



MOVING WATER FORWARD, SINCE 1968

50HZ DE-ICER

2400ED, 3400ED,
4400ED

Operation & Maintenance Manual



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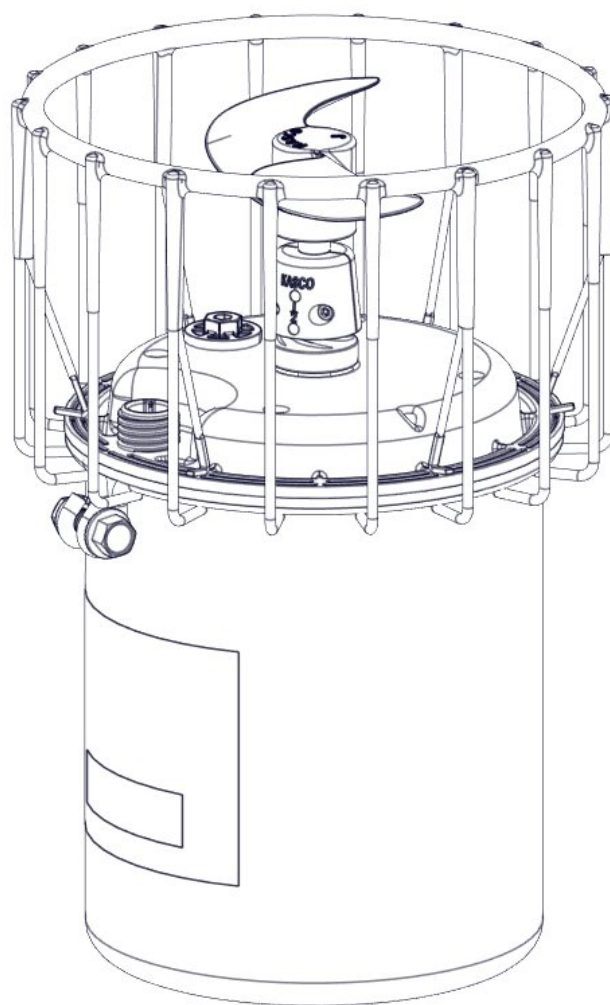


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SAFETY FIRST

WARNINGS:



Moving Machinery



Shock Hazard

- NEVER enter the water with the electrical equipment connected and/or in operation.
- All electrical equipment must be Ground fault/leakage current protected. Use of a Ground fault protective device (GFI, RCD, RCBB, or RCBO type device) is required as directed by local and national codes.
- Stay clear of all moving parts.
- NEVER run the unit out of water. This will damage the equipment and pose a danger to the operator.
- Use extreme caution around water, especially cold water.
- NEVER lift or drag the unit by the power cord. Always use the ropes or mount to remove it from the water.
- Do not use waders in deep water or in areas with drop-offs, drastic slopes, or soft bottom material.
- Do not use boats that tip easily for unit installation (such as canoes).
- Follow all boating safety rules and regulations, including wearing a Personal Flotation Device.
- The unit is supplied with an internal grounding conductor. To reduce the risk of electrical shock, be certain that the unit is plugged in/connected to a circuit with ground fault protection.
- Means for disconnection must be incorporated in the fixed wiring, in accordance with local and national wiring rules.
- Consult a qualified electrician for electrical installation.

UNIT SPECIFICATIONS

Model	HP	Voltage / Phase / Hz	Amperage	Locked Rotor Amps	Thrust (kg.)	Min. Depth of Operation*
2400ED	1/2	230 / 1 / 50	2.2	5.3	11.8	1.2m
3400ED	3/4	230 / 1 / 50	3.5	9	13.4	1.2m
4400ED	1	230 / 1 / 50	3.7	10	16.8	1.2m

SIZING CHART

Sizing recommendations based on the following assumptions:

- Unobstructed water.
- 200-acre+ body of water with 200 feet+ water depth.
- Water depth in de-icing area is greater than 4 feet.
- Size may vary greatly based on a number of local conditions.

Average Low Air Temperature	Orientation	Model		
		2400	3400	4400
34 °F to 20 °F (-1 °C to 6.5 °C)	Angled	30' x 100'	35' x 120'	40' x 150'
	Vertical	65'	85'	90'
19° F to 0° F (-7° C to -18° C)	Angled	25' x 60'	30' x 80'	35' x 90'
	Vertical	50'	70'	80'
-1 °F to -20 °F (-19 °C to -29 °C)	Angled	25' x 55'	30' x 75'	35' x 85'
	Vertical	35'	50'	65'
Great Lakes	Angled	20' x 40'	25' x 50'	30' x 60'
	Vertical	30'	45'	55'

GENERAL INSTRUCTIONS

Immediately inspect your shipment for any visible damages. Damages should be reported immediately.

Kasco De-icers are designed and engineered for continuous duty in the harshest environments. Following installation, your Kasco De-icer is ready for immediate use. The motor is oil-filled, with ball bearings submerged in oil and equipped with a thermal overload protection and an automatic reset. No further lubrication is necessary.

It is extremely important that sufficient and proper voltage is provided to the unit's motor.

The sacrificial anode located on the shaft below the propeller must be in good condition in order to prevent corrosion damage to the unit. The anode must be inspected periodically and replaced if it shows significant deterioration.

Make sure to keep the motor housing clean from hard water deposits and/or algae.

If the de-icer has been stored or exposed to cold for an extended period without running, it may take a minute for the prop to get to full speed once power is supplied.

The de-icer is completely assembled. All you have to do is suspend it in as little as two (2) feet of water and plug it into a properly grounded and GFI/RCD-protected outlet of the correct size for your installation.

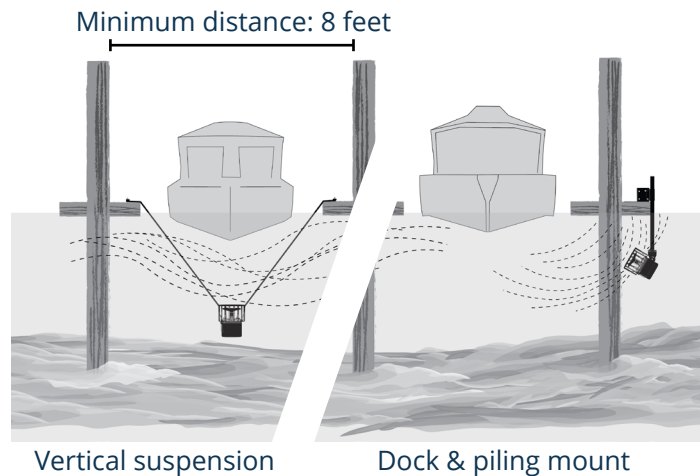


Under certain conditions, no de-icer can prevent damage from ice movement caused by wind or current. De-icing can become less effective in areas where the water is the same temperature at all depths and ice forms all the way to the bottom, such as in shallow applications.

DE-ICER INSTALLATION

Kasco offers two basic options for de-icer installation:

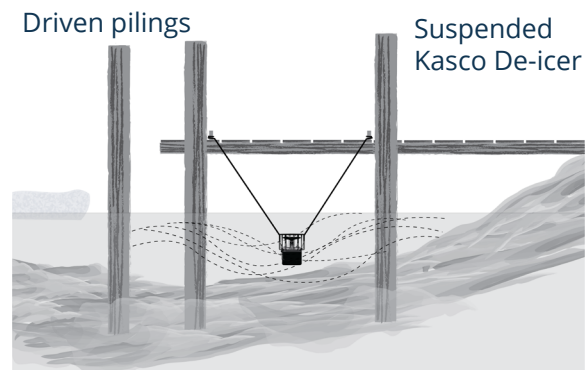
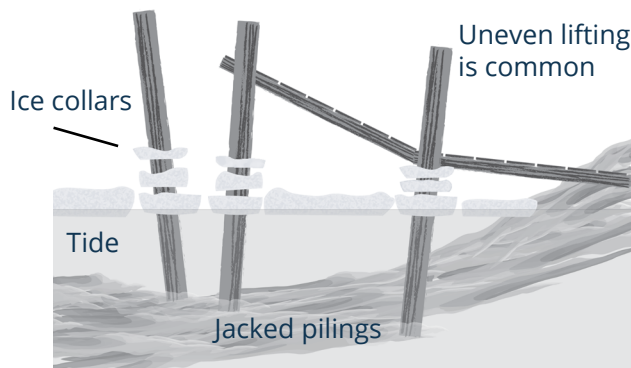
- Vertical suspension
- Dock & piling mount



1. Determine Your De-icing Objectives

Examples:

- Create a focused buffer of open-water between a structure and an expanding ice pack.
- Avoid ice lifting and/or expansion pressure by keeping your structure completely free of ice (see below).



2. Calculate the Optimal Depth for Your De-icer

A de-icer draws warmer water from the bottom and circulates it upward. In the target area, look for deeper water to pull to the surface. A good guide is to place the de-icer 4-6 feet deep for vertical installation and slightly shallower for angled operation, but at least 1 foot off the bottom to prevent clogging from debris.

NOTE In extremely cold climates, circulating warmer water is more important than surface circulation, so you may wish to install your de-icer deeper than the above guidelines. We recommend that you experiment with more than one possible location for the best installation results.

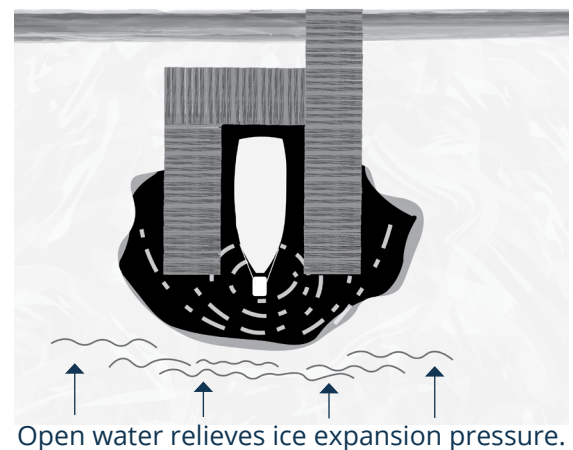
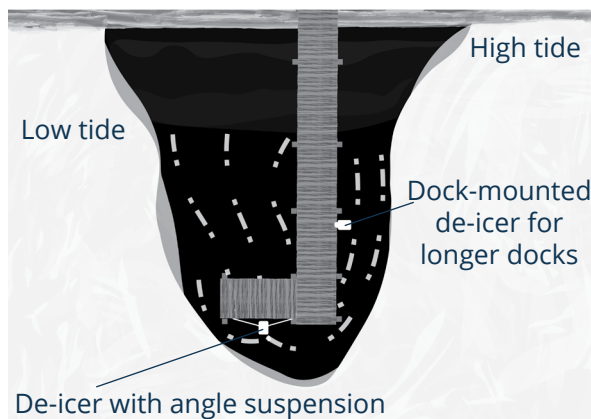
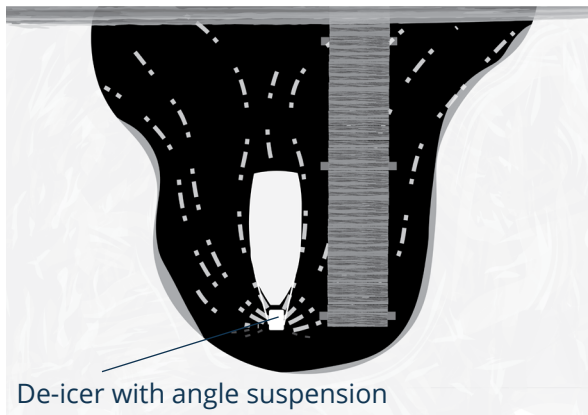
DE-ICER INSTALLATION (CONT.)

3. Consider Obstructions and Water Movement in the Area

Consider any obstructions, such as structures or boats, that could slow or stop the flow of warmer water at the surface. Natural currents move de-iced water downstream.

Some useful tips are:

- Work with the current to de-ice from the upstream side.
- Use the design of a boat to push water from the bow to the stern. Fully protecting a boat often requires more than one de-icer.
- Angle your de-icer from the deeper water toward shallow water.
- It is better to angle multiple units in one direction, creating a current, rather than in opposing directions.
- In tidal waters, place the de-icer so that it is in shallow water at low tide and deep water at high tide. If you are protecting a boat, tie the de-icer to the boat so that both rise and fall together with the tide.



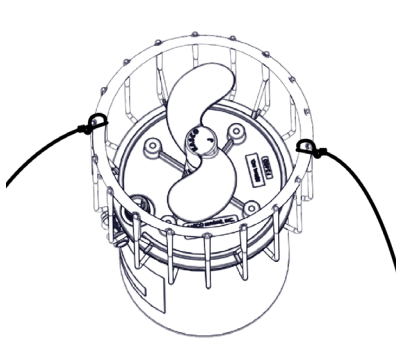
DE-ICER INSTALLATION (CONT.)

4. Angle the Unit in the Water

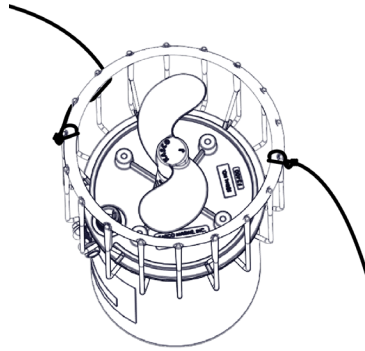
Make sure the lines are spread at least 8 feet apart. Lines that are too close can twist and damage the power cord. Tie each rope with a secure knot from the dock piling, cleat, boat, etc., so that the de-icer hangs vertically.

In order to suspend your Kasco De-icer at an angle, simply change the suspension point of one line. Do not remove the existing knot; simply loop the rope around the top cage ring, across one to four vertical cage wires. (More than four not recommended). This hangs the unit at a slight angle and allow you to aim the flow of warmer water in the desired direction.

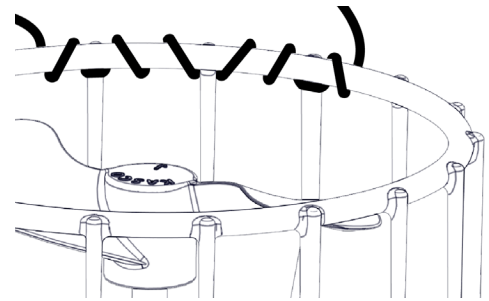
See dock mount manual for more information on angling a dock-mounted de-icer.



Rope positions
as shipped.



Rope moved up
two cage wires.



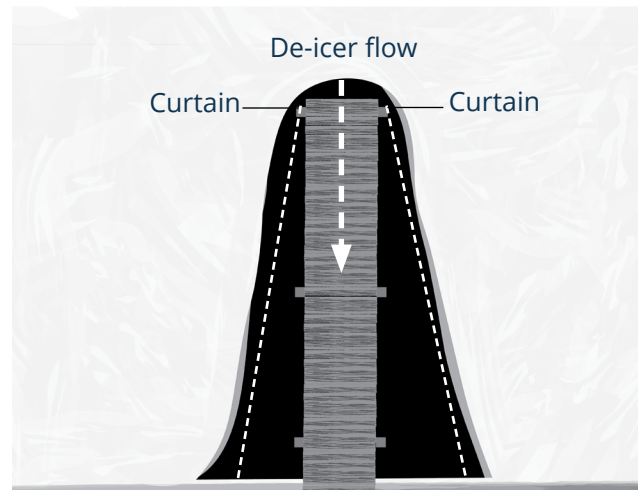
To move the rope up by three
or four cage wires, loop it
around the cage ring AND
around each wire.

5. Power On

Once your de-icer is properly installed and secured, you can plug the unit into a properly grounded and GFI-protected circuit.

6. Optional Curtain Installation

Use a curtain technique to limit or control the open water area. Tie a canvas tarp above the water line and weight it at the bottom so that it hangs a few feet deep. (One weighting method is to fold the tarp in half and lay a chain in the fold.) As always, we recommend that the ice-free area is well marked.



MAINTENANCE RECOMMENDATIONS

Proper Installation

Proper installation of Kasco equipment will include a power source with ground fault protection. There should only be one GFCI in a circuit. Ground fault protection devices can also alert you to electrical leaks in the equipment. It is extremely important to test the device upon installation and every month thereafter to ensure proper operation. In the case of consistent trips of the ground fault device, disconnect the equipment and remove it from the water. Inspect the power cord for damage and contact your distributor or Kasco Marine (1.715.262.4488,) for further instructions. Kasco recommends placing an extra serial number sticker on the inside of the control panel cover.

ALWAYS DISCONNECT POWER BEFORE PERFORMING MAINTENANCE.

Observation

Observe equipment in operation on a regular basis (daily, if possible). If you observe a change in performance, disconnect the equipment from the power source and inspect for any material clogging the system or wrapped around the motor shaft. To avoid damage to the equipment, it is important to remove clogs as soon as possible. ALWAYS DISCONNECT POWER TO THE UNIT BEFORE ATTEMPTING TO REMOVE CLOGS.

Cleaning

Buildup of algae, calcium, barnacles, or other matter on the motor housing creates insulation and blocks heat transfer, so to prevent overheating, it is important to clean the unit. In warmer regions or in other areas prone to buildup such as this, inspect and clean the equipment regularly. In all regions, inspect and clean the equipment at least once a year. It is easiest to clean the unit immediately after removing it from the water, when the equipment is still wet. If you use a power washer, avoid hitting the mechanical seal area directly.

Unit Storage

Store the equipment with the cage down if it is going to be out of the water for long periods of time, such as during off-season storage. Seals on units that sit upright on a shelf for extended periods of time are more likely to dry out. Storing upside down or sideways will ensure oil is reaching the seals and help to prevent drying.

Sacrificial Anode

All Kasco units include a sacrificial anode installed on the shaft to protect against corrosion and electrolysis. Replace the anode if it is reduced to half the original size or if it is white in color. Corrosion from electrolysis most commonly occurs in saltwater or brackish water, but it is important to check the anode in all installations at least every two to three months.

Seal And Oil Replacement

This is a sealed motor assembly. Like brake pads on a car, seals wear out over time. Replace the seals and change the oil after three years to increase the motor's longevity and to avoid more expensive repairs.

Other Repairs

Seal replacement and all other repair services should be performed at Kasco or a Kasco-trained authorized repair center. Please contact your Kasco distributor or representative to find your nearest service center.

Please keep the original box for maintenance shipping.

TROUBLESHOOTING TIPS

ALWAYS DISCONNECT EQUIPMENT FROM ELECTRICAL SOURCE BEFORE SERVICING

SERVICE SHOULD ONLY BE PERFORMED BY A QUALIFIED TECHNICIAN OR ELECTRICIAN

Ground fault/earth leakage protection (RCD) tripping

Typically indicates electrical current is leaking to earth (ground).

- Consult a qualified service technician or electrician to address the issue.

Possible causes:

- Control panel damaged or defective ground fault protection device (RCD, GFI)
- Water contamination in the motor unit or Electrical motor damage
- Power cord damage or water leak at quick disconnect

Collect this information for the electrician:

- How long until the RCD trips after resetting?
- Does the trip time vary or repeat the same interval of time?
- Does it trip randomly or same time of day?
- How many times has it tripped?
- Any electrical problems in the area recently, or changes made to site wiring?

Unit appears to run slowly

Typically indicates low voltage to the motor or motor damage.

- Contact a qualified service technician or electrician to measure for proper voltage and motor amps while the motor is operating. Voltage drop should be no more the 5% from power source to motor control panel.

Unit hums and will not start

Typically indicates a motor capacitor problem (single phase motor), a motor controller problem (3 phase), or debris preventing the unit from starting.

- Turn the unit off and disconnect from power source to prevent motor damage.
- Remove the equipment from the water and inspect for debris or damage.
- Remove the debris and clean the equipment.
- If there is no debris in the unit and it will not start. Turn the unit off and contact a qualified service technician to address the issue.

Unit cycles on/off by itself

Typically indicates the motor is overheating. The Motor overload (single phase motor) will automatically reset once cooled down and restart the motor.

Possible causes:

- Low water level, build-up of material on motor can preventing heat dissipation, or debris around the motor shaft or propeller area creating excess motor loading.
- Turn the unit off and disconnect from power source to prevent motor damage.
- Remove the equipment from the water and inspect for debris or damage.
- If there is a build-up on the unit and motor can, remove the debris and clean the equipment.

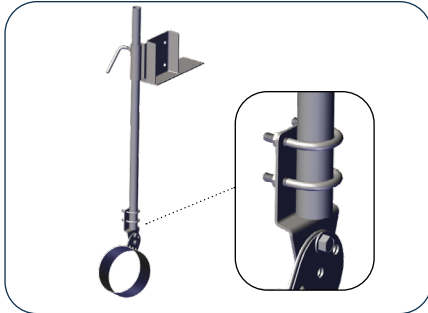
Unit flow/performance fluctuates

Typically indicates debris is clogging the unit and preventing water flow into the unit.

- Turn the unit off and disconnect from power source.
- Remove the equipment from the water and inspect for debris or damage.
- If there is build-up on the unit and motor can, remove the debris and clean the unit.

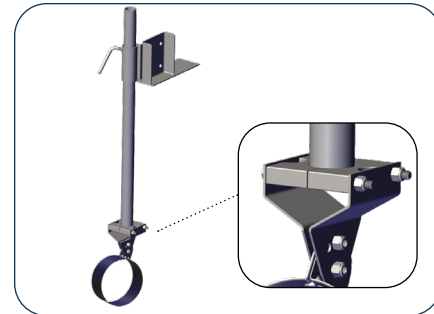
MOUNT OPTIONS

Kasco offers a variety of mounting options to best position a de-icer in any environment, all featuring durable stainless steel.



Universal Mount

- For pipe with nominal diameter of 1 inch
- For units up to 1HP
- Kit 243485

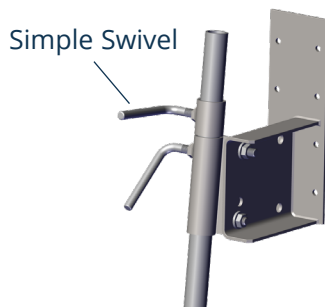


Industrial Mount

- For pipe with nominal diameter of 1.5 inches
- For units up to 1HP and pipe 5 feet long or greater.
- Kit 243484

Easily lower, angle, and position units for proper water movement. Mount to a dock, piling, wall, or other in-water property. Packages include upper and lower mount assemblies; pipe supplied by customer.

Upper Mount Features



The upper mount can be secured horizontally, as shown above, or vertically (left), allowing installation options for a variety of shoreline structures.

Optional: both mounts are available with a Simple Swivel bracket that allows the unit to rotate easily and direct the flow of water (Universal kit 243478, Industrial kit 243479).

WARRANTY

Warranty Period: 2 years

Kasco® Marine, Inc. warrants this equipment to be free from defects in material or workmanship (except for the ropes, power cord, and propeller) under normal use and service. The Kasco Marine, Inc. obligation under this warranty is limited to replacing or repairing free of charge any defective part within the warranty period. The customer shall pay shipping charges for returning the unit to Kasco or an authorized repair center.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND ANY OTHER OBLIGATION OR LIABILITY WHATEVER ON THE PART OF KASCO MARINE, INC. AND IN NO EVENT SHALL KASCO MARINE, INC. BE LIABLE FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES.

Warranty is void if:

- The equipment is not maintained properly according to the maintenance recommendations supplied in this manual.
- The equipment is returned for repair without the power cord, or if the unit, control box, or power cord are altered in any way from the original shipment. Cuts in the power cord are not covered under warranty.
- The equipment is damaged by unauthorized tampering.
- The sacrificial anode around the propeller shaft shows significant deterioration. (The anode must be inspected periodically and replaced as necessary.)

Warranty Claim Procedure: The best method for establishing warranty period is via the original receipt. Also, register the unit online at: www.kasco-marine.com. Once the warranty coverage has been established, the unit may be sent to any Kasco authorized repair center for evaluation and repair. Please call Kasco at 715-262-4488 prior to shipping to receive any updated information or a repair form, or call to locate your nearest authorized repair center. You can also email Kasco at info@kasco-marine.com.

Please include the repair form received from Kasco or your local distributor with the shipment. If no repair form is available, include your name and physical address for return delivery of the repaired unit and a daytime phone number and/or email address for correspondence regarding the warranty claim. Any expedited shipping method for the return of the unit is at the customer's expense. For repairs covered under warranty, Kasco will cover the cost of returning the unit to the customer. The credit will be calculated based on the US Dollar exchange rate on the date of shipment.



Kasco only accepts complete assemblies for warranty repair. We must receive the power cord and all other components with the motor as originally assembled. **THIS DOES NOT INCLUDE CONTROL PANEL, FLOAT, MOUNT, OR OTHER PARTS THAT CAME IN ADDITION TO THE MOTOR ASSEMBLY, UNLESS SPECIFICALLY REQUESTED BY A KASCO REPRESENTATIVE.** Kasco will bill the customer to replace any missing parts necessary for repair.

Please attach a repair form with the shipment. The repair form must include a name, physical address (for return delivery of the repaired unit), daytime phone number, and an e-mail address for correspondence regarding the warranty claim.

Any expedited shipping method for the return of the unit is at the customer's expense.

OTHER REPAIRS

Most failed equipment can be repaired at substantially lower costs than that of replacing it with new equipment. Please ship according to the instructions in the previous section.

Kasco does estimates on repairs at the request of the customer. The request for an estimate should be included in the letter that accompanies the returned unit and must include a daytime phone number and/or email address. Estimate options are as follows:

- We will contact the customer with a total estimated cost for repairs after we have evaluated the unit but before we perform the work.
- We will repair the unit only if repair costs are under a dollar amount stated by the customer. Example: "Please repair if total is under \$150.00 before shipping charges."

All estimates that are rejected for repair will be destroyed unless otherwise directed by the customer. If the customer would like the unit returned, we will restore the unit as closely as possible to the condition in which we found it and ship at the customer's expense (including shipping and handling charges).

Billing: Kasco accepts Visa, MasterCard, and American Express credit card payments. Kasco will call for credit card information upon completion of the estimate at the customer's request. All other warranty and repair inquiries should be directed to Kasco at

REPAIR CONTACT FORM

- Kasco requires that all equipment sent for repair MUST be accompanied by this form and marked to Repairs attention.
- Unit should be cleaned before shipping.
- Kasco is NOT responsible for shipping damage accrued in return shipment.
- It is the responsibility of the customer to ship and pay freight to Kasco.

Note: Contact information should be that of the person or company to contact for repair information.

Company name			
Contact name	First name	Last name	
Address	Address line 1		
	Address line 2		
	Country		
	Postal Code		
Phone number	Primary	Alternate	
Email address			
Preferred method of contact (circle one)	Phone	Email	
Purchase order number			
Additional product information	Serial Number	Cord Length	
Information for Repair Technician			
Was this unit used in a chemical treatment or wastewater application? (circle one)		Yes	No
Additional notes			