

# HYDRO-GUARD®

## HG-2 High Profile Direct Discharge Unit

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**⚠ 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. 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.



**Reliable Connections™**

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# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Installation Instructions

### GENERAL

#### Overview

The Hydro-Guard® HG-2 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

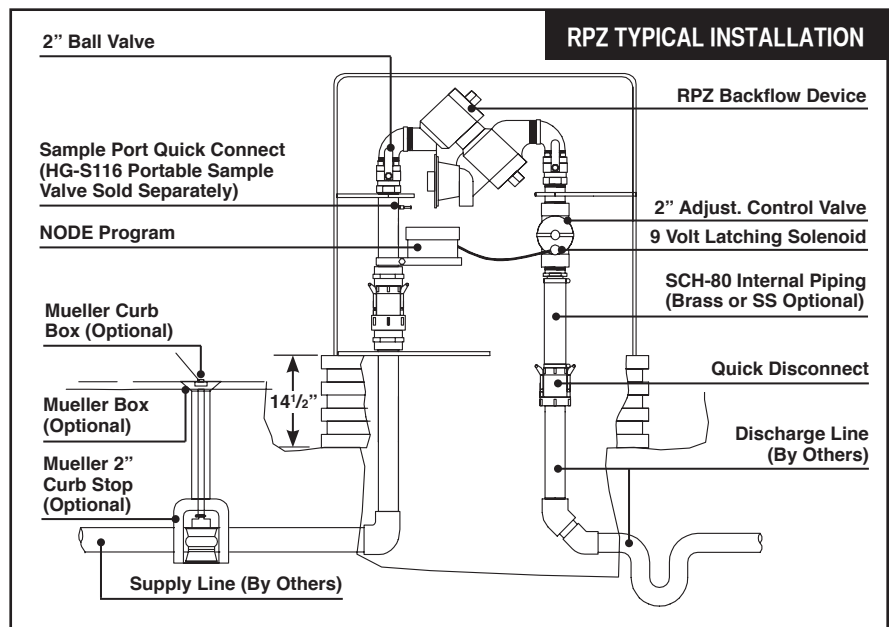
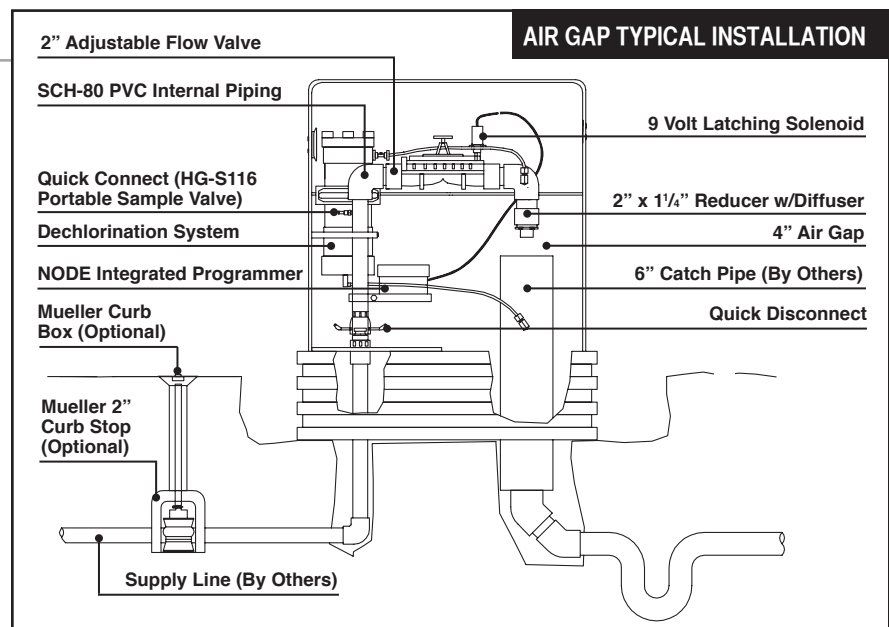
Each Hydro-Guard® Unit installation is unique and will require a minimum of advance planning. Prior to the installation of the device, the

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 High Profile Direct Discharge 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.



# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Programming Unit

### 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 32° to 120° 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 cursor 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.)

# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Programming Unit

### 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.



# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Programming Unit

### 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 **HOURLASS** 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.

# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Programming Unit

### 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 through 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® HG-2 High Profile Direct Discharge Unit

## Options and Upgrades

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

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

#### Sample Station

A standard feature on the HG-2 High Profile Unit is the sample port, which allows Hydro-Guard's Portable Sample Valve (HG-S116) 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® Programmable Flushing 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 High Profile Direct Discharge Unit.

#### 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®.

# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Disassembly/Reassembly of Unit

### HG-2 DISASSEMBLY AND REASSEMBLY INSTRUCTIONS

 **TOOLS NEEDED:** HG-15113 “P” Key Security Tool, Philips screwdriver, flat-head screwdriver

Although the Hydro-Guard® HG-2 High Profile 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.

#### Disassembly and Check

1. Shut off water supply and secure isolation valve.
2. Remove the housing cover by inserting the P-shaped key into the lock. Then turn the key to unlock the lock and lift the cover off the housing.
3. Use the sample port connection to bleed off residual pressure within the line.
4. Remove the solenoid from the valve. If your unit comes with Dechlorination and/or freeze protection, unscrew the lines from the internal assembly.
5. **For Vac and Air Unit:** Remove the two  $\frac{7}{16}$ " bolts from the stabilizing clamps and remove cap.
6. Release the banjo coupling from the base plate. On units with Vacuum breaker or RPZ, release the discharge piping from your fixed receiver pipe.
7. Remove the internal unit assembly.

#### Electrical System Check

1. Unscrew Solenoid and be careful **NOT TO LOSE THE O-RING**.
2. Make sure controller is attached to solenoid via connectors (remove adaptor if present).
3. Run manual flush for 2 minutes.

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

4. If everything checks re-install O-Ring and solenoid back into valve.

#### Disassembly and Check

For units manufactured from August 2004 to present, use the following directions.

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. Replace the top cover back onto the diaphragm— make sure to line up the openings in both.
5. Match up the top cover of the valve with the bottom portion. The arrows have to align on both portions.
6. Replace the bolts and tighten down.

#### Disassembly and Check

For units manufactured from 1997 through August 2004, use the following directions.

1. Remove six (6) bolts from top cover.
  2. Slowly pull cover off the valve.
  3. Remove metal pad.
  4. Remove rubber diaphragm and inspect for holes or worn areas.
  5. Remove plastic ring.
  6. Remove flapper valve.
  7. Inspect valve body for cracks. Make sure relief hole is not clogged with debris. And remove small O-Ring from hole. You will need it for reassembly.
  8. Remove connector tube and blow through it to check if it is clogged.
  9. Remove O-Ring from bottom of connector tube hole. You will need it for reassembly.
  10. Inspect screen at bottom of hole and make sure it is not clogged
- Reassembly of the valve: reverse order of disassembly along with these pointers.

11. When reinstalling connector tube, be sure O-Ring is placed on tube for reassembly.

12. When reinstalling spring pad, be sure it is centered on raised area of rubber diaphragm.

13. To install cover, bring it squarely over valve so as not to disturb or move spring seat from center of diaphragm. Press down evenly and reinstall bolts. Be sure O-Ring is placed on small tube before reinstalling cover.

#### Reassembly

1. Place the internal assembly onto the male banjo connection located on the base plate, making sure to align the discharge pipe with the permanent receiver pipe. If you have the Air Gap model make sure the discharge pipe is directly over your receiver pipe. Clamp back into place.

2. **Air Gap and Vac models:** Install two  $\frac{7}{16}$ " bolts and cap onto the stabilizing clamp

- RPZ Model:** Install four  $\frac{7}{16}$ " bolts and two caps onto the stabilizing clamps.

3. If your unit has dechlorination and/or freeze protection install the lines going to the internal assembly.

4. Place the O-Ring into the plastic adapter and install the solenoid back into the valve, being careful **NOT** to cross thread or overtighten it.

5. Turn the water supply to the unit back on and run a manual flush. Check the internal assembly for leaks.

6. Check or replace batteries in the programmer and set your flushing schedule. Close up watertight housing for the programmer using four screws.

7. Place the housing cover over the unit and check to make sure it is locked.



# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Troubleshooting

### 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.

**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.

**The Hydro-Guard® Unit will not shut off:**

**Possible Causes**

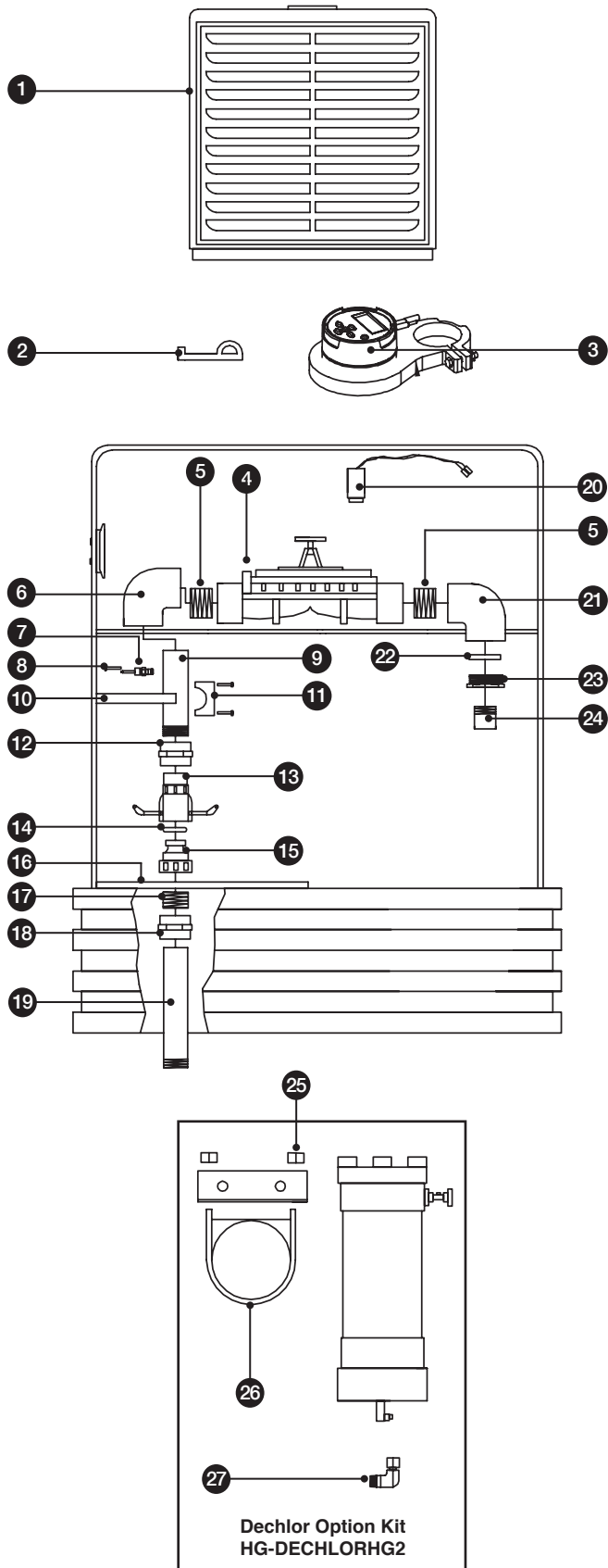
- The solenoid is stuck in the open position.
- Batteries are weak or dead.
- Connection loss from controller to solenoid.
- The solenoid is loose or there is debris in the adapter.
- There is a hole in or debris around the diaphragm.

**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.

# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Parts

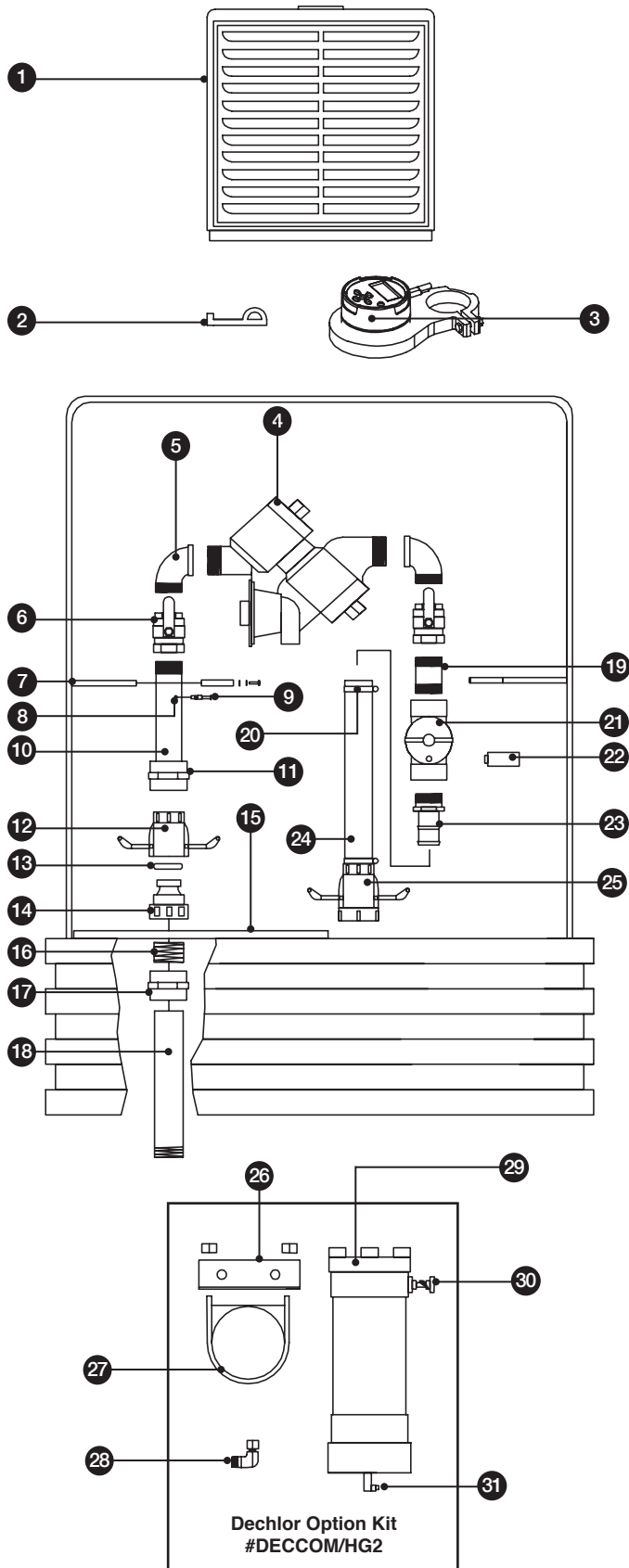


## REPLACEMENT PARTS

ID	PART #	DESCRIPTION
1	HG-15100	Housing Cover & Base
2	HG-15113	P-Key
3	546589	Programmer
4	HG-123100	2" Control Valve
5	HG-15105	Close Nipple
6	HG-123106	2" PVC Elbow
7	HG-123105	Quick Connect Cap
8	HG-123104	Male Quick Connect
9	HG-13172	2" x 18" PVC Nipple – Cut to 14"
10	HG-15102A	Stabilizing Bracket
11	HG-15191	Stabilizer Cap
12	HG-13138	2" PVC Coupling TxT
13	HG-13101	200B Female Cam Lock
14	HG-V102	Banjo Gasket
15	HG-13100	200A Male Cam Lock
16	HG-15101	Deck Plate
17	HG-15105	Close Nipple
18	HG-02109	2" PVC Coupling SxT
19	HG-01112	2" x 13" PVC Nipple
20	HG-S255	Latching Solenoid 17"
21	HG-13140	2" 90° Elbow TxT
22	HG-14011	Diffuser Disc
23	HG-1415A	Diffuser Bushing – Machined
24	HG-14016	1 1/4" x 4" PVC Nipple
25	HG-13163	DCU Stainless Steel Angle Bracket
26	HG-13165	3" Cushion Clamp
27	HG-14009	1/4" NTP x 3/8" Tubing

# HYDRO-GUARD® HG-2 High Profile Direct Discharge Unit

## Parts



## REPLACEMENT PARTS

ID	PART #	DESCRIPTION
1	HG-15100	Housing Cover & Base
2	HG-15113	P-Key
3	546589	Programmer
4	HG-02110	2" Wilkins Backflow Preventor
5	HG-20051	2" Brass Elbow
6	HG-20064	1" x 3" Spacer
7	HG-15102A	Stabilizing Bracket
8	HG-123104	Male Quick Connect
9	HG-123105	Quick Connect Cap
10	HG-01112	2" x 13" PVC Nipple
11	HG-02109	2" PVC Coupling SxT
12	HG-13101	200B Female Cam Lock
13	HG-V102	Banjo Gasket
14	HG-13100	200A Male Cam Lock
15	HG-15101A	Deck Plate
16	HG-15105	2" Close Nipple PVC
17	HG-02109	2" PVC Coupling SxT
18	HG-13172	2" x 18" PVC Nipple – Cut to 14"
19	HG-01111	2" x 3" PVC Nipple
20	HG-15109	45-67/262 Hose Clamp
21	HG-123100	2" Control Valve
22	HG-S255	S. Latching Solenoid 17"
23	HG-15108	Banjo Male
24	HG-V175	2" Rubber Flex Hose (per inch)
25	HG-15110	Banjo Female
26	HG-13163	DCU Stainless Steel Angle Bracket
27	HG-13165	3" Cushion Clamp
28	HG-14009	1/4" NTP x 3/8" Tubing
29	HG-13164	Dechlorination Chamber
30	HG-A137	Dechlorination Control Valve
31	HG-D128	Dechlorination Check Valve



**Reliable Connections<sup>®</sup>**

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