with an optional integrated multi-event programmer or a standard removable multi-event handheld programmer that can be used to program multiple Hydro-Guard® flushing units. Either way, the HG-6 flushing unit can be programmed to flush a water line multiple times, several times a day, seven days per week. The flush durations can range from one minute to six hours per flushing event.

Constructed of heavy-gauge powder-coated aluminum for durability, the HG-6 unit is designed to be self-supporting. It features vents that direct discharged water equally in two directions, enhancing stability. The venting and the unit's splash plate help to minimize the potential for ground erosion around the bottom of the HG-6 unit and the hydrant from the discharged water.

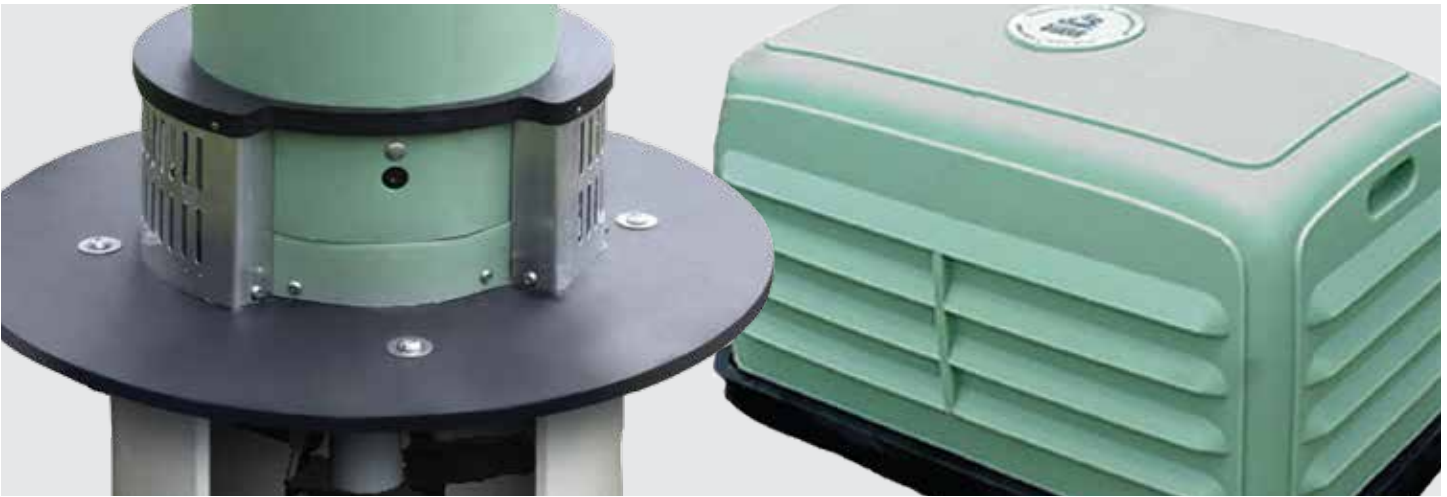
To accommodate the variation in fire hydrant heights, the HG-6 unit features a unique adjustable slide panel and hydrant swivel connector. The slide panel allows for eight inches of vertical adjustability to match with virtually every hydrant in a system, and to assure the unit can be firmly planted for maximum stability.

Since many communities require discharged water to be dechlorinated before it is released into the storm sewer system or surrounding environment, the HG-6 unit has a built-in dechlorination tablet chamber as a standard OEM-installed feature.



Standard Features:

- Programming managed by removable multi-event remote handheld programmer (Multi-event integrated programmer - optional)
- 7 psi to 150 psi operating pressure
- Easy access to mounted programmer (or port for handheld)
- Adjustable mounting connection
- Durable, powder-coated heavy-gauge aluminum construction
- Self-supporting, free standing design
- 2 inch glass reinforced Nylon control valve
- Sampling Valve (operational with unit on or off)
- Splash plate for erosion control
- 2.5 inch NTP hydrant swivel adapter
- 8-tablet dechlorination dispenser
- Security kit
- Air Gap to prevent backflow of water into water main



Permanent Flushing Systems

Warm Climate Systems

HG-1 - The HG-1 fully automates the process for flushing water distribution lines. It is designed for operating reliably in warm and moderately cold climates. Designed for use with an integrated multi-event programmer, the HG-1 can be programmed to flush a water line multiple times per day, seven days per week, with flush durations ranging from one minute to four hours per program.

HG-2 - The HG-2 is a low profile flushing system developed for use in applications where the discharge water will be directed to the storm sewer system or a retention facility, rather than onto the ground as is common with the original atmospherically discharged systems. The HG-2 unit is available with an air gap, or a choice of an optional double check valve or reduced pressure zone (RPZ) backflow preventer to prevent discharged water from being re-introduced back into the potable water main.



HG-1



HG-2

Cold Climate Systems

HG-3 - The HG-3 was developed for use in moderate to severe cold weather climates, and can be operated all year in all weather conditions. All of the unit's mechanical components are located below frost depth, yet are easily assessed using the patented Hydro-Guard® Cam-Lock™ Release System. In addition, the battery and programming interface are accessible from the top of the device.

HG-4 - Introduced in 2002, the HG-4 was developed for use in moderate to severe cold weather climates. One of the most significant benefits of the HG-4 is the capability to direct the discharged water to a storm sewer or a retention pond. Above ground, the low profile HG-4 unit appears identical to other utility boxes and can be locked for security.

HG-8 - The HG-8 uses the field proven design of the Mueller® Therma-Coil® Box. In this design, all components are mounted on a movable platform and connected to inlet and outlet piping through flexible coiled tubing. This arrangement allows the platform to be raised to the surface easily, then lowered for normal service deep below the frost line where the components are protected against freezing temperatures. At the surface, the HG-8 installation is only evidenced by its composite lid flush at ground level.



HG-3



HG-4



HG-8

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

The Hydro-Guard S.M.A.R.T. Flushing System is the ultimate automated flush management system. S.M.A.R.T. enabled flushing can be set to occur either by scheduled flush times or in response to real-time analysis of water quality parameters. What's more, it allows two-way communication and remote flush and water quality management via either a secure web portal or a secure interface with the end user's existing SCADA via MODBUS TCP protocol.

Operators receive near-time updates from each Hydro-Guard Unit in the distribution system equipped with the S.M.A.R.T. controller. It can be integrated with a residual analyzer and a variety of other water quality management devices to flush only when the disinfectant residual drops below the parameters established by the end user.



Hydro-Guard® Sampling Stations & Enclosures

Sampling Stations

The Hydro-Guard blow-off sampling station (B.O.S.S.) provides an easy way to take samples of potable water. Using a permanent, dedicated sampling point is the most reliable method of taking a water sample. Hydro-Guard sampling stations are for use in warm to cold climates, with a variety of freeze protection options for use in regions subject to freezing temperatures. Units are available with a choice of UV-protected impact-resistant plastic or powder-coated steel enclosures.



Sampling Station

Enclosures

Enclosures are ideal for housing equipment that needs protection from vandalism or the environment. Engineered for extended life and performance, these enclosures are impact and UV-resistant, affordable, and lockable solutions for a wide range of utility applications.

Standard Features:

- Plastic enclosures are UV and impact resistant polyethylene
- Metal enclosures are high-strength aluminum, painted with Mueller hydrant-quality paint
- Below-grade base for stability
- Locking covers
- Side and top accessibility
- Corrosion resistant
- 1-year limited warranty

Options & Accessories:

- Colors for all plastic styles: blue, light green, dark green, purple, multicolor faux stone granite, and sand stone
- Colors for metal styles: blue, dark green, white, black, brown, and purple
- Hex and shoulder bolt lock key combo (key lock on aluminum)



Safety Guard Enclosures



T2 Retrofit Kit



NODE Retrofit Kit



HG-A103104 Security Kit



Rock Enclosure



HG-123100 Control Valve

Programming Retrofit Kits	
Kit	Description
HG1-T2 retrofit kit	For converting older HG-1 units to current RM style programming
HG2-T2 retrofit kit	For converting older HG-2 units to current RM style programming
HG3-T2 retrofit kit	For converting older HG-3 units to current RM style programming
HG4-T2 retrofit kit	For converting older HG-4 units to current RM style programming
HG5-T2 retrofit kit	For converting older HG-5 units to current RM style programming
HG6-T2 retrofit kit	For converting older HG-6 units to current RM style programming
HG1-NODE	Retrofit kit for converting older HG-1 units to current IN style programming
HG2-NODE	Retrofit kit for converting older HG-2 units to current IN style programming
HG3-NODE	Retrofit kit for converting older HG-3 units to current IN style programming
HG4-NODE	Retrofit kit for converting older HG-4 units to current IN style programming
HG5-NODE	Retrofit kit for converting older HG-5 units to current IN style programming
HG6-NODE	Retrofit kit for converting older HG-6 units to current IN style programming
Security Kits	
HG-A2023 - Hex/Shoulder Bolt Key	For HG-1, HG-3, and all CHA style low profile enclosures
HG-A2006 - TD Key	For HG-2 and all DIV style enclosures
HG-15113 - P-Key	For all CHA high profile enclosures
Rock Enclosures	
545781	To cover HG-2/HG-4 low profile units
545782	To cover high profile CHA enclosures (i.e. HG-2 HPLG)
Controllers and Valves	
HG-123100	Replacement valve
HG-16035	Replacement valve diaphragm
5456987	“RM” style handheld controller (TBOS-II)



Our Products

Mueller has built its reputation on producing innovative water distribution products of superior quality – a reputation that is literally “on the line” every day throughout the world. Mueller products and those of its affiliates are used throughout the water system...from the source to the consumer. And we are committed to continuing research and development of new products and services to meet the growing needs of the water infrastructure industry. Mueller is the largest and only full-line supplier of potable water distribution products in North America and its markets continue to expand globally.

Our People

The capacity to deliver the widest array of products and stand behind those products to ensure your satisfaction is our strength. The success of Mueller is dependent upon the success of those who are involved, both inside and outside our company. Therefore, we feel our future is wholly dependent on long-term relationships with our employees, customers and suppliers. This is why we strive to be proactive and responsive to their needs, always looking for a “better way”. It’s an approach that has set us apart since 1857 and will assure our mutual achievement and prosperity in the future.

For more information about Mueller or to view Mueller’s full line of water products, please visit www.muellercompany.com or call Mueller Customer Service at 1.800.423.1323.

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Other Innovative Mueller Products



Remote Pressure Monitoring

§ Pressure management in pipe networks are fundamental to providing safe drinking water. The loss of pressure can allow ground water to contaminate the distribution system. Fluctuations in pressure can affect the physical integrity of pipes. Surges in pressure have been known to create additional leaks, main breaks and/or dramatically reduce infrastructure life. Pressure management can also save money. Accurate pressure data allows system operators to reduce leakage volumes, energy costs, system maintenance costs, customer complaints, and water quality problems.

- Reduce unaccounted for (non-revenue) water (NRW)
- Identify potential infrastructure failures related to pressure fluctuations which can lead to significant repair costs.
- Improve pump management and reduce energy costs
- Improve public safety



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