

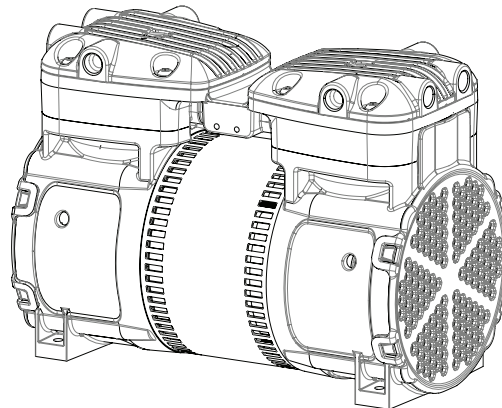
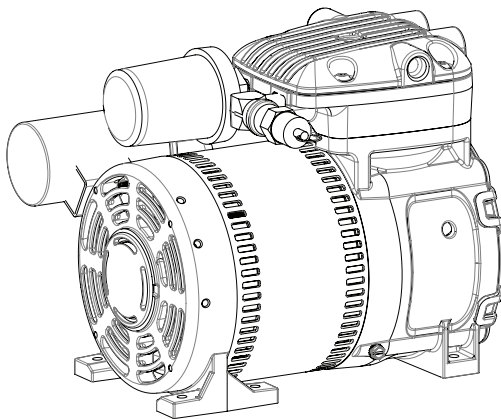


AQUATIC ECO-SYSTEMS®

SWEETWATER®

ROCKING PISTON AIR COMPRESSORS

PART NO. AQ101C, AQ201C, AQ202C, AQ401C and AQ402C



OPERATION GUIDE

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

Part No. _____ Serial Number _____ Date Purchased _____

CUSTOMER SERVICE / TECHNICAL SUPPORT

If you have questions about ordering Pentair Aquatic Eco-Systems replacement parts and products, please use the following contact information:

Customer Service

Monday to Thursday: 8 AM to 7 PM EST
Friday: 8 AM to 5 PM EST

US

Phone: (877) 347-4788
FAX: (407) 886-6787

International

Phone: (407) 886-3939
FAX: (407) 886-4884

Website:

Visit www.pentairaes.com

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IMPORTANT PUMP WARNING AND SAFETY INSTRUCTIONS



IMPORTANT NOTICE

This guide provides installation and operation instructions for this product. Consult Pentair with any questions regarding this equipment.

Attention Installer: This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment after installation or left on or near the pump. This pump is for use for aquaculture installations ONLY. Do not use with any type of swimming pool, hot tub, or spa.

Attention User: This manual contains important information that will help you in operating and maintaining this product. Please retain it for future reference. This pump is for use for aquaculture installations ONLY. Do not use with any type of swimming pool, hot tub, or spa. Warnings and safety instructions for Pentair Aquatic Eco-Systems pumps and other related products are available at:

<http://www.pentairaes.com> or call U.S. (877) 347-4788 • International (407) 886-3939 for additional free copies of these instructions.

READ AND FOLLOW ALL INSTRUCTIONS SAVE THESE INSTRUCTIONS



This is the safety alert symbol. When you see this symbol on your system or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER

Warns about hazards that can cause death, serious personal injury, or major property damage if ignored.

⚠ WARNING

Warns about hazards that may cause death, serious personal injury, or major property damage if ignored.

⚠ CAUTION

Warns about hazards that may or can cause minor personal injury or property damage if ignored.

NOTE

Indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

⚠ WARNING

You will be killed or seriously injured if you don't follow these instructions.

⚠ WARNING

Do not pump flammable or explosive gases, or use in an environment that contains such gases.

⚠ CAUTION

Protect all surrounding items from exhaust air. This exhaust air can become very hot.

⚠ CAUTION

Do NOT flush with kerosene or other combustible solvents.

General Warnings

- Code requirements for the electrical connection differ from country to country, state to state, as well as local municipalities. Install equipment in accordance with the current National Electrical Code and all applicable local codes and ordinances.
- Before servicing the compressor; switch OFF power to the compressor by disconnecting the main circuit to the compressor.
- This appliance is not intended for use by persons (including children) of reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

⚠ WARNING

RISK OF ELECTRICAL SHOCK



This product must be properly grounded. Do not modify the plug provided in any way. If it will not fit the outlet, have the proper outlet installed by a qualified electrician. If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The green, or green with yellow stripe, wire is the grounding wire.

Do NOT permanently connect this product to wiring that is in bad condition or is inadequate for the requirements of this product.

Guidelines for Product Use

- Pump only clean, dry air.
- Operate at 32-104°F (0-40°C).
- Protect unit from dirt, foreign material and moisture.
- Never lubricate oilless air compressors.

OPERATION GUIDELINES



WARNING

Failure to follow these instructions can result in death, fire or electrical shock. Ensure proper installation conditions are met and that installation clearances do not block airflow.



WARNING

Your equipment may be damaged if you don't install your pump according to the following instructions.

Installation

- Disconnect electrical power at the circuit breaker or fuse box before installing or servicing the compressor.
- Install the Sweetwater® Rocking Piston Air Compressor away from areas where it will come into contact with water or other liquids.
- Install the compressor where it will be protected from weather conditions.
- Electrically ground the compressor.
- Blocking airflow over the compressor in any way can cause the product to overheat.

Mounting

The compressor can be installed in any orientation. Mounting the product to a stable, rigid operating surface and using shock mounts will reduce noise and vibration.

Plumbing

Remove plugs from the IN and OUT ports. Connect with pipe and fittings that are the same size or larger than the compressor's threaded ports. Ensure intake and exhaust plumbing are connected to the correct inlet and outlet ports. Ports will not support plumbing.

Accessories

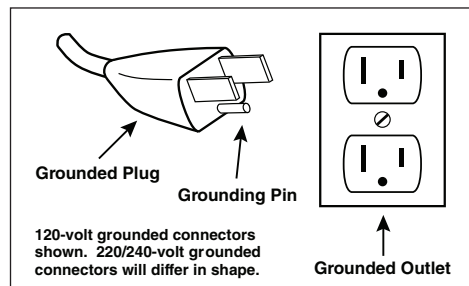
The product's external intake and exhaust muffler will provide adequate filtration in most applications. Check filters periodically and replace when necessary. Consult Pentair Aquatic Eco-Systems for additional filter recommendations. Install relief valves and gauges at inlet or outlet, or both, to monitor performance. Check valves may be required to prevent back streaming through the pump.

Motor Control

You have the responsibility to contact a qualified electrician and assure that electrical installation is adequate and in conformance with all national and local codes and ordinances. The metal capacitor must be ground. Determine the correct overload setting required to protect the motor (see motor starter manufacturer's recommendations). Select fuses, motor protective switches or thermal protective switches to provide protection. Fuses act as short circuit protection for the motor, not as protection against overload. Incoming line fuses must be able to withstand the motor's starting current. Motor starters with thermal magnetic overload or circuit breakers protect motor from overload or reduced voltage conditions. The wiring diagram supplied with the product provides required electrical information. Check that power source is correct to properly operate dual-voltage motors.

Models With Power Supply Cord

The compressor must be grounded. For either 120 or 220/240V circuits, connect power supply cord grounding plug to a matching grounded outlet (See Diagram Below). DO NOT use an adapter.



In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. The compressor may be equipped with a power supply cord with a grounding wire and appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Check with a qualified electrician if you do not completely understand the grounding instructions, or if you are not sure whether the compressor is properly grounded. Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Models That Are Permanently Wired

The compressor must be connected to a grounded, metallic, permanent wiring system or a grounding terminal or lead on the product. Power supply wiring must conform to all required safety codes and be installed by a qualified person. Check that supply voltage conforms with that listed on product nameplate.

Extension Cords

Use only a 3-wire extension cord that has a 3-blade grounding plug. Connect extension cord plug to a matching 3-slot receptacle. DO NOT use an adapter. Make sure your extension cord is in good condition. Check that the gauge wire of the extension cord is the correct size wire to carry the current this product will draw.

An undersized cord is a potential fire hazard and will cause a drop in line voltage, resulting in loss of power causing the compressor to overheat. The table to the right indicates the correct size cord for length required and the ampere rating listed on the product nameplate. **If in doubt, use the next heaviest gauge cord. The smaller the gauge number, the heavier the wire gauge.**



WARNING Failure to take safety precautions may cause serious injury. Install proper safety guards as needed. Keep fingers and objects away from openings and rotating parts. When provided, motor terminal covers must be in place for safe operation.



WARNING Wear hearing protection.



WARNING You are responsible for operating this product at recommended pressures, vacuum duties and ambient temperatures. DO NOT start against a vacuum or pressure load.

Minimum gauge for extension cords

Amps	Volts	Length of cord in feet								
		25	50	100	150	200	250	300	400	500
	120v									
	240v	50	100	200	300	400	500	600	800	1000
0-2		18	18	18	16	16	14	14	12	12
2-3		18	18	16	14	14	12	12	10	10
3-4		18	18	16	14	12	12	10	10	8
4-5		18	18	14	12	12	10	10	8	8
5-6		18	16	14	12	10	10	8	8	8
6-8		18	16	12	10	10	8	6	6	6
8-10		18	14	12	10	8	8	6	6	4
10-12		16	14	10	8	8	6	6	4	4
12-14		16	12	10	8	6	6	6	4	2
14-16		16	12	10	8	6	6	4	4	2
16-18		14	12	8	8	6	4	4	2	2
18-20		14	12	8	6	6	4	4	2	2

Start-Up

If motor fails to start or slows down significantly under load, shut off and disconnect from power supply. Check that the voltage is correct and that the motor is turning in the proper direction. Check the plug, cord and switch for damage. If so equipped, the thermal protection switch has tripped; the motor can restart after cooling.



CAUTION Product surfaces become very hot during operation; allow them to cool before handling.



WARNING The air stream from the this product may contain solid or liquid material that can cause eye or skin damage. Wear proper eye protection to prevent possible eye injuries.

GENERAL MAINTENANCE



WARNING When servicing this product, all power to the motor must be discharged and the plug disconnected. All rotating components must be at a standstill.

Make sure that pressure and vacuum are released before starting maintenance. Check intake and exhaust filters after the first 500 hours of operation. Clean filters, and determine how frequently filters should be checked during future operation.

Follow this procedure in particular to help the compressor's performance and prolong its service life:

1. Remove the end plate and filters. Inspect filters for rips, tears, cuts, brittleness and excessive foreign material.
2. Clean filters if good condition with compressed air. Reinspect for wear conditions. Set filters aside.
3. Check the filter/muffler for compacted debris. If debris is present, replace the filter/muffler.
4. Check the condition of the O-Ring. It should be soft and flexible. Replace if it is not.
5. Remove and inspect the muffler box (not all models have a muffler box). Clean the box and set it aside.
6. Check the gasket for cracks or tears. Install the new gasket if any cracks or tears exist.
7. Replace the muffler box.
8. Reinstall filters or install new filters if required. Reinstall the end plate.

Shutdown Procedures

You are responsible for following proper shutdown procedures to prevent product damage. NEVER ADD OIL TO THIS OILLESS PUMP. These pumps are constructed of ferrous metals or aluminum which are subject to rust and corrosion when pumping condensable vapors such as water.

Follow the steps below to ensure correct storage and shutdown between operating periods:

1. Disconnect plumbing.
2. Operate product for at least 5 minutes without plumbing.
3. Run at maximum vacuum for 10 to 15 minutes.
4. Repeat Step 2.
5. Disconnect power supply.
6. Plug open ports to prevent dirt or other contaminants from entering product.

LIMITED WARRANTY

Pentair Aquatic Eco-Systems, Inc. (PAES) warrants that its products shall, at the time of delivery and for a period of twelve (12) months thereafter, except for filters, be free from defects in materials and workmanship; and, if any such product shall prove to be defective in material or workmanship under normal intended usage and maintenance during the warranty period, upon examination by PAES or its authorized representative, then PAES shall repair or replace, at its sole option, such defective products at its own expense; provided, however, that the Purchaser shall be required to ship each such defective product, freight prepaid, to PAES' designated facility. The warranty on products and/or components not manufactured by PAES, is limited to the warranty, if any, provided by the original manufacturer of said product or component. PAES sole warranty in regard to any components or products that are not manufactured by it shall be limited to the repair or replacement of the product, as set forth herein, with the condition that the Purchaser first return such defective item, freight prepaid, to PAES' designated facility. After PAES has made an inspection of the product, and has confirmed that there is a defect in the manufacture of the product, a credit will be issued to Purchaser's account. PAES HAS MADE NO AFFIRMATION OF FACT AND HAS MADE NO PROMISE RELATING TO THE GOODS BEING SOLD THAT HAS CREATED OR AMOUNTED TO AN EXPRESS WARRANTY OR THAT THE GOODS CONFORM TO ANY AFFIRMATION OR PROMISE. PAES DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS. PAES SHALL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

This warranty does not extend to an equipment that has been subjected to:

1. Damage caused by careless handling, improper repackaging, or shipping.
2. Damage due to misapplication, misuse, abuse or failure to properly operate equipment.
3. Damage caused by improper installation or storage.
4. Damage due to unauthorized product modifications or repairs.
5. Damage caused by negligence, or failure to properly maintain products.
6. Accidental damage, fire, acts of God, or other circumstances outside the control of PAES.

REPLACEMENT PARTS

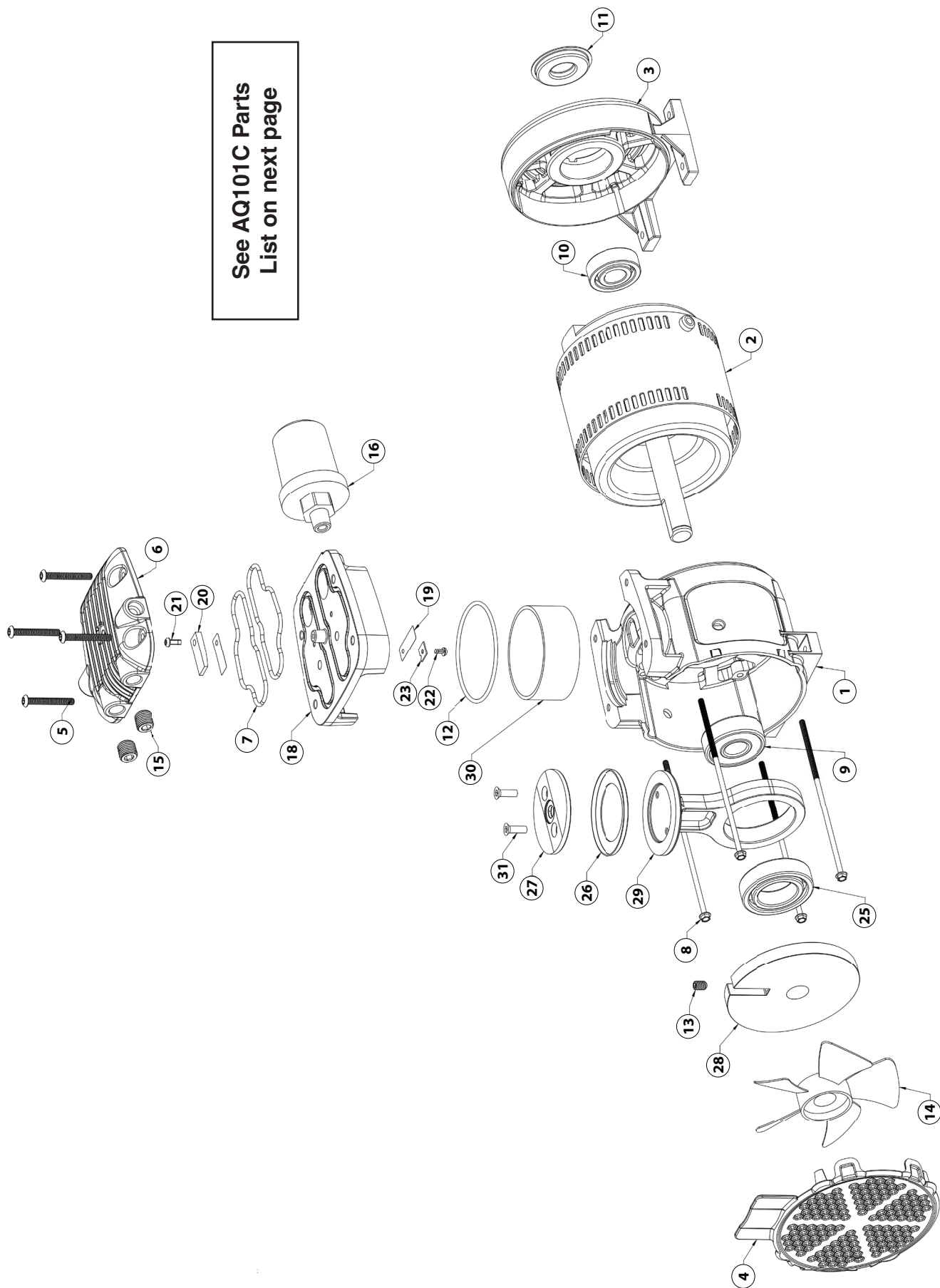
Service Kit Installation

Pentair AES will NOT guarantee field-rebuilt product performance. For performance guarantee, the product must be returned to Pentair AES. Service Kit contents vary. Most contain gasket and filter parts.

1. Disconnect electrical power to pump.
2. Disconnect air supply and vent all air lines to release pressure or vacuum.
3. Mark the orientation of the ports so cover will be reinstalled correctly.
4. Remove screws from the head of the pump. Remove the head of the pump.
5. Mark orientation of valve plate. Remove valve plate.
6. Remove and discard old cup(s), retainer screws, cylinder O-ring, head O-ring, valves and valve retainers.
7. Install new cup on rod facing up.
8. Reinstall retainer plates.
9. Apply a thread locking compound to retainer screws. Torque screws to 34-38 in-lbs.
10. Carefully install cylinder over cup at an angle to avoid damaging cup.
11. Clean valve plates with water-based solvent. Take care to not scratch valve seats.
12. Install valves and valves retainers. Check that the orientation with the ports is correct.
13. Apply a thread locking compound to retainer screws. Torque screws to 10-13 in-lbs.
14. Install cylinder O-ring in the bottom of valve plate.
15. Check that the orientation of valve plate with the ports is correct.
16. Install head O-rings in the O-ring grooves on top of valve plate.
17. Reinstall head over valve plate checking that orientation with ports is correct.
18. Torque screws to 50 in-lbs.

Check that all external accessories such as relief valves and gauges are not damaged before operating product again. If pump still does not produce proper vacuum or pressure, contact Pentair Aquatic Eco-Systems for repair.

AQ101C Exploded View



See AQ101C Parts
List on next page

AQ101C Parts List

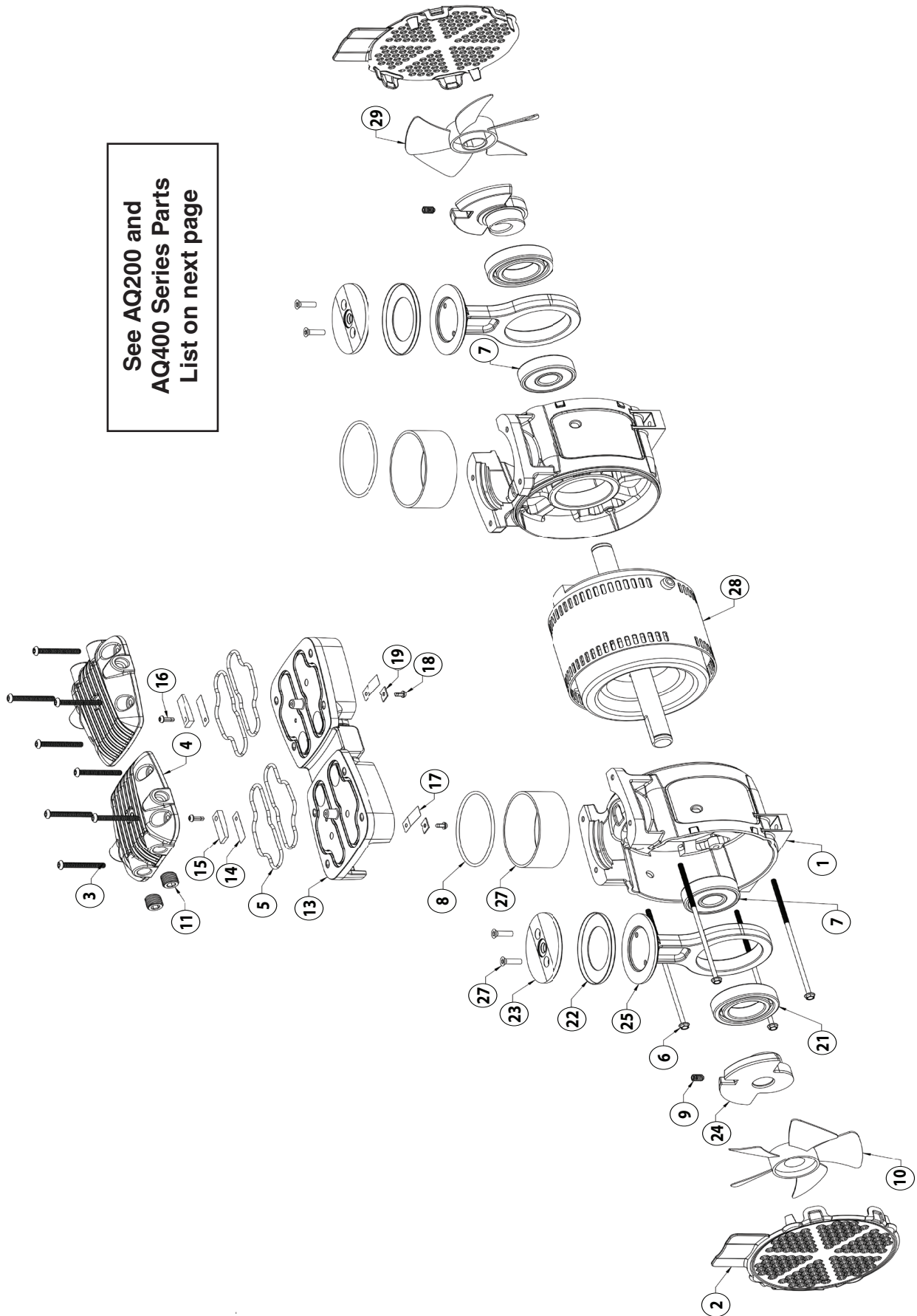
Item #	Part/Kit #	Description
1	**	Body
2	**	Motor
3	**	End Bell
4	AP108A	Fan Cover
5	730033	Head Screws (Qty 4)
6	730034	Head
7	Incl. in AQK965A	O-Ring
8	**	Motor Bolt
9	**	Bearing
10	**	Bearing
11	730035	End Bell Cap
12	Incl. in AQK965A	Head O-Ring (Qty 2)
13	730036	Screw
14	AP108A	Fan
15	730038	Pipe Plug (Qty 2)
16	AB300A	Filter
Part # 730065 - Valve Plate Assembly (Includes Items #18-23)		
18	730040	Valve Plate
19	Incl. in AQK965A	Leaf Valve (Qty 2)
20	730041	Valve Limiter
21	Incl. in AQK965A	Valve Screw
22	Incl. in AQK965A	Valve Screw
23	Incl. in AQK965A	Valve Retainer

Item #	Part/Kit #	Description
Part# 730042 - Rod Assembly (Includes Items #25-31)		
25	Incl. in Rod Assembly	Bearing
26	Incl. in Rod Assembly or AQK965A	Cup
27	Incl. in Rod Assembly	Retainer Plate
28	Incl. in Rod Assembly	Eccentric
29	Incl. in Rod Assembly	Rod
30	Incl. in Rod Assembly or AQK965A	Cylinder
31	Incl. in Rod Assembly or AQK965A	Cup Screw (Qty 2)
*	730052	Capacitor
*	ZB1438	Brass Elbow, 1/4" x 3/8"
*	AS100A	Pressure Relief Valve
*	GA9SED	Galvanized Street Elbow, 1/4"

* - Parts not illustrated

** - Parts not available for purchase

AQ200 Series and AQ400 Series Exploded View



See AQ200 and
AQ400 Series Parts
List on next page

AQ200 Series and AQ400 Series Parts List

Item #	Part #		Description
	200 Series	400 Series	
1	**		Body (Qty 2)
2	730043		Fan Cover (Qty 2)
3	730033		Head Screw (Qty 8)
4	730044		Head (Qty 2)
5	Incl. in AQK965		Head O-Ring (Qty 4)
6	**		Motor Bolt
7	**		Bearing (Qty 2)
8	Incl. in AQK965		Cylinder O-Ring (Qty 2)
9	730036		Set Screw (Qty 2)
10	730037		Fan
11	730038		Pipe Plug (Qty 2)
	730067	730066	Valve Plate Assembly (Includes Items #13-19)
13	730046	730045	Valve Plate
14	Incl. in AQK965		Leaf Valve (Qty 2)
15	730041		Valve Limiter (Qty 2)
16	Incl. in AQK965		Valve Screw (Qty 2)
17	Incl. in AQK965		Leaf Valve (Qty 2)
18	Incl. in AQK965		Valve Screw (Qty 2)
19	Incl. in AQK965		Retainer Valve (Qty 2)

Item #	Part #		Description
	200 Series	400 Series	
	730048	730047	Rod Assembly (Includes Items #22-26 & 28)
21	Incl. in Rod Assembly		Bearing 6006
22	Incl. in Rod Assembly or AQK965		Cup
23	Incl. in Rod Assembly		Retainer Plate
24	Incl. in Rod Assembly		Eccentric
25	Incl. in Rod Assembly		Rod
26	Incl. in AQK965		Cylinder (Qty 2)
27	Incl. in Rod Assembly or AQK965		Retainer Screw (Qty 4)
28	**		Motor
29	AP108		Fan
*	730052		Capacitor
*	ZB1438		Brass Elbow, 1/4" x 3/8"
*	AS100A		Pressure Relief Valve
*	GA9SED		Galvanized Street Elbow, 1/4"
*	AB300A		Filter

* - Parts not illustrated

** - Parts not available for purchase

TROUBLESHOOTING

<i>Low Pressure</i>	<i>High Pressure</i>	<i>Low Vacuum</i>	<i>High Vacuum</i>	<i>Compressor Overheats</i>	<i>Won't Start</i>	<i>Excess Noise</i>	<i>Problem Cause and Solution</i>
X		X	X	X	X		Filter dirty. Clean or replace.
X		X					Valves dirty or bent. Clean or replace.
X		X					Worn cup. Repair or replace.
	X			X	X		Relief valve set too high. Inspect and adjust.
X		X					Relief valve set too low. Inspect and adjust.
X	X	X	X	X	X		Plugged or collapsed pressure line. Inspect and repair.
				X	X	X	Wrong voltage. Check power source.
X		X				X	Worn cup/piston hitting cylinder. Replace.
X				X		X	Cylinder needs adjusting. Realign.
X		X			X		Leaky hose or check valve. Replace.
X		X		X	X	X	Dirt or liquid on top of piston. Inspect and clean.
X		X		X	X	X	Motor not wired correctly. Check wiring diagram/line voltage.
X		X				X	Blown head gasket. Replace.

NOTES



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