



# The Industry Leader in Ice Control Engineering De-Icer & Accessories Owners Manual

2400D, 3400D, 3400HD, 4400D, 4400HD, Universal Dock Mount,  
Horizontal Float, C-20 Thermostat/Timer, & C-10 Thermostat



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Made in the USA

# Thanks!

We at Kasco Marine, Inc. would like to both thank and congratulate you on your purchase of the De-Icer. We appreciate you choosing Kasco and for your purchase. Kasco is the industry leader of De-Icing equipment and technology. Your decision to purchase Kasco's De-Icer will not disappoint you. We thank you for choosing Kasco for your De-Icing needs and want you to be completely satisfied with your purchase.

## **IMPORTANT SAFETY & HANDLING INSTRUCTIONS**

Please read and follow these extremely important safety and handling instructions for your Kasco equipment. Following these instructions will help ensure your safety and the quality performance of your equipment.

- Under **NO** circumstances should anyone enter the water with the electrical equipment plugged in and/or in operation. All Kasco De-Icers are ETL approved to UL and CSA standards for safety in water. However, it is **NEVER** recommended to enter the water with the equipment in operation.
- Caution should be used when dealing with any electrical and/or moving equipment. Always keep people and objects clear of the propeller when operating.
- **NEVER** run the unit out of water. It will damage the seals and create a dangerous situation for the operator.
- Extreme caution should be used around open water, especially **cold water**, which poses a hazard in and of itself.
- Always disconnect the electrical power before servicing or removing your De-Icer.
- **NEVER** lift or drag the De-Icer by the power cord. This could damage the power cord and make your De-Icer unsafe to operate. If you need to pull the unit, use the mooring ropes.
- Kasco Marine recommends that precautions be taken around open water de-icing areas to ensure the safety of the public, i.e., "Thin Ice" and/or "Open Water" signs, appropriate lighting, fencing, or other safety measures required in your area.
- The De-Icer is supplied with an internal grounding conductor and a grounding-type attachment plug. To reduce the risk of electrical shock, be certain that the De-Icer is plugged into a GFI protected circuit.
- **Please Note:** *Under certain conditions, no de-icer can prevent damage from ice movement caused by wind or current, or from extremely cold weather causing ice to form all the way to the bottom and in some cases where bottom water temperature is the same as the ice. Effective de-icing can also be retarded when used in extremely shallow conditions.*

# GENERAL OWNER'S INSTRUCTIONS

## **INSPECT THE SHIPMENT**

Immediately inspect your Kasco De-Icer shipment for any visible damages. Also cross reference the parts supplied with the Parts Included sheet to check for shortages. Shortages should be reported immediately to your Kasco Marine distributor or representative and damages reported to your carrier and Kasco Marine.

## **CAUTION**

***WARNING: Under NO circumstances should anyone enter the water with the unit in operation.***

Always operate the unit in the water and keep people and objects clear of the propeller. Do not lift or pull the unit by the electrical cord. Always use extreme caution around electrical equipment and water situations.

## **ASSEMBLY & INSTALLATION**

Please see the proper Assembly and Installation Instructions enclosed in this manual. Each is specific for your model and size of De-Icer and De-Icer accessory.

## **WARRANTY**

Kasco De-Icers are the result of over 40 years of design and engineering. Kasco products are built to withstand the toughest conditions. Kasco Marine backs each De-Icer with a 2 Year Warranty. This warranty covers any and all manufacturers defects within 2 years from the date of purchase (See Warranty, Warranty Claim, & Return Policy on pages 4 & 5). Please register your De-Icer online at: [www.de-icer.com/solutions\\_warranty\\_registration.htm](http://www.de-icer.com/solutions_warranty_registration.htm).

## **USE AND OPERATION**

Kasco De-Icers are designed and engineered for continuous duty in the harshest environments, such as in marinas or other commercial applications, or on-demand use, as may be needed.

Your Kasco Marine De-Icer is ready for immediate use (after installation). The motor is of an oil-filled design with ball bearings submerged in oil and equipment with a thermal overload protection with an automatic reset. No further lubrication is necessary. It is extremely important that the installer make sure sufficient and proper voltage is available to the unit's motor. The zinc anode located below the propeller must be in good condition in order to prevent corrosion damage to the unit. The zinc 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. (See Maintenance Recommendations on page 6.)***

The De-Icer is also completely assembled, you do not need bolts, screws, nails, or brackets, unless an optional mounting device was purchased. All you have to do is suspend it in as little as two (2) feet of water from piers, docks, or boats and plug it into a 15 amp outlet.

Kasco De-Icers are lightweight, energy efficient, and easy to install and operate. We strive to produce products that exceed customer expectations. We hope you enjoy your Kasco De-Icer.

***Please Note: Under certain conditions, no de-icer can prevent damage from ice movement caused by wind or current, or from extremely cold weather causing ice to form all the way to the bottom and in some cases where bottom water temperature is the same as the ice. Effective de-icing can also be retarded when used in extremely shallow conditions.***

## WARRANTY, WARRANTY CLAIM, & RETURN POLICY

**2 Year Limited Warranty:** Kasco® Marine, Inc. warrants this De-Icer to be free from defects in material or workmanship (except for the ropes, power cord, ropes, 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 two (2) years from the date of shipment. **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 De-Icer is not maintained properly according to the Maintenance Recommendations supplied in this Owners Manual.
- The De-Icer is returned for repair without the power cord or if the unit or power cord are altered in any way from original shipment. **Cuts in the power cord are not covered under warranty.**
- The De-Icer is damaged by unauthorized tampering.
- The Sacrificial Zinc Anode around the propeller shaft shows significant deterioration. (The Anode must be inspected periodically and replaced if necessary.)

Note: There are certain conditions under which no circulator can prevent ice damage such as ice that moves due to wind or current, extremely cold weather where ice forms all the way to the bottom and in some cases where the bottom water temperature is the same as ice (very shallow water). Effective operation can be somewhat reduced when flow is restricted by too little bottom clearance.

### *Warranty Claim Procedure:*

Check the ten-digit serial number printed either on the black cover of the motor or on the blue nameplate and determine the year of manufacture according to the serial number scheme below:

Sample Serial #  
6001 D 2 1725

- The first two digits represent the reverse of the last two digits of the year of manufacture.  
Example: 60 = 2006 model year.
- The third and fourth digits represent the week of the year. (Ex. "01" for 1st week in Jan.)
- The fifth digit represent the model. (Ex. "D" for 2400D)
- The sixth digit represents the horsepower of the unit in fourths: 2 = 2/4 = 1/2HP, 3 = 3/4HP, 4 = 1HP.
- The remaining four digits are sequential.

The best method for establishing warranty period is registering your De-Icer online at the below address and/or the original receipt. If the customer has registered the De-Icer online at:

[www.de-icer.com/solutions\\_warranty\\_registration.htm](http://www.de-icer.com/solutions_warranty_registration.htm),

Kasco Marine will have a record of the purchase and will be able to determine whether or not the unit still carries warranty coverage.

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 Marine at 715-262-4488 prior to shipping to receive a Return Authorization Number and/or Repair Form, then ship to:

Kasco Marine, Inc.  
800 Deere Rd.  
Prescott, WI 54021  
Attn: Repairs

Or call Kasco Marine at 715-262-4488 to locate your nearest Authorized Repair Center. You can also email Kasco at [service@kascomarine.com](mailto:service@kascomarine.com).

**Note:** Only complete motor assemblies will be accepted for warranty repair. The power cord and all other components must be returned with the motor as originally assembled. Any missing parts will be replaced at the customer's expense and, if determined to have caused the failure, could void the entire warranty. Some parts are essential for structural support during shipping and others, such as the power cord, are essential to properly diagnose potential causes of failure. It is not necessary to return the control box or float with the motor assembly, unless specifically asked to by a Kasco representative.

Please include the Repair Form received from Kasco Marine 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 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. Kasco Marine will return units repaired under warranty at our expense via ground freight within the continental United States.

### ***Other Repairs:***

Most failed equipment can be repaired at substantially lower costs than replacement with new. Please ship according to the instructions in the previous section. Again, it is best to call ahead for a Return Authorization Number and/or Repair Form so we know the repair is coming.

Kasco Marine offers *free estimates* on repairs at the request of the customer. The request for estimate should be included in the letter that accompanies the returned unit and must include a daytime phone number and/or e-mail address. ***Estimate options are as follows:***

- We will contact the customer with a total after the unit has been evaluated, but before the work is performed.
- We will repair the unit only if repair costs are under a stated dollar amount. 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, the unit will be restored as closely as possible to the condition in which it was received and shipped at the customer's expense for shipping and handling charges.

### ***Billing:***

All non-warranty repairs will be returned to the customer and billed C.O.D. unless otherwise directed. Kasco Marine also accepts Visa and MasterCard credit card payments. Kasco Marine will call for credit card information upon completion of the repair at the customer's request.

All other warranty and repair inquiries should be directed to Kasco Marine, Inc. at 715-262-4488 or [returns@kascomarine.com](mailto:returns@kascomarine.com).

## MAINTENANCE RECOMMENDATIONS

**\*\* Under No Circumstances should anyone enter the water while a De-Icer is operating. \*\***

**\*\* Please keep the original box for maintenance shipping. \*\***

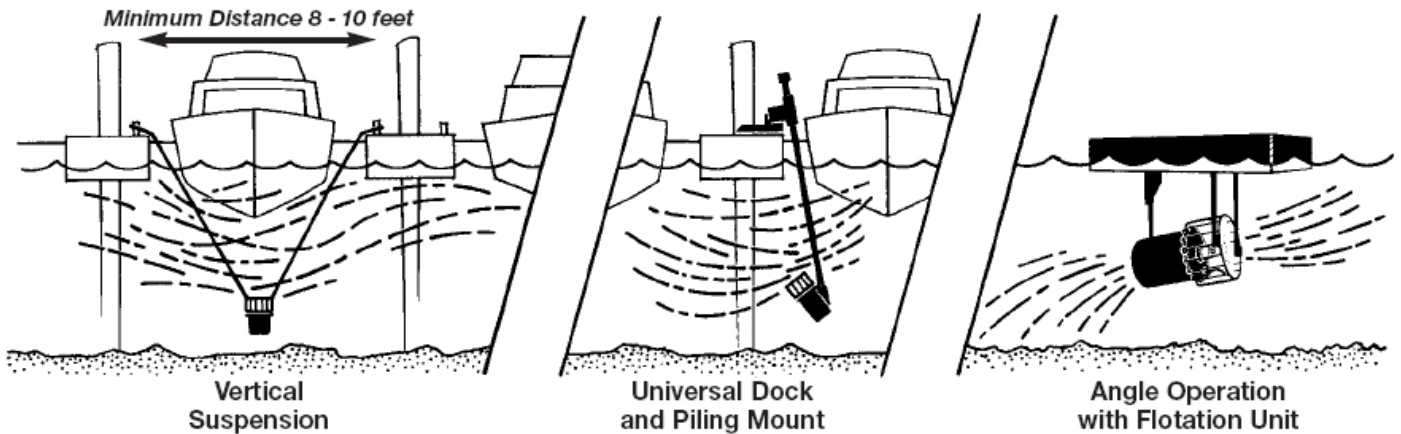
The following maintenance procedures can be utilized to ensure many years of quality performance from your Kasco De-Icer and reduce the need for more costly repair work.

- **PROPER INSTALLATION:** Proper installation of Kasco equipment will include a power source with ground fault interruption. Ground fault interrupters are a safety feature that can also alert you to electrical leaks in the equipment. *It is extremely important to test the GFI upon installation, each reinstallation, and monthly thereafter to ensure proper operation.* If you have repeat, consistent trips on your ground fault, the equipment should be disconnected and removed from the water. The power cord should be inspected for damage and you should call Kasco Marine at 715-262-4488 for further instructions or email Kasco at [service@kascomarine.com](mailto:service@kascomarine.com).
- **OBSERVATION:** Operating equipment should be observed on a regular basis (daily, if possible) for any reduction or variation in performance. If a change in performance is observed, the equipment should be disconnected from power and inspected for any material that may have clogged the system or wrapped around the shaft of the motor, especially plastic bags and fishing line. Even though Kasco De-Icers are the most clog-resistant on the market, it is impossible to protect against all items that can clog equipment and still maintain a flow of water. These materials can be very damaging to the equipment under continued operation and must be removed as soon as possible. **ALWAYS UNPLUG THE UNIT BEFORE ATTEMPTING TO REMOVE CLOGS.**
- **SUMMER STORAGE:** You Kasco De-Icer can be used during non-freezing times of the year to improve water circulation and prevent stagnant water areas and poor water quality. If you do decide to store the unit during non-freezing times it is not necessary to store Kasco motors upside down. All internal seals are fully lubricated while stored in an upright position.
- **CLEANING:** De-Icers should be removed from the water at least once per season to clean the exterior of the system, especially the stainless steel motor housing (can). The motor housing is the surface that dissipates heat into the water and any algae, calcium, etc. build-up will become an insulator that blocks heat transfer. In most cases a power washer will be sufficient if the unit and algae are still wet.
- **SEAL AND OIL REPLACEMENT:** This is a sealed motor assembly and seals will wear out over time (similar to brake pads on a car). Replacement of the seals and a change of oil after three years may add longevity to the operation of the motor, saving you the cost of more expensive repairs. In where the De-Icer runs most or all of the year, it is a good idea to replace seals more regularly than you would need to in situations where the unit is removed from the water for several months.
- **ZINC ANODE:** A Sacrificial Zinc Anode is supplied on the shaft of all De-Icers for protection of the equipment from corrosion and electrolysis. It is extremely important that the zinc anode be updated (replaced) if reduced to half the original size or if white in color. Corrosion from electrolysis is more commonly associated with saltwater or brackish water, but as a matter of precaution, it is important to periodically check the zinc anode in all installations (at least every two to three months; monthly in saltwater).

Seal replacement and all other repair services should be performed by Kasco Marine or a Kasco trained Authorized Repair Center. Any alterations or changes made to Kasco units by an unauthorized source will void the warranty. This includes tampering with the unit, power cord, and/or control box. Please contact Kasco Marine, Inc. at 715-262-4488 for your nearest Authorized Repair Center.

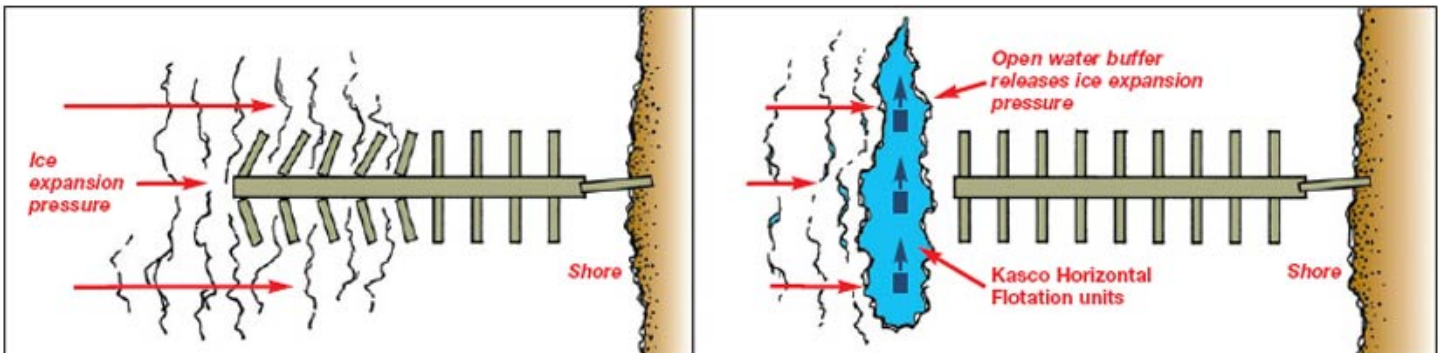
# DE-ICER INSTALLATION INSTRUCTIONS

De-Icing is often referred to as more of an art form than an exact science because each situation is different and unique. Kasco offers three basic ways for De-Icer installation, Vertical or Rope Suspension, Universal Dock Mount Installation, or Angled or Horizontal Float Installation. Different De-Icing objectives may require different mounting/installation options.

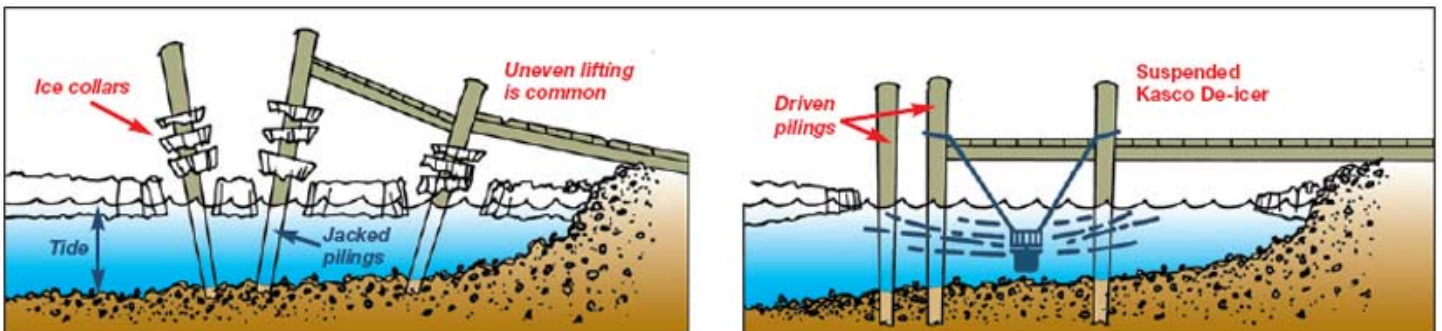


## STEP ONE

How and where to locate your De-Icer depends on your De-Icing objectives. If ice expansion pressure is your concern, you may find it easier to have an open-water buffer between your dock or structure and the expanding ice pack.



If ice lifting or a combination of lifting/expansion is your concern, you may wish to keep your dock, structure, or boat area completely ice free. Both of these concerns or objectives are very different and may require very different installations.



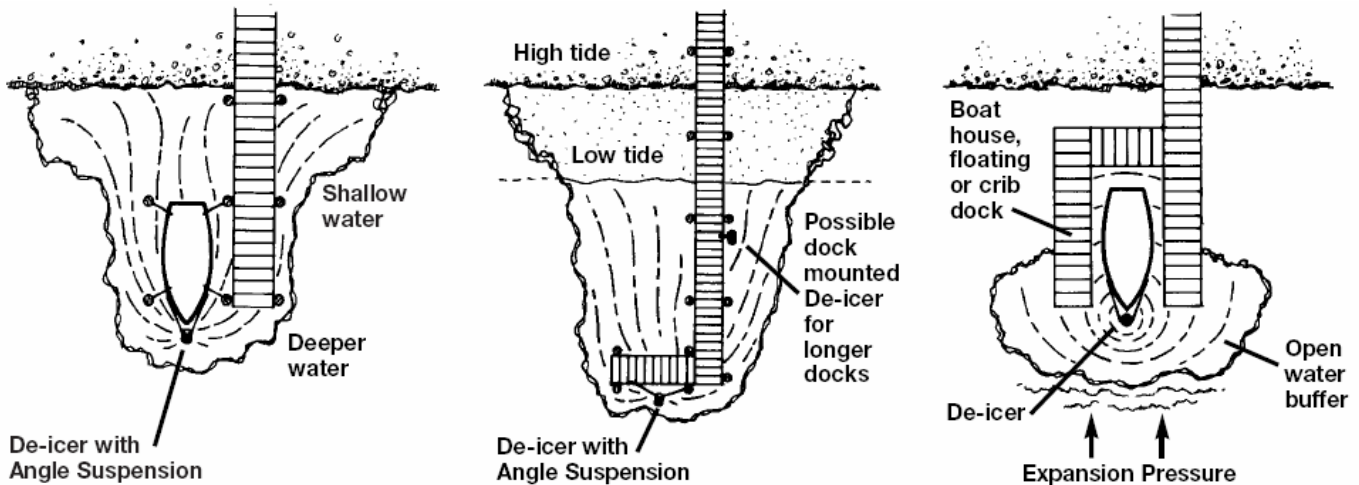
## STEP TWO

Once you have determined your De-Icing objective, the next thing to do is determine the best location(s) for installation. Remember, a De-Icer draws warmer, denser water from the bottom (39°F or 4°C is approximately water's densest point) and circulates it upward to the surface. Around docks and boats water is usually fairly shallow, so look for somewhat deep water to install your De-Icer. Up to a point, the deeper the water, the warmer the water; however, if your De-Icer is installed too deep, the rising warmer water will not effectively spread at the surface, thereby reducing the De-Icing effect.

Although conditions change from one climate to another, a **good guide is 4-6 feet deep for vertical installation**, and slightly shallower in angled operation, but at least 1 foot off the bottom. Operating your De-Icer too close to the bottom may increase the possibility of debris being picked up, causing the propeller to clog. In colder climates, warmer water is a more important factor than surface circulation, so you may wish to install your De-Icer deeper than the above guide lines. De-Icers generally will work in shallower water, but are less effective and due to the constraints of your installation, you may have to settle for a shallower installation. It is recommended that you experiment with more than one possible location for the best installation results.

### STEP THREE

When you have determined both your De-Icing objectives and best installation points, it is time to analyze what external constraints your De-Icing location (structures, i.e., dock, boat, etc.) may have that could affect the flow of warmer water at the surface. Any obstruction at the surface of the water may slow or stop the flow of warmer water. A natural current, such as in a river, will tend to force your De-Icing efforts downstream.



Once you have determined your external constraints, you can choose your installation point(s). Some useful tricks you may wish to consider are:

- De-Ice from the upstream side and let the current help, rather than hinder.
- Boats are designed to allow water to flow from the bow to the stern with the least resistance. It is generally easier to De-Ice a boat by installing the De-Icer at or near the bow, angled to push the De-Icing flow of water toward the stern.
- It is generally easier to De-Ice a shallow area by bringing the warmer water from a deeper area into the shallow area. Angle your De-Icer from the deeper water toward the shallow water.
- When using more than one unit, it is better to angle all units in one direction, creating a current rather than installing De-Icers in opposing directions.
- In tidal waters, split the difference in water depth so the De-Icer is in shallow water at low tide and deep water at high tide. If you are De-Icing a boat, it is easier to tie your De-Icer to the boat and allow the boat and De-Icer to rise and fall with the tide together.

### STEP FOUR

When installing your Kasco De-Icer for suspended operation with the provided ropes, make sure the ropes or suspension lines are spread at least 8 to 10 feet apart. The high starting torque of your Kasco De-Icer may cause suspension lines that are too close together to twist up and possibly damage the electrical power cord. Tie each rope with a secure knot from the dock piling, cleat, boat etc. so the De-Icer hangs vertically.

Angling your Kasco De-Icer with suspension operation can be accomplished easily by simply changing the mounting location of one suspension line. There is no need to remove the knot and splice of the rope, simply change the point at which the line leaves the propeller cage by looping the rope around the top circular band over 1 to 4 vertical cage wires (more than 4 not recommended). This will move the support lines off center



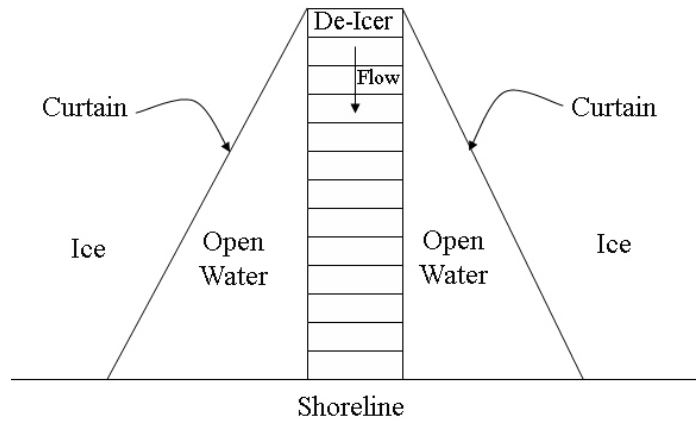
and allow the unit to hang at a slight angle. After installation and the unit is turned on, your Kasco De-Icer will swing up to an angle (the angle is dependent on how many cage wires you move the line) and the De-Icer will hold that angle during operation. This allows you to aim the flow of warmer water in the desired location. If the Universal Dock Mount or Horizontal Float were purchased, see their Assembly and Installation Instructions later in this manual.

**STEP FIVE**

Once your De-Icer is properly installed and secured, you can now plug the unit into a properly grounded and GFI protected circuit. If a C-10 Thermostat or C-20 Timer/Thermostat Controller was purchased, they can be plugged into the outlet receptacle and the De-Icer plugged into the controller. See Controller Instructions later in this manual.

**STEP SIX (OPTIONAL)**

On installations where open water area is required or desired to be limited/controlled, a curtain technique can be used to block the flow of water and restrict the open water area. By draping a canvas tarp as a curtain in the water, you can successfully disrupt the flow of water from the De-Icer. The canvas can be tied above the water level and weighted at the bottom (easiest if you fold the tarp in half and lay a chain in the fold as the weight). The curtain needs to hang into the water a few feet. This curtain will allow you to protect only the area you need. As always, we recommend the ice-free area is well marked.



**UNIT SPECS.**

Model	Voltage	Operating Amps	Lock Rotor Amps
F2400D	110-120	5.0 @ 120V	12 @ 120V
F3400D	110-120	6.7 @ 120V	18 @ 120V
F3400HD	208-240	3.4 @ 240V	9 @ 240V
4400D	110-120	11.3 @ 120V	40 @ 120V
4400HD	208-240	5.7 @ 240V	20 @ 240V

**Kasco De-Icer Sizing Chart**  
Average Low Air Temperature (°F)

HP Size	34°-20° Orientation		19° - 0° Orientation		Minus 1° to Minus 20° Orientation		Great Lakes Orientation	
	Angled	Vertical	Angled	Vertical	Angled	Vertical	Angled	Vertical
1/2 HP	30' x 100'	65'	25' x 60'	50'	25' x 50'	45'	20' x 40'	35'
3/4 HP	35' x 120'	85'	30' x 80'	70'	30' x 75'	65'	25' x 50'	45'
1 HP	40' x 150'	95'	35' x 90'	80'	35' x 85'	75'	30' x 60'	55'

Assumption:

Unobstruted water

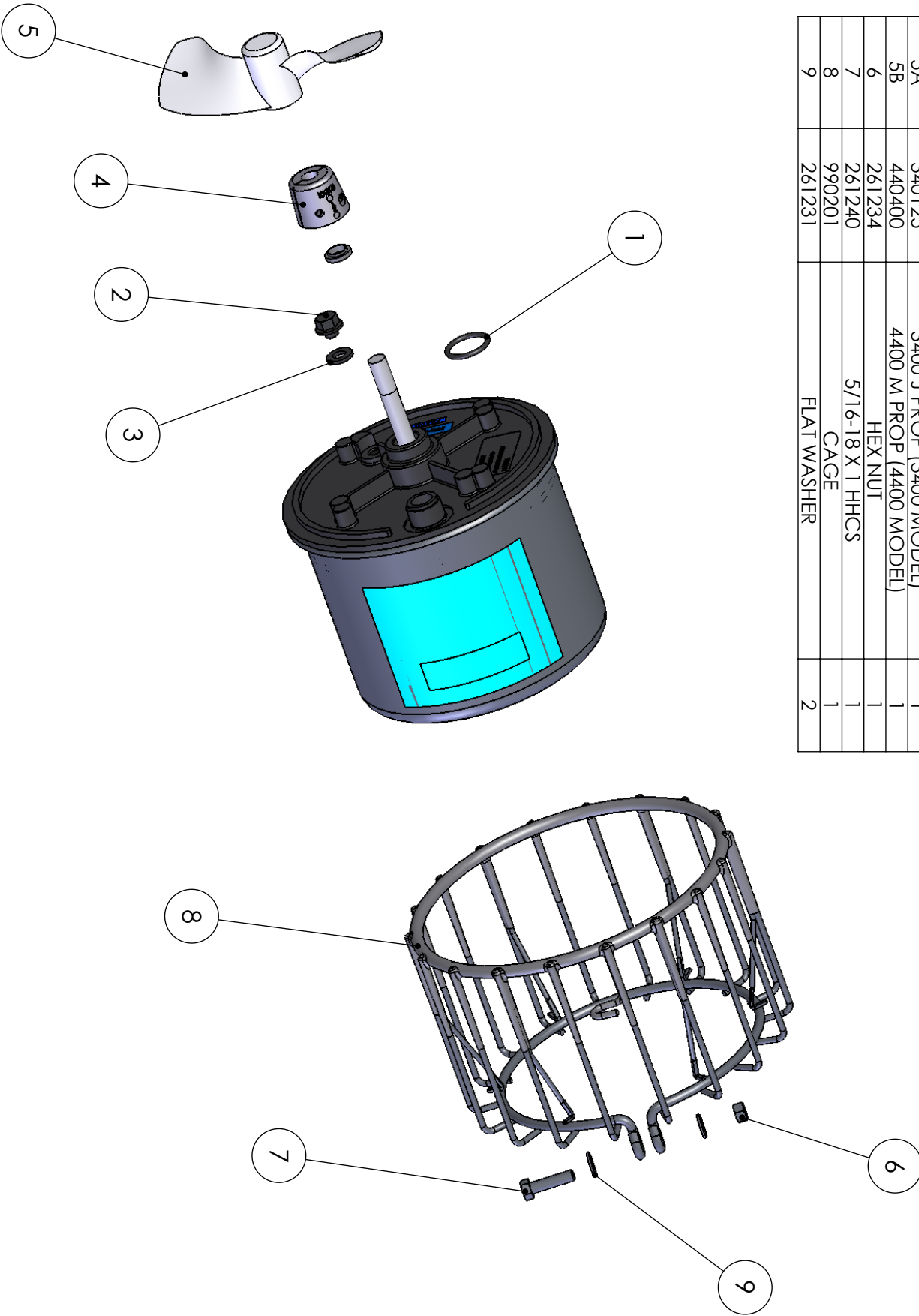
200 acre plus body of water with 20 feet plus maximum water depth or greater

Water depth in de-icing area 4 feet plus

\* Size may vary greatly based on a number of local conditions

# REPLACEMENT PARTS & ASSEMBLY DIAGRAM

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	990275	CORD O RING	1
2	990280	SEALING PLUG	1
3	990285	SEALING WASHER	1
4	243475	ZINC ASSEMBLY (2400 & 3400 MODELS)	1
4A	840475	ZINC ASSEMBLY (4400 MODELS)	1
5	240170	2400 K PROP (2400 MODEL)	1
5A	340125	3400 J PROP (3400 MODEL)	1
5B	440400	4400 M PROP (4400 MODEL)	1
6	261234	HEX NUT	1
7	261240	5/16-18 X 1 HHCS	1
8	990201	CAGE	1
9	261231	FLAT WASHER	2





# C-10 Thermostat Unit Control

## Owners Instructions



### **CAUTION:**

To ensure the safe operation and long life of your Kasco Equipment, always take the following precautions:

- Always keep people and objects clear of the De-Icer propeller when operating.
- Always disconnect the power before servicing or removing your De-Icer.
- Always operate your Kasco De-Icer in the water! Operating your De-Icer dry (on shore or dock) can cause damage to the seals or injure operator.
- Always mount your C-10 on a vertical surface and operate only with the cover closed.
- Never lift your Kasco De-Icer or C-10 control by the power cable. This could damage the power cable and make your De-Icer or control unsafe to operate.
- Kasco Marine highly recommends that all possible precautions be taken around open water De-Icing areas to ensure the safety of the public, i.e., “Thin Ice” and/or “Open Water” signs, appropriate lighting, fencing or other safety measures as required in your area.
- There are certain conditions under which no circulator can prevent ice damage such as ice that moves due to wind or current, extremely cold weather where ice forms all the way to the bottom and in some cases where the bottom water temperature is the same as ice (very shallow water). Effective operation can be somewhat restricted by too little bottom clearance.

### **INSPECTING YOUR C-10 UNIT CONTROL:**

Upon receiving your Kasco C-10 Unit Control, please unpack and inspect your C-10 for any possible damage that may have happened during shipment. Any damage or shortage should be reported to your dealer/delivery service immediately to ensure prompt resolution.

### **INSTALLATION:**

This unit must be mounted on a vertical surface close enough to your power supply to allow at least a slight slack in the power cord from the C-10. Select the screw(s) with which to mount your C-10. You will need two for the mounting holes at the top of the box and one for the mounting hole located at bottom of the C-10 box.

**Important:** Your C-10 is designed to operate only one Kasco De-Icer. For the most accurate operation, avoid placing your C-10 in direct sunlight.

### **OPERATION:**

#### **Step One:**

Plug the C-10 Power Cord into a properly grounded 120V outlet.

#### **Step Two:**

Set the temperature you desire the De-Icer to turn on using the Thermostat dial on the C-10. It is recommended to set the temperature at 30°F (top black numbers). The C-10 works on temperature fall. When the ambient air temperature reaches the set point on the thermostat, the De-Icer will turn on. There is a 2.5°F differential, so when the temperature rises to 2.5°F above the set thermostat temperature, the De-Icer will turn off.

#### **Step Three:**

Plug the *INSTALLED* Kasco De-Icer into the piggy-back plug of the C-10.

### **RECOMMENDATIONS & INFO:**

Use the following guide lines and hints to assist in customizing your setting for local conditions.

- De-Icers set up small localized currents the longer they run. Fewer and longer operation cycles will prove to be more effective than more frequent and shorter operation cycles.
- Fresh water freezes at 32°F, salt water at 28°F, and brackish water will freeze somewhere in between depending on the salinity level.
- Once activated, the thermostat stays activated until the temperature rises the 2.5°F differential, putting the temperature above the freezing point.
- If the temperature is hovering near the freezing point, any ice formation is minimized.
- Daily observation is suggested for all de-icing installation.
- A number of factors can increase freeze rates such as wind, snow, and colder temperatures. A sunny day can actually retard freezing.

**TWO YEAR LIMITED WARRANTY:**

Kasco Marine, Inc. warrants the C-10 Thermostat Control to be free from defects in material and workmanship under normal use and service. The Kasco Marine, Inc. obligation under this warranty is limited to replacing free of charge any defective part within two (2) years from date of purchase. Customer shall pay all shipping charges.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS 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.

No warranty registration is required, only original purchase receipt is needed for limited warranty coverage.

Warranty is void: If thermostat is damaged by unauthorized tampering or improper use.

**KASCO SERVICE PARTS:**

If the service parts listed below are not available from your local marine dealer, please order direct from Kasco Marine.

F2400 (1/2 HP) "K" Propeller

F3400 (3/4 HP) "J" Propeller

4400 (1 HP) "M" Propeller

Zinc Anode

Electric Power Cable, 25' length (16 gauge)

*Other lengths and gauges are available by special order.*

Specifications are subject to change without prior notice.

All orders shipped via United Parcel Service.



For Optional Kasco Parts or accessories, contact your local dealer or call Kasco Marine, Inc. at (715) 262-4488.



***The Industry Leader in  
Ice Control Engineering.***

KASCO MARINE, INC.  
800 Deere Road  
Prescott, WI 54021-1241

*Phone (715) 262-4488 \* Fax (715) 262-4487*

**[www.De-Icer.com](http://www.De-Icer.com) \* [sales@kascomarine.com](mailto:sales@kascomarine.com)**

# Kasco Model C-20 Time & Temperature Unit Control

## Owners Instructions



(Please read completely before installing and operating your Kasco Equipment)

### CAUTION:

To ensure the safe operation and long life of your Kasco Equipment, always take the following precautions:

- Always keep people and objects clear of the De-Icer propeller when operating.
- Always disconnect the power before servicing or removing your De-Icer.
- Always operate your Kasco De-Icer in the water! Operating your De-Icer dry (on shore or dock) can cause damage to the seals or injure operator.
- Always mount your C-20 on a vertical surface and operate only with the cover closed.
- Never lift your Kasco De-Icer or C-20 control by the power cable. This could damage the power cable and make your De-Icer or control unsafe to operate.
- Kasco Marine highly recommends that all possible pre-cautions be taken around open water De-Icing areas to ensure the safety of the public, i.e., “Thin Ice” and/or “Open Water” signs, appropriate lighting, fencing or other safety measures as required in your area.
- There are certain conditions under which no circulator can prevent ice damage such as ice that moves due to wind or current, extremely cold weather where ice forms all the way to the bottom and in some cases where the bottom water temperature is the same as ice (very shallow water). Effective operation can be somewhat restricted by too little bottom clearance.

### INSPECTING YOUR C-20 UNIT CONTROL:

Upon receiving your Kasco C-20 Unit Control, please unpack and inspect your C-20 for any possible damage that may have happened during shipment. Any damage or shortage should be reported to your dealer/delivery service immediately to ensure prompt resolution.

### INSTALLATION:

This unit must be mounted on a vertical surface close enough to your power supply to allow at least a slight slack in the power cord from the C-20. Select the screw(s) with which to mount your C-20. You will need one for the slot near the top of the box and you may wish to utilize the two additional mounting holes located near the inside bottom of the C-20 box. At this time, prior to final installation, you may wish to do some pre-programming of the timer and thermostat (see Programming below).

Install the De-Icer power cord through the hole in the lower left portion of the C-20 housing and plug it into the receptacle inside the C-20.

*Important:* Your C-20 is designed to operate only one Kasco De-Icer. For the most accurate operation, avoid placing your C-20 in direct sunlight. Complete programming the timer and thermostat now.

### PROGRAMMING:

The advance design of Kasco’s C-20 gives you both time and temperature control of your De-icer. The C-20 is wired in a series configuration giving you control based on both time and temperature. Your Kasco De-Icer will only operate when both the timer and the thermostat are activated. The red indicator light will only be lit when both time and temperature are activated.

Timer	Thermostat	De-icer
Off	Off	Off
On	Off	Off
Off	On	Off
On	On	On

You will need to program both the timer and thermostat to complete your programming and we will address the how’s, why, and recommendations for each separately below.

**TIMER:** The timer is programmable in 30 minute increments, but do not program the timer in segments of less than a one hour period at any time.

#### • Setting Timer:

1. Pull out each tripper for every half hour of ON time between desired hour mark on dial.
2. Turn dial clockwise  $\curvearrowright$  one or more revolutions until correct time-of-day is adjacent to the timer arrow in the center of dial.

**THERMOSTAT:** The thermostat has a 6°F differential. This means that the De-Icer will come ON at the temperature setting and will not go OFF until the temperature reaches 6°F above the ON setting.

#### • Setting Thermostat:

Set dial to temperature at which you wish to have your Kasco De-Icer begin activation.

### RECOMMENDATIONS:

Use the following guide lines and hints to assist in customizing your setting for local conditions.

- De-Icers set up small localized currents the longer they run. Fewer and longer operation cycles will prove to be more effective than more frequent and shorter operation cycles.
- Fresh water freezes at 32°F, salt water at 28°F, and brackish water will freeze somewhere in between depending on the salinity level. Most people find that by setting the thermostat a couple degrees below the freezing point, they can minimize unneeded operation time for two reasons:
  - A. Once activated, the thermostat stays activated until the temperature rises the 6°F differential, putting the temperature above the freezing point.

- B. If the temperature is hovering near the freezing point, any ice formation is minimized.
  - While picking time periods to operate, use these guidelines.
- A. Daily observation is required for all de-icing installation, so pick a time for operation when your installation would be observed, i.e., if you are De-Icing a dock at your home, you may decide to have it operate during your morning and/or evening meal time. If the unit is installed at a marina, one of the operation times should be during the Dockmaster's daily inspection of the De-Iced boats.
- B. A number of factors can increase freeze rates such as wind, snow, and colder temperatures. A sunny day can actually retard freezing. While picking operation times, remember to operate more when conditions will promote quicker freezing.
- C. Your programming will likely require some fine tuning, so remember to observe and be prepared to adjust your timer cycles.
- D. Remember that conditions do change, and you will need to either choose to program for worst case conditions or be willing to make some adjustments as time goes by.
- E. Objectives for use of the timer will vary by region, but as a general guideline, most people will be able to reduce operation time and energy consumption by 50-66%. Users in more severe conditions, such as the Great Lakes, will see less savings.
- F. ON cycles should be 2 to 6 times per day with neither ON nor OFF cycles being less than one hour.
- G. The following is a simple program giving a 50% operating time and 4 ON cycles. We are allowing more operation time during after dark hours and less during day light hours.

Cycle	Time	Length
ON	7:00am - 9:00am	2:00 hr
OFF	9:00am - 1:00pm	4:00 hr
ON	1:00pm - 3:00pm	2:00 hr
OFF	3:00pm - 7:00pm	4:00 hr
ON	7:00pm - 10:00pm	3:00 hr
OFF	10:00pm - 12:00am	2:00 hr
ON	12:00am - 5:00am	5:00 hr
OFF	5:00am - 7:00am	2:00 hr

This is only a sample to demonstrate some of the choices

- To bypass the time and operate only on temperature, pull all trippers on the timer to the ON position.
- Bypassing the thermostat to operate only on time can only be done when temperatures are below 40°F. To do so, set the thermostat to the highest temperature setting. The thermostat is still functioning, but would only shut down at that elevated temperature.
- When not in use, store inside away from salt air and sun light.

**TWO YEAR LIMITED WARRANTY:**

Kasco Marine, Inc. warrants the C-20 to be free from defects in material or workmanship under normal use and service. The Kasco Marine, Inc. obligation under this warranty is limited to replacing free of charge any defective part within two (2) years from date of purchase. Customer shall pay all shipping charges.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS 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.

No warranty registration is required, only original purchase receipt is needed for limited warranty coverage.

Warranty is void: If thermostat is damaged by unauthorized tampering.

**KASCO SERVICE PARTS:**

If the service parts listed below are not available from your local marine dealer, please order direct from Kasco Marine.

- F2400 (1/2 HP) "K" Propeller
- F3400 (3/4 HP) "J" Propeller
- 4400 (1 HP) "M" Propeller
- Zinc Anode

Electric Power Cable, 25' length (16 gauge)

*Other lengths and gauges are available by special order.*

Specifications are subject to change without prior notice.

All orders shipped via United Parcel Service.



For Optional Kasco Parts or accessories, contact your local dealer or call Kasco Marine, Inc. at (715) 262-4488.

***The Industry Leader in Ice Control Engineering.***

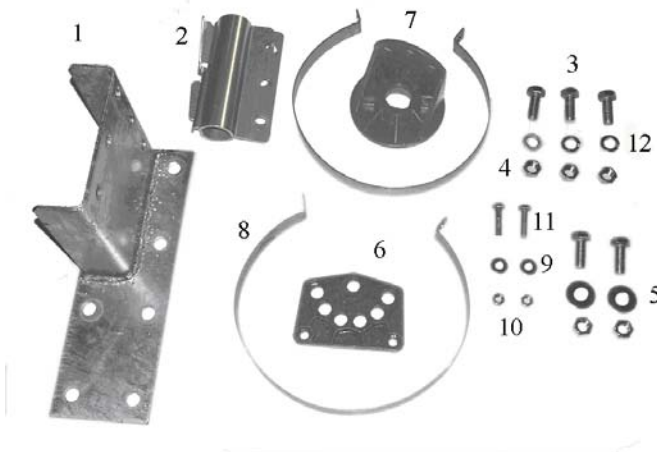


KASCO MARINE, INC. 800 Deere Road, Prescott, WI 54021-1241  
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# Universal Dock or Piling Mount Assembly & Installation Instructions

## PARTS INCLUDED

1. Dock Mount Base (1)
2. Clam Shell Pipe Clamp (1; set of 2 pieces)
3. 1/2"-13 x 1 1/4" Hex Head Bolt (5)
4. 1/2"-13 Nut (5)
5. 1/2" Flat Washer (2)
6. 9 Hole Plate (1)
7. 4 Hole Angle Bracket (1)
8. Dock Mount Strap (2)
9. 5/16" Flat Washer (2)
10. 5/16" Nut (2)
11. 5/16"-18 x 1 1/2" Hex Head Bolt (2)
12. 1/2" Lock Washer (3)



## TOOLS & SUPPLIES NEEDED

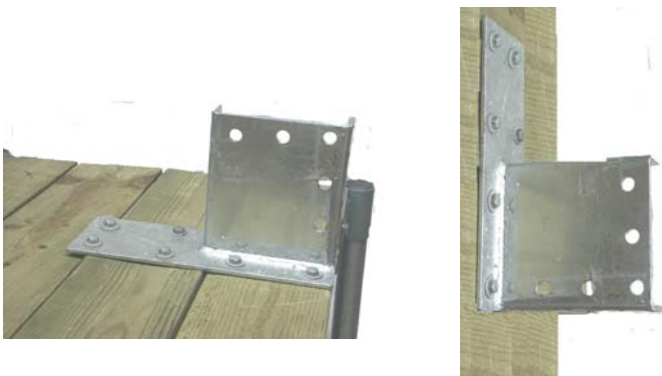
- 1" NPT or BSPT (European) Threaded Galvanized or Stainless Steel Pipe up to 10' long (1)
- Lag Screws or Bolts for Mounting to Dock (8)
- 3/4" Wrench
- 1/2" Wrench or 1/2" Socket with Ratchet
- 3/4" Socket with Ratchet

## Assembly Instructions

**Note:** Customer must provide the 1" galvanized or stainless steel threaded pipe extension not more than 10 feet in length. Since applications may vary, the user will supply the appropriate lag screws or bolts to secure the dock or piling base. Kasco urges that the base be mounted as securely as possible. **For salt water use, Kasco suggests that you use 1" stainless steel pipe.**

### STEP ONE:

Determine the most suitable application for your situation. Install the Dock Mount Base to your dock or piling using 8 mounting lag screws or bolts supplied by user. For mounting on dock surface or the horizontal surface make one end of the Dock Mount Base flush with the dock edge as shown. For piling or other vertical surface mount large end down as shown.



### STEP TWO:

Wrap one of the Dock Mount Straps around the De-icer can. Insert one 5/16 – 18 x 1 1/2" Hex Head Bolt through the 9 Hole Plate and then through the two holes in the strap. Use a 5/16" Washer and 5/16" Nut to hold the strap onto the can. Position the band as close to the De-Icer cage as possible and tighten using the 1/2" Wrench or Socket. Do not over tighten.



### STEP THREE:

Attach the 2<sup>nd</sup> draw strap to the Deicer can following the same procedure as step 2 using the lower hole on the 9 hole plate.



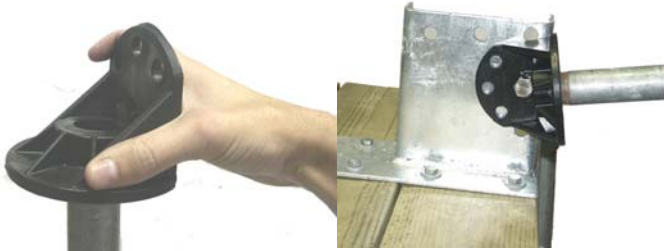
2400D (1/2HP) Band Placement



3400D & 4400D (3/4 & 1HP) Band Placement

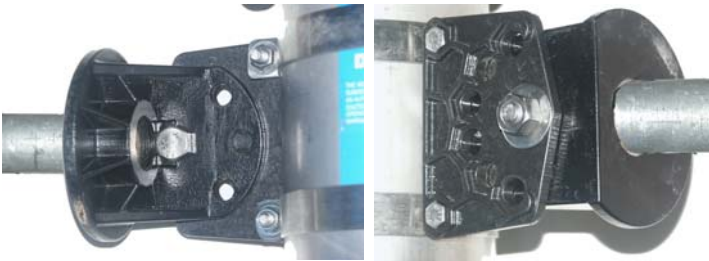
**STEP FOUR:**

First, thread the user supplied pipe extension (more than 10 ft is not recommended) into the 4 Hole Angle Bracket by hand to start to ensure the threads are aligned properly. Then temporarily mount it to the Dock Mount Base using one of the 1/2" Hex Head Bolts included to tighten further. Hand tighten only.



**STEP FIVE:**

Remove the 4 Hole Angle Bracket from the Dock Mount Base and attach the 4 Hole Angle Bracket to the 9 Hole Plate using a 1/2 - 13x1 1/4" Hex Head Bolt, 1/2" Flat Washer and 1/2"-13 Nut. Hand tighten at this point.



**STEP SIX:**

Adjust the angle of the 4 Hole Angle Bracket. The deicer can be set in 15 degree intervals. Once the 4 Hole Angle Bracket is in the desired position, insert one 1/2 - 13x1 1/4" Hex Head Bolts through the hole in the 9 Hole Plate that is aligned with the hole in the 4 Hole Angle Plate. Use a 1/2" Flat Washer and 1/2"-13 Nut to hold the bolt in place and tighten using the 3/4" Wrench or Socket. Make sure all bolts and nuts are now tight. (If more than one set of holes align use the holes closest to the de-icer.)



**STEP SEVEN:**

Place the Clam Shell Pipe Clamp onto the pipe extension. Make sure the two halves are interlocked. To interlock, insert the tabs into the openings and rotate 90 degrees.



**STEP EIGHT:**

Line up the 3 holes of the Clam Shell Pipe Clamp with the 3 vertical holes on the Dock Mount Base (connected to the dock or piling). Insert a 1/2 - 13x1 1/4" Hex Head Bolt into the top hole of the clamp and base. Use the 1/2" Lock Washer and 1/2-13" Nut to hold the bolts in place. Make sure the De-Icer is at the correct desired depth and hand tighten. Repeat with the two remaining holes and use the 3/4" Wrench and 3/4" Socket and Ratchet to tighten all three. (Use the 3 side holes shown in picture for mounting on a dock, or use the top 3 holes shown in picture when mounting to a piling.) Your Universal Dock Mount is now ready for use.



*The Industry Leader in  
Ice Control Engineering.*

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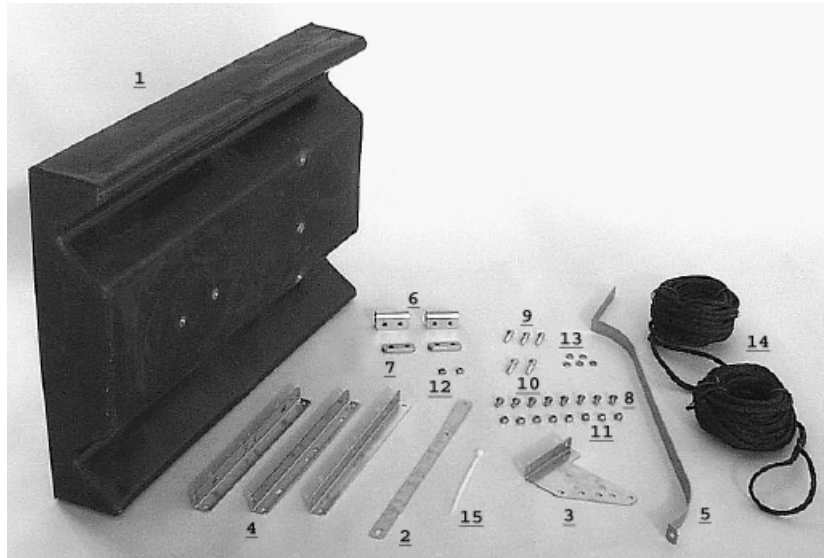
[www.De-Icer.com](http://www.De-Icer.com) \* [sales@kascomarine.com](mailto:sales@kascomarine.com)



# Horizontal Float Assembly & Installation Instructions

## PARTS INCLUDED

- A. Circulator (Unit with cord) (1)  
 B. Float in separate box (1) (Diagram to Right)
1. Float (1)
  2. Base Strap (1)
  3. Adjustment Bracket (1)
  4. Angle Bracket (3)
  5. Draw Band (1)
  6. U-Bracket (2)
  7. Spacer Bracket (2)
  8. 1/4" x 1/2" Stainless Steel Bolt (8)
  9. 1/4" x 1" Stainless Steel Bolt (3)
  10. 1/4" x 1-1/4" Stainless Steel Bolt (2)
  11. 1/4" Stainless Steel Lock Nut (8)
  12. 1/4" Stainless Steel Hex Nut (2)
  13. 1/4" Stainless Steel Lock Washer (5)
  14. 50' Black Nylon Ropes (2)
  15. Nylon Tie (1)



## TOOLS & SUPPLIES NEEDED

- 7/16" Wrench (1)
- 7/16" Socket & Ratchet (1)
- Felt-Tip Marker (1)
- Anchors or Stakes for Installation (2)
- 12" pieces of 1" galvanized pipe for weighting ropes (optional) (2)

### **STEP ONE**

Remove all contents from package and place on a clean, flat surface. Inspect the shipment for any damages. If damages are found, immediately notify your carrier and your Kasco Marine, Inc. representative. Make sure you have all the parts needed. If any shortages are found, contact your Kasco representative immediately.

### **STEP TWO**

Position the Float upside down (lengthwise channels facing up) and place the Base Strap so the three holes in the Base Strap align with the three threaded holes that comprise the lengthwise midline of the Float.

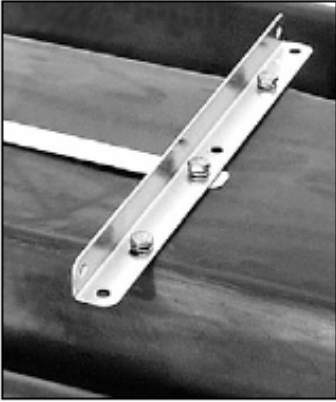


### **STEP THREE**

Position the Adjustment Bracket over the two holes at the back end of the Float and Base Strap. Loosely secure the Adjustment Bracket to the Float using two 1/4" x 1/2" Stainless Steel Bolts and two Stainless Steel Lock Washers. (See photo above for orientation.)

### **STEP FOUR**

Place one of the three Angle Brackets perpendicular to the Base Strap at the front end of the Base Strap. One of the two center holes of the Angle Bracket should be positioned over the hole in the Base Strap and the threaded hole in the Float. Secure the Angle Bracket to the Float using three 1/4" x 1/2" Stainless Steel Bolts and three Stainless Steel Lock Washers. (See photos on the next page for specific instructions based on the size circulator purchased.) Tighten all hardware at this time with the 7/16" socket and wrench.



### STEP FIVE

With a felt-tip marker, draw three to four marks around the circumference of the motor housing at the appropriate measurement from the back (or bottom) of the motor housing given below:

Model F2400: 3/4"

Model F3400: 3-3/8"

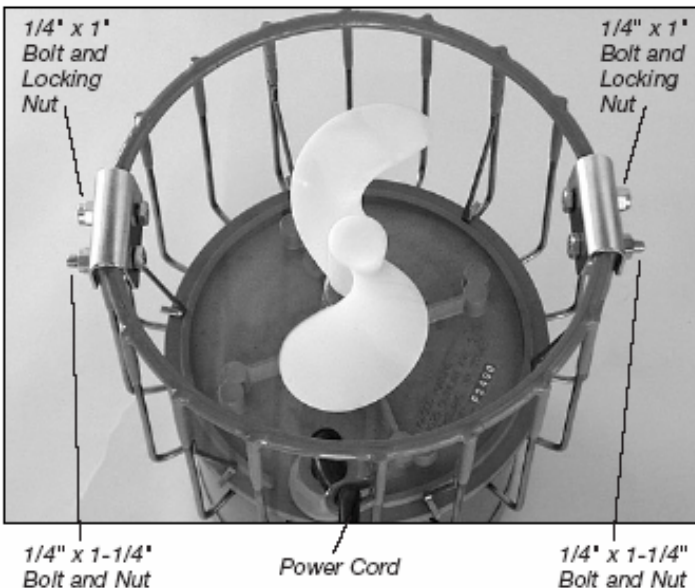
Model 4400: 3-3/8"

Model 8400: 3-1/4"



### STEP SIX

Place the two U-Brackets directly across from each other (180°) over the top ring of the motor cage. The cord clamp on the cage should be 90° from each of the U-Brackets.



### STEP SEVEN

Insert the Spacer Bracket under the U-Bracket and inside the cage. Secure this assembly using one 1/4" x 1" Bolt and a 1/4" Lock Nut, and one 1/4" x 1-1/4" Bolt and a 1/4" Hex Nut. The longer bolt should be on the side of the U-Bracket that is closer to the cord clamp. Tighten the hardware using the 7/16" wrench and socket & wrench until the U-Bracket clamps firmly around the cage (U-Bracket should pull together slightly). Repeat with the second U-Bracket.



### STEP EIGHT

Attach an Angle Bracket to each of the longer (1-1/4") bolts on the U-Brackets (See photo for orientation) with a 1/4" Lock Nut.



### STEP NINE

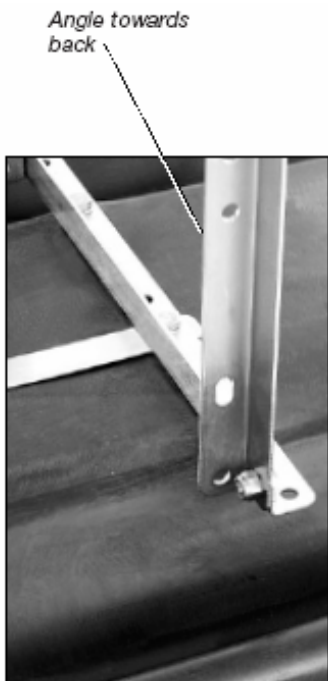
Wrap the Draw Band around the motor housing and position so that the back of the Draw Band touches the marks drawn in Step Five. There is no front or back to the Draw Band itself - it is reversible. Orient the arm of the Draw Band so it aligns with the cord clamp on the cage of the motor housing and is parallel to the Angle Brackets attached in Step Eight. Secure using a 1/4" x 1" Stainless Steel Bolt and a 1/4" Lock Nut. (See photo on next page.)



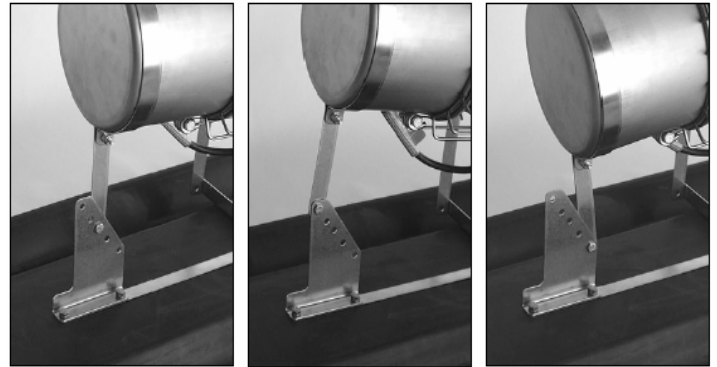
Step Nine

**STEP TEN**

Attach the Angle Bracket on the motor to the Angle Bracket on the Float using two 1/4" x 1/2" Bolts and two 1/4" Lock Nuts (one set for each Bracket). See photo for orientation based on model size. Also, the cord clamp on the cage should be oriented toward the Float.

**STEP ELEVEN**

Attach the Draw Band on the motor to the Adjustment Bracket on the Float using a 1/4" x 1/2" Bolt and a 1/4" Lock Nut. Select one of the five possible positions to mount the Draw Band for your preferred direction of flow (three are pictured on next page).



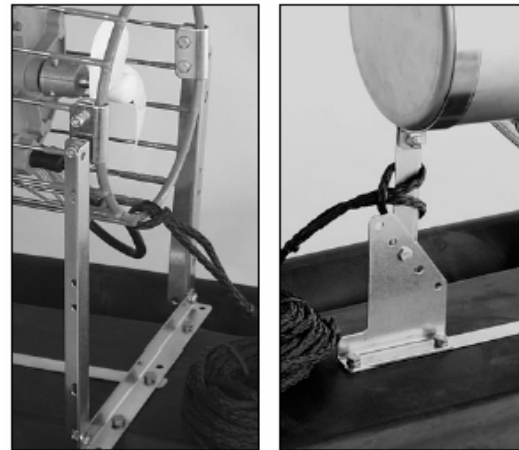
Horizontal

Angled Up

Angled Down

**STEP TWELVE**

Attach the Ropes to the front (on the cage) and back (around the Draw Band) of the motor. At this time, use the Nylon Tie provided to connect the power cord and front Rope to prevent the cord from tangling in the prop. Also, if the power cord has a Quick Disconnect and Additional Strain Relief, attach the Strain Relief to the cage of the unit and double check the threaded collar on the Quick Disconnect to ensure it didn't loosen during shipping.

**STEP THIRTEEN**

Float the circulator in the water and position where desired. Tie the front Rope to a stake on the shore or weight. If a weight is used sink weight in front of unit so rope is taught. (Circulator create great force, make sure weight is enough to prevent movement.) Tie back Rope to a stake on opposite shore or weight. Sink weight behind the unit so rope is taught. At this time take up any slack in the line.

## TROUBLESHOOTING TIPS

Below are some helpful troubleshooting tips. If a problem occurs, please double check the assembly and installation instructions as well as the instructions for the proper control panel. More troubleshooting tips can be found at [www.de-icer.com/general\\_info\\_troubleshooting.htm](http://www.de-icer.com/general_info_troubleshooting.htm) . Contact Kasco Marine at 715-262-4488 for further diagnosis if these fail.

### **“My De-Icer trips the ground fault interrupter on the circuit.”**

This is the most common symptom of several possible problems. To correctly diagnose the problem, you will need to collect more information. A Ground Fault Interrupter (GFI) breaker that trips can indicate an electrical service problem, water contamination in the unit and/or cord, bad breaker, control box problems, motor problems, etc. Try to find out the answers to these questions before you contact Kasco to narrow down the problem.

- \* How long does it take to trip the breaker?
- \* Does it always take the same amount of time to trip?
- \* How many times has it tripped?
- \* Has there been any electrical problems in the area recently?

### **“My De-Icer seems to run slowly.”**

This can also be a symptom of several possible problems. There could be an electrical problem where the unit is not getting the proper voltage. This could also indicate a problem with the motor of the unit, which needs to be looked at by an Authorized Repair Center. Check that the unit is receiving the proper voltage, and, if so, contact Kasco for further steps.

### **“My De-Icer hums, but will not start. When I spin the prop with a stick, it starts up.”**

This indicated a problem with the Starting Capacitor. Each Kasco De-Icer is equipped with a Starting Capacitor to get the unit going when it is first plugged in. If it is operating, but not spinning and can be started by spinning the prop with a stick, the Starting capacitor needs to be replaced by an Authorized Repair Center.

### **“My De-Icer turns itself off and back on without the thermostat and without tripping the GFI breaker.”**

Each Kasco De-Icer has a Thermal Overload built in that will turn the unit off when it overheats. Once the unit has cooled down, it will start back up. If you are noticing these symptoms, the unit should be unplugged immediately because the Thermal Overload will continue to turn on and off until it burns out and damages the motor. The unit should be unplugged and taken out of the water to find the cause of the problem. The problem could be one of many, such as, low water levels, build-up on the unit to prevent heat dissipation, something inhibiting the free rotation of the shaft, etc. If something is caught in the unit or there is a build-up on the unit, remove the debris and, if caught early enough, the unit should be fine. Contact a Kasco representative before restarting the unit.

### **“My De-Icer flow seems to fluctuate and/or be less than usual.”**

This can occur because of a few different reasons. Most of the time, this symptom is caused from unit being clogged with debris. A mat of weeds, many leaves, plastic bags, etc. can clog up the unit and cause it to be starved of water. If the unit does not have the proper amount of water, the flow or pattern will fluctuate up and down and look sporadic. If you are seeing these symptoms, unplug the unit and clean away the debris that is clogging the cage. Another possibility if these symptoms are noticed, is a chipped or damaged prop that is causing the unit to wobble and not pump properly. When the unit is unplugged, check the prop for damages and replace if damage is found.

### **“My C-20 does not seem to be working properly.”**

Most of the time, a C-20 that is not working properly is from a setup error. The C-20 Time and Temperature Control must have BOTH the Timer AND Thermostat activated. (The timer must be in an ON position and the outside air temperature must be lower than the setting on the thermostat.) Keep in mind, the thermostat may take a few hours to adjust to the outside temperature. Make sure the C-20 is not in direct sunlight which would heat up the thermostat. If both are activated, the small light in the upper left hand corner of the control box will be lit up. A test that can be done is to put the C-20 in the freezer for a couple hours and then test it. If your outdoor temperature is cold enough, you can set up the C-20 and plug a light into it. Watch it throughout the evening to see if and when the light comes on. If all else fails, please contact Kasco for assistance.



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[www.De-Icer.com](http://www.De-Icer.com)   [Sales@KascoMarine.com](mailto:Sales@KascoMarine.com)

### Kasco Repair Sheet — Customer Info.

#### **\* Important Reminders \***

- **All repairs sent in MUST be accompanied by a copy of this completed sheet!**
- Routine maintenance consists of checking the zinc anode regularly and replacing if necessary, keeping the unit clean, keeping the stainless steel can clean, and having the seals and oil replaced every 3-5 years depending on use.
- Address your Repair to Kasco Marine, Attn: Repairs (or to your Authorized Repair Center).
- Shipping to Kasco or an Authorized Repair Center is paid for by the customer.
- You must include the power cord and cage assembly with each unit sent in for repair to be considered for warranty repair!
- Do not ship the float and/or control box with the unit for repair, unless otherwise instructed.

Today's Date: \_\_\_\_\_

#### **Customer Information**

Name: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Address: \_\_\_\_\_

Alternate Number: \_\_\_\_\_

City: \_\_\_\_\_

Email Address: \_\_\_\_\_

State: \_\_\_\_\_

Zip Code: \_\_\_\_\_

#### **Unit Information:**

Model # (Ex. 3400D): \_\_\_\_\_

Serial # (Ex. 6001D34025): \_\_\_\_\_

Date Purchased: \_\_\_\_\_

Purchased From: \_\_\_\_\_

Earliest Date of Problem: \_\_\_\_\_

#### **Description of Problem**

#### **Comments**

## De-Icer Warranty Information

Please register your Kasco De-Icer online at

[www.de-icer.com/solutions\\_warranty\\_registration.htm](http://www.de-icer.com/solutions_warranty_registration.htm)

**Also, fill in the information below and keep for your records.**

**Model # (Ex. 2400D)** \_\_\_\_\_

**Serial # (Ex. 6001D21725)** \_\_\_\_\_

**Purchase Date:** \_\_\_\_\_

**Purchased From:** \_\_\_\_\_

**Registration Date:** \_\_\_\_\_



**Kasco Marine, Inc.**

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Prescott, WI 54021

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