



HYDROLINK™

WATERING SYSTEM WITH
CLAMPLESS TUBING



This manual provides detailed instructions for safely installing, operating and maintaining the HydroLink™ Watering System and/or related water supply. Thoroughly review this document before installing or using the HydroLink Watering System.

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1 SAFETY INSTRUCTIONS AND WARNINGS

Please read and comply with all of the following safety-related instructions and warnings prior to installing, operating and maintaining the HydroLink Watering System. Failure to comply with these instructions may result in serious personal injury, death and/or property damage.



DANGER! - EXPLOSIVE GASES

- ▶ Batteries can generate explosive gases! Do not smoke in the vicinity of any batteries.
- ▶ Keep sparks and flames away from the batteries, vehicle and service area.
- ▶ Ventilate when charging batteries or operating a vehicle in an enclosed space.
- ▶ Wear a full-face shield and rubber gloves when working on or near batteries.



DANGER! - POISON / ACID

- ▶ Lead-acid batteries contain acid, which is a poison and can cause severe burns!
- ▶ Do not transport, store, handle or operate batteries except in an upright position.
- ▶ Wear a full-face shield and rubber gloves when working on or near batteries.
- ▶ In the event of an acid spill, avoid contact with skin, eyes, or clothing.
- ▶ Antidotes:
 - External: Flush with water. Call a physician immediately.
 - Internal: Drink large quantities of milk or water. Follow with milk of magnesia or vegetable oil. Call a physician immediately.
 - Eyes: Flush with water for 15 minutes. Call a physician immediately.

2 GENERAL INFORMATION AND PRECAUTIONS



DANGER! - RISK OF ELECTRIC SHOCK

- ▶ The energy stored in batteries can cause electric shock resulting in serious bodily injury or death, even at low voltages.
- ▶ Use insulated tools when working near batteries or electrical connections.
- ▶ Use extreme caution to avoid shorting of components or wiring.
- ▶ Do not wear metal jewelry such as rings, watches, chains, etc., when servicing the vehicle, watering system, battery or battery charger.
- ▶ Ensure that the work area is dry when servicing the vehicle, watering system, battery or battery charger.

3 GENERAL SAFETY WARNINGS

- ▶ Follow the procedures exactly as stated in these instructions, and heed all **DANGER** and **WARNING** statements in these instructions, as well as those on the vehicle, battery, watering system, and battery charger.
- ▶ Only trained technicians should service or repair the HydroLink Watering System. The instructions in this manual must be followed when installing, operating and maintaining the HydroLink Watering System and/or related water supply.
- ▶ Prior to servicing any vehicle or leaving any vehicle unattended, turn the key switch OFF, remove the key, set the parking brake.
- ▶ Moving parts! Do not attempt to service any vehicle while it is running.
- ▶ Do not wear loose clothing when servicing any vehicle, battery, watering system or battery charger.
- ▶ Hot! Do not attempt to service hot engine, exhaust system, or motor. Failure to heed this warning could result in severe burns.
- ▶ If wires are removed or replaced, make sure wiring and wire harness are properly routed and secured.
- ▶ Wear safety glasses or other approved eye protection when installing or servicing any part of the HydroLink Watering System.

4 HYDROLINK WATERING SYSTEM CONTENTS



6-Volt HydroLink Vent shown



Clamless Tubing
Quantity: Varies per kit type



Coupler & Dust Cover
Quantity: 1



Red End Caps
Quantity: Varies per kit type

NOTE: pictures may differ slightly from your specific application.

Kit Size	Battery Type	Quantity of HydroLink Vents
48-volt	12-volt	8
48-volt	8-volt	6
48-volt	6-volt	8
36-volt	12-volt, 6-volt	6
24-volt	12-volt, 6-volt	4
12-volt	12-volt, 6-volt	2

5 BEFORE INSTALLING YOUR HYDROLINK WATERING SYSTEM KIT

(Kit purchased separate from your Trojan batteries)



DANGER! - POISON / ACID

The battery contains acid, and may release explosive gases. Wear eye protection at all times. No smoking, sparks or open flames near batteries. In the event of an acid spill, avoid contact with skin, eyes and clothing.

⚠ DANGER/POISON

 SHIELD EYES EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY	 NO •SPARKS •FLAMES •SMOKING	 SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS	 FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.	 HIGH VOLTAGE RISK OF SHOCK
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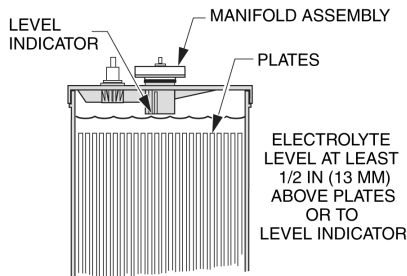
1. Remove the vent caps and inspect the fill wells.

2. Check electrolyte level:

a) If electrolyte level is below the plates:

Manually add enough water to cover the plates. (Refer to Trojan Battery's User Guide, Table 4 for Water Impurity Limits, available at www.trojanbattery.com.)

Charge batteries to 100% full charge, before using the HydroLink Watering System.



WARNING! DO NOT OVERFILL THE CELL. ADDING TOO MUCH WATER TO THE CELL WILL CAUSE THE BATTERY TO OVERFLOW ACID DURING THE CHARGING PROCESS CAUSING CORROSION AND POTENTIAL INJURY.

b) If electrolyte level is inside of the fill well, the cell is overfilled.

Do NOT install the system at this time. Wait for the electrolyte levels to go down normally (under battery usage). After levels are normal, fully charge the batteries and continue to Section 6, Installation.

6 HYDROLINK INSTALLATION

IF PRE-INSTALLED ON YOUR TROJAN BATTERIES

If you purchased your Trojan batteries pre-installed with HydroLink vents, then you have one simple step below:

STEP 1 - INSTALL CLAMPLESS TUBING

Connect all the HydroLink vents together with the included clampless tubing. When cutting the tubing ensure there is enough slack to create a slight bend in the tubing. Place the feed tube with coupler attached on a HydroLink vent that is near the middle of the plumbing so water is evenly distributed to all batteries.



STEP 2 - INSTALL RED END CAPS

Install a red end cap on each of the remaining barbs.



YOUR HYDROLINK WATERING SYSTEM IS NOW READY FOR USE.

INSTALLING A HYDROLINK WATERING SYSTEM ON YOUR TROJAN BATTERIES

IMPORTANT: Make sure to follow instructions on Page 5 before installing

STEP 1 - REMOVE CURRENT VENT CAPS AND INSERT HYDROLINK VENTS.

STEP 2 - FIRMLY PRESS HYDROLINK VENTS DOWN.

Ensure HydroLink vents are completely seated to avoid electrolyte spillage.

WARNING! PRESS ON THE HYDROLINK VENT WITH YOUR HANDS ONLY - DO NOT USE A HAMMER.



STEP 3 - INSTALL CLAMPLESS TUBING

Connect all the HydroLink vents together with the included clampless tubing. When cutting the tubing ensure there is enough slack to create a slight bend in the tubing. Place the feed tube with coupler attached on a HydroLink vent that is near the middle of the plumbing so water evenly distributes to all batteries



STEP 4 - INSTALL RED END CAPS

Install a red end cap on each of the remaining barbs.

YOUR HYDROLINK WATERING SYSTEM IS NOW READY FOR USE.



7 WATERING

IMPORTANT: Water quality is important to maintain the life of your Trojan battery and HydroLink Watering System. Flooded/wet batteries need to be watered periodically. The frequency depends upon battery usage and operating temperatures. Check new batteries every few weeks to determine the watering frequency for your application. It is normal for batteries to need more watering as they age.

- ▶ Fully charge the batteries prior to adding water. Electrolyte levels drop during discharge and rise during charge. In addition, charging generates heat, fluid expansion and explosive gases.

WARNING! - WATERING A BATTERY BEFORE CHARGE (OR WITH A LOW CHARGE LEVEL) CAN LEAD TO BOIL OVER RESULTING IN POTENTIAL BODILY INJURY AND POTENTIAL DAMAGE TO THE WATERING SYSTEM, BATTERY AND VEHICLE.

- ▶ Use only distilled or deionized water. Tap water can contain contaminants that will damage the battery. Also, be aware that water can pick up impurities from containers, piping, and fixtures. Table 4 in the Trojan Battery User's Guide, available at trojanbattery.com/pdf/TrojanBattery_UsersGuide.pdf contains the limits for impurities to avoid damaging batteries.

8 OPERATION

For continued successful operation of your HydroLink Watering System always:

1. Use only an approved Flow-Rite water supply (visit www.trojanbattery.com/products/hydrolink-watering-system/water-supplies/ for a list of approved Flow-Rite water supplies).

IMPORTANT: Use of unapproved water supply or modification of approved water supply can lead to system failure and will void your HydroLink warranty.

2. Always follow Trojan Battery's required battery watering procedures.
3. Perform regular scheduled maintenance.

WARNING! ONLY FILL BATTERIES AFTER THEY HAVE BEEN FULLY CHARGED, AND REQUIRE WATER. WATERING A BATTERY BEFORE CHARGE (OR WITH A LOW CHARGE LEVEL) CAN LEAD TO BOIL OVER RESULTING IN POTENTIAL BODILY INJURY AND POTENTIAL DAMAGE TO THE WATERING SYSTEM, BATTERY AND VEHICLE.

IMPORTANT: If you are using a Flow-Rite Hand Pump or Gravity Feed water supply to fill your HydroLink Watering System, please refer to Flow-Rite's instructions for proper operation!

IMPORTANT: The HydroLink vent is not intended to be removed once installed. Should the HydroLink vent need to be removed, it must be done so carefully, as to not damage the vent and the float. The Snake tubing would need to be removed first. To help release the vent, a rocking motion from front to back can be used. Then pry the HydroLink vent upwards. Once the HydroLink vent releases, it should be removed in a vertical lifting motion.

Do not reuse a HydroLink vent when replacing a battery. A new vent should always be installed with a new battery.

Any HydroLink vent that gets damaged upon removal should be replaced to ensure HydroLink Watering System integrity and functionality.

9 REGULATED HOSE AND DEIONIZER OPERATION

STEP 1 - QUALIFY WATER SUPPLY

- ▶ Check flow rate through included purger by mating purger with hose end assembly. Verify that a minimum of 2 GPM (Gallons per minute) is achieved. This can be measured with a bucket and a stop watch or watch with a second hand.

NOTE: Should a 2 GPM flow rate not be produced refer to the troubleshooting guide in your Flow-Rite water supply's instruction booklet.



(continue on pg 10)

Regulated Hose and Deionizer Operation (continued)

For a Deionizer - Verify that the water quality light indicates acceptable water quality. The light should be green in color.

NOTE: If light indicates unacceptable water quality, cartridge must be replaced.

STEP 2 - REMOVE DUST COVER FROM THE HYDROLINK SNAKE



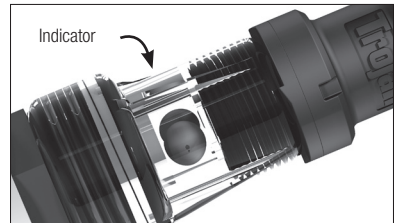
STEP 3 - MALE COUPLERS

Insert the male coupler on the HydroLink Watering System into the female coupler on the end of the water supply.



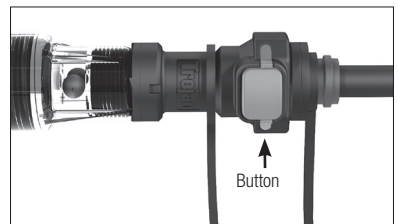
STEP 4 - OBSERVE FLOW INDICATOR

The red balls inside the flow indicator will begin to spin indicating that water is flowing into the battery. As the cells fill and the valves shut off, the balls will begin to spin slower until they come to a stop.



STEP 5 - DISCONNECT

When the balls stop spinning, and not before, immediately disconnect the couplers by depressing the push button on the female coupler. If the water supply is left connected after the filling process is finished it could lead to an overflow. Disconnecting before the balls come to a complete stop will lead to under filled cells that will impact your battery's performance and long life.

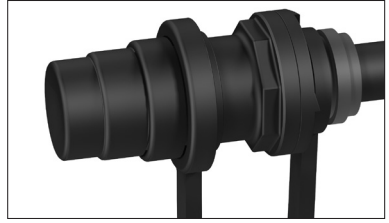


WARNING! - IF A VALVE FAILURE OCCURS DURING THE FILLING PROCESS, IMMEDIATELY DISCONNECT THE COUPLER TO PREVENT THE OVERFLOW OF ACID.

STEP 6 - REPLACE DUST COVER ON THE HYDROLINK SNAKE

Place dust cover back over the male coupler. Do not push cover past the large barb on the coupler.

TIP: If you slightly squeeze the dust cover when sliding it over the coupler it will create a vacuum allowing it to hold tightly.



10 HAND PUMP

The hand pump water supply is perfect for the user who has 1 or 2 vehicles, (golf car, pallet jack, etc.) and would like to use distilled water. To operate, simply connect the hand pump to your watering system and place the other end in a gallon of distilled water. Begin to fill by squeezing the pump. When all of your batteries are filled, the bulb will become firm, not allowing you to add any more water.

11 REGULAR MAINTENANCE

Your HydroLink Watering System requires regular preventative maintenance on at least a quarterly basis.

1. CHECK ALL SCREENS AND/OR FILTERS ON WATER SUPPLIES

Clean or replace all filters and line strainers as necessary. Failure to do so can cause a reduction in the water pressure and flow rates needed to operate the system properly. A filter screen can be found on the inlet of all regulators, and a line strainer on all supply hoses. Pump powered water supplies include a strainer on all suction hoses. For deionizers, be sure to replace the filter cartridges as indicated by the water quality light. Consult your water supply instructions for detailed instructions.

2. INSPECT THE CONDITION OF ALL TUBING CONNECTIONS AND COUPLERS

Make sure that all parts are in good working condition and are secure, leak free and properly connected. The coupler must have an O-ring and dust cover properly attached.

12 SEASONAL MAINTENANCE

WATER SUPPLIES

Water supplies must be drained and stored in an empty state if they will be exposed to freezing temperatures. Failure to do so can cause permanent damage to the watering supply.

WATERING SYSTEM

If you have vehicles that are taken out of service or put into storage for a period of 6 weeks or longer, your single point watering system will require seasonal maintenance. No special steps need to be taken for winterization of the SPW system that is mounted on the batteries; however, the following steps need to be followed when bringing your vehicle back into service:

1. After the batteries have been fully charged / equalized, connect the system to its water supply for 3-5 seconds then disconnect regardless of whether or not the batteries are completely full.
2. Return the vehicle to its regular service.
3. Place the vehicle back into its regular watering schedule (waiting at least 1 week until next watering).

13 OPERATING SPECIFICATIONS

OPERATING REQUIREMENT OF THE HYDROLINK WATERING SYSTEM

Flow-Rate:	2-5 gallons per minute*
Pressure Range:	3-35 PSI (no flow, static)
Temperature Range:	Freezing - 150°F/ 65.5°C

WATER SUPPLY OPERATING REQUIREMENTS

Inlet Pressure Range:	40-100 PSI (no flow, static)
Temperature Range:	33 - 150°F/1 - 65.5°C

All product specifications must be met for proper operation of your Trojan HydroLink Watering System. Contact Trojan Battery if you have any questions regarding HydroLink (www.trojanbattery.com). If you have questions on Flow-Rite water supplies, contact Flow-Rite Control (www.flow-rite.com).

*Flow rate should be measured at the end of a purger (female/male coupler combination).

14 HYDROLINK WARRANTY

LIMITED WARRANTY FOR HYDROLINK WATERING SYSTEM

Trojan Battery Company warrants only to the original purchaser that any HydroLink Watering System will be free of manufacturing defects in material and workmanship for four years after the date of purchase (the "Warranty Period").

If a HydroLink Watering System covered under this limited warranty is installed on a Trojan battery during the battery's limited warranty period and is determined to be the cause of the failure of such Trojan battery (unable to deliver 50% of rated capacity), Trojan will repair or replace the damaged Trojan battery and HydroLink Watering System, free of charge, subject to the terms and conditions of the Trojan battery limited warranty and this limited warranty, respectively.

If a HydroLink Watering System covered under this limited warranty is installed on a Trojan battery after the battery's limited warranty period and is determined to be the cause of the failure of such Trojan battery (unable to deliver 50% of rated capacity), Trojan will repair or replace only the HydroLink Watering System, free of charge, subject to the terms and conditions of this limited warranty.

PLEASE CONTACT THE LOCAL TROJAN BATTERY DISTRIBUTOR FROM WHOM YOU PURCHASED THE BATTERIES TO DETERMINE YOUR TROJAN BATTERY'S LIMITED WARRANTY PERIOD.

This HydroLink limited warranty is subject to the following terms, conditions and limitations:

- ▶ The HydroLink Watering System must be installed in compliance with Trojan's HydroLink installation, operation and maintenance manual.
- ▶ All recommended watering and maintenance procedures outlined in Trojan's HydroLink installation, operation and maintenance manual must be followed.
- ▶ The HydroLink Watering Systems can only be used on the following Trojan Battery products: T-605, T-105, T-125, T-145, T-875, T-890, T-1275, Ranger™ 160, DC-8V, J150, J185HG, J185PG, J185G, J185E, J250G, J305HG, J305PG, J305G, J305E, L16HG, L16PG, L16E, and L16G. HydroLink does not work with Trojan's Plus Series batteries.
- ▶ A Trojan approved Hydrolink Watering Supply must be used. (visit www.trojanbattery.com/products/hydrolink-watering-system/water-supplies/ for approved water delivery systems)
- ▶ The HydroLink Watering System must not be subject to misuse, abuse, inadequate maintenance or physical damage.
- ▶ This HydroLink limited warranty does not extend the battery limited warranty.
- ▶ This HydroLink limited warranty applies to the original customer of the product and is not transferable.
- ▶ The HydroLink Watering System may not be transferred from one set of batteries to another set of batteries.

HydroLink SPW	Hand Pump	Mini Pump	Regulated Hose Supply	Deionizer	Water Cart
Product Warranty	1 year	1 year	1 year	1 year	1 year
Product Life Expectancy	2 years	5 years (3000 cycles)	5 years	5 years	5 years
Maximum cells filled in single SPW string	24 cells	24 cells	24 cells	24 cells	24 cells

(continue on pg 14)

To submit a claim, customers must send the following, at their own expense, to the local Trojan Battery distributor from whom they originally purchased the Trojan products:

1. Copy of original proof of purchase for both the HydroLink Watering System and Trojan battery.
2. Date code for both the HydroLink Watering System and Trojan batteries.
3. Description of the problem (e.g., over filling, under filling).
4. All products which are the subject of any claim under this HydroLink limited warranty must be returned for inspection of proper installation, operation and maintenance procedures.

WARRANTY EXCLUSIONS

Trojan Battery Company will not be responsible for any expenses for transportation or travel, installation, loss of time, loss of use of equipment, or other expenses, which would be considered as incidental or consequential damages.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

HOW STATE LAW APPLIES

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

HYDROLINK LIMITED WARRANTY EXAMPLES

SCENARIO ONE:

A customer purchases a Trojan battery with a twelve-month limited warranty. The battery has been in use for ten months and the customer installs a newly purchased HydroLink Watering System in month eleven. Two years later, the Trojan battery fails due to a defect in the HydroLink Watering System.

RESULT:

The customer installed a HydroLink Watering System covered by its limited warranty during the battery limited warranty period (in this case within 12 months), thus Trojan will repair or replace the battery and HydroLink Watering System, subject to the terms and conditions of the Trojan battery limited warranty and this limited warranty, respectively.

SCENARIO TWO:

A customer purchases a Trojan battery with a twelve-month limited warranty. The battery has been in use for 24 months and the customer installs a newly purchased HydroLink Watering System in month 25. One year later, the Trojan battery fails due to a defect in the HydroLink Watering System.

RESULT:

The customer installed a HydroLink Watering System covered by its limited warranty after the battery limited warranty period (in this case after 12 months), thus Trojan will only repair or replace the HydroLink Watering System, subject to the terms and conditions of this limited warranty.

Trojan batteries and HydroLink Watering Systems are available worldwide through Trojan's Master Distributor Network.



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