

# ***12V Portable Diaphragm Compressor*** ***Operating and Maintenance Instructions*** ***(Part No. DC20)***



Part No. \_\_\_\_\_ Serial Number \_\_\_\_\_ Date Purchased \_\_\_\_\_



**AQUATIC ECO-SYSTEMS™**

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## Safety Messages

Safety is important to us. We have included safety messages throughout this manual and for your protection. Please read and follow all directions.

A safety message has a safety alert symbol followed by an explanation of what the hazard is, what can happen and what you should do to avoid injury. This is the safety alert symbol:



The safety alert symbol and "WARNING" or "CAUTION" will precede all safety messages:



### WARNING

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



### CAUTION

***You can be killed or seriously injured if you don't follow instructions.***

- Do not pump flammable or explosive gases or use in an atmosphere that contains such gases.
- Protect all surrounding items from exhaust air. This exhaust air can become very hot.
- Corrosive gases and particulate material will damage the unit. Water vapor, oil-based contaminants or other liquids must be filtered out.
- Do not flush with kerosene or other combustible solvents.



## ELECTRICAL SHOCK HAZARD

Disconnect electrical power at the circuit breaker or fuse box before installing this product. Install where it will not come into contact with water or other liquids and where it will be weather protected. Electrically ground this product. Failure to follow these instructions can result in death, fire or electrical shock.

## Guidelines for Product Use

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

## Operation Guidelines

### Installation

Make sure the wiring is done by a qualified electrician familiar with NEMA MG2 safety standards, national electric code and all local safety codes. 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 help to withstand the motor's starting current. Motor starters with thermal magnetic overload or circuit breakers protect the motor from overload or reduced voltage conditions. The wiring diagram attached to the product provides required electrical information.

Make sure that installation clearances do not block air flow. Blocking air flow over the product in any way can cause the product to overheat.



## **WARNING**

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

The air stream from this product may contain solid or liquid material that can cause eye or skin damage; wear proper eye protection. Failure to follow these instructions can result in burns, eye injury or other serious injury.

Each model has an automatic thermal protector that shuts the motor off if it overheats. The motor will restart without warning once the protector resets itself upon cooling.

This product can be installed in any orientation, provided that the flow of cool, ambient air is not blocked. To minimize noise and vibration, the unit should be mounted on a solid surface that will not resonate. We recommend the use of shock mounts or vibration isolation material. Inlet noise can be minimized by attaching an optional muffler.

### **Plumbing**

Remove plugs from the IN and OUT ports. Connect with pipe and fittings that are the same size or larger than the product's threaded ports.

### **Starting**

If the compressor is extremely cold, allow it to warm to room temperature before starting. If the motor fails to start or slows down when under load, shut it off and unplug it. Check that the supply voltage agrees with the motor post terminals and motor data name plate, and make sure the motor is turning in the proper direction.

## **General Maintenance**



## **WARNING**

When servicing, 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 from the product 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. This procedure in particular will help the product's performance and service life.

1. Remove the end plate and filters. Inspect filters for rips, tears, cuts, brittleness and excessive foreign material.
2. Clean filters if in 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 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 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.

### **Flushing the Muffler Assembly**

Should excessive dirt, foreign particles, moisture or oil be permitted to enter the compressor, the vanes will act sluggish or even break. Flushing the muffler assembly should remove these materials. Do not use kerosene or other combustible solvents. Use flushing solvent (part no. **AQ255**) liberally to clean muffler parts.

## **Frequently Asked Questions (FAQ)**

### **Is my compressor running too hot?**

It is normal for a motor to run hot to the touch because the shell transfers heat away from the motor windings.

However, improved materials used in motor manufacturing make the "too-hot-to-touch" test obsolete. The best way to determine if a motor is operating properly is to check the ampere (amp) draw. Each motor has a nameplate listing full-load amps (FLA). If the tested amp draw does not exceed the nameplate rating, its internal or external cooling fan is working (if so equipped), and the ambient air temperature around the motor is below 104°F (40°C). The motor is probably not running hot, even though it is too hot to touch.

Even so, make sure that there is plenty of air flow around the motor, and keep the area around the motor clear so that there is no blockage of air flow to the motor. Also keep paint and other flammable materials away from the motor.

### **How much will it cost to operate my compressor?**

The cost of operation will depend on the length of time the compressor is run each day. The following example is for a typical 1-hp, single-phase compressor operated 24 hours a day at \$.08 per kWh. The cost per kWh will vary from location to location. Check your electric bill for the cost per kWh.

9.7 amps x 115 volts = 1,115.5 watts (amps & volts are on motor nameplate)

1,115.5 watts x 1,000 = 1.116 kW

1.116 kW x 24 hrs = 26.77 kWh

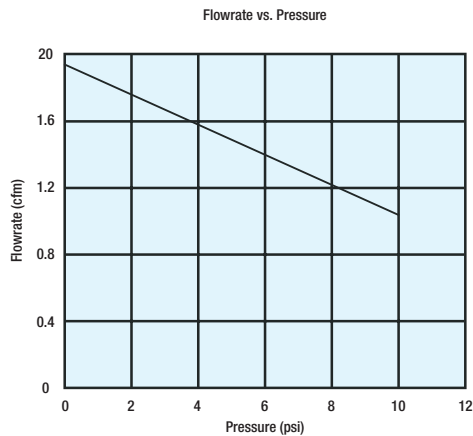
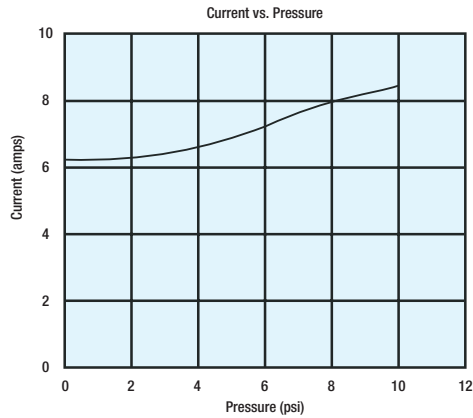
26.77 kWh x \$.08 per kWh = \$2.14 per day

### **Why is my compressor so noisy?**

Compressor noise can be the result of vibration or mechanical noise.

1. Vibration is the intensification of normal compressor noise. The noise should decrease if the compressor is firmly attached to the foundation or if the compressor is completely isolated by using a rubberized or cushioned base.
2. Mechanical noise is typically a high-pitched squealing sound. The most common causes include worn motor bearings and rubbing of the impeller against the compressor housing.

## DC20 Pump Curves



### 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

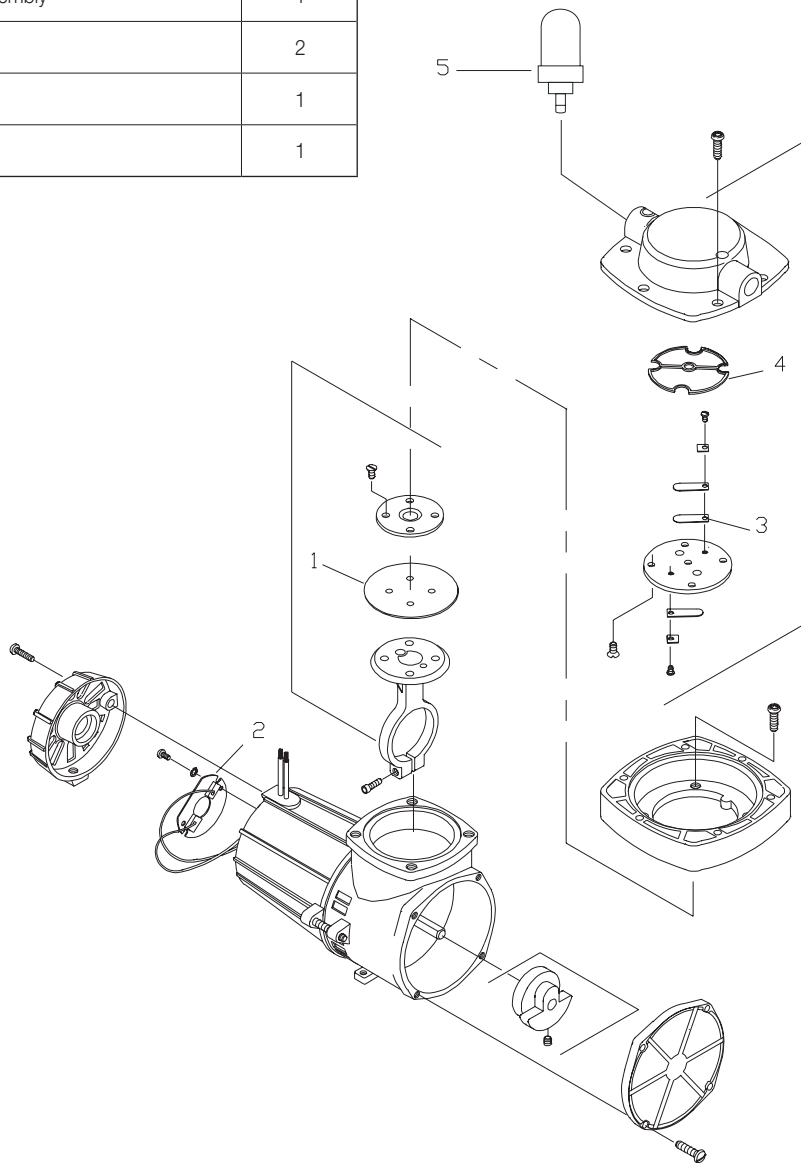
AFFIRMATION OR PROMISE. PAES DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS. PAES SHALL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

This Warranty does not extend to any Equipment that have 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.

## Exploded View & Parts Included in Repair Kit

| Ref. No. | Description         | Part Qty |
|----------|---------------------|----------|
| 1        | Diaphragm           | 1        |
| 2        | Brush Card Assembly | 1        |
| 3        | Valve Flapper       | 2        |
| 4        | O-Ring              | 1        |
| 5        | Filter Element      | 1        |



Should you require service or repair parts, contact Pentair Aquatic Eco-Systems at 877-347-4788 from 8 AM to 7 PM Monday to Thursday and 8 AM to 5 PM Friday. Have your part and serial numbers handy, and our technical staff will gladly help you resolve any problems.



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