



Operator's Manual

Model #PS 5000



Arch Chemicals, Inc.
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Charleston, TN 37310-0800
1-800-4-PULSAR



9.3.14



Product Stewardship

"Making the World a Better Place"

Lonza is committed to maintaining and improving our leadership in the stewardship of our products. One of our initiatives 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.

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 the stewardship of our products, contact your Lonza Representative.

The Major Components - How They Work

All Figures in Chart (below right) represent Chlorinator Output in Pounds of Available Chlorine Per Day.

General Principles of Operation

The three main components of the Pulsar® 3 Chlorinator are (from top to bottom) the briquette tank, the manifold spray section and the discharge tank. The water from the pool enters the Pulsar® 3 Chlorinator via the emergency shutoff valve. The water then splits to feed the spray manifold and the solids removal system. The spray manifold then distributes the water onto the briquette bed creating a chlorinated solution. The chlorinated solution falls into the discharge tank and is discharged into the pool recirculation system. The amount of chlorine discharged is determined by the ORP controller or the Timer/Solenoid Assembly. Inlet water pressure of 17 to 45 psi is required to provide sufficient flow into the Pulsar® 3. These pressures will result in an inlet flow of 1.6 gallons/minute. The Pulsar® 3 feed rate settings referred to in the Pulsar System Owners manual are calibrated for this flow rate. Flow out of the Pulsar® 3 Chlorinator requires vacuum to properly evacuate the discharge tank. A minimum outlet flow-rate of 1.7 gallons/minute ensures that the flow out of the Pulsar® 3 exceeds the flow in. Once the Pulsar® 3 has been installed the outlet flow can be measured by watching the level in the bottom tank. If the level is rising as the feeder is running, there is insufficient flow out.

Pounds of Available Chlorine Per Day							
Upper Timer Knob Setting	A	B	C	D	E	F	G
"Normal" Bottom Knob Setting	55	14	3.2	1.7	1.3	1.1	1.0
"Low" Bottom Knob Setting	90	24	6.5	3.6	2.5	2.0	1.8
"High" Bottom Knob Setting	120	30	7.4	4.1	3.0	2.4	2.2



SPECIFICATIONS – Model PS 5000

Operational Requirements:

Inlet pressure (Range)	17-45 psi
Ideal	30 psi
Outlet Vacuum	5-29" hg
Operating Temperature	40-130°F

Operational Characteristics:

Inlet flow	1.6 gpm
Outlet flow (Min.)	1.7 gpm

Note: To maintain NSF approval a flow indicator must be installed.

Dimensions:

Tubing	1/2" O.D. Polyethylene
Chlorinator diameter	19"
Chlorinator height	33"
Chlorinator weight (full)	125 lbs
Chlorinator weight (empty)	27 lbs

Capacity

62 lbs Pulsar Plus Dry Chlorinator
Briquettes (equivalent 40 lbs. available chlorine per day)

Feed Rate:

Pulsar Plus Briquettes 1.0 - 120 lbs of Available Chlorine per day

Recommend Pool Size¹

10,000–4000,000 gallon unstabilized
10,000–1,500,000 gallon stabilized

¹Subject to local health codes.

Pre Start-Up Checklist

Following the procedure outlined below will ensure a smooth start-up of the Pulsar 3 Chlorinator. For seasonal operation, perform this procedure each spring.

IMPORTANT!!

Do NOT put Pulsar Plus Briquettes in the chlorinator during the start-up operation

Inlet Water Flow

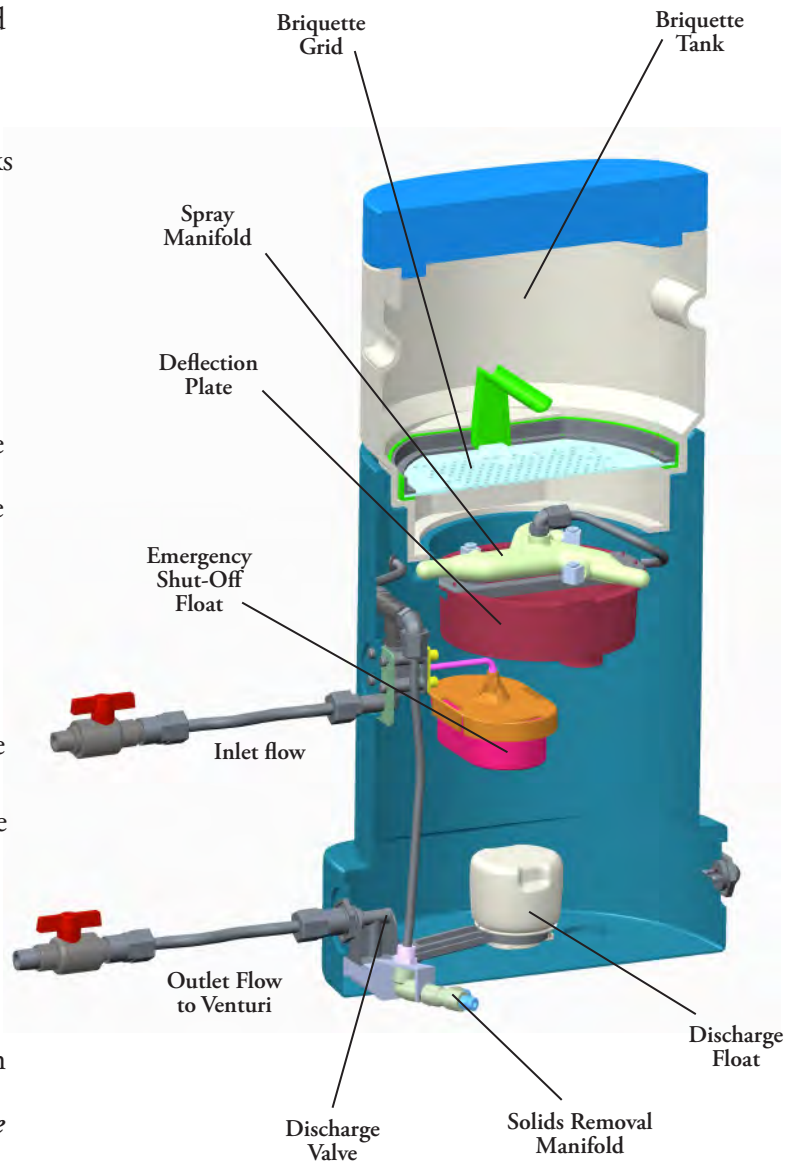
The inlet water flow system is designed to provide a steady side-stream of clean filtered pool water to the chlorinator.

1. Switch on the pool recirculation system and open all valves to the chlorinator.
2. Check the flow indicator (if present) of the Pulsar system to see that water is flowing into the chlorinator
3. Check to see that the three nozzles are spraying water onto the Briquette-Tank grid and water is flowing from Solids Removal Manifold.
4. Check all lines leading to the Chlorinator for leaks. hand tighten all fittings if any leaks are found.

Outlet Water Flow

The float on the Discharge Valve rises with the water level and allows the pump suction to draw the chlorinated water into the pool's recirculation system as the Discharge Tank fills with water. When the water level drops, the float falls, shutting off the valve. The Discharge Valve also contains a check valve to prevent pool water from backing up into the Discharge Tank. Use the following procedure to ensure that the outlet water flow system is operating properly.

1. With the briquette hopper and deflection plate of the chlorinator temporarily out of the way, fill the Discharge Tank with sufficient water to open the Discharge Valve - use a hose or pail.
2. The float should rise, opening the Discharge Valve, allowing water to be drawn out by the Pulsar evacuation system (or venturi on 2" or less piping).
3. Check the system for leaks. If small air bubbles are visibly moving, there may be an air leak. Tighten the connections and make sure the tubing is properly installed in the fittings. (**NOTE: Air bubbles near the Pulsar 3 Chlorinator body that do not move are normal and do not indicate leaks.**)
4. Check to see that water is flowing through both nozzles of the solids removal system.
5. Check for air leaks after the Discharge Valve closes.



Start-Up Procedures

After completing the PRE-START-UP CHECKLIST, and establishing that all components of the chlorinator are operating properly, your PULSAR® 3 Chlorinator is ready for start-up. Routine maintenance of the PULSAR® 3 Chlorinator is minimized when proper pool water balance is maintained. Maintain pool water chemistry as follows:

Total Alkalinity	60-80ppm
Calcium Hardness	200-1800ppm
pH	7.2-7.6

Adherence to these recommendations at all times will ensure the most effective and economical performance from the PULSAR® 3 Chlorinator.

NOTE: *The use of CO₂ to lower pH will raise Total Alkalinity. High total alkalinity (over 80 ppm) will increase scale and solids buildup in chlorinator.*

WARNING: Use ONLY Pulsar® Plus Briquettes in the Chlorinator. The use of any other treatment chemicals will void the warranty. **DANGER:** Under no circumstances mix calcium hypochlorite with other forms of concentrated chlorine or other chemicals. Fire and/or explosion may result. *Caution must be used when refilling dispenser.*

KEEP OUT OF REACH OF CHILDREN

1. Fill the Briquette Tank with Pulsar® Plus Briquettes. The Briquette Tank holds 62 pounds of briquettes.
2. Check the chart below to determine an approximate start-up timer setting for your pool (or be certain that the ORP Controller is calibrated and the set-points are correct). Set the Upper and Lower Timer Knobs at the recommended setting.

NOTE: *For best chlorinator performance, use the “normal” bottom timer setting. This will assist in maintaining desired Free Available Chlorine level in pool and help maintain chlorinator maintenance.*

3. Open all valves to the pool and to the chlorinator.
4. Monitor the water flow to the chlorinator daily to ensure that a proper flow is being maintained.
5. During the first few days of operation, check chlorine level in the pool frequently to establish the best Timer setting (or ORP Controller setting) for your pool. Adjust the chlorine output either up or down according to the table or, adjust the ORP setpoint.

Recommended Start-Up Settings

Pool Size in thousands of gallons (000)					
High Bottom Timer Setting		Low Bottom Timer Setting		Normal Bottom Timer Setting	
Unstabilized	Stabilized*	Unstabilized	Stabilized*	Unstabilized	Stabilized*
492	1,800	370	1,353	220	836
86	440	67	350	37	197
30	116	24	98	12	50
18	60	12	43	—	25
12	43	—	37	—	20
—	37	—	30	—	17
—	30	—	25	—	12

*Do not exceed 25 ppm stabilizer

Pulsar® 3 Chlorinator Inspection & Maintenance

Calcium Hypochlorite by the nature of its manufacture, contains a small amount of calcium carbonate. Proper water balance will minimize the buildup of calcium carbonate solids in the Pulsar® 3 Chlorinator, however, periodic cleaning of chlorinator components is normal and recommended. The following is a list of the parts to be cleaned and the proper procedures to do so.

Table of Contents

Suggested Inspection Frequency	Section	Contents
As Needed	Section A	Use of Pulsar Plus Acid Cleaner 50 to remove solids and scale from the Pulsar 3 Chlorinator
As Needed	Section B	Troubleshooting Guide

SECTION A

Cleaning PULSAR® 3 Chlorinator with PULSAR® Plus Acid Cleaner 50

Inspection: The solids build-up and cleaning frequency required for the unit will depend on the amount of Briquettes used and the pool water chemistry. Described below is the easiest way to remove solids and minor scale buildup using the PULSAR® Plus Acid Cleaner 50.

WARNING

Do NOT use Muriatic Acid to perform the following procedures. Chlorine gas may evolve causing serious injury or possible death.

Maintenance Procedure Steps:

1. Close the inlet and outlet shutoff valves to the chlorinator.
2. Lift the Briquette Tank off of the Spray Manifold Section and Discharge Tank and pour the contents into a clean dry bucket. Be sure to remove all pieces of briquettes or tablets. If necessary, rinse any heavy solids buildup from the tank before proceeding.
3. Remove briquette grid and place in black tub (provided with system). Fill with 1 gallon of water. Slowly pour ½ quart PULSAR® Plus Acid Cleaner 50 into tub and ½ quart PULSAR® Plus Acid Cleaner 50 into discharge tank. Frequent agitation may be required to dissolve solids and scale. Allow acid to dissolve solids and scale, evident by the foaming action. After 5 to 10 minutes, check for presence of scale on grid. If necessary, add additional PULSAR® Plus Acid Cleaner 50 to dissolve any remaining scale or scrape with putty knife.
4. Pour the solution from tub into the discharge tank. Dispose of scale with backwash from filter.
5. Place the Briquette grid back into bottom of hopper. Rinse the Briquette grid thoroughly with water and open the inlet-shutoff valve to allow the spray to rinse the grid from the bottom. The solution from the Discharge tank will clean the discharge valve, tubing and venturi when system is restarted.
6. Pour Pulsar® Plus Briquettes from bucket back into Briquette Tank. Resume operation.
7. Open inlet and outlet shut off valves to the chlorinator.

NOTE: *To increase the period between Grid cleanings, allow Briquette Tank to completely empty once a week.*



SECTION B
Troubleshooter's Guide

Problem	Cause	Solution
Insufficient water flow to chlorinator	Check water flow through spray nozzles	Clean spray nozzles with compressed air. Do not use mechanical cleaning method.
	Inlet Shutoff Valve closed	Open Inlet Shutoff Valve
	Emergency Shut Off Valve in closed position	If ESV Valve is stuck, lower gently to reset Solenoid Valve not operating Check with Dealer
Insufficient chlorine in pool	Feed rate/output too low Chlorinator empty	Increase feed rate/output on timer or ORP Refill Briquette Tank with Pulsar® Plus Briquettes
	No inlet water flow	See insufficient water flow section
	Outlet/Shutoff Valve closed	Open Outlet Shutoff Valve
	Clogged Discharge Tubing	Refer to Section A or Replace discharge tubing
	Briquettes stuck together	Tap side of Briquette Tank to loosen
	Clogged Briquette Tank Grid	Refer to Section A
	Clogged Venturi System	Remove venturi – soak in tub with 50/50 mixture of water and Pulsar Plus Acid Cleaner solution.
Excess chlorine in pool	Closed valves in venturi system	Open venturi system valves
	Automatic Controller Problem Feed rate/output too high	Refer to automatic controller manual Decrease feed rate/output on timer
Air leaks	Discharge Tubing not properly installed in fittings	Reinstall Discharge Tubing
	Discharge Valve seat failure	Replace Discharge Valve Arm
	Scale prevents Discharge Valve from properly seating	Remove Discharge Valve Assembly and soak in dilute acid to remove scale
	Pinched O-rings in Tubing Connectors	Inspect O-rings on discharge side of feeder
Chlorinator overflow	Discharge Tubing clogged	Refer to Section A or Replace Discharge tubing
	Clogged venturi system	See clogged venturi system solution
	Insufficient outlet suction Emergency shutoff valve failure	Check with Dealer Check with Dealer

WARRANTY POLICY

Pulsar® 3 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.

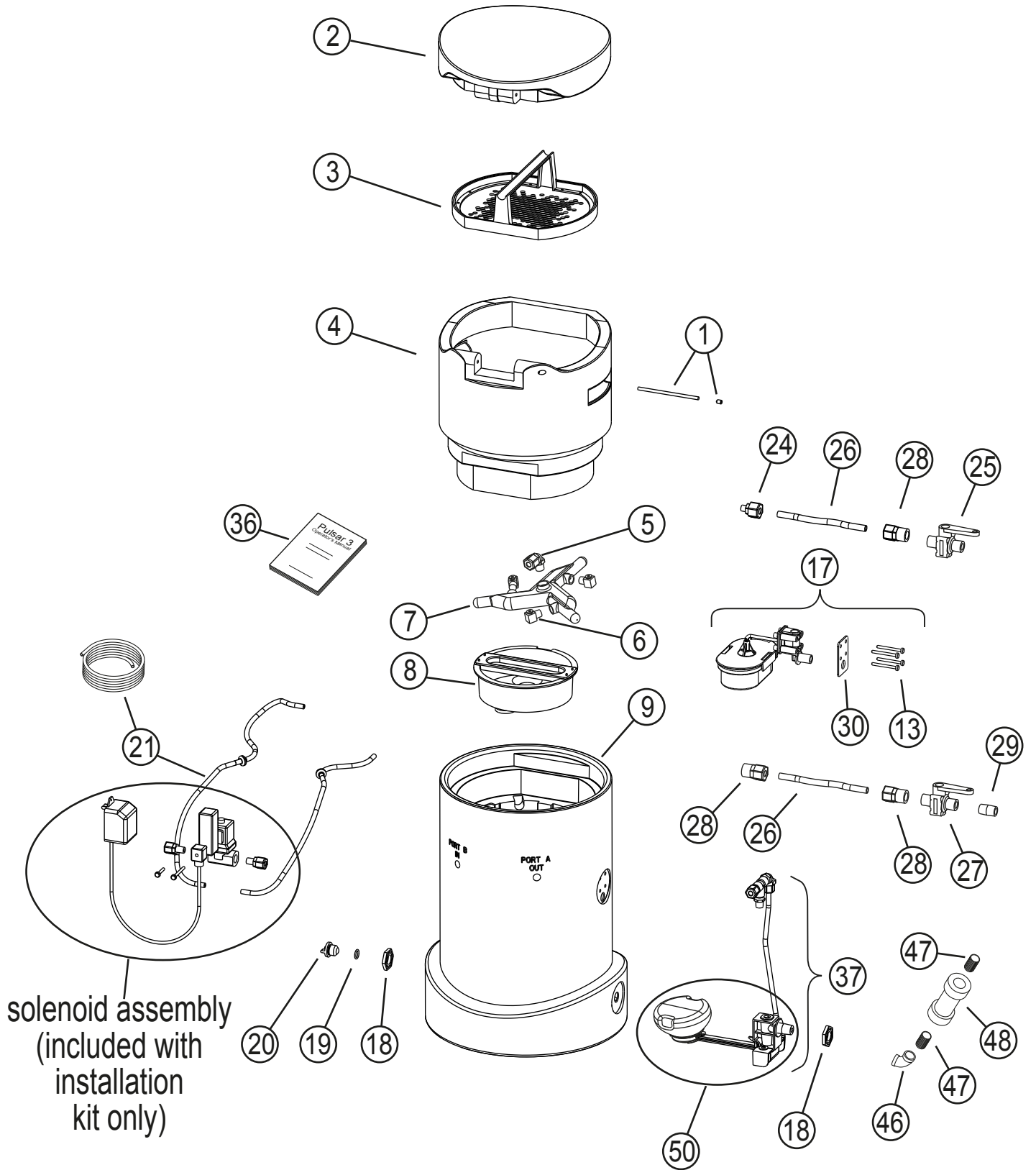
In addition, each system is covered by a sixty (60) day, 100% buy-back guarantee. If the original purchaser ("owner") is dissatisfied with the Pulsar® 3 Commercial Pool Chlorinator performance for any reason, they can return it to the Authorized Commercial Pool Dealer for a full refund. The equipment 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. Arch disclaims all liability for damage during transportation, for consequential damage of whatever nature, for damage due to handling, installation or improper operation, and for determined suitability for the use intended by purchaser ("owner"). Arch makes no warranties, either expressed or implied, other than those stated above. No Arch Representative or Authorized Commercial Dealer Representative has authority to change or modify this warranty in any respect.

Pulsar® 3 Parts

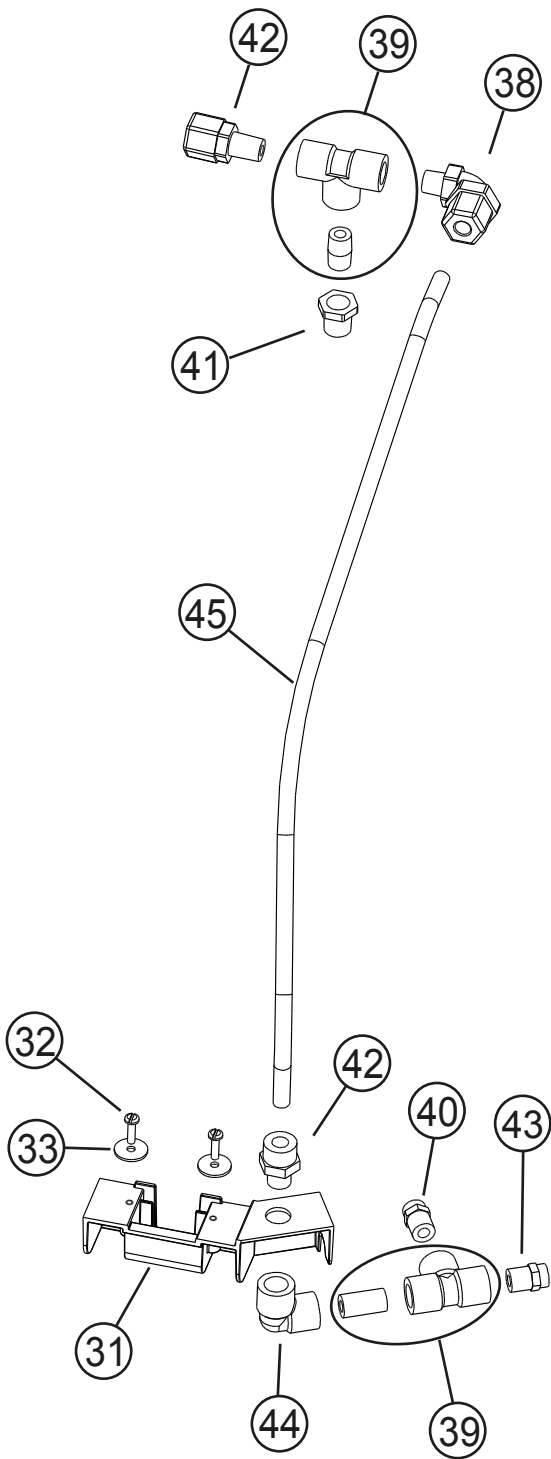
Arch warrants equipment parts of its manufacture and bearing its identification to be free of defects in workmanship and material. Arch's liability under this warranty extends for a period of ninety (90) days from the date of installation as performed by an Authorized Commercial Dealer Representative. This warranty is restricted to Pulsar® 3 Chlorinator Parts purchased on a replacement basis.

Arch Water Chemicals, Inc.
1-800-4 PULSAR

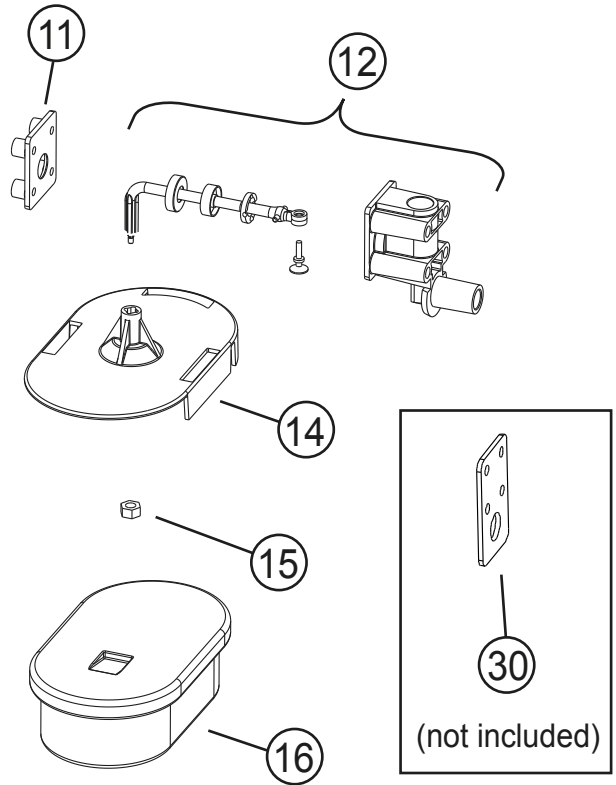
Pulsar® 3 Feeder Detailed View



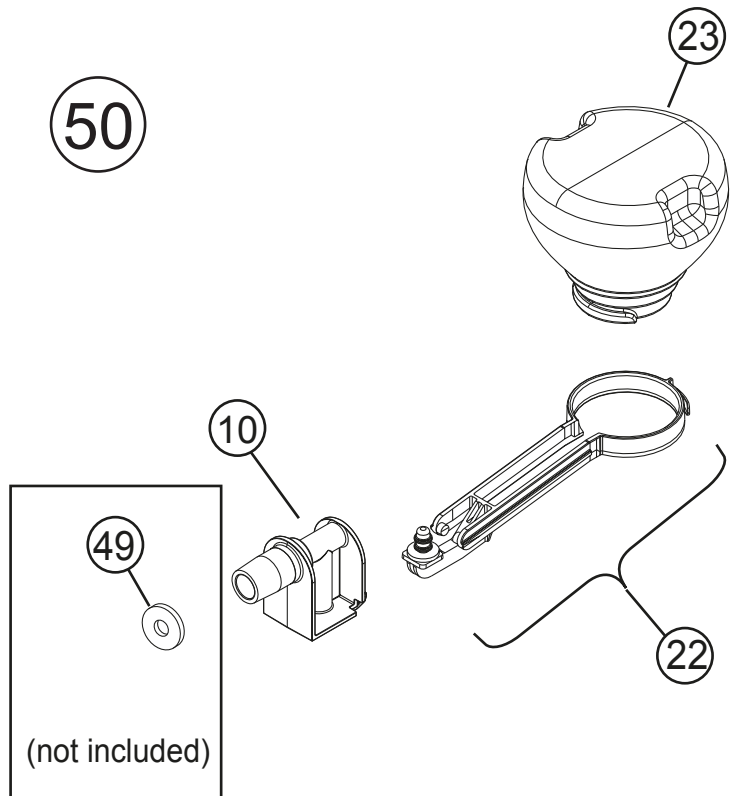
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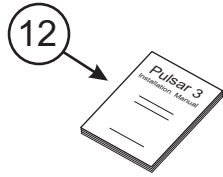
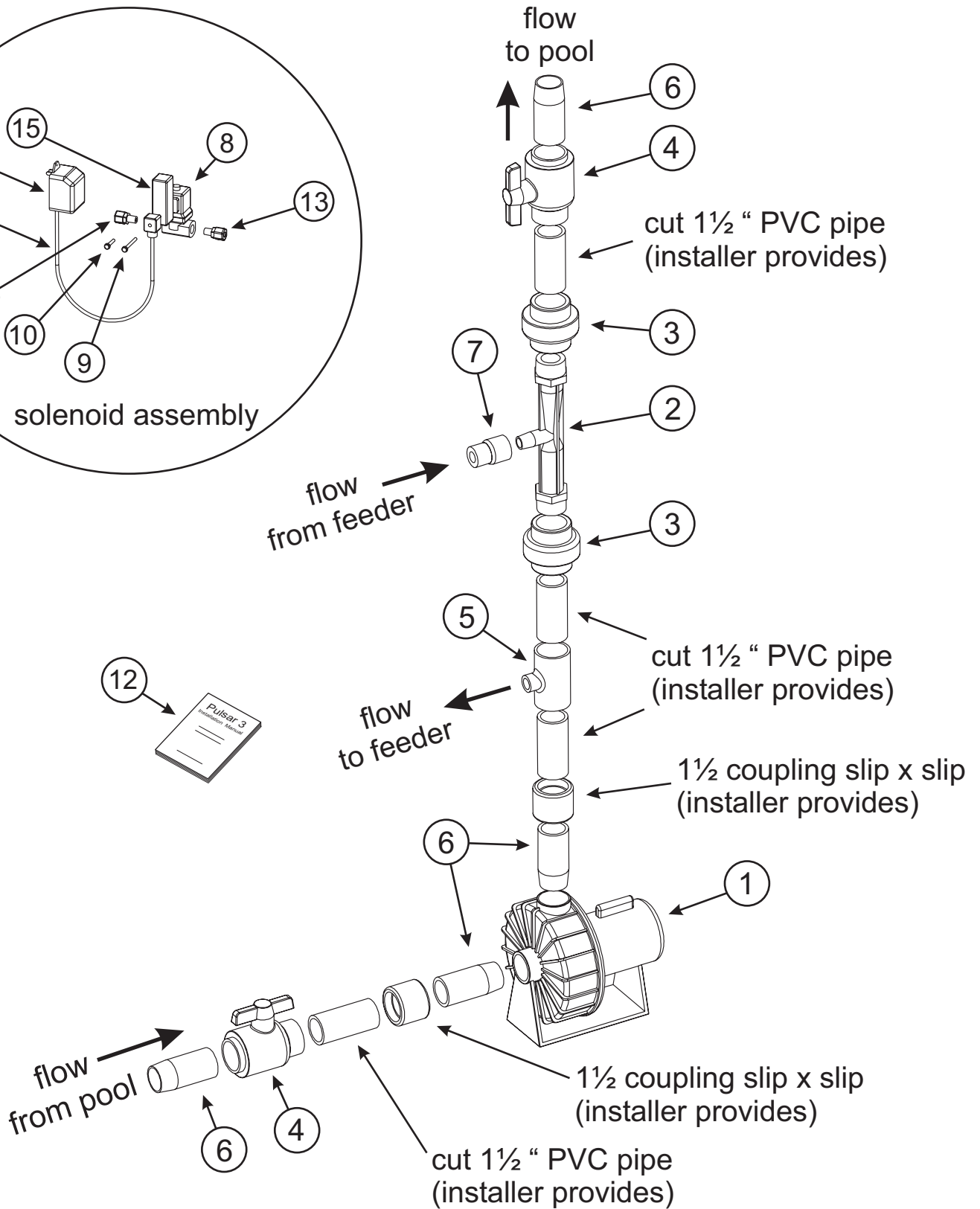
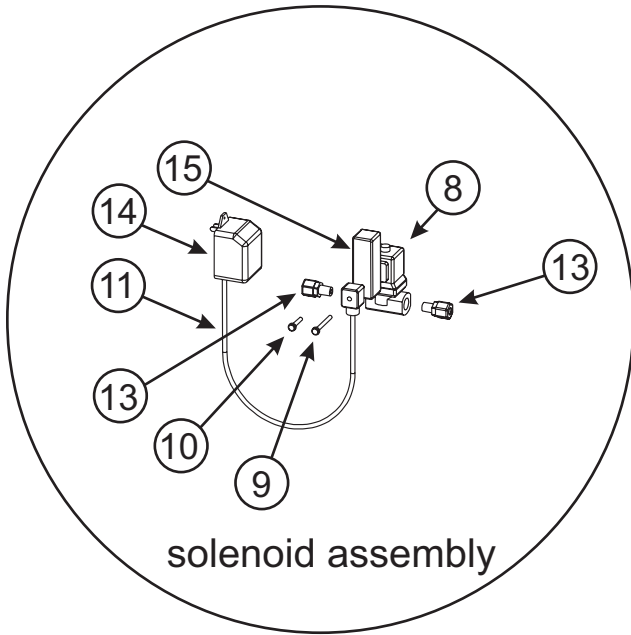
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Pulsar® 3 Installation Kit



Pulsar® 3

Diagram Number	Part Number	Qty	Description
0	71528	1	Pulsar 3 System, PS 5000-Includes Installation Kit
1	71608	1	Hinge Rod W/Set Screw for P3 Hopper
2	71607	1	Lid for P3
3	71609	1	Briquette Screen Assembly for P3
4	71606	1	Hopper without Lid for P3
5	71619	2	Elbow (P6ME6) 3/8" For Feeders 30991 & P3
6	71617	3	Spray Nozzle for P3
7	79047	1	Manifold for P3
8	71620	1	Deflection Plate Assembly
9	71610	1	Base without assembled parts for P3
10	79806	1	Discharge Valve Body
11	71536	1	Emergency Shut Off Mounting Plate
12	71535	1	Emergency Shut Off Valve with Arm Only
13	71537	4	Emergency Shut Off Mounting PVC Screws(1/4x20x2 1/4)
14	71539	1	Emergency Shut Off Float Plate
15	71538	1	Emergency Shut Off Float Plate PVC Nut
16	71540	1	Emergency Shut Off Overflow Float
17	71496	0	Emergency Shut Off Valve Assembly - Part 71910 Not Included
18	71583	2	Discharge Valve Locknut
19	71613	1	(4026) O-Ring #115 - Used in Plug
20	71612	1	Plug for Feeder Body for P3
21	71558	1	3/8" O.D. Polyethylene Tubing - 20'
22	79805	1	Discharge Valve Arm
23	79808/79810	1	Discharge Valve Float
24	71614	1	Tube Connector (P8MC4) for P3
25	71621	1	1/2" Ball Valve MM (Inlet)
26	71626	1	20' 1/2" O.D. PE Tubing(P4 only need 3 inch piece)
27	71627	1	1/2" Ball Valve MF (Outlet)
28	71588	3	(5008) 1/2" X 1/2" Female Connector (P8FC8)
29	71611	1	1/2" X close PVC Nipple
30	71910	1	Rubber Gasket for Emergency Shut Off Valve
31	72863	1	Discharge Valve Enhancement Adaptor
32	75860	2	10-32X5/8" PVC Screws (Packaged 4)
33	72865	2	Custom Washer for Discharge Valve Adapter
	71373	1	Cleaning pan for Briquette Grid (Pulsar 3) - <i>not shown in diagram</i>

Pulsar® 3

Diagram Number	Part Number	Qty	Description
	71598	1	(8001) Scoops (Pulsar Accessory) - <i>not shown in diagram</i>
36	71622	1	Operators Manual for P3 System
37	72864	0	P3 Enhancement Kit
38	71900	1	Parker fitting W6ME4
39	71968	2	1/4" Threaded PVC Tee with Nipple
40	72862	1	Spray Nozzle (Lechler 632.364.5E.BC)
41	71572	1	(3045) Reducing Bushing (3/8"x1/4") For Feeder 30025 (PPI)&P3 Enhancement K
42	71582	2	(4014) Parker Fitting P6MC4
43	72861	1	Spray Nozzle (Lechler 632.564.5E.BC)
44	71563	1	(3002) PVC Elbow For Feeders 30025, 30991and P3 Enhancement Kit
45	71574	1	(3103) 3/8" P.E. Tubing E-64-0500 (13.5")
46	79222	1	45° PVC Threaded Elbow
47	71916	2	1/2" NPT PVC Closed Nipple
48	79218	1	Check Valve (True Union)
49	71576	1	Discharge Valve Body Gasket
50	79804	0	Discharge Valve Assembly

Pulsar® 3 Installation Kit

Diagram Number	Part Number	Qty	Description
0	71531	1	Installation Kit for Pulsar 3 System
1	79214	1	1 Horsepower Pump for Pulsar System Installation
2	71811	1	Venturi for Pulsar Systems
3	71907	2	Unions(Quick disconnects) Venturi (Slip X Thread)
4	71913	2	1 1/2" Slip PVC sch40 ball valves
5	71547	1	1 1/2" X 1/2" Schedule 80 PVC T SXF
6	71548	2	1 1/2" X 12" PVC Nipple
7	71917	1	3/4" FNPT X 1/2" FNPT PVC Reducer
8	71894	1	Solenoid (24 VAC) Pulsar Line
9	71525	1	Screw (Long) M3X55, Timer/Solenoid Assembly
10	71526	1	Screw (Short) M3X32 Solenoid Assembly Only
11	72329	1	15 ft Pre-Molded Cable (24V AC Transformer to Solenoid)
12	71658	1	Installation Manual for Pulsar 3 System
13	71590	2	(5023) 1/2" X 3/8" Male Connector (W6MC8)-Parker
14	71923	1	24V AC Transformer/Plug US
15	71689	1	Timer - 24V AC

Lonza

Lonza Emergency Action Network (LEAN)

The Lonza Emergency Action Network ("LEAN") is Lonza's emergency action system. Call the LEAN 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 LEAN 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 Lonza's environmental, technical transportation, toxicological and other expertise about its products readily available to anyone needing assistance. The LEAN 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) can be obtained by contacting (800)-511-MSDS.

