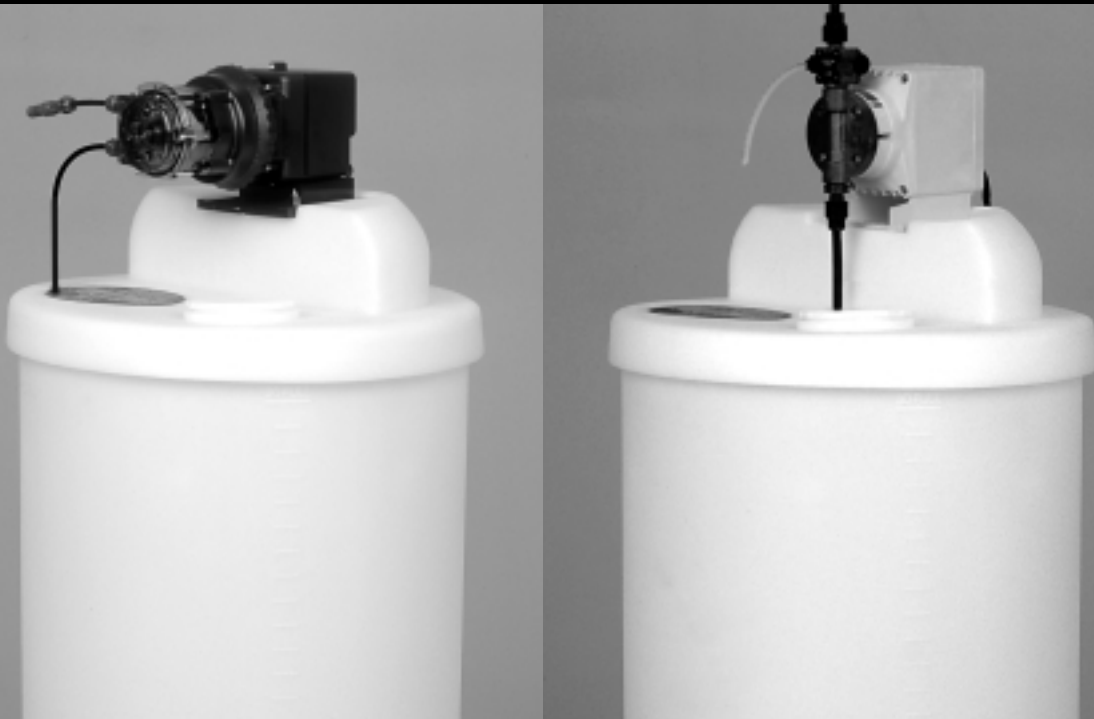


Injection Systems

Keep this manual handy for future reference

Owner's Manual



INSTALLATION • OPERATION • PARTS LIST • DOSAGE

Caution:

Read all instructions carefully before beginning the installation

Our Injection Systems are made for applying American Hydro Rust Stain Preventers and Liquid Fertilizer products:

RID O'RUST
GrassSoGreen

Questions? Need parts or supplies?

Call us at
1-800-347-7487

or e-mail us at
info@americanhydro.com

or visit our web site
www.americanhydro.com
www.ridorust.com

**American
Hydro
Systems
inc.**

American Hydro Systems

American Hydro Systems

We are dedicated to helping you solve problems that come with using well water to irrigate. Our knowledge of chemistry, irrigation systems and metering pumps will give you the expertise to remove and prevent well water stains and deposits. We want to help you reach your goal of a clean and green landscape. Put our “know-how” to work for you – we are at your service, just a phone call or a mouse click away.



To find out more about our easy to use products and systems, visit our web site:

www.americanhydro.com

www.ridorust.com



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Rid O' Rust Injection System Owner's Manual

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General Comments on Injection Systems

An Injection System consists of a metering pump, related tubing, and a feed tank. The metering pump may be either a diaphragm pump or a peristaltic pump.

Location

Be sure to locate the feed tank where it can be easily accessed and serviced.

The metering pump's nearness to a power source should be a factor in its location. In most cases, you will need to splice the power cord to connect the pump to a pump start relay or similar on/off control between the metering pump and its power source.

Your particular application may require a longer length of tubing leading from the pump to the discharge point than is normally supplied. The distance between the intake and/or discharge points and the metering pump can affect the pump's ability to intake liquid or discharge it against a certain line pressure. The same is true for significant differences in elevation between intake and/or discharge points and the metering pump. These factors may require a metering pump rated for pumping against higher line pressure. Check the pump specifications to determine which type of metering pump your installation calls for.

When in doubt, call American Hydro at 1-800-347-7487.

Electrical Set up

Please note:

- You must always match the voltage rating of the metering pump to the voltage of the power source.
- Before installing any type of metering pump, you should be aware of local code requirements in regards to both anti-siphoning devices and electrical devices.
- The injection valve at the end of the discharge line must be installed vertically on the bottom side of the water line to prevent back flow into the discharge line.



Two types of Injection Systems:
(Top) Peristaltic pump and 30 gallon tank
(Left) Diaphragm Pump and 30 gallon tank

Injection System Installation

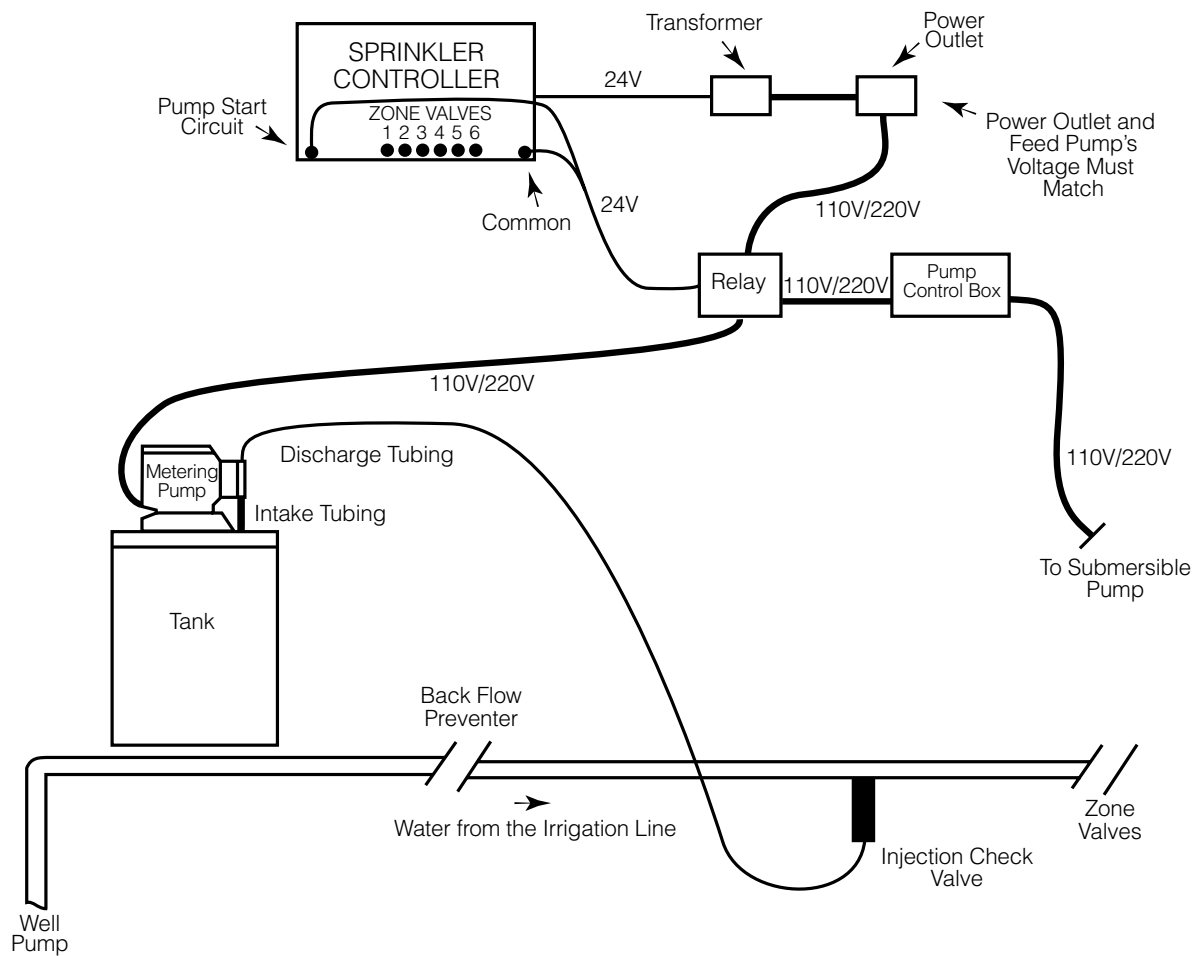
Case 1:

Well used for irrigation only, no pressure tank:

1. If there is no pressure tank, the metering pump may be connected to the pump start relay for the well pump so that the well pump and the metering pump turn on simultaneously.
2. Plumbing code typically requires a back flow preventer in the irrigation system. The metering pump injection point should be downstream of the back

flow preventer and upstream of the first zone (between the backflow preventer and the first zone).

3. The “pig tail” on the power cord of the metering pump is generally cut off so the power cord can be spliced to the relay or the controller unit (whichever is used).



Injection System Installation

Case 2:

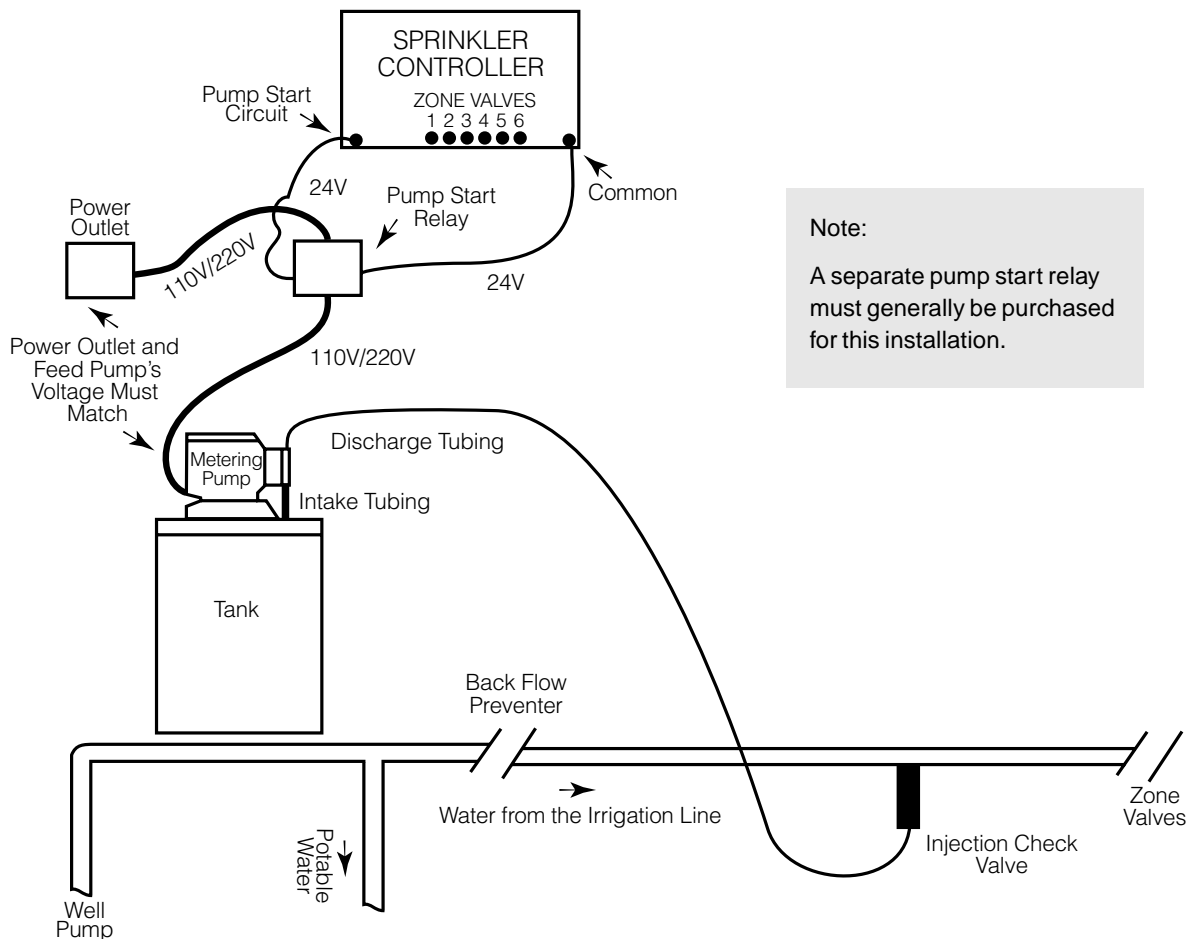
Well used for drinking water and irrigation or irrigation system has a pressure tank:

1. The metering pump must be connected to the controller unit for the irrigation system. This can be done by using the pump start circuit in the controller unit or by installing a separate pump start relay and connecting that relay to the controller unit.

2. Plumbing code typically requires a backflow preventer. The metering pump injection point should be

downstream of the pressure tank, the “T” for the drinking water line and between the backflow preventer and the first zone.

3. The “pig tail” on the power cord of the metering pump is generally cut off so the power cord can be spliced to the relay or the controller unit (whichever is used).



Diaphragm Metering Pump: P-Series

Pump Specifications (P-Series)

Item#	Description	Max Output in GPD	Model #
2668	Pump Only	10 gal. per Day	P-031 (110 v) or P-032 (220v)
2669	Injection System (Pump and 30 gal. Feed Tank)	Same	Same

Maximum Discharge Pressure:	110 P.S.I.	Comments: Can be installed both indoors and outdoors Comes with a 3 function valve (priming valve, pressure relief and line drain) Prime is maintained by a series of 4 ceramic ball check valve
Maximum Lift:	10 Feet	
Maximum Discharge Length:	75 Feet	

Dial Settings and Output:

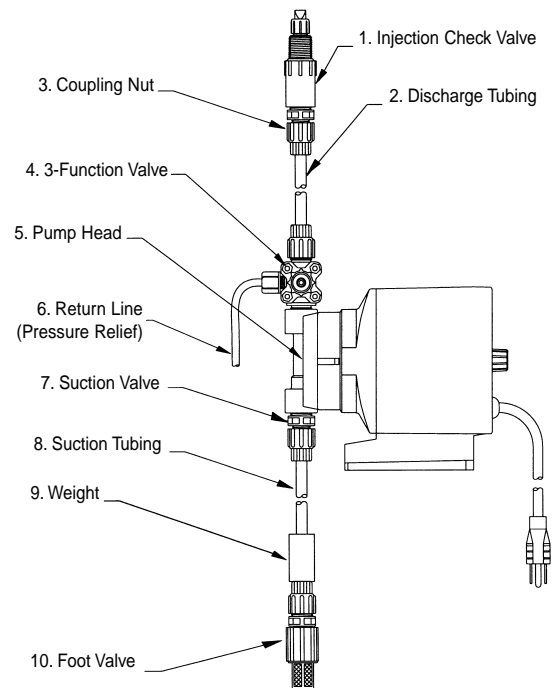
	Dial Setting				
	30%	50%	60%	80%	100%
G.P.D. Output:	3.0	5.0	6.0	8.0	10.0
G.P.H. Output:	.12	.21	.25	.33	.42

Parts List (P-Series)

LMI Diaphragm "P" series pump: Part no. 2668

Key No.	Part No.	Description
1	38026	Injection check valve
2	10342	3/8" Discharge tubing
3	10299	Coupling nut
4	38054	3-Function valve
5	37752	Pump head
6	25636-10	Return line (Pressure relief)
7	38019	Suction valve
8	10342	3/8" Suction tubing
9	10322	Ceramic weight
10	38032	Foot valve
<input checked="" type="checkbox"/>	26136	Clamp retaining ring

= Not Illustrated



Diaphragm Metering Pump: Installation

Diaphragm Metering Pump Installation (P-Series)

A. Installing the Injection Check Valve

1. The purpose of the injection check valve is to prevent backflow from the treated line.
2. A 1/2" NPT female fitting with sufficient depth will accept the injection check valve.
3. The arrows on the injection valve should point into the tee; the valve should be installed upwards (vertically) on the underside of the pipe.

B. Connecting Discharge Tubing

Note: Cut tubing for length needed for discharge line.

1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
2. Slide the small end of the coupling nut onto the tubing, then slide on the clamp ring.
3. Push tubing on the valve housing so that the tubing flares out and butts up against the valve housing and will not go any further.
4. Slide the clamp ring and coupling nut to the threads and engage. While pushing the tubing on to the valve housing nozzle, tighten the coupling but by hand until the tubing is held securely in place.

C. Connecting Suction Tubing

1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the feed tank. The maximum recommended vertical lift is 5 feet.
2. Follow the same procedure in connecting the suction tubing to the suction valve and foot valve as you followed in B., above with the discharge tubing.

D. Connecting Priming Valve

1. Remove red plug from pump head.
2. Screw in priming valve (3 function valve)

E. Priming the Pump

Note: The pump is shipped from the factory with water in the valves and in the pump head (liquid end). If you follow the steps below, it should be self priming.

1. The pump is equipped with a priming valve (3 function valve) mounted with the discharge valve. It has a black knob and small diameter clear tubing which allows the pump to pump against atmospheric pressure.
2. Route the clear tubing down into the feed tank.
3. Fill the tank 1/2 full with water.
4. Start the metering pump and then set it at 100% stroke (set the dial only when the pump is running).
5. Open the priming valve by turning the black knob 1/4 turn in order to engage the priming line and then close it off once you have primed the pump.
6. When a column of water is visible and rising in the clear tubing, turn the black knob clockwise so as to close the priming valve. The pump should now be primed.

Note: If the pump does not self-prime, unscrew the discharge valve in the pump head and pour water into discharge port until it is filled. Replace the discharge valve, reattach the discharge tubing and repeat the steps under D above.

Peristaltic Metering Pumps

Pump Specifications

We stock three models of the Stenner peristaltic pump – the 85MHP5 which has a fixed output of 5 GPD, the 45MHP10 which has an adjustable rate output of up to 10 GPD, and the 85MHP17 which has an adjustable rate output of up to 17 GPD.

Item#	Description	Max Output in GPD	Pump Model #
2678	Pump Only	5 gal. per day, fixed rate	85MHP5 (110v or 220v)
2679	Injection System (Pump and 30 gal. Feed Tank)	Same	Same
2688	Pump Only	10 gal. per day, adjustable	45MHP10 (110v or 220v)
2689	Injection System (Pump and 30 gal. Feed Tank)	Same	Same
2690	Pump Only	17 gal. per day, adjustable	85MHP17 (110v or 220v)
2691	Injection System (Pump and 30 gal. Feed Tank)	Same	Same

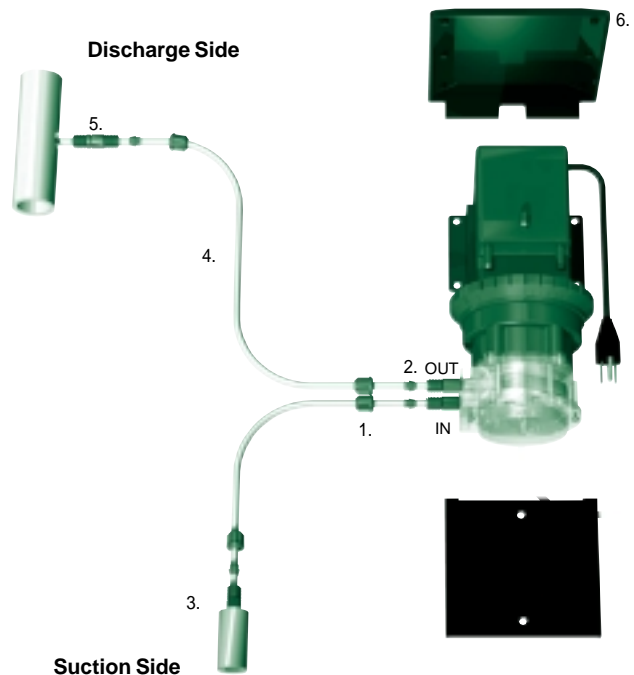
Maximum Discharge Pressure:	100 P.S.I.	Comments: If installed outdoors, should be protected from the elements with a rain guard Self-priming, will pump air
Maximum Lift:	20 Feet	
Maximum Discharge Length:	75 Feet	

Parts List

Stenner Peristaltic pump: Part nos. 2678, 2688, 2690

Key No.	Part No.	Description
1	UCAK100	Connecting nut 1/4" (pkg of 10)
2	UCAK200	Ferrule 1/4" (pkg of 10)
3	UCMACWO	Clay weight, fittings 1/4"
4	AK4002B	Discharge/suction tube blk 20' x 1/4"
<input checked="" type="checkbox"/>	AK4010B	Discharge/suction tube blk 100' x 1/4"
5	UCDBINJ	Injection check valve 1/4"
<input checked="" type="checkbox"/>	UCCVDBO	Check valve (pkg of 2)
<input checked="" type="checkbox"/>	UCCP201	Tube assembly with ends (pkg of 2) for 85MHP5 pump
<input checked="" type="checkbox"/>	UCCP202	Tube assembly with ends (pkg of 2) for 45MHP10 and 85MHP17 pumps
<input checked="" type="checkbox"/>	HPACK-1B	1/4" Accessory Kit with #1 tube Accessory kit includes: 1 Injection check valve 1 Clay discharge/suction tube weight 20" Black discharge/suction tube 1 Pumping tube (85MHP5) 4 1/4" Connecting nuts and ferrules
<input checked="" type="checkbox"/>	HPACK-2B	Same as above, pumping tube for 45MHP10 pump
6	MP90000	Rain roof

= Not Illustrated



Peristaltic Metering Pump: Installation

Peristaltic Metering Pump Installation

A. Installing the Injection Check Valve

1. The purpose of the injection check valve is to prevent backflow from the treated line.
2. Shut off water supply
3. At point of injection, drill a 7/16" hole and tap with 1/4 " NPT pipe tap.
4. Connect nut and ferrule to injection check valve. Hand tighten only.

B. Connecting Discharge Tubing

1. Cut lead tube to desired length with enough slack to avoid kinks.
2. Connect nut, ferrule and lead tube to the discharge side of the pumping head (labeled "out" on the cover of the head). Hand tighten only.

C. Connecting Suction Tubing

1. Connect nut, ferrule, and lead tube to the suction side of the pumping head (labeled "out" on the cover of the head). Hand tighten only.

2. Run the lead tube to the feed tank. Measure the line on the outside of the tank to ensure that it will reach close to the very bottom of the tank. Cut lead tube to desired length with enough slack to avoid kinks.
3. Connect nut, ferrule and lead tube to the strainer/foot valve and the clay weight. Hand tighten only.

D. Mounting

1. Mount pump in a dry location to avoid the risk of flooding the vent openings.
2. Use a rain roof or similar enclosure (allowing for air circulation around the motor) in outside applications.
3. Do not mount the feeder with motor pointing downward. In the event of tube rupture or leakage, the motor would be damaged.

Frequently Asked Questions

How do you determine which Rid O' Rust Formula to use?

Step One:

Test the well water for three things:

pH:

The measurement of well water's relative acidity or alkalinity is termed "pH." Neutral pH is 7.0. A reading lower than 7.0 is to the acidic side, a reading higher than 7.0 to the alkaline side.

Hardness:

Hardness is measured in grains per gallon (gpg). We consider well water measuring 15 gpg or more to be relatively "hard."

Iron:

Iron content is measured in parts per million (ppm). One part per million (1 ppm) will produce a noticeable rust stain in a month or so.

Step Two:

Choose the proper formula:

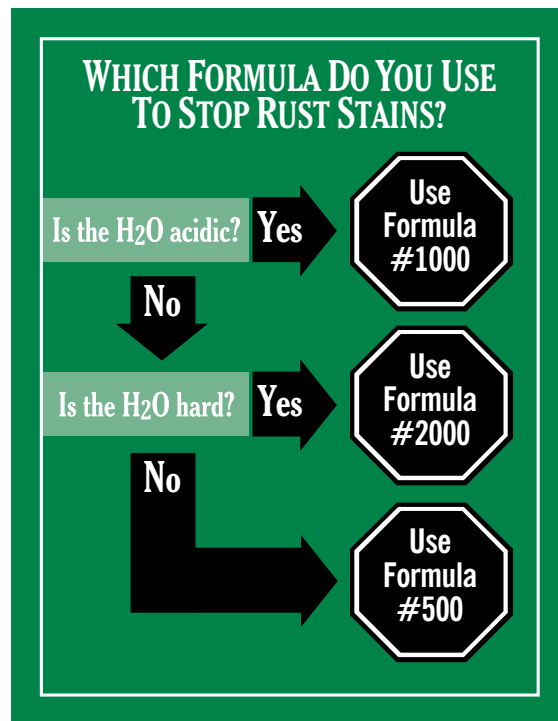
For "**acidic**" well water measured at a pH of 6.0 or lower, you **MUST** use Formula #1000.

For "**hard**" well water measuring in the 15-20 gpg range or higher, we recommend Formula #2000. It is the most cost efficient product for these conditions.

For the majority of applications, Rid O' Rust Formula #500 will do the job.

Note:

We recommend that well water be tested at least annually and preferably every six months.



Frequently Asked Questions

How do you determine which metering pump to use?

Recommended Metering Pump to Use		
Location of Metering Pump:	Maximum Flow Rate of the Irrigation System	
	Up to 30 Gallons per Minute	Over 30 Gallons per Minute
Outdoors	LMI Diaphragm "P" Part No. 2668	Stenner 45MHP17 Part No. 2690 (needs rain roof or enclosure)
Indoors	Stenner 45MHP10 Part No. 2688	Stenner45MHP17 Part 2690

How long will a tankful of chemical solution last before the tank must be refilled?

Hours of Irrigation Before Refill			
Feed Tank Size:	Metering Pump Feed Rate in Gallons per Day / Gallons per Hour		
	5 GPD / .21 GPH	10 GPD / .42 GPH	17 GPD / .70 GPH
15 Gallons	71 hours	35 hours	21 hours
30 Gallons	143 hours	71 hours	42 hours
65 Gallons	309 hours	155 hours	92 hours
100 Gallons	476 hours	238 hours	140 hours

What pump setting do you need to get a certain feed rate?

Metering Pump Feed Rate Settings		
Feed Rate Required	Pump Part No.	Setting Required
5 GPD / .21 GPH	2668	50%
	2678	Fixed
	2688	50%
10 GPD / .42 GPH	2668	100%
	2688	100%
	2690	60%
17 GPD / .70 GPH	2690	100%

Frequently Asked Questions

Rust Stain Prevention Formulas Dosage

Important:

In order to use this chart you MUST know the feed rate of the feeder system you are using. The charts are based on **(A)** a 30 gallon feed tank, and **(B)** a 25 gallon per minute flow rate for the irrigation system. If your particular application has a different tank size or flow rate, the dosage figure must be adjusted. Please note that Formula 500 is presented in **quart units**. All other Formulas are presented in gallon units. To see how long a tankful of solution will last, refer to “Frequently Asked Questions” on page 11.

Gallons of Formula 300, 1000 and 2000 and Quarts of Formula 500 to Be Added to Feed Tank				
Parts Per Million of Iron	Feed Rate of Feeder System			
	5 gallons per day (.21 gallons per hour)	10 gallons per day (.42 gallons per hour)	17 gallons per day (.71 gallons per hour)	24 gallons per day (One gallon per hour)*
1	2.00	1.00	0.75	0.50
2	3.50	1.75	1.25	0.75
3	5.25	2.75	2.00	1.25
4	7.25	3.75	2.75	1.50
5	9.00	4.50	3.25	2.00
6	10.75	5.50	4.00	2.25
7	12.50	6.25	4.50	2.75
8	14.25	7.25	5.25	3.00
9	16.50	8.25	6.00	3.50
10	18.00	9.00	6.50	4.00

*This is the feed rate of a siphoning system



Call our friendly
Tech Support staff
if you have any
questions!

GrassSoGreen Fertilizer Dosage



GrassSoGreen®

Fertilize by adding our environmentally friendly liquid fertilizer product in your feeder system.

- A nitrogen-rich solution that enhances grass greening
- Designed to be fed through the irrigation system and provide a steady stream of a small quantity of nutrient
- Will not burn your grass like granular fertilizer
- Will not run off and pollute bodies of water

GrassSoGreen Fertilizer can be mixed in the same feeder system with Rid O' Rust Stain Prevention Formulas.

GrassSoGreen Liquid Fertilizer Dosage Chart

Siphoning Feeder System and Injection Feeder System (30 Gallon Tank)

Gallons of GrassSoGreen To Put In Feeder Tank				
Number of times you refill the feeder tank:	Approximate area to be covered			
	1000 sq ft	2,500 sq ft	5,000 sq ft	10,000 sq ft
Monthly	0.25 gal	0.75 gal	1.50 gal	3.00 gal
Every 2 months	0.50 gal	1.50 gal	3.00 gal	6.00 gal
Every 3 months	0.75 gal	2.25 gal	4.50 gal	9.00 gal

Notes:

- The remainder of the tank should be filled with water. Bleach may be added for algae prevention only after the mixture is fully diluted. Adding bleach directly to the fertilizer will cause a gas release.
- GrassSoGreen may be combined in the tank with both Rid O' Rust Stain Preventer and Calcium Cracker Formulas.
- The amounts shown are based on minimum requirements — the grass will only get greener if you add more!
- Cut dosage by 1/2 if you have a 15 gallon tank.

General Warranty Information

General Statement

Because of the nature of the water treatment business, we can warranty our hardware — the pumps, tanks and parts that feed chemicals — but cannot make a blanket guarantee as to the performance of our chemicals in the field. We do warranty that we have provided the appropriate amount of ingredients and that under stated conditions, they should perform as represented.

Many factors over which we have no control affect the performance of our products. Actual well conditions, for instance, may differ from those represented to us when we recommend dosage rates. We have no control over the equipment installation, or the maintenance and service provided to sustain the performance of a water treatment system. A blanket guarantee of performance, given these conditions, would be impossible.

On Rust Stain Prevention

Our Formula chemicals work to prevent rust stains and corrosion by sequestering and chelating ferrous (clear water) iron in the well water. To the extent that there is ferric iron in the well water, we will not be able to prevent a stain. Generally speaking, ferric iron can be produced in two ways:

By introducing air, chlorine or any other oxidizing agent into the well water prior to the point that our formulas are injected.

By the presence of iron-related bacteria in the well water that produce ferric iron as a by-product of propagation.

It is difficult to test well water to determine the amount of ferric iron present. Iron bacteria, in the other hand, signify their presence by reddish tinged water, slime on pipes, and slime and "sludge" build-up around the edges and corners of an irrigation system.

Please note that lake water or any other bodies of water exposed to the atmosphere can have substantial amounts of ferric iron that we cannot treat.

As noted elsewhere in our literature, stains are also caused by tannin in the well water. We find that stains can

appear with tannin in excess of 3 ppm. Our products do not prevent stains of an organic nature and tannins are organic.

A final point is that "mother nature" can interfere with the best application charts through changes in the water table. We would recommend that users test their water each year to monitor changes in iron, hardness and pH levels.

FULL ONE YEAR WARRANTY ON PARTS THAT FAIL

For one year from the date of purchase, we will replace any defective part of a feeder system, free of charge. This warranty extends to five years on certain molded tanks and a lifetime for the PumpHaus™. We reserve the right to provide reconditioned parts as replacements. Warranty service is available by contacting your nearest American Hydro Systems products supplier. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

American Hydro Systems, Inc.

1499 22nd St. N.
St. Petersburg, FL 33713

Return Policy for Metering Pumps

General Policy

Our warranty is extended through our distributors.

We provide a one-year warranty from the date of purchase by the home owner or the contractor. Proof of purchase should be provided as well as the pump serial number. Homeowner proof of purchase not being available, our warranty extends fifteen months from the date of our sale to the distributor through which it was purchased.

We accept returned pumps and parts only if accompanied by a returned goods authorization (RGA) number that we supply.

Pumps Under Warranty

Upon receipt of the pump described in the RGA, we credit the distributor for the cost of the pump less the cost of any parts not returned.

As an alternative to providing credit, we are glad to make repairs at no charge, supplying new parts and promptly returning the pump in operating condition.

If we receive a returned pump for credit, not repair, within the warranty period and we determine it to be in operating condition, and that only a part needs to be replaced, we will deduct a service charge in addition to the deduction for any parts not returned.

Pumps Out of Warranty

We recondition pumps for a service charge plus the cost of parts and will warranty the reconditioned pump for six months.

We require a purchase order from the distributor for a reconditioned pump.

The Rid O'Rust Family of Products

Feeder Systems

Siphoning System

The system consists of either a 15 or 30-gallon holding tank and a siphoning assembly. It is designed for use on the INTAKE side of an above-ground well pump to supply a Formula solution to the well water.

Injection System

The system consists of either a 15 or 30 gallon holding tank and a metering pump assembly. It's designed for use on the DISCHARGE side of any well pump to supply a Formula solution to the well water.

Stain Preventers

Formula #300

(Use with injection system only)

An inexpensive alternative to filter systems, this unique product is formulated using EPA-approved components for use with potable water systems (drinking water). It prevents scaling and rust stains on plumbing fixtures and pipes.

Formula #500

(Use with either system)

One quart of Rid O'Rust Formula 500 will treat 125,000 gallons of water at one part per million of iron. It's most effective when the pH of the water is 6.0 or higher and the hardness measures 15 grains per gallon or less.

Formula #1000

(Use with either system)

A rust stain and scale preventer designed for use with well water with a pH of 6.0 or lower

Formula #2000

(Use with either system)

A rust stain and scale preventer designed for use with well water with a hardness of 15 grains per gallon or more.

Stain Removers

Rid O'Rust Stain Remover

Removes existing rust stains. It's biodegradable and non-carcinogenic.

Powdered Cleaner Removes existing rust stains. It's also biodegradable and non-carcinogenic, and is in a powdered form that minimizes shipping costs.

Fertilizers

GrassSoGreen

(Use with either system)

A nitrogen-rich solution that enhances grass greening



American Hydro Systems, Inc.
1499 22nd Street North
St. Petersburg, FL 33713
www.americanhydro.com
1-800-347-7487

**Makers of Rid O' Rust
GrassSoGreen & The
PumpHaus**

You shouldn't have to look hard to find our products. Rid O' Rust products are generally available through professional sources such as:

- Irrigation Equipment Suppliers
- Sprinkler System Contractors
- Landscapers

We won't keep you in the dark! American Hydro is strong on support:

- Our tech people are available during business hours (EST)
- We'll give you piles of literature and manuals
- We offer contractors our famed *Rusty Wall and the Hot Babe* training CD
- We have a great web site (natch)