Installation Manual

Model #PS 8000

Arch Chemicals, Inc.
1955 Lake Park Drive
Smyrna, GA 30080
1-800-4-PULSAR

11.02.06

Product Stewardship

"Making the World a Better Place"

Arch is committed to maintaining and improving our leadership in Product Stewardship. One of the six initiatives outlined under the Chemical Manufacturers Association (CMA) Responsible Care® Program is to make health, safety, and environmental protection an integral part of a product's life cycle – from manufacture, marketing, and distribution to use, recycling, and disposal.

Successful implementation is therefore, a shared responsibility. Everyone involved with the product has responsibilities to address society's interest in a healthy environment and in products that can be used safely. We are each responsible for providing a safe workplace. All who use and handle products must follow safe and environmentally sound practices.

For more information about our Product Stewardship Program, contact your Arch Representative.

Instructions for Pulsar 4 Booster Pump Installation

To Simplify Installation: Please read this installation manual completely before going to the pool site.

Equipment needed to install:

Drill – Cordless recommended	Tube cutters or Utility Knife
PVC Pipe Fittings (as required)	RTV silicon seal
PVC Primer/Cleaner	2 Pipe Wrenches or Gas Pliers (Channel Locks)
PVC Glue	Water tight connectors for pump wiring
Saw to cut PVC Pipe	Wire for pump (14gauge minimum required)
Electricity for the pump	(115V)/20 Amp Pressure gauge
1 ½" PVC pipe (length will vary)	Saddle clamps (optional)
Teflon tape	

The following parts are included in the installation kit:

One 1 hp Pulsar pump	One venturi - 1585X
Two - 1 ½" threaded x slip unions	One 1 ½" x 1 ½" x ½" FNPT reducing tee for inlet water to chlorinator
Two 1 ½" ball valves – slip x slip	Two 1 ½" x 12" threaded nipple
Two - 1 ½" slip unions (around the pump)	

The following parts are included with the feeder:

One ½" NPT male x male gray ball valve	One ½" NPT male x female gray ball valve
½" O.D. LDPE tubing	Two ½" closed PVC nipples
Two ½" Female Parker tube fittings (P8FC8)	One Scoop

Overview

A 1 ½" loop is going to be added to the main pool recirculation line. The loop will have an in-line Pulsar pump to drive a venturi. The Pulsar 4 inlet line will get water from the discharge of the Pulsar pump. The discharge valve of the chlorinator will be hooked up to the venturi. The Pulsar pump provides the correct pressure (~ 35 psi) to drive the jets in the manifold of the Pulsar 4 chlorinator. It also provides correct flow through the venturi to create a vacuum to evacuate the chlorinator. This installation method gives optimal performance of the Pulsar 4 chlorinator in most above and below grade installations. The use of a pressure gauge on the discharge side of the pool pump after the filter is recommended for correct installation of the system.

Pulsar Site Assessment

It is critical to determine the effluent pressure of the system prior to installation. This pressure must be measured immediately after backwashing when it will be at its highest level. Refer to the appropriate system diagram in the back of this manual to determine where to measure this pressure (P1).

Take a pressure reading and refer to the graph on page 5 to determine the suction capacity of the system assuming that there is no suction lift correction. Record this suction capacity as F1.

Next, determine where the Pulsar pump and venturi loop will be installed. It may be preferable to install this loop across the heater bypass valve to use this pressure differential to enhance system performance.

Always minimize the backpressure on the venturi. Avoid use of elbows after the venturi if possible. Never install an elbow within 3 feet of the venturi outlet. Always use elbows on the inlet to the Pulsar pump or prior to the venturi if possible. After the evacuation system has been laid out, measure the height differential (in feet) between where the venturi will be installed and discharge valve of the Pulsar chlorinator. Use this height differential to calculate the suction lift factor in the formula that follows. The greater the height differential the more suction you will lose from the venturi. Next calculate the outlet flow using F1 and the suction lift factor. The minimum outlet flow required is 2.3 gpm.

Suction lift factor = (34 – height differential in feet) / 34

Example: height differential is 6 feet, therefore
Suction lift factor = (34-6) / 34
= 28 / 34
= 0.82
Take the suction capacity F1 and multiply it by the suction lift factor to get the actual outlet flow.

The formula is: F1 x suction lift factor = actual outlet flow

Example #1: Assume that the pressure measured in the pipe is 12 psi.
Using the P4 graph 1 in this manual the outlet flow (F1) is determined to be 3.8 gpm.

F1 x suction lift factor = actual outlet flow
3.8 gpm x 0.82 = 3.1 gpm = actual outlet flow
(This flow is acceptable) It is above 2.3 gpm which is the minimum.

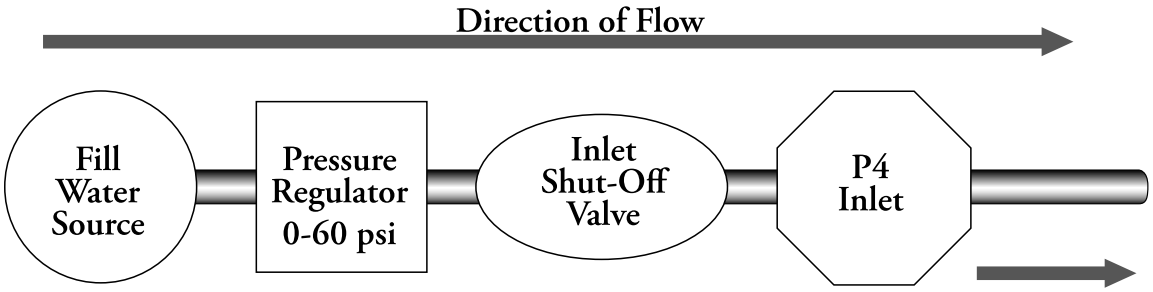
Example # 2: Assume that the pressure measured in the pipe is 25 psi. Using the P4 graph, the outlet flow (F1) is determined to be 2.7 gpm. F1 x suction lift factor = actual outlet flow 2.7 gpm x 0.82 = 2.2 gpm = actual outlet flow ***(This flow is insufficient to drain chlorinator)***
A larger pump will be required to generate sufficient outlet flow. Consult Arch.

Now determine where the power source will come from for both the booster pump and solenoid. These considerations will help determine the length and gauge of wire needed.

The last consideration for the site assessment is the fill/tap water source and the type of pH control system to be used. If Carbon Dioxide will be used for pH control, it may be preferable to provide the inlet flow to the chlorinator from the fill water source. Typically, Carbon Dioxide pH control systems will raise the Total Alkalinity of the pool water to well over 100 ppm. This TA level will increase the tendency for scale formation in the chlorinator. Consequently, it is recommended that the inlet flow be provided from the fill water source **if** the TA of the fill water is below 100 ppm.

The use of fill water to the chlorinator inlet will add water to the pool on a daily basis in relatively small amounts. A typical indoor 100,000 gallon pool will use approximately 20 gallons of chlorinated solution from the Pulsar® System per day. A typical outdoors 100,000-gallon pool will use approximately 60 gallons of chlorinated solution from the Pulsar® System per day. The P4 System also puts **an additional 870 gallons water a day** in the pool from the washdown system. If you use this installation method make sure that the pool has that amount of water being removed as to not cause the pool to overflow.

Fill water systems typically operate at pressures between 50-80 psi. This pressure is too high for the Pulsar® System valves to operate properly. It is therefore necessary to install a pressure regulator on the inlet flow to the Pulsar® system. This regulator must be installed directly at the fill water source. This will insure a reduced pressure in the flexible polyethylene tubing and solenoid valve on the inlet side of the chlorinator. Adjust the pressure regulator to provide between 30-35 psi inlet water pressure. See diagram below for proper fill water plumbing hook-up.



Pump

The 1 H.P. pump is to be wired for 220V single-phase service only. The pump is shipped for 220 V single-phase installation, no modifications are necessary. 208V serice is not adequate and will harm the pump. Use 110V service with a 20 amp breaker if 220V service is not available. The booster pump electric service must be installed by a licensed electrician according to the local electrical code.

The power supply to the Pulsar pump must be interlocked to the pool recirculation pump.
This is to prevent running the Pulsar pump dry when the pool pump is shut off. Use watertight connectors when wiring the pump.

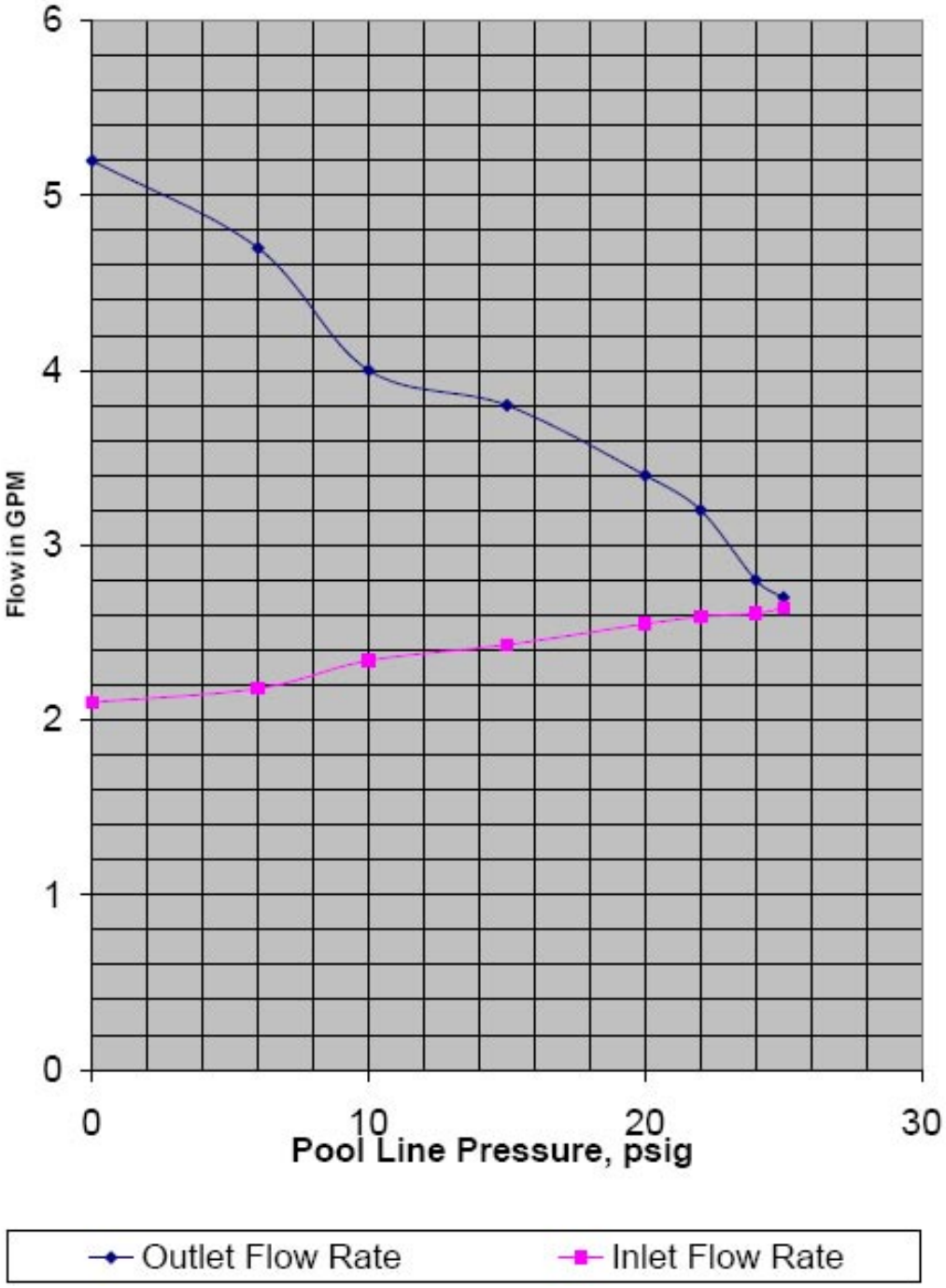
Installation of equipment

Place the equipment, pump and chlorinator, in the poolroom in a convenient location.

Shut off the pool recirculation equipment before proceeding with the installation. Review the installation diagram prior to installation.

Dealer Installation Notes:

Pulsar 4 Installation
1 HP Booster pump and 1585X Venturi



1. Based on your site assessment, drill and tap a 1 ½" NPT hole down stream of the pool filter and heater. Note: You can use saddle clamps if you wish. This is one of two holes that will be needed in the installation. The hole should be drilled on the side or bottom of the pipe, if the pipe is horizontal. **NOT ALL PIPES RUN FULL**.

2. Cut both of the 12" x 1 ½" PVC nipples in half. (4 pieces). Take one of the pieces and apply Teflon tape to the threads. On top of the Teflon tape add a silicon seal bead around the threads. The silicon seal helps to make a good seal. Wipe off any excess.

3. Thread the nipple into the 1 1/2" tapped hole or saddle clamp.

4. Teflon tape the 2" x 1 ½" reducer bushing and screw and tighten it securely into the inlet of the Pulsar pump.

5. Teflon tape the threaded end of one of the nipples that was cut in half. Place a bead of silicon seal around the taped threaded ends.

6. Screw and tighten the two pieces into the inlet and outlet of the Pulsar pump.

7. Take the 1 1/2" ball valve and glue it onto the nipple that has been screwed into the pool piping in step #3. This is what makes the connection from the pool recirculation system to the Pulsar pump inlet using 1 ½" PVC piping.

8. Drill and tap another 1 ½" NPT hole downstream of the first hole that was drilled and tapped. This hole accommodates the discharge side of the Pulsar pump. If automated controllers are used in the system, the drilled and tapped hole must be placed downstream of the ORP and pH probes location. This is to avoid problems that may occur with the controller operation. See installation diagram. Thread one of the cut 1 ½" nipples into the 1 1/2" tapped hole or saddle clamp.

9. Take the 1 ½" ball valve and glue it onto the nipple installed in Step 8. Please make sure that there is a straight connection back into the pipe, no elbows. This is to connect the pool recirculation system to the discharge side of the Pulsar venturi.

10. Tie in the electrical to the Pulsar pump **making sure you have the pump configured for the correct voltage.**

11. Using 1½" PVC piping, connect the inlet side of the Pulsar pump to the 1 ½" ball valve installed in step #7 using slip unions around the booster pump.

12. Piping the discharge side of the Pulsar pump will involve installing a venturi and reducing tee. See Pulsar 4 diagram on Page 10 for a reference. Place and glue the 1 ½" x ½" reducing tee and 1 ½" slip x slip union on the 1 ½" cut nipple on the discharge side of the pump. This reducing tee will have a ½" male x male ball valve screwed into it that will provide the inlet water to the chlorinator.

13. Take the black venturi and Teflon tape all the threaded ends. Take the two unions (makes for easy removal of venturi, for cleaning, after installation) and screw one on each end and tighten. Take and thread

14. Connect the venturi as close as possible to the ball valve installed in step 8 using a short section of 1½" PVC pipe. Make sure the flow through the venturi is in the proper direction. Connect the other end of the venturi to the discharge side of the Pulsar pump using 1 ½" PVC pipe.

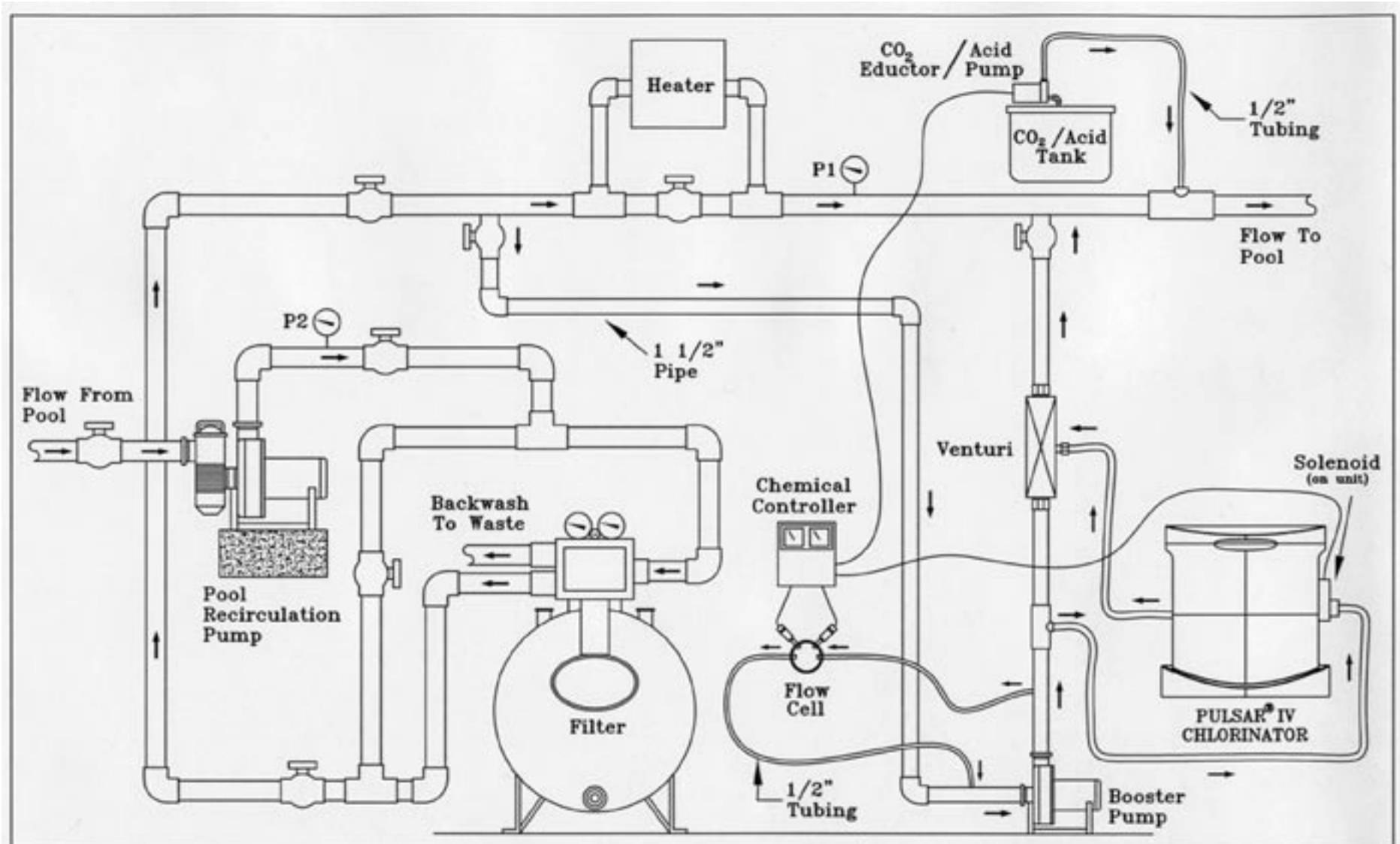
15. The recirculation loop is now complete.

16. Now hook up the Pulsar 4 feeder to the Pulsar recirculation loop. Two ½" NPT gray ball valves have been included with the feeder. One is a ½" x ½" male valve which is screwed into the reducing tee, which is located on the discharge side of the Pulsar pump. Once this is done, thread on the line strainer (NOTE: Direction of flow arrow on line strainer) assembly. Next thread the ½" closed nipple into the line strainer assembly. Install the flow indicator onto the closed nipple and then screw in the tubing connector (5/8" tubing x ½" MNPT) into the flow indicator. Connect the 5/8" tubing from the flow indicator to the solenoid valve **inlet** on the Pulsar 4. Plug the transformer into the controller or power source (115v). See Pulsar 4 Installation Sch matic layout in the back of the manual for clarification.

17. The next ½" gray ball valve is a female by male valve. Take the ½" closed nipple and thread it into the female side of the ½" ball valve. This valve is threaded into the reducing bushing on the venturi. Install female Parker fitting on ball valve. Connect the 1/2" tubing from the venturi to the **discharge** valve of the feeder.

18. Restart the pool pump. Open the 1 ½" ball valves and start the Pulsar pump. Run the Pulsar pump for 3-4 minutes. Open the ½" gray valves and allow water to flow into the chlorinator, checking for leaks.

19. Refer to the Operators Manual for Pulsar 3 chlorinator operation.



PULSAR® IV Installation Schematic Layout

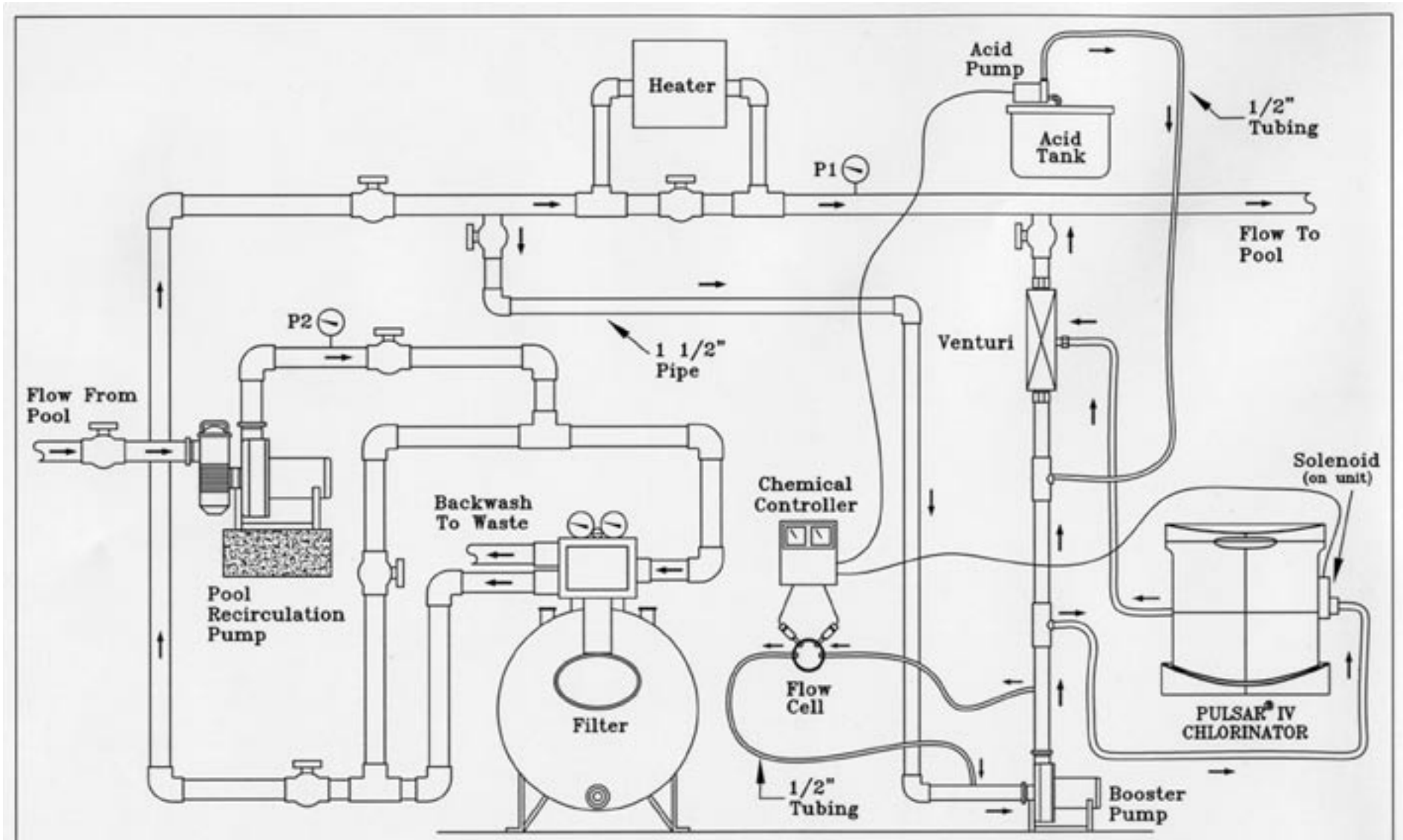
1 HP Pump & Venturi Installation 3-06-00

Standard Installation

ARCH Aqua Chemicals, Inc.

Commercial Pool Products

PULSAR® IV Installation | P4SS

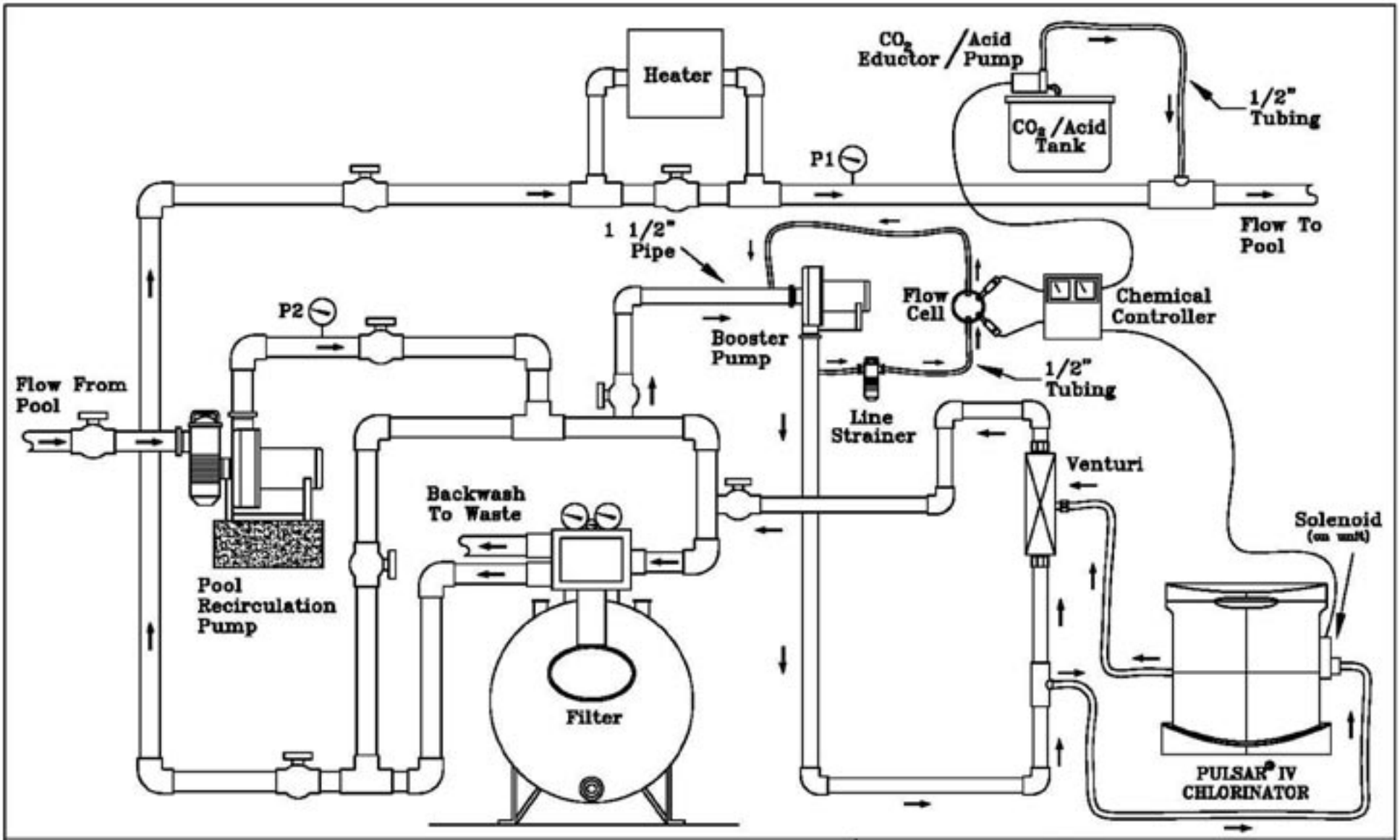


PULSAR® IV Installation Schematic Layout
1 HP Pump & Venturi Installation 3-06-00
Optional Acid Feed

ARCH Arch Chemicals, Inc.

Commercial Pool Products

PULSAR® IV Installation | P4SSA



PULSAR® IV Installation Schematic Layout

3/4 HP Pump & Venturi Installation 7-20-01

Optional Pre-Filter Installation

ARCH

Commercial Pool Products

PULSAR® IV Installation | P4SSO

P4 Installation Notes:

P4 Installation Notes:

P4 Installation Notes:

P4 Installation Notes:

Arch Chemicals, Inc. Emergency Action Network (ACEAN)

The Arch Chemicals, Inc. Emergency Action Network ("ACEAN") is Arch's emergency action system. Call the ACEAN system at 1-800-654-6911) in North America, and at (Country Code for the United States) 423-780-2970 elsewhere in the world. The ACEAN system is available 24 hours a day, 7 days a week for assistance with spills, injuries and emergencies of any kind. It uses computers and other systems to make Arch's environmental, technical transportation, toxicological and other expertise about its products readily available to anyone needing assistance. The ACEAN system also includes emergency response teams capable of providing on-site support throughout North America.

(800) 654-6911

(From outside North America, call after the country code for the US, 423-780-2970)

Additionally, in the event of an emergency, CHEMTREC (Chemical Transportation Emergency Center) should be contacted. CHEMTREC is a national center established by the Chemical Manufacturers Association (CMA) in Washington, DC, to relay pertinent emergency information concerning specific chemicals on request.

CHEMTREC has a 24-hour toll-free telephone number (800) 424-9300, intended primarily for use by those who respond to chemical transportation emergencies. CHEMTREC may also be accessed through the CMA website at www.cmahq.com.

Material Safety Data Sheets (MSDS) sheets can be ordered by contacting (800)-511-MSDS.

If you would like a copy of this manual in another language please call:

1-800-4-PULSAR