HYDRO-GUARD®

HG-2 Low-Profile Direct Discharge Unit

⚠ WARNING:

Failure to read and follow the instructions contained within this manual could result in serious personal injury, and/or damage to the Hydro-Guard® Automatic Flushing Device.

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. Replace worn or defective parts with OEM parts and check your battery twice a year.

6. Operate the Hydro-Guard Automatic Flushing Device only when fully installed and correctly assembled.

7. It is recommended that a pressure reducing valve be installed in front of the Hydro-Guard where pressure could exceed 120psi.

⚠ 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.

Mueller Co.

Reliable Connections™

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HYDRO-GUARD® HG-2 Low-Profile Direct Discharge Unit

GENERAL

Overview

The Hydro-Guard® HG-2 Direct Discharge Unit, the industry's premium patented, programmable flushing apparatus, is suitable for year-round use in warm and moderate climates. This Automatic Flushing System has been designed, engineered, and manufactured to provide outstanding dependability and performance.

Please read and retain this manual. It will be helpful for future reference, training, troubleshooting, and maintenance.
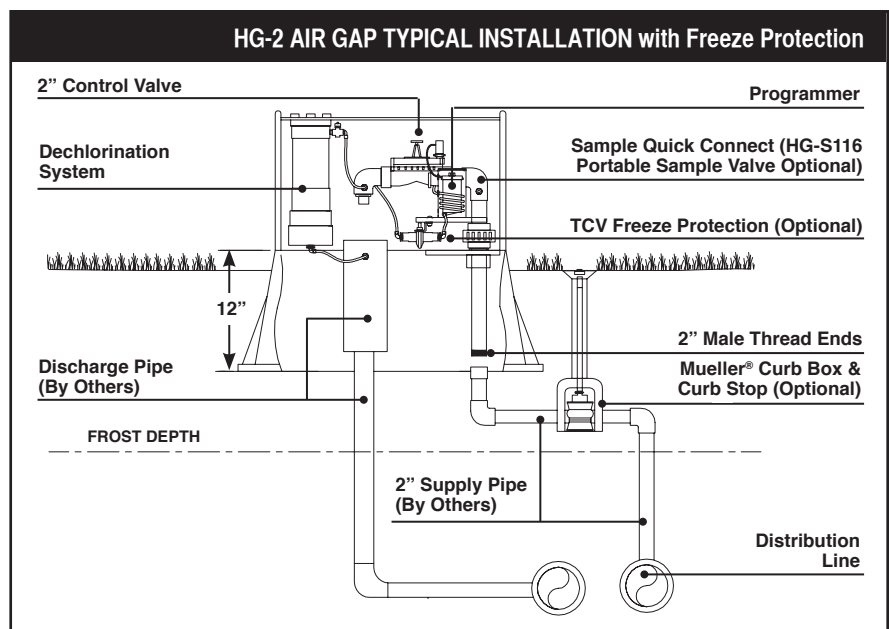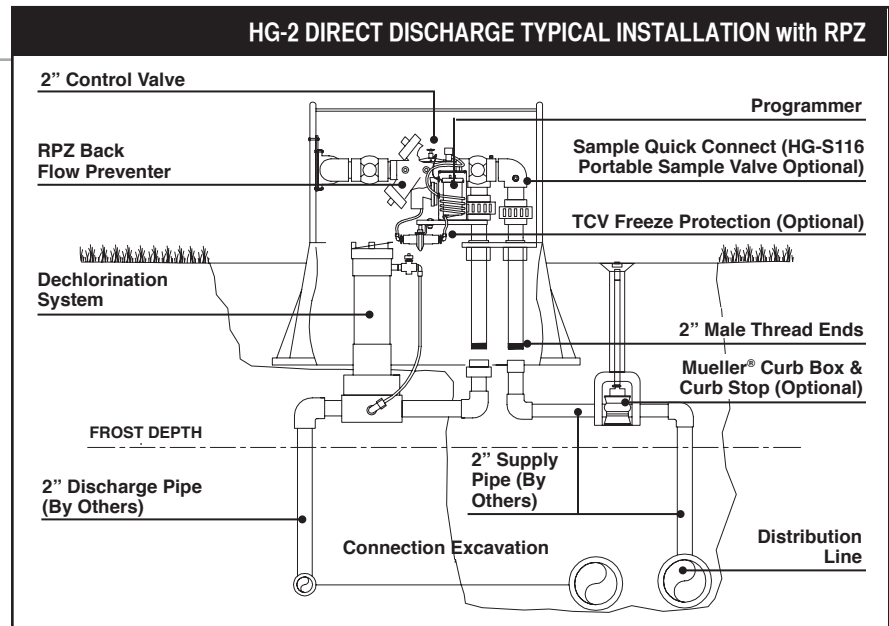
Site Evaluation

Each Hydro-Guard® Unit 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 in the case of a backflow situation. In cold-weather applications multiple nightly flushes are effective in managing discharge volumes and preventing the accumulation of ice.

INSTALLATION

Hydro-Guard® HG-2 Low-Profile Direct Discharge RPZ and Air Gap 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 noncompacted 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.

4. Connect the utility's water system to the Hydro-Guard® Unit by means of the 2" threaded connection. Ensure that Unit is level before beginning the backfilling operation.

5. Backfill the hole around and under the Unit with clean fill and/or #57 stone. Backfilling should be accomplished in 6" compacted lifts. Check that the Unit is level.

6. 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.

HG-2 DIRECT DISCHARGE TYPICAL INSTALLATION with RPZ

2" Control Valve
Programmer
RPZ Back Flow Preventer
Sample Quick Connect (HG-S116 Portable Sample Valve Optional)
TCV Freeze Protection (Optional)
Dechlorination System
2" Male Thread Ends
Mueller® Curb Box & Curb Stop (Optional)
FROST DEPTH
2" Supply Pipe (By Others)
2" Discharge Pipe (By Others)
Connection Excavation
Distribution Line

HG-2 AIR GAP TYPICAL INSTALLATION with Freeze Protection

2" Control Valve
Programmer
Dechlorination System
Sample Quick Connect (HG-S116 Portable Sample Valve Optional)
TCV Freeze Protection (Optional)
12"
2" Male Thread Ends
Discharge Pipe (By Others)
Mueller® Curb Box & Curb Stop (Optional)
FROST DEPTH
2" Supply Pipe (By Others)
Distribution Line

PROGRAMMING HYDRO-GUARD® UNIT FOR OPERATION

Discharged water flushed from the Hydro-Guard® Unit must be routed away from the device. For Air Gap models it is recommended that a 6" catch pipe (by others) be installed inside of the HG-2's external cabinet. The catch pipe shall be mounted at least 3" under the discharge piping of the HG-2 (see Typical Installation illustration on page 2). 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.

Technical Data
• Operating temperature range of 32º to 120º F
• Operating Pressure: 7 to 200psi

NOTE: Where sustained pressures may exceed 120psi the installation of a pressure reducing valve (PRV) is recommended.

Battery Life
• Will vary based on number of cycles per year, operating pressure, and temperature. We recommend checking the battery every 6 months, but in many cases, you will get more life out of them.

HG-2 (Requires Handheld)

TBOS-II Programming Instructions

The TBOS-II handheld uses on screen prompts for intuitive programming. It will control current programming interface (T-2: dark gray case), as well as the previous model of programming interface (T-1 modules programmed by the TBOS-US handheld).

Features
• 1 to 24 possible flushing events daily, or on selected days weekly, 365-day calendar
• Flush duration 1 minute to 12 hours (1 minute increments)
• Preprogram and store up to 3 different schedules
• Rechargeable battery (low battery indicator shows both handheld and controller battery conditions) with recharging adaptor (9-volt lithium battery can be used in the built-in programming interface)

NOTE: In that the handheld was designed by its manufacturer to program flush systems, many displays use flush terminology. In the following instructions, in such cases the equivalent flushing terminology is shown in parentheses.

⚠ **CAUTION: Leaving the infra-red connector connected to the built-in programming interface can significantly reduce the battery life of the 9-volt batteries in the programming interface and the rechargeable battery in the TBOS-II handheld.**

TBOS-II Handheld Keys

HOME – press three seconds to turn handheld on.
ABC – press to choose from three available programs (to store a program when preprogramming, or uploading a program to controller).
LEFT and **RIGHT ARROWS** – move curser left or right, also go back or forward one screen.
ON and **OFF**/**+** and **–** /**UP** and **DOWN ARROWS** – Used to set flushing events on or off, move selector up and down on screen, or increase or decrease duration and other values.
OK – press to make selection final.

TBOS-II Handheld Home Screen Menu
1. TBOS infra-red – accessible only when connected to programming interface via the IR cable: select to connect handheld to programming interface via infrared cable and access programs on it, or to transfer programs from handheld to programming interface.
2. Templates (TBOS-II) – select to program handheld without connecting to programming interface.
3. Settings – select to access and set time, date, and various other available user settings.

First Time Use
1. Press **HOME** key for three seconds to turn on handheld.
2. Press **RIGHT ARROW** key or the **OK** key to access "Settings"
3. Use **DOWN ARROW** to select and set the following:
a) Date and Time
b) Contrast of the screen
c) Name of the handheld controller (can be assigned to a specific operator)
d) Language (English, French, Spanish, Italian, Dutch, Portuguese, Turkish, etc.)

Programming Flushing Schedule

There are two ways to proceed:

- select "**TBOS-II infra-red**" if IR cable is connected to a TBOS-II programming interface to access, change or load programs there, or
- select "**Templates (TBOS-II)**" to create or change programs stored on the handheld to load onto a programming interface at a later time (IR cable not used).

NOTE: The home screen for "TBOS-II infra-red" shows battery condition for programming interface and ON/OFF state of any current operation in progress.

1. Press **HOME** key for three seconds to turn handheld on.

2. Press **RIGHT ARROW** key or the **OK** key to access "**Settings**".

3. Use **DOWN ARROW** to select "**Templates**" and press **OK**.

4. Use **DOWN ARROW** to select "**Programs**" and press **OK.**

5. Use **DOWN ARROW** to select "**Watering Days**" (Days to Flush) and press **OK**.

6. Use **UP/DOWN ARROWS** to select one of the following:
a) **Custom Cycle (Week)**: use **RIGHT/LEFT ARROWS** to move to days of the week, use **ON/OFF** keys to highlight days on which to flush, then press **OK** to confirm days when selections are complete.
b) **Even Days**: to Flush on even dates, press **OK** to set.
c) **Odd Days**: to Flush on odd dates including 31st, press **OK** to set.
d) **Odd Days 31**: to Flush on odd dated except 31st, press **OK** to set.
e) **Cyclical**: to Flush every "X" days, set "X" using **ON/OFF** keys (X=1 to 31), press **OK** to set; then set start date "dd/mm/yyyy" using **ON/OFF** keys, press **OK** to set.

7. Use **LEFT ARROW** to navigate back to the program "**Settings**" menu.

8. Select "**Start times**", press **OK** to set.

9. Use **ABC** to select program to be set up.
a) Set hours and minutes for each start time (up to 8 per program) using **ON/OFF** keys, press **OK** to set each (hours are indicated using 24 hour clock). [When exiting this screen, start times will automatically sort into chronological order.]

10. Use **LEFT ARROW** to navigate back to the program "**Settings**" menu.
a) Use **DOWN ARROW** to select "**Valve Run Times**" (Flush Duration), press **OK** to set.
NOTE: Although six valves may be shown on screen, only Valve 1 is used to manage the Hydro-Guard® unit.
b) Use **ON/OFF** keys to select program A, B and/or C (one or more can be assigned).
c) Then use **ON/OFF** keys to set Flush duration (hours and/or minutes) for program just set, use **LEFT/RIGHT ARROW** keys to move between hours and minutes and **+** and **–** keys to set times (1 minute to 12 hours), press **OK** to set.

Transmitting Time, Date and Programs to Programming Interface, Clearing/Checking Programs, Manual Start

Connect handheld to programming interface using IR cable.

1. To transmit: from home screen, use **DOWN ARROW** to select "**TBOS-II infrared**" and press **OK**. TBOS-II handheld will receive data (settings) from built-in programming interface.

2. Once data receipt is complete press **RIGHT ARROW** to move to "**Settings**" menu.

3. From "**TBOS-II infra-red**" settings screen select "**Transmit**" and press **OK** again. When program to be transmitted appears, press **OK** to confirm.

4. To clear programs A, B, or C: from "**TBOS-II infra-red**" welcome screen, use **DOWN ARROW** to select "**Clear Programs**" and press **OK**, then select type of program to clear and follow prompts.

5. To check programs A, B, or C: from "**TBOS-II infra-red**" welcome screen, use **DOWN ARROW** to select "**Programs**" and press **OK**, then select what is to be checked and follow prompts.

Manual Flushing

Using TBOS-II handheld on the T-2 built-in programming interface (dark gray in color).

NOTE: Manual start cannot be initiated if there is no program in the programming interface.

1. To start manual flushing from "**TBOS-II infra-red**" welcome screen.
a) Use **DOWN ARROW** to select "**Manual Watering**" (Manual Flush) and press **OK**,
b) Select "**Start Valve**" (Open Control Valve) then using **ON/OFF** keys select "**Valve 1**" and press **OK**,
c) Use **ON/OFF** keys to set the manual Flush Time (1 minute to 12 hours) and press **OK** to confirm. Flushing will start after a four (4) second delay.

Stop Manual Flush Sequence

1. Reconnect IR cable to built-in interface, then hold down **HOME** key on handheld.

2. Use **RIGHT ARROW** to select "TBOS-II infra-red" menu and select "**Manual Watering**."

3. Select "**Cancel Flush**" to cease the manual flush sequence.

HG-2 Built-In: (Integrated)

NODE Programming Instructions

Batteries

The NODE uses standard 9-volt alkaline batteries to operate the control valve and program the controller. The controller can operate with one or two batteries installed. Under normal conditions, potential life is 1 year for a single battery.

Battery Installation

1. Unscrew rear body of the NODE to gain access to battery compartment.
2. Insert battery/batteries into battery tray and connect the battery connector to controller.
3. Make sure no water is inside battery compartment.
4. Screw the NODE rear body back onto front half.

NOTE: Make sure that seal marker on rear half of the NODE lines up with front half, ensuring a proper seal is created. Also, The NODE has non-volatile memory, which allows battery replacement without losing program information.

Idle Mode – Waking Up

Normally the NODE display shows time and day, day of week, and battery life indicator. During a short period of inactivity the display will shut off to retain battery power Pressing any key will wake up the NODE to the Idle Mode.

Run Mode

When controller is operating a program, items shown on display will include station number (always "1"), program letter (A, B, or C), remaining runtime, and a blinking Rotor icon.

Programming

The NODE has the capability to hold 3 programs (A, B, C) and 4 start times per program. When programming, flashing portion of display can be changed by pressing **+** or **–** keys. To change something not flashing, press **LEFT or RIGHT ARROWS** until desired item is flashing.

Setting Date/Time

1. Press **RETURN/ENTER** key until **CLOCK** icon is displayed.
2. All 4 digits will be displayed representing the year. Use **+** or **–** keys to change year. Press **RIGHT ARROW** key to proceed to setting month.
3. All 4 digits will be displayed with two digits on left flashing representing the **MONTH**. Use **+** or **–** key to change month. Press **RIGHT ARROW** key to proceed to setting **DAY**.
4. Only two digits on right will be flashing, representing the **DAY**. Press **+** or **–** key to change day. Press **RIGHT ARROW** key to proceed to changing **TIME**.
5. The **AM/PM/24** time setting is shown flashing. Press **+** or **–** key to change to AM, PM, or 24-hour time. Press **RIGHT ARROW** key to proceed to setting the **HOUR**.
6. All 4 numbers are shown with two numbers on the left flashing, representing the **HOUR**. Press **+** or **–** key to change the hour. Press **RIGHT ARROW** key to proceed to setting **MINUTES**.
7. All 4 numbers are shown with two numbers on right flashing, representing **MINUTES**. Press **+** or **–** key to change minutes. (Pressing **RIGHT ARROW** key will return to **YEAR** setting at step #2.)
8. Press **RETURN/ENTER** key to proceed to next programming function, or allow controller to return to idle mode.

Setting Flush Sequence Start Times

1. Press **RETURN/ENTER** key until **CLOCK** icon is displayed.
2. The **START TIME** will be displayed flashing, along with the program letter (A, B, or C) and start time number (1, 2, 3, or 4) in the upper left of the display. Up to 4 different start times can be set for each program.
3. Use **+** or **–** key to change **START TIME** for program displayed. Each press of key will change start time in 15-minute increments.
4. Press **RIGHT ARROW** key to add an additional **START TIME** to program displayed. The start time number is shown in upper left corner of display.
5. Press **PRG** key to add **START TIME** to a different program.
6. Press **RETURN/ENTER** key to proceed to next programming function, or allow controller to return to idle mode.

Setting Flush Duration Times

1. Press **RETURN/ENTER** key until **HOURGLASS** icon is displayed. **RUN TIME** will be displayed flashing. Also shown is program letter (A, B, or C) and active station # (always #1– all other stations not used) on lower left side of display.
2. Press **+** or **–** key to change station **RUN TIME** from 1 minute to 6 hours.
3. Press **PRG** key to add a **RUN TIME** to another program.
4. Press **RETURN/ENTER** key to proceed to next programming function, or allow controller to return to idle mode.

Setting Flushing Days

1. Press **RETURN/ENTER** key until **CALENDAR** icon is displayed. The program letter (A, B, or C) will be displayed. Arrows point at specific days of week in which flushing will occur.

2. Press **LEFT or RIGHT ARROW** to scroll though days.

3. Press **+** key to activate that day for program displayed, or **–** key to cancel watering for that day. The arrow will show on flushing days for active program.

4. Press **PRG** key to set days to flush for a different program, if desired.

5. Press **RETURN/ENTER** key to proceed to next programming function, or allow controller to return to idle mode.

Manual Flushing

Manual flushing allows user to test the Hydro-Guard® unit or a program for a specified run time.

Make sure controller is in Idle Mode.

1. Press and hold **RIGHT ARROW** until **HAND** icon is displayed. The station number (always #1) will be displayed in lower left side of display along with **RUN TIME**.

2. Use the **LEFT or RIGHT ARROW** to select #1 station if not already displayed, and **+** or **–** key to set manual flushing time.

3. To manually activate a program, press **PRG** key. Program letter (A, B, or C) will show on screen. If a different program is needed, press **PRG** key until desired program is displayed.

4. To stop **MANUAL FLUSHING** cycle press **–** key until time is reduced to zero.

5. Press **RETURN/ENTER** key to proceed to next programming function, or allow controller to return to idle mode.

NOTE:
– Pressing + or – key when running in MANUAL FLUSH mode will modify FLUSH TIME for that station.

– Pressing the button when a station is running in manual watering will stop flush on the current station and advance to the next station.

– Pressing the button when a station is running in manual watering will stop the flush on the current station and revert to the previous station.

Turn System Off

To turn off controller, press **RETURN/ENTER** key button until icon resembling water spray and **OFF** is displayed on screen. To return controller to auto programming mode, press **RETURN/ENTER** key. The controller will immediately return to auto programming mode and will display time and battery life indicator.

NODE Quick Check

This circuit diagnostic procedure can quickly identify "shorts" commonly caused by faulty solenoids or when bare common wire touches a bare station control wire. To initiate **NODE Quick Check** procedure:

1. From Idle Mode, press and hold **+, –, LEFT ARROW**, and **RIGHT ARROW** keys.

2. Display will show all segments. Release keys.

3. Press **+** key to initiate **NODE Quick Check** test.

4. Controller will then activate flushing unit for 1 second to verify operation.

Battery Life Indicator

Remaining battery life can be estimated from the battery life indicator shown on display. The NODE can operate using either a single 9-volt battery or using two 9-volt batteries. Using two nine volt batteries will yield approximately twice the battery life of a single 9-volt battery. The battery life indicator chart below shows an estimate of remaining battery life.

Full: 100-60% remaining battery life
Med: 60-25% remaining battery life
Low: 25-0% remaining battery life
Replace battery immediately!

Resetting Controller

Resetting controller will erase current program data and restart controller. A reset does not, however, delete a program saved to permanent memory using the Easy Retrieve Memory feature to save a preferred program.

1. From Idle Mode, press and hold **–**, **RIGHT ARROW**, and **PRG** keys.

2. After two seconds screen will go blank. Continue to hold keys.

3. 12:00 will flash on display. Release keys.

4. The controller may show a countdown from 10 to 1 on display, and then 12:00 am will be shown flashing when reset is complete. The controller can now be reprogrammed.

HYDRO-GUARD® FEATURES, OPTIONS AND UPGRADES

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

Sample Station

A standard feature on the HG-2 Low Profile Direct Discharge Unit is the sample port, which allows Hydro-Guard's Portable Sample Valve (Part # HG-S1167) to attach to the sample port to obtain a sample. Slip off the sanitary blue cap, attach the quick-connect adaptor, open the valve and collect your 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.

Freeze Protection

The Hydro-Guard® Direct Discharge Unit (HG-2) can be upgraded to include freeze protection via a thermal control valve to help prevent the unit from freezing at colder temperatures.

Dechlorination

All Hydro-Guard® Units are equipped with a dechlorination system. 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 for the HG-2 Direct Discharge Unit.

Rock Enclosure

The Hydro-Guard® Direct Discharge Unit (HG-2) can be upgraded to include a rock enclosure for those areas that might desire or require it.

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

The Hydro-Guard HG-2 can be upgraded to include a S.M.A.R.T. controller and a variety of water quality sensors. The S.M.A.R.T. equipped HG-2 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:

• 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 BlueTooth®.

HG-2 DISASSEMBLY AND REASSEMBLY INSTRUCTIONS

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

Although the Hydro-Guard® HG-2 Direct Discharge with RPZ, Double Check or Air Gap 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-2 Removal of Internal Components (FOR RPZ AND DOUBLE CHECK MODELS)

1. Shut off water supply and secure isolation valve.

2. Remove the housing cover by tilting the housing upward while lifting slightly on its end. Once the retaining pin, located in the opposite end of the housing, is clear of the cover, lift upward to remove the cover.

3. Use the sample port connection to bleed off residual pressure within the line.

4. Disconnect the quick connectors on the solenoid. Remove all upgrades from piping.

5. Loosen the unions on each side of the control valve and RPZ or Double Check Valve.

6. Remove nut from support bracket.

7. Remove all piping from housing.

HG-2 Removal of Internal Components (FOR AIR GAP MODEL)

1. Shut off water supply and secure isolation valve.

2. Remove the housing cover by tilting the housing upward while lifting slightly on its end. Once the retaining pin, located in the opposite end of the housing, is clear of the cover, lift upward to remove the cover.

3. Use the sample port connection to bleed residual pressure within the line.

4. If you have dechlorination, remove from piping by loosening the nut and disconnect, *Skip to #5, if no dechlorination.

5. Loosen the union and remove piping and control valve.

Electrical System Check

1. Unscrew Solenoid from control valve.

2. Make sure controller is attached to solenoid via connectors (remove adaptor if present).

3. Position thumb or other object in front of plunger, leaving a slight gap ($^1/_8$"), to prevent plunger and spring from ejecting away from work space.

4. Run manual flush for 2 minutes. ***NOTE: Plunger inside solenoid should be down when running and up when off.***

5. If everything checks out, reinstall solenoid in valve.

6. Avoid cross threading. Any resistance means solenoid is not going in correctly and cross threading may occur. Do not overtighten. Tighten until snug.

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

Disassembly and Check

For units manufactured from August 2004 to present, use the following directions. If you have an older model with a different valve and lost the manual, please call us at 877-864-8500 to get the manual for that model.

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. Inspect valve screen plug to be certain it is not damaged and clear of debris.

5. Remove valve screen plug and inspect valve screen for debris. Clean with water if necessary.

6. Replace the top cover back onto the diaphragm– make sure to line up the openings in both.

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

8. Replace the bolts and tighten down.

Reassembly (FOR RPZ OR DOUBLE CHECK MODELS)

1. Before reinstalling the working components, check all union surfaces for wear or damage. Reinstall the working components and tighten the union.

2. Reconnect electric connection to the solenoid wiring harness. Reconnect all upgrades.

3. Reinstall nut on the support bracket.

4. Turn the water supply to the unit back on and check for leaks.

5. Run a 2-minute manual flush. Replace the batteries in the controller if needed. Now program the flushing schedule.

Reassembly (FOR AIR GAP MODEL)

1. Before reinstalling the working components, check all union surfaces for wear or damage. Reinstall the working components and tighten the union.

2. If you have dechlorination, re-attach to piping by tightening the nut. *Skip to #3 if no dechlorination.

3. Turn the water supply to the unit back on and check for leaks.

4. Run a 2-minute manual flush. Replace the batteries in the controller if needed. Now program the flushing schedule.

HYDRO-GUARD® HG-2 Low-Profile Direct Discharge Unit

TROUBLESHOOTING THE PROGRAMMER

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
	Controller improperly programmed	Check program and clock settings
Blank display	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.
• The water pressure is too high and the solenoid will not open.

Try this Correction

• Check if curb stop is open.
• Change batteries.
• Check connections for corrosion, breaks, or lack of connection.
• Run an electrical systems check.

• Check to make sure the flow control knob is open on the valve OR Check the pipes for obstructions OR Check the valve.
• Check the water pressure at the unit. The pressure must be in the operating range of the solenoid and programmer (150 psi maximum). If too high a PRV might need to be installed.

The Hydro-Guard® Unit will not shut off:

Possible Causes

• The solenoid is stuck in the open position.
• Batteries weak or dead.
• Connection loss from controller to solenoid.
• The solenoid is loose or there is debris in the adapter.

• There is a hole in or debris around the diaphragm.
• The water pressure is too high and the solenoid will not close.

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.
• Check the water pressure at the unit. The pressure must be in the operating range of the solenoid and programmer (150 psi maximum). If too high a PRV might need to be installed.
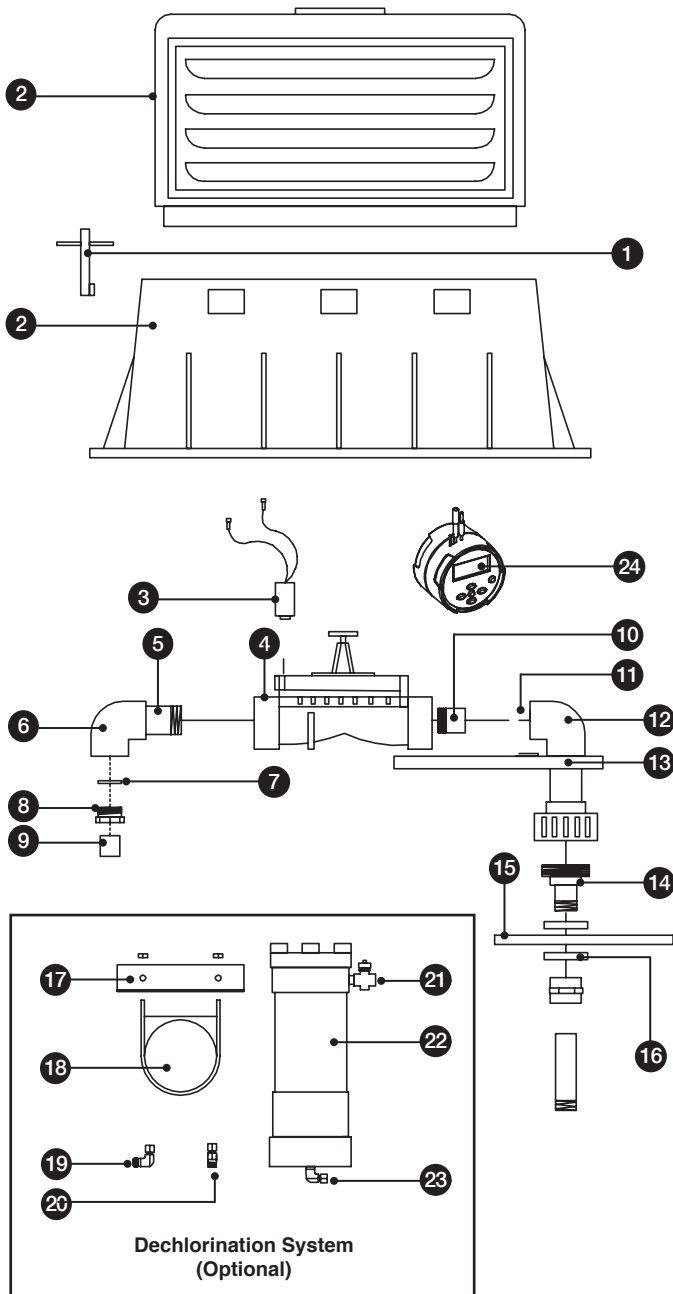
REPLACEMENT PARTS

ID	PART #	DESCRIPTION
1	HG-A2006	T.D. Key
2	HG-2202	UV & Impact Resistant Molded Enclosure (Base and Cover)
3	546596	Bermad Solenoid 30"
4	HG-123100	2" HIT Valve
5	HG-01111	2" x 3" PVC Nipple TxT
6	HG-13140	2" 90° Elbow TxT
7	HG-14011	Diffuser Disc
8	HG-14015A	2" x 1$\frac{1}{4}$" Bushing/Machined
9	HG-14016	1$\frac{1}{4}$" x 4" PVC Nipple
10	HG-01100	Cap
11	HG-S258	Controller Clip
12	HG-13140	2" 90° Elbow TxT
13	HG-13210	Controller Support Clamp
14	HG-S138	2" Male Union Assembly
15	HG-01157	Deck Plate
16	HG-02109	2" PVC Coupling SxT
17	HG-13163	DCU SS Angle Bracket
18	HG-13165	3" Cushion Clamp
19	HG-13189	$\frac{3}{8}$" x $\frac{1}{4}$" NTP Straight
20	HG-14009	$\frac{1}{4}$" NTP x $\frac{3}{8}$" Tubing
21	HG-A137	Dechlorination Control Valve
22	HG-13164	Dechlorination Chamber
23	HG-D128	Check Valve Elbow/Dechlorination

Dechlorination System (Optional)

HYDRO-GUARD® HG-2 Low-Profile Direct Discharge Unit
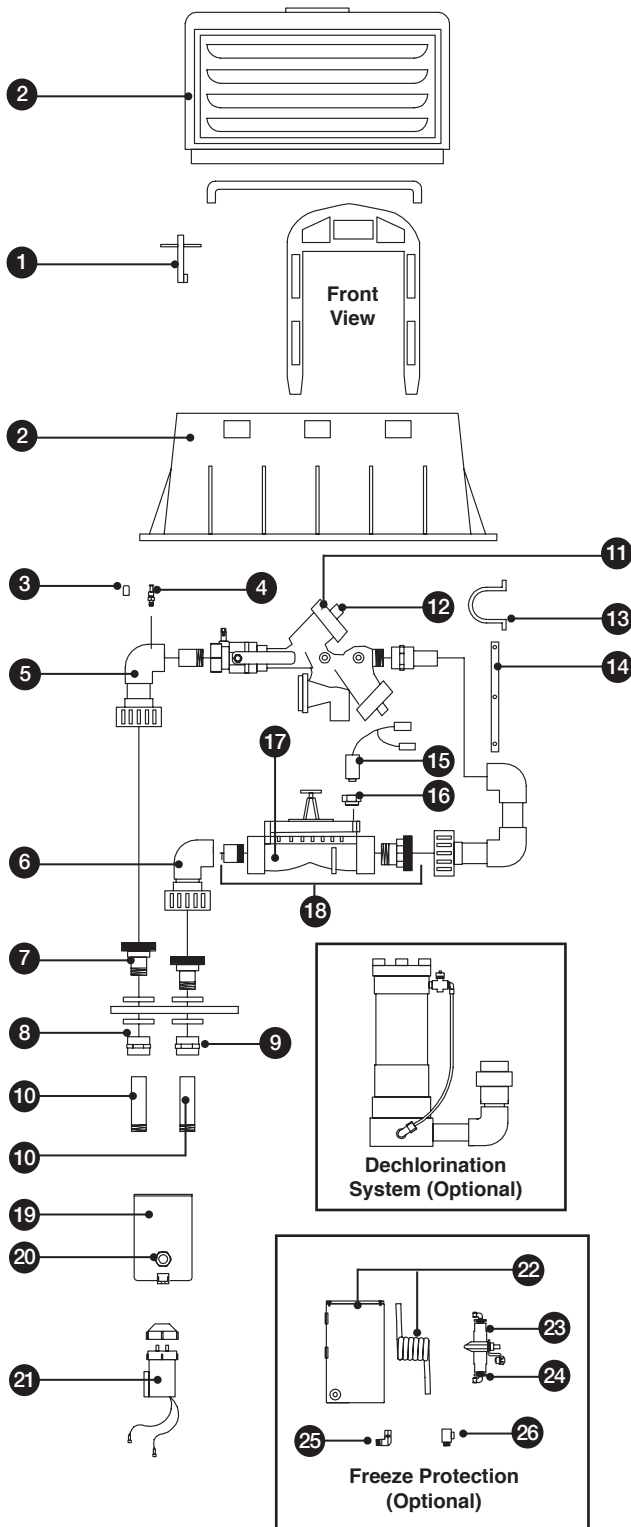
REPLACEMENT PARTS

ID	PART #	DESCRIPTION
1	HG-A2006	T.D. Key
2	HG-S114	UV & Impact Resistant Molded Enclosure (Base and Cover)
3	HG-123105	Latching Rods
4	HG-123104	Male Quick Connect
5	HG-S110	HG-2 2" Backflow Tee
6	HG-S111	HG-2 2" Backflow Tee
7	HG-S138	2" Male Union Assembly
8	HG-S112	Deck Plate Sub-Assembly
9	HG-02109	2" PVC Coupling SxT
10	HG-02108	2" x $7^{1}/_{4}$" SxT PVC
11	HG-02112B	Support Bracket
12	HG-S139	RP2 Sub-Assembly
13	HG-02112	Brace
14	HG-02112B	Support Bracket
15	HG-S255	Latching Solenoid Assembly, 7"
16	HG-V117H	Valve/Solenoid Adapter
17	HG-123100	2" Control Valve
18	HG-S113	2" Valve Sub-Assembly
19	HG-20006B	4" x 4" x 6" Machined Controller Housing
20	HG-13184	$^{3}/_{8}$" NTP Water-Tight Connecter
21	HG-S252	Controller Sub-Assembly
22	HG-20006D	Controller Housing
23	HG-FP100	Freeze Protection Valve
24	HG-20020	$^{1}/_{2}$" x $^{1}/_{4}$" Brass Bushing
25	HG-14009	$^{1}/_{4}$" NTP x $^{3}/_{8}$" Tubing

Front View

Dechlorination System (Optional)

Freeze Protection (Optional)

Mueller Co.

Reliable Connections®

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Form 12771 - Rev 07/17