

## UNPACKING

Please open and inspect your package upon receipt. Your package was packed with great care and all the necessary packing materials to arrive to you undamaged. If you do find an item that is broken or damaged, you must contact the delivering carrier to report the claim.

# Installation Guidelines and Operation of Anderson Ratio:Feeder® Series J Plus Injectors

## GETTING TECHNICAL ASSISTANCE

**The H.E. Anderson Company** is dedicated to assisting our customers with installation and use of our products. Our technical staff are available each weekday from 8:30 AM to 4:30 PM central time. You may call us toll free at **1-800-331-9620** from anywhere in the U.S.A. and Canada. If no one is available, we will promptly return your call. You may also contact us via e-mail at **info@heanderson.com**

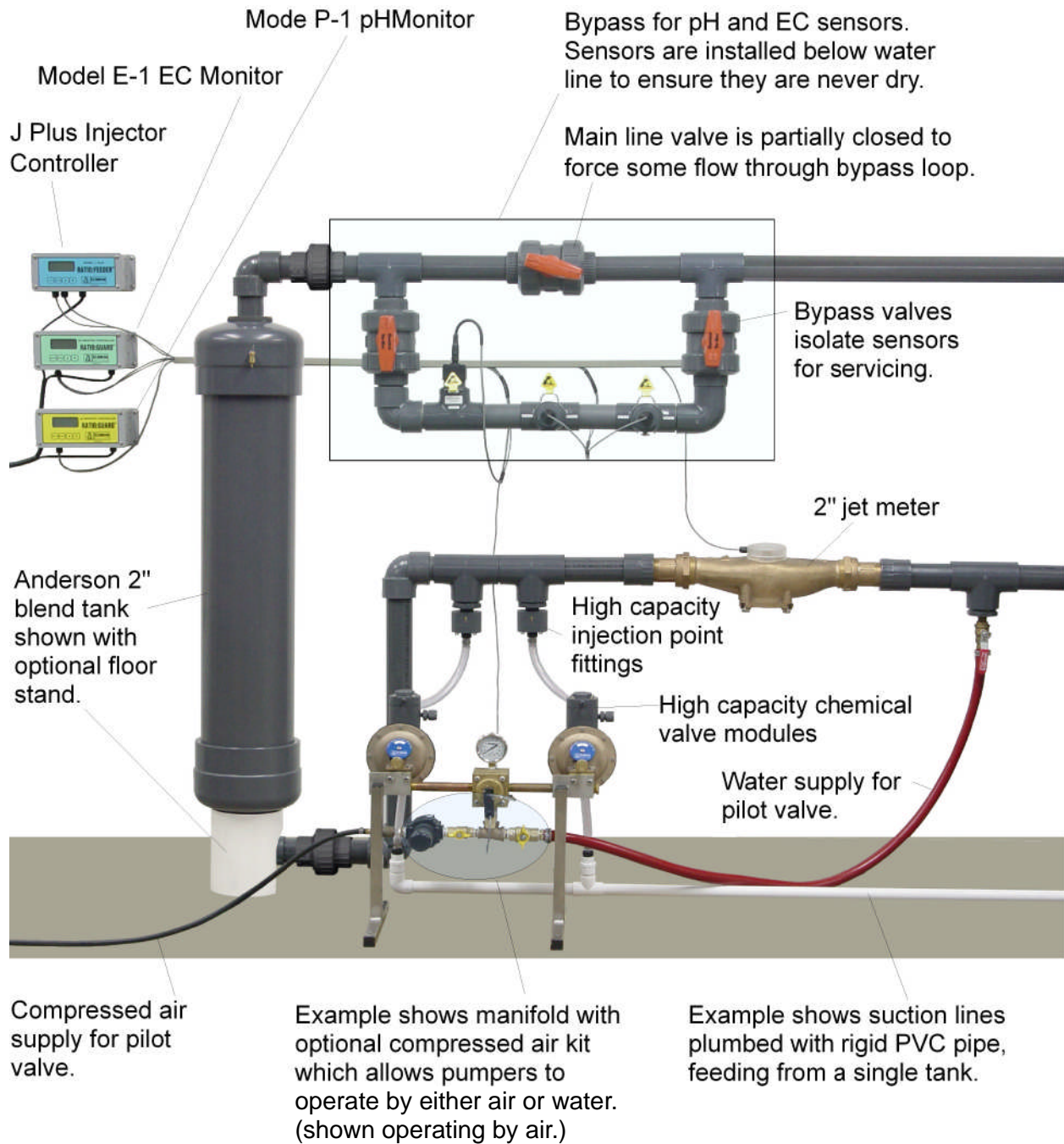
**Before you call**, review this manual. You may find the answer to your question here. But if not, reviewing the manual will help us to help you.

If you need an additional owners manual for **any** H.E. Anderson Company product, please visit our website at <http://heanderson.com/manuals.php>



## Two Inch J Plus Injector Installation Example

J Plus controller, 2 inch jet meter shown  
2 high capacity pumpers pumping fertilizer.  
Optional EC & pH monitors  
Plumbed using sch 40 PVC pipe

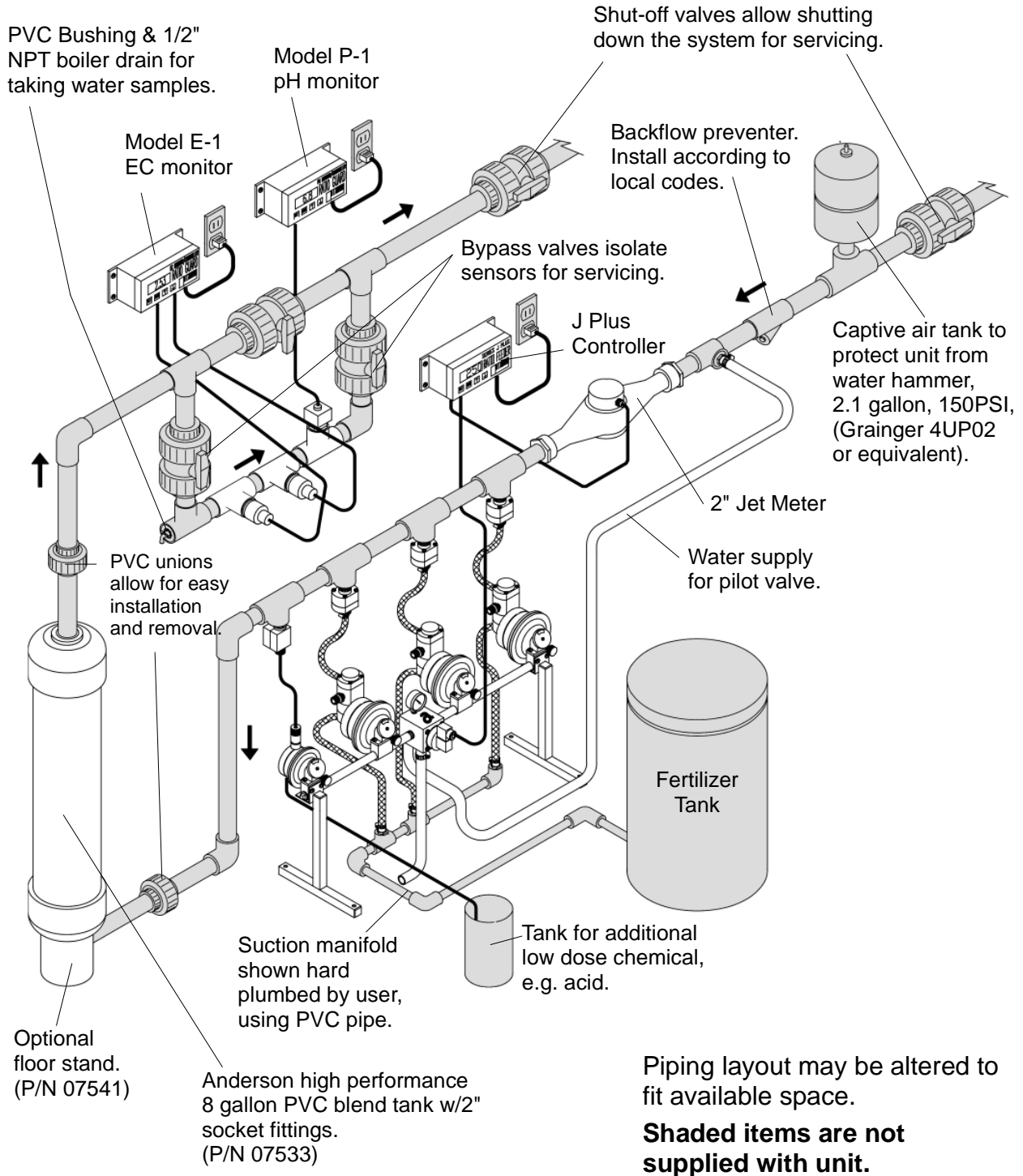


Piping layout may be altered to fit available space.

**Some PVC plumbing items are not supplied with unit. (See page 3)**

**Two Inch J Plus Injector  
Installation Example w/Two  
Chemicals**

J Plus controller, 2 inch jet meter shown  
3 high capacity pumpers pumping fertilizer.  
1 standard pumper pumping a low dose chemical.  
Optional EC & pH monitors.  
Plumbed using sch 40 PVC pipe



## Warnings and Cautions



**WARNING!** Never allow the unit to freeze! The unit is not warranted for freeze damage.



You should set up your controller before starting up your system. Refer to the J Plus Controller manual.



**IMPORTANT!** The waste line must exit to atmospheric pressure and must not be elevated or restricted in any way



**IMPORTANT!** If you have not flushed out the system as described in section 2.1 you should do so now.



Store protective clothing and accessories in a location away from the injector so that they may be donned before approaching the equipment.



Never transfer the suction line of a feeder pumping a strong acid or alkali to a container of water. This can generate dangerous heat which may destroy your pumper and plumbing.



**WARNING!** Water Hammer Destroys diaphragms.



Do not store chemicals in tanks where the level will be more than just a few feet above the discharge point of the pumpers. If you have very large solution



**WARNING!** Connecting the flow sensor incorrectly can damage the flow sensor electronics.

storage tanks you should use them to fill smaller "day tanks". This will eliminate the chance of large quantities of chemicals draining into your watering system.

## Installation Guidelines

### Location & Access

- The injector should be out of the way, yet accessible,
- If your water supply is from a municipal or public water line, you should comply with local codes.
- If your watering system is connected to a public or potable water source you should install a backflow preventer so that no backward flow of treated water into potable supplies or public mains could occur. Contact your local water authority for approved devices and recommendations to insure that your installation meets their standards.
- Install the system neatly and with room for easy maintenance access.

### Environment



**WARNING! Never allow the unit to freeze! The unit is not warranted for freeze damage.**

Freezing can cause expensive damage, even during storage if the measuring unit and pumpers have not been properly drained.

A drain should be close at hand. The unit discharges approximately twice as much water as chemical pumped. The drain line should be kept short, or expanded to a larger size for runs longer than fifteen feet.



**IMPORTANT! The waste line must exit to atmospheric pressure and must not be elevated or restricted in any way.**

### Safety

- Most chemicals used to treat water are dangerous to someone or thing.
- Do not permit access by children or pets.
- Provide safety equipment such as goggles, gloves, aprons, or anything common sense tells you you might need.



**Store protective clothing and accessories in a location away from the injector so that they may be donned before approaching the equipment.**

- Check with the manufacturer of the chemical for safety precautions for specific chemicals.
- Label chemicals and keep a supply of antidotes, neutralizing agents, and safety precautions handy. **If feeding acid, keep some baking soda (powdered and solution) nearby.**
- If feeding dangerous or corrosive chemicals, you should attach a drain line to the drain hole in the bottom of the cylinder, which drains into a chemical resistant container. An alternative would be placing a chemical resistant container directly beneath the drain hole.
- Protect the injector from corrosive vapors with adequate ventilation. **Corrosion can sometimes attack diaphragms from the back side, resulting in premature failure.**

### Water Hammer



**WARNING! Water Hammer Destroys diaphragms.**

- Water hammer can generate pressures up to 500 psi or more! This puts stress on the injector (and on your entire water system), but it is especially destructive to diaphragms.
- Water hammer can be a serious problem in installations with long pipe runs.
- Solenoid valves can cause water hammer.
- If water hammer could be a problem for your installation, you should install a suppressor such as a “pop” valve or an accumulator (captive air device) near your injector. (See installation example, P. 3)

## Water Quality

Solids in your water supply act as abrasives and will wear away the water measuring mechanism. If you have problems with solids, install a filter upstream of the injector and place pressure gauges before and after. You can use the difference in pressure readings to tell when the filter is plugged up.

## Preparation

Refer to the examples on pages 2 & 3 to help you with assembly and installation. You will need PVC pipe cleaner and glue to complete assembly; these are available at most hardware and home improvement stores.

Other piping can be of your preference.

## Installation Pointers & Recommendations

- (1) A check valve or backflow preventer should be installed in the main line before the by-pass and injector. Comply with local codes.
- (2) Any on-off water valve should be installed downstream from the blending tank. This will insure that the system injection point will always be pressurized, making siphoning of chemical unlikely.
- (3) Suction lines may be plumbed with rigid PVC piping for a neater installation.

### PH & EC Monitors

- (4) PH and EC sensors should be installed in a three valve bypass so they can be isolated for calibration and repair.
- (5) The main-line bypass valve should be partially closed to insure water flow through the bypass.
- (6) Install the bypass for pH and EC sensors below the main water line to ensure they are never dry.
- (7) Install a PVC Bushing & 1/2" NPT boiler drain for taking water samples.

## Assembly

**NOTES: See your pumper manual for complete information on installing the pumps.**

**Do not connect the supply line to the pilot valve/manifold before flushing the system.**

**Make wiring connections after plumbing is complete.**

Refer to the installation photos and drawings in the rear of this manual for information in assembling your system. If you are unfamiliar with plumbing or working with the piping materials of your choice, you should hire a professional plumber to do the installation. **Beware! Most plumbers are unfamiliar with our equipment and should be monitored to see that they are following our installation recommendations.**

Once the plumbing is complete and all pipe connections are tight, remove the meter from the system. The piping should not spring apart or close up when it is removed. Continuous strain could interfere with operation. Adjust the piping if necessary.

Before reinstalling the meter, flush the system to remove metal flakes and other debris from the plumbing. You should also flush the line that supplies the pilot valve/manifold before connecting it to the valve.

## Electrical Connections

Refer to the manual *Series J Plus Pumper Controllers* for the terminal locations. The flow sensor and valve outputs should be connected before wiring the power connections.



**WARNING! Connecting the flow sensor incorrectly can damage the flow sensor electronics.**

The terminals on the flow sensor terminal block are labeled 1, 2, & 3, both on the terminal board and on the sensor cable. Be certain to match numbers when connecting these wires. If you need a longer cable, use the color coding to be sure that these connections are correct.

The manifold valve terminals are numbered on the 4-output terminal block. On the 2-output model, valve #1 is on the left side.

**NOTE:** On 2-output models the sensor terminal block is detachable which makes connecting the cable much easier.

## Setting The Controller



**You should set up your controller before starting up your system. Refer to the J Plus Controller manual.**

## Operational Start-Up



**IMPORTANT! If you have not flushed out the system as described in section 2.1 you should do so now.**

## Initial Check-Out

- With the water off, apply power to the electronic controller. After a few seconds the display should indicate OFF.
- Turn the water on slowly and let all lines and contact tank fill with water. You should be getting intermittent discharges of water from the waste line.

## Start-Up

- Turn off the water to stop the injector. Install the strainers in the solution concentrate tanks. If installing as a bulkhead fitting, install about 2" above the bottom of the tank, to prevent the strainer from becoming fouled by sediment which may collect on the bottom. Connect the suction lines from the chemical container to the lower connection of the valve modules. Connect the discharge lines between the valve module and injection point fittings. Set dials on the pumpers to the number calculated to give the desired feed.
- Fill your concentrate tanks and restart your injector. It should now be operational.
- You may need to check, as done in the initial check-out, to be sure the pumpers are properly primed.

## Maintenance

The meter and electronic controller portion of your injector system normally require no maintenance. There is no reason to disturb these components except to service them when a problem arises. See the pumper manual for information on maintaining your pumpers and fittings. The chemical concentrate solution should be

kept clean and fresh. When refilling the concentrate, try to avoid stirring up sediment which may have collected on the bottom of the tank. Your solution tank should be covered, but must be vented with a small vent hole to atmosphere to permit the pump to pump from it.

Periodically you may find you need to completely clean your solution container. When doing this we recommend transferring the suction line of the injector to another container of the same solution, to prevent loss of prime. Use caution appropriate to the chemical.



**Never transfer the suction line of a feeder pumping a strong acid or alkali to a container of water. This can generate dangerous heat which may destroy your pumper and plumbing.**

## Storage

If an injector will not be used for a long period, you should remove it from service.

- Flush the pumper and chemical valves, either by pumping water through the unit (if not feeding acid, see below) before removing it or by rinsing after removal.
- Tape the valve openings closed while still wet. This protects the seals and prevents insects from plugging the openings.
- Drain the unit completely to prevent damage by freezing water still inside.

## Trouble Shooting

If you suspect there may be a problem with your unit please read the following section carefully. **DO NOT DISASSEMBLE ANY PART OF YOUR SYSTEM** until you have determined the exact problem, and then do it carefully, according to instructions. Many small and easily corrected

problems are greatly aggravated by not heeding this warning. Table 4 in the *Series J Plus Pumper Controllers* manual gives some common problems and tells how to correct them. Call the factory if you have questions about what you need to do.

There are two basic categories of problems; pumper problems and control problems. If you are getting flow indication and regular cycles of waste water from the pilot valve you can be virtually certain the controller and pilot valve are working properly. Table 1 in the *Pilot Valve & Manifolds* manual gives some possible conditions along with probable causes and suggested action. If you cannot determine the problem, call our factory at the number listed in the front of this manual.

## Checking the Meter Sensor

You have probably already observed the red LED indicators mounted on the sensor circuit board which is housed in the clear housing atop the water meter. Checking these can quickly pinpoint some problems.

- The power LED will be lit whenever power to the controller is on and properly functioning (it displays and responds to key presses). If not lit, there is a problem with the sensor board or, more likely, with the cable between meter and controller.
- The second LED should light with each pulse from the sensor. It should be blinking whenever water is flowing. If this is not happening, refer to the instructions for your meter for more information.

## Pumper and Diaphragm Problems

See your pumper manual(s) for information on servicing your pumps

## Primary Requirements for Proper Operation

There are some conditions which must be met in order for your injection system to operate properly.

These are given here:

- Minimum line pressure of 30 psig, measured on the downstream side of the injector. If you do not have a pressure reading of 30 pounds at the pressure gauge on top of the unit, then you do not have enough pressure. If the water is flowing out to an open tank or onto the ground, there will probably not be sufficient back pressure to meet the 30 psig requirement even if there is much greater pressure (e.g. 50 psig) on the inlet. This is the most common cause of erratic operation. In this situation you should install a valve and pressure gauge downstream from the unit. Close the valve until the gauge reads 30 psi or greater.
- The flow rate should be within the range of your flow meter. (See Table 1 in your meter manual for flow range information)
- The manifold discharge line and any tubing attached must open to "daylight" and go directly to a drain. Do not obstruct or elevate the line at any point. If a long line is needed, it should be expanded to a larger size. Put an air vent or gap between the primary and the extended line.
- Too much chemical feed is not caused by a mechanical malfunction. It is probably due to siphoning or gravity flow of chemical through the feeder during periods of zero pressure on the system. The system shutoff valve should be downstream of the system to maintain pressure at all times.



***Do not store chemicals in tanks where the level will be more than just a few feet above the discharge point of the pumps.***

***If you have very large solution storage tanks you should use them to fill smaller "day tanks". This will eliminate the chance of large quantities of chemicals draining into your watering system.***

# RATIO:FEEDER® LIMITED WARRANTY

## WHAT IS COVERED

The H.E. Anderson Company of Muskogee, Oklahoma, will make any necessary repairs and/or replace any parts of any Ratio:Feeder® product made necessary because of defects in materials or workmanship for fifteen months from date of manufacture. Warranty repairs and/or replacements will be performed without charge to the owner by H.E. Anderson Company within a reasonable time after prepaid delivery of the defective product to the H.E. Anderson Company, 2100 Anderson Drive, Muskogee, Oklahoma 74403.

## WHAT IS NOT COVERED

This warranty specifically excludes failure of any parts or materials caused by chemical attack or damage caused by operation above rated capacity or pressure. Further, this warranty does not cover wear or failure caused by sand or other foreign materials which may be found in water that is passed through our products, or damage caused by freezing or exposure to water temperatures above 60 °C (140 °F).

This warranty does not cover damage caused by failure to follow prescribed installation instructions and limitations issued by H.E. Anderson Company. In addition, this warranty does not cover service adjustments, repairs, or replacements caused by misuse, negligence, alteration, accident, or lack of specified maintenance.

This warranty does not cover components used by, but not manufactured by H.E. Anderson Company, in the manufacture of our products except to the extent of said component manufacturer's warranty.

This warranty specifically excludes liability for consequential damages or for charges for labor or expense in making repairs or adjustments, or losses of time or inconvenience.

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This warranty gives you specific legal rights and you may also have other legal rights which may vary from state to state. H.E. Anderson Company does not authorize any person to create for it any other obligation or liability in connection with these products. ANY IMPLIED WARRANTY APPLICABLE TO THESE PRODUCTS IS LIMITED TO THE DURATION OF THIS WARRANTY. H.E. Anderson Company shall not be liable for consequential damages resulting from breach of this written warranty.

NOTE: Some states do not allow limitation on how long an implied warranty will last or the exclusion of limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

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## WHAT TO DO IF THERE IS A QUESTION REGARDING WARRANTY

- 1) Promptly notify the consumer adviser at H.E. Anderson Company by telephone at 800-331-9620 or 918-687-4426.
- 2) Confirm the report in writing (or via FAX at 918-682-3342) to the H.E. Anderson Company, stating the circumstances surrounding the problem.

## PURCHASER'S OBLIGATION

- a) Purchaser must give H.E. Anderson Company immediate written notice on discovery of defect.
- b) Purchaser must pay for shipment of the defective product to the H.E. Anderson Company, 2100 Anderson Drive, Muskogee, Oklahoma 74403.