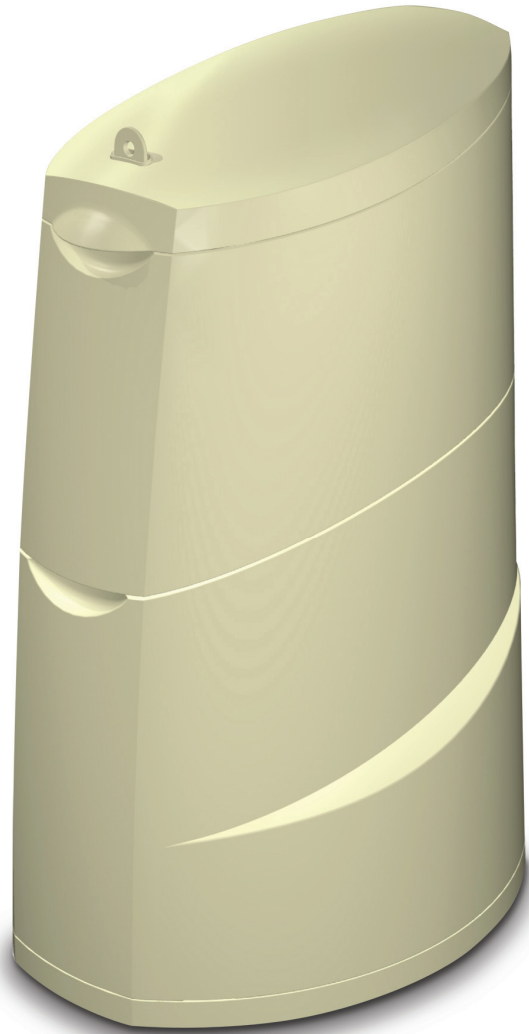


Arch Feeder: Installation Manual

Model #A300N



rev.2 (10/3/11)



Arch Chemicals, Inc.
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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, its purpose 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, and 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.

Dealer Contact:

General Principles of Operation

The Arch Feeder is an atmospheric system designed for pools and spas ranging from 500 gallons to 70,000 gallons. There are two different installations. The location of the pool pump (above grade or below grade) will determine the installation necessary.

Selecting a location

Choose a location in the pump room that will allow easy access and service. Always try to minimize the length of the outlet tubing when locating the Arch Feeder. The Arch Feeder comes with 20 feet of ½" OD polyethylene tubing.

Equipment Required for Feeder Installation

Drill – Cordless Recommended	Tube Cutters or Utility Knife
1/2" NPT Tap and 11/16" Drill Bit	Gas Pliers (Channel Locks)
Teflon Tape or Pipe Sealant	Vacuum Gauge (Inches of Hg)
Hacksaw (Optional)(required for venturi)	1/2" MNPT x 1/4" FNPT reducer

Equipment Required for Venturi Installation

1 1/2" PVC Pipe and Fittings (elbows, tees etc.)	Ball or Gate Valve for Pool Return Line
1 1/2" NPT Tap and 1 3/4" Hole Saw (Optional)	Saddle Clamps (optional)

Parts Included with the Arch Feeder

1/2" OD Polyethylene Tubing (20 feet)	(2) 1/2" NPT PVC closed nipple
(2) 1/2" FNPT X FNPT PVC ball valve	0 – 2.0 gpm acrylic flow indicator
Tubing connector: ½ " Tube X ¼" MNPT (W6MC4) for ESV inlet	(2) Tubing connector: 1/2" tube X 1/2" FNPT (W8FC8) for discharge valve and flow indicator
	(2) Tubing connector: 1/2" tube X 1/2" MNPT (W8FC8) for ball valves

Procedure # 1: Test for Required Vacuum

The Arch Feeder requires a minimum of 5" of mercury suction to work properly. This amount of vacuum must be measured when the pool filter is dirty (when the filter needs backwashing) at its highest operating pressure. This is critical because the vacuum is lowest when the pressure is highest. Failure to test the vacuum reading when the filter pressure is highest may cause poor Feeder performance when the filter is dirty.

If an accurate, working vacuum gauge is installed on the suction side of the pool pump, simply read the amount of vacuum (inches of Hg) when the filter is dirty. If the reading is 5 inches of Hg or higher, go to the "Standard Installation of the Feeder" section. If it is lower, refer to "Will the Small Feeder Venturi Work @ Site" later in the manual.

Note: If a vacuum gauge is not present on the pools recirculation system, follow the steps below:

Step #1: Turn off the pool recirculation pump.

Step #2: Close valves (if any) between the pool filter system and the pool.

Step #3: Remove the drain plug from the hair and lint strainer basket. If there is no plug in the hair and lint strainer or the plug is inaccessible, go to step #8.

Step #4: Install the vacuum gauge in the hole (for the plug).

Step #5: Open all valves closed earlier.

Step #6: Turn on the pool pump.

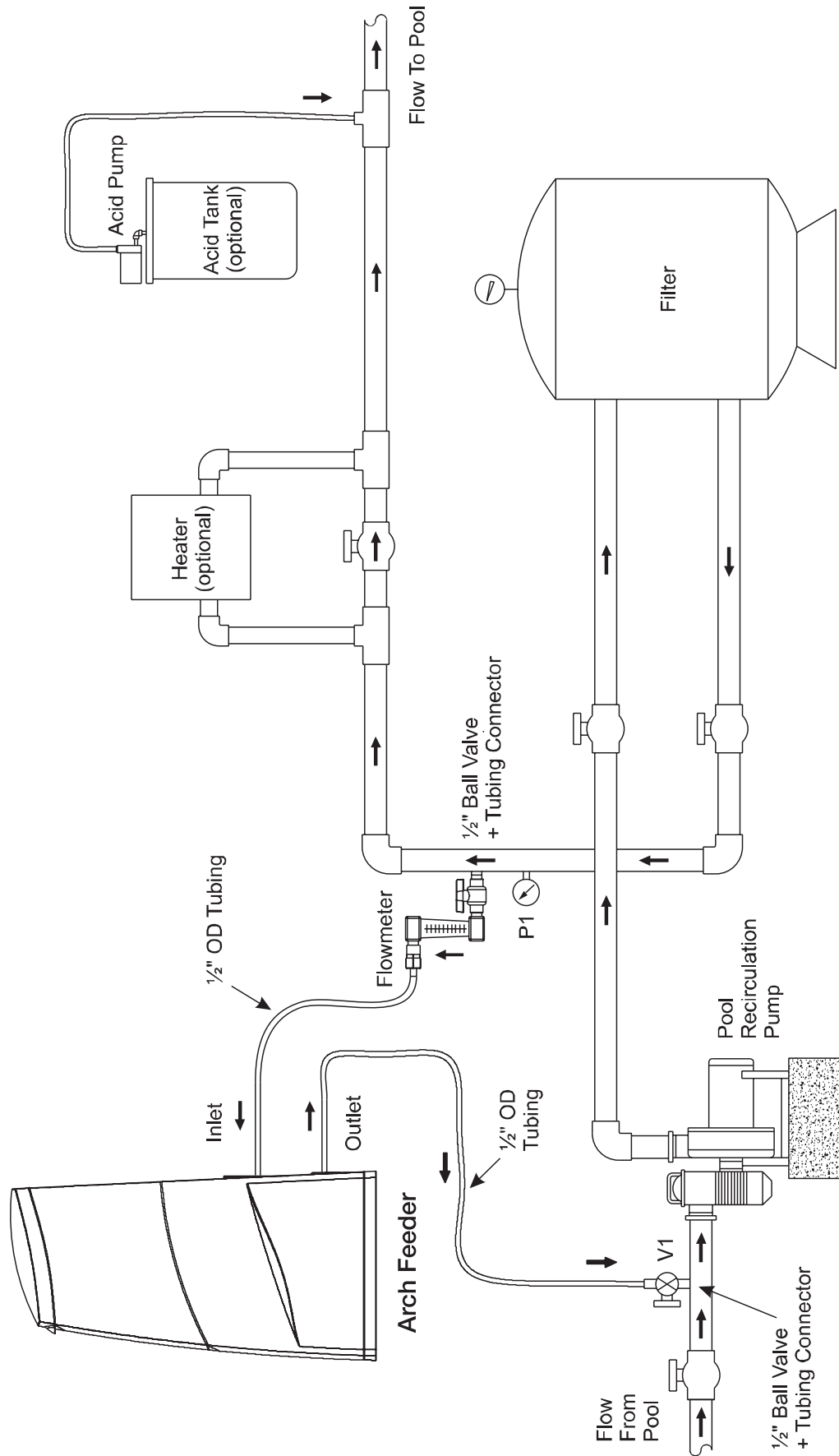
Step #7: Take a reading of the vacuum after the system is fully primed. If the reading is 5 inches of Hg or higher, replace the vacuum gauge with the plug and go to the "Standard Installation of the Feeder" section. If it is lower, refer to "Will the Small Feeder Venturi Work @ Site" later in the manual.

Step #8: Locate a 1/4" or 1/2" NPT hole on the suction side of the pump where the vacuum gauge can be installed. If only 1/2" hole can be found, use a 1/2" MNPT x 1/4" FNPT bushing on the gauge. If you locate a hole, repeat steps 4-7; otherwise go to step 9.

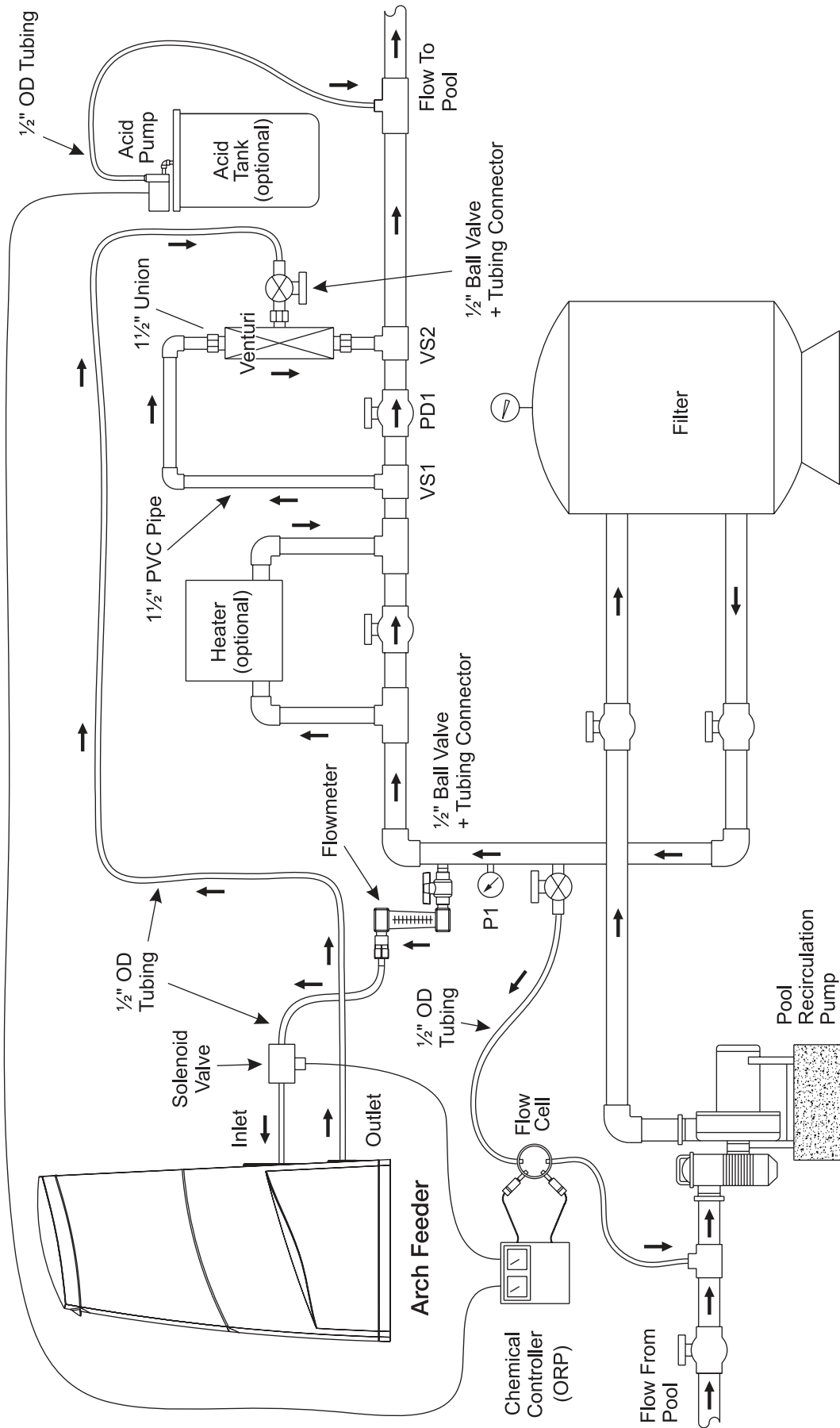
Note: Before performing step #9 be sure that you have a 1/2" MNPT plug available or are prepared to leave the vacuum gauge in the hole you are about to drill and tap.

Step #9: Drill a 11/16" hole in the PVC pipe on the suction side of the pump. Tap the hole with a 1/2" NPT tap. Repeat steps 4-7.

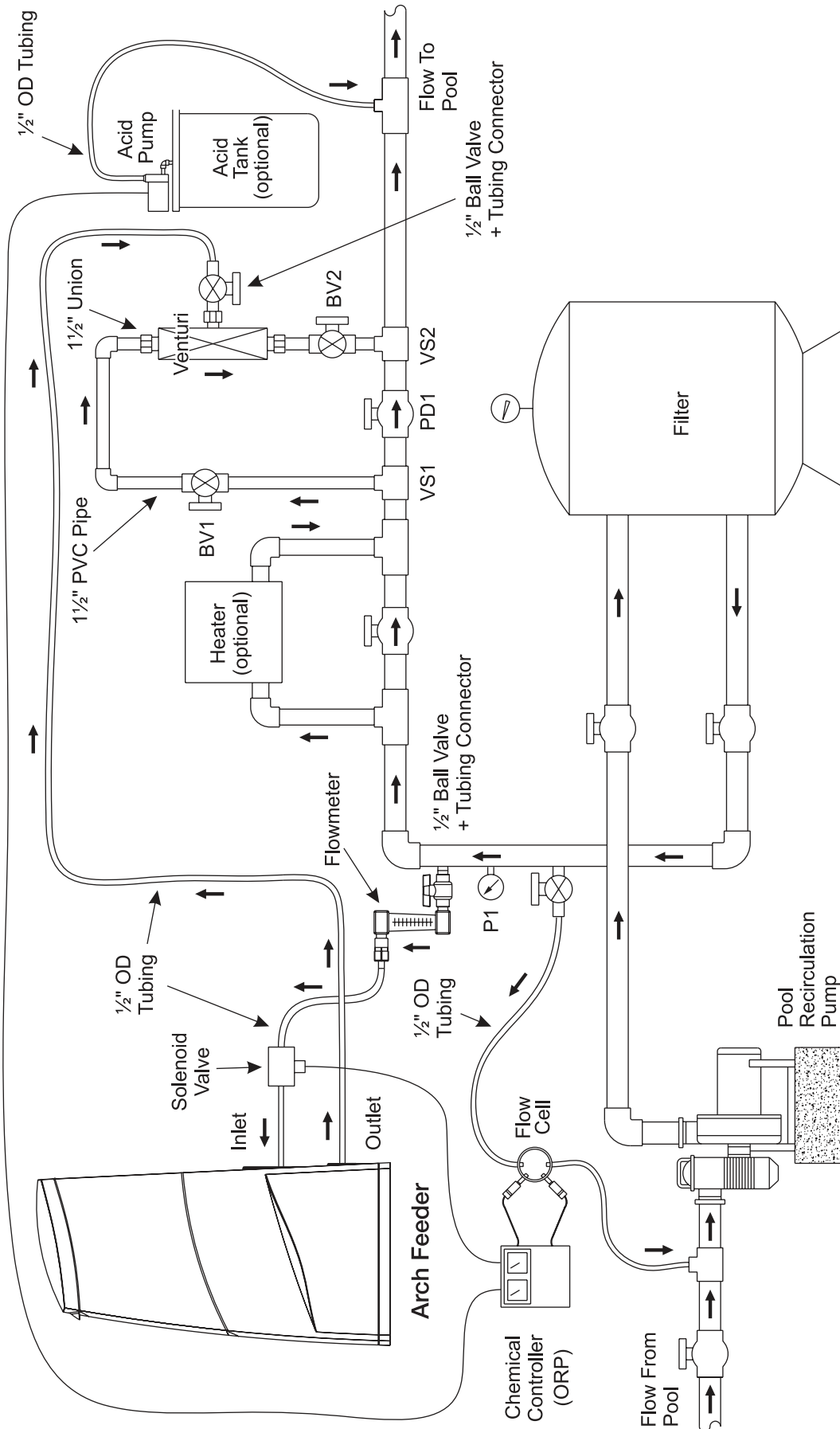
Arch Feeder: Standard Installation - Schematic #1



Arch Feeder: Venturi Above Grade Installation - Schematic #2



Arch Feeder: Venturi Below Grade Installation - Schematic #3



Standard Installation of the Feeder

Refer to Schematic #1 for the standard installation and follow the steps below.

Step #1: Turn off the pool recirculation pump.

Step #2: Close valves (if any) between the pool filter system and the pool.

Note: The hole in the following step should be drilled on the side of the pipe away from the floor to provide the clearance and right angle required for Flow controller installation.

Step #3: Drill an 11/16" hole after the filter (before heater if present) where "P1" is on Schematic #1. Tap the 11/16" hole with a 1/2" NPT tap.

Step #4: Install closed nipple in 1/2" ball valve using Teflon tape or pipe sealant (Figure 1).



Figure 1

Step #5: Install tubing connector (W8FC8) on the outlet (top) port of the flow indicator. Install ball valve into the drilled and tapped hole in step #3. Install the flow indicator onto the ball valve (Figure 2).

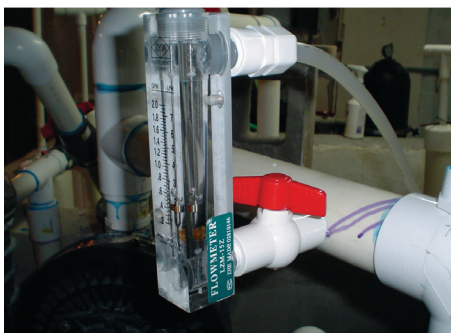


Figure 2

Step #6: Close the valve installed in step #5.

Step #7: Drill an 11/16" hole on the suction side of the pump where V1 is on the Schematic #1. Tap the 11/16" hole with a 1/2" NPT tap (Figure 3).

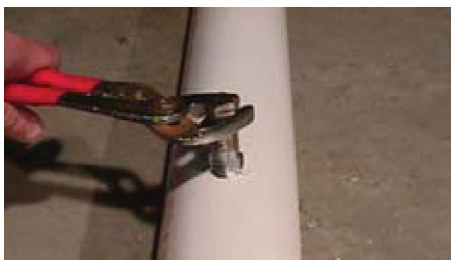


Figure 3

Step #8: Apply Teflon tape to both ends of the 1/2" PVC closed nipple and install in ball valve (figure 4).

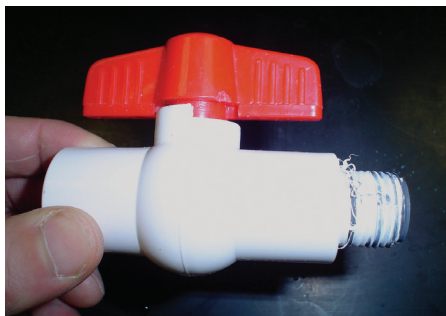


Figure 4

Step #9: Install tubing connector (W8MC8) on one end of the 1/2" ball valve (Figure 5).



Figure 5

Step #10: Install 1/2" ball valve in 1/2" NPT hole and close the valve (Figure 6).



Figure 6

Step #11: Open valves closed in step #2 and turn on the pool pump.

Step #12: Go to the section "Assembling the Arch Feeder and connecting it to the Pool Recirculation System" later in the manual.

“Will the Small Feeder Venturi Work @ Site?”

Ask the pool operator what the flow rate (minimum) of the pool is with a dirty filter. Backwash or clean the filter and measure the effluent pressure of the pool system after the heater at “VS1” in Schematic #2. If this pressure is 17 psi or less and the minimum flow rate of the pool is greater than 45 gpm the small feeder venturi will provide adequate suction to operate the Arch Feeder. The chart below lists the suction flow generated by the small feeder venturi at various pressure differentials.

Install the venturi loop as shown in the appropriate Installation Schematic (#2 or #3) for either an above or below grade filtration system. The primary difference between the two is the use of ball valves on the below grade installation to allow the loop to be isolated from the pool system for service. Once the loop has been installed using the step by step instructions in the Installation Manual, adjust the pressure differential ball valve (PD1) to achieve a vacuum reading of 19” Hg.

Arch Feeder System Venturi Installation: Theory

Flow to the venturi is taken from the pressure side of the pool recirculation pump after the filter and heater loop (if present). Flow from the venturi is returned downstream of the venturi inlet. A partially closed valve in between the venturi inlet and outlet provides the pressure drop needed to power the venturi. The three critical parameters in choosing a venturi are the inlet and outlet pressures and the suction lift. The Venturi must be capable of evacuating 1.5 gpm from the discharge tank when the filter is dirty. Suction flow will decrease with an increase in filter pressure as less water will flow through venturi.

Always minimize the backpressure when installing a venturi. **This includes eliminating/minimizing any elbows on the outlet side of the venturi.** In addition, if the venturi is located more than 3 feet above the Feeder outlet, it will be necessary to calculate the effect of the suction lift loss on outlet flow. Follow instructions below to perform the Suction Lift calculation if required.

After the evacuation system has been laid out, measure the height differential (in feet) between the venturi and discharge valve of the Arch Feeder Use this height differential to calculate the Suction Lift Factor in the formula that follows.

$$\text{Suction Lift Factor} = (34 - X) / 34$$

Where X is the height differential, in feet

(Example) Height differential is 6 feet, therefore:

$$\begin{aligned} \text{Suction Lift Factor} &= (34-6) / 34 \\ &= 28 / 34 \\ &= 0.82 \end{aligned}$$

Take the suction flow (F1) and multiply it by the Suction Lift Factor to get the Actual Outlet Flow.

The formula is:

$$F1 \times \text{Suction Lift Factor} = \text{Actual Outlet Flow}$$

Note: After installation, it is important to check the evacuation cycle of the Arch Feeder to ensure that the drain time of the discharge tank is adequate. The maximum recommended elapsed time to drain a 1 gallon bottle (positioned at the same height of the discharge valve) of water is 45 seconds. This corresponds to an outlet flow-rate of approximately 1.5 gpm.

Suction Flow Chart			
Inlet Pressure (psi)	Outlet Pressure (psi)	Flow Through Venturi (gpm)	Suction Flow (gpm)
6.5	5.0	30	2.0
7.0	5.5	30	1.9
7.5	6.0	31	1.8
8.0	6.5	29	1.7
8.5	7.0	29	1.7
10	7.5	32	1.6
13	10	33	1.5
14	10	37	1.6
17	12	39	1.7
19	14	40	1.6
20	15	40	1.6
23	16	43	1.5
24	17	43	1.5

Venturi System Installation of the Feeder

Refer to Schematic #2 for an above grade/ORP pool system installation or Schematic #3 for a below grade pool system installation and follow the steps below.

Complete steps #1 through #6 of Standard Installation of the Feeder.

Background: The next steps involve creating a bypass loop on the pool return line for installation of a Venturi. This loop can be created by drilling and tapping or splicing into the return line with Tee's. We refer to using the drill and tap method. You may find it preferable to splice in Tee's to make these connections. It will also be necessary to install a ball (or gate) valve in the return line at location "PD1" in the schematic drawing. This valve when partially closed, will force water to flow through the venturi creating the suction needed to evacuate the Feeder.

Step #7: Drill a 1 3/4" hole (Figure 1V) at location "VS1" found on the schematic drawing. Tap the 1 3/4" hole with a 1 1/2" NPT tap (Figure 2V). Options for this step include the use of saddle clamps instead of drilling and tapping or splice in a tee with 1 1/2" pipe size (Figure 3V) leading to Venturi System loop.



Figure 1V



Figure 2V



Figure 3V

Step #8: Install a Ball or Gate valve at location "PD1" in Schematic #2 or #3 (Figure 4V).



Figure 4V

Step #9: Drill a 1 3/4" hole (Figure 1V) at location "VS2" found on the schematic drawing. Tap the 1 3/4" hole with a 1 1/2" NPT tap (Figure 2V). Options for this step include the use of saddle clamps instead of drilling and tapping or splice in a tee with 1 1/2" pipe size (Figure 3V) leading to Venturi System loop.

Note: Below grade systems will require the addition of ball valves at locations "BV1 & BV2" in Schematic #3. This will allow the Venturi System to be isolated for servicing.

Step #10: Take one Union for the Venturi system apart. Note that they have different halves. Glue these two halves of the union onto the Venturi (Figure 5V).



Figure 5V

Step #11: Take the other union apart and install on the union halves on the Venturi (Figure 6V).

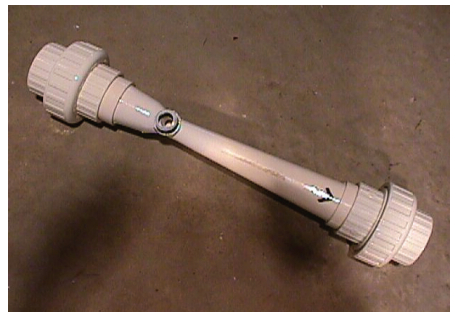


Figure 6V

Venturi System Installation of the Feeder (cont'd)

Step #12: Apply Teflon tape to tubing connector (W8MC8) and install on the 1/2" ball valve.

Step #13: Install 1/2" ball valve on 1/2" MNPT vacuum port of venturi (Figure 7V).

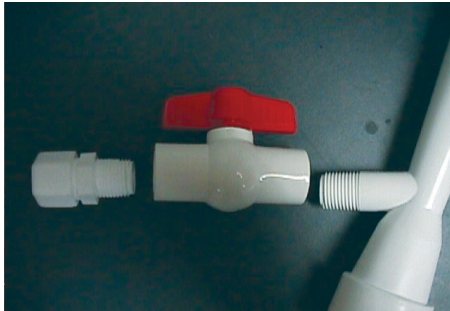


Figure 7V

Step #14: Close the valve (Figure 8V).

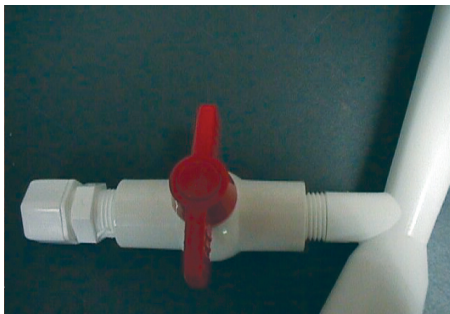


Figure 8V

Step #15: Note the Arrow on the venturi indicating the direction of flow (Figure 9V).



Figure 9V

Note: When performing step #16, make sure the venturi is installed with correct direction of flow.

Step #16: Complete installation of venturi bypass loop using 1 1/2" PVC pipe and fittings. There are four methods profiled in the following figures.

Drill & Tap

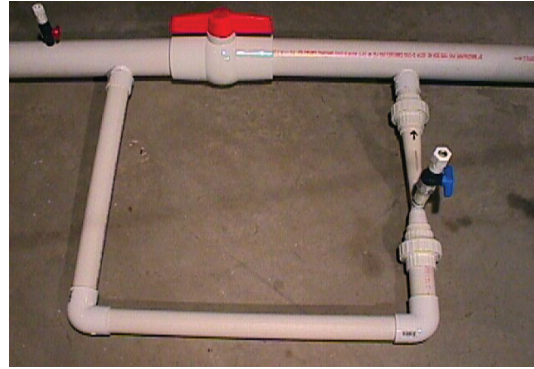


Figure 19A:
Above Grade
ORP

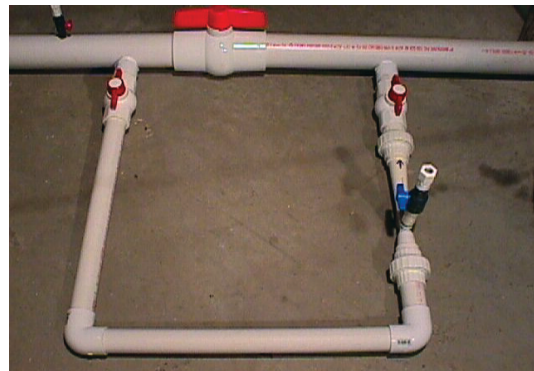


Figure 19C:
Below Grade

Tees

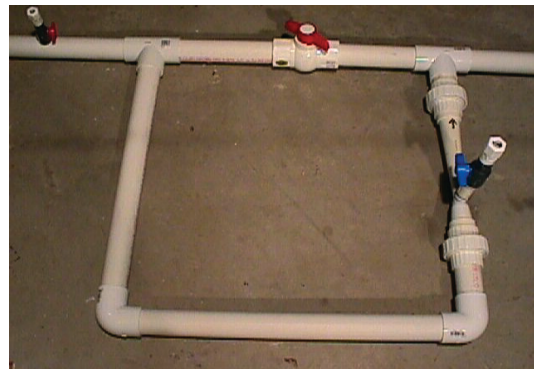


Figure 19B:
Above Grade
ORP

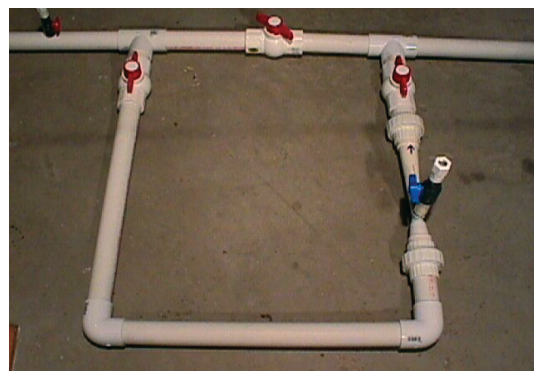


Figure 19D:
Below Grade

Allow at least 30 minutes for glue to set before restarting the pool pump.

Adjusting and Testing the Outlet Flow Rate

Step #1: Remove ball valve from venturi and install vacuum gauge with 1/2" MNPT x 1/4" FNPT fitting into 1/2" coupling provided with the feeder and install on the Venturi.

Step #2: Start pool system and open all valves on the venturi loop.

Step #3: Slowly close "PD1" until the vacuum gauge reads 19" Hg.

Step #4: Put "Do not Adjust" tag on "PD1".

Step #5: Remove vacuum gauge and re-install outlet ball valve with fitting.

Step #6: Close the outlet ball valve.

Step #7: Connect 1/2" tubing to fitting on outlet ball valve.

Checking the Outlet Flow

Step #1: Fill a 1 Gallon Bottle with water.

Step #2: Place near Discharge valve.

Step #3: Disconnect the tubing from the discharge valve and place end of tubing at bottom of gallon bottle.

Step #4: Open outlet ball valve and record time it takes to empty the bottle.

Step #5: It should take 45 seconds or less to empty the bottle.

Step #6: This corresponds to an outlet flow rate of 1.5 gpm or greater.

Step #7: Close outlet ball valve and connect tubing to the discharge valve

Assembling the Arch Feeder and Connecting to the Pool Recirculation System

Step #1: Place the Arch Feeder in the pump room following the recommendations in the "Selecting a location for the Arch Feeder System" section.

Step #2: Install tubing connector W8MC4 into ESV valve and hand tighten.

Step #3: Install tubing connector W8FC8 onto Discharge valve.

Step #4: Loosen the nut on the tubing connector on the ESV of the Arch Feeder and push the 1/2" OD polyethylene tubing into the connector and hand tighten.

Step #5: Run the tubing to the inlet ball valve installed in step 3 and cut to desired length. Loosen the nut on the tubing connector on the inlet ball valve and push the 1/2" OD polyethylene tubing into the connector and hand tighten.

Step #6: Loosen the nut on the tubing connector on the discharge valve of the Arch Feeder and push the 1/2" OD polyethylene tubing into the connector and hand tighten.

Step #7: Run the tubing to the outlet ball valve on pump suction/venturi and cut to desired length. Loosen the nut on the tubing connector on the outlet ball valve and push the 1/2" OD polyethylene tubing into the connector and hand tighten.

Refer to the Operator's Manual for Start-up of the Arch Feeder

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Arch Feeder Commercial Pool Chlorinator

Arch Chemicals, Inc. ("Arch") warrants equipment of its manufacture and bearing its identification to be free of defects in workmanship and material. Arch's liability under this warranty extends for a period of two (2) years (excluding electrical components which carry a 1 year warranty) from the date of installation as performed by an Authorized Commercial Dealer Representative and registered with Arch Water Chemicals via the Arch Commercial Chlorinator Warranty Registration Card. Systems for which there is no Warranty Registration Card on file carry no warranty of any kind, expressed or implied.

In addition, each system is covered by a sixty (60) day, 100% buy-back guarantee. If the original purchaser ("owner") is dissatisfied with the Commercial Pool Chlorinator performance for any reason, they can return it to the Authorized Commercial Pool Dealer for a full refund. The equipment must have received normal use and care, and Arch must be notified in writing before the sixty (60) days have expired. There is no reimbursement for chemicals used during the sixty (60) days.

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Parts

Arch warrants equipment parts of its manufacture and bearing its identification to be free of defects in workmanship and material. Arch's liability under this warranty extends for a period of ninety (90) days from the date of installation as performed by an Authorized Commercial Dealer Representative.



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(800) 654-6911

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

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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) can be obtained by contacting (800)-511-MSDS.

