

**FogMate™ Horn Controller**  
**Installation and Operation Manual**

**FogMate™**

**Intelligent Signaling in Low-Visibility**

**Be "Safe and Sound"™**  
**and Distress Situations at Sea**

**TSX Products Corp.**  
**Marine Electronics Division**  
**[www.FogMate.com](http://www.FogMate.com)**



Congratulations on your purchase of the FogMate Horn Controller.

This device conveniently manages your vessel's horn and automatically produces the recommended horn patterns for fog, other conditions of limited visibility, and distress situations.

We are proud of this product and know you will be proud to own and use it. We have provided you with a detailed installation and operation manual. Please do not be put off by the manual's length. It includes specific information for all major installation types for various configurations of motor boats, sail boats, and hybrids (Motor/Sail).

The first few pages of this manual will help you determine your vessel's installation type.

Once you have determined your installation type, you will only need to read a few pages of the manual.

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## **Disclaimer**

The FogMate horn controller automates the sounding of repetitive signals used in conditions of limited visibility or distress. It is not a guarantee of safety under these conditions. There is no substitute for good seamanship in the difficult conditions created by limited visibility or distress. The end of this manual suggests a few pointers for safe operation in fog. These are pointers only. It is not suggested or implied that these pointers are a sufficient or thorough treatment of the topic of good seamanship.

### ***Warranty Card Return***

Please make sure you send in your warranty information. You can reply with the enclosed warranty card, or visit [www.FogMate.com](http://www.FogMate.com). Both methods are quick and easy ways to ensure that TSX Products Corp. keeps you up to date on product announcements, and tips for operating your vessel in fog.

*FogMate™ and “Safe and Sound™” are trademarks of TSX Products Corp. FogMate Horn Controller is patent pending.*

*COLREGS is the summary term for the International Rules of the Road, Convention for Preventing Collisions at Sea. For more information, see page 46.*

# Introduction

Congratulations on your purchase of a FogMate horn controller. FogMate has been designed to work for all vessel types in a number of different installation types. This manual will guide you through:

1. Selecting the installation option that is correct for you
2. Installing FogMate on your vessel
3. Operating FogMate

**DON'T BE OVERWHELMED BY THE SIZE OF THE MANUAL.**

It is large because FogMate can be configured for motor boats, sail boats, or motor/sailers. For each vessel type, there are several alternative installation options. It takes a lot of pages to cover all the alternatives!

**YOU ONLY NEED TO READ A FEW PAGES OF THE MANUAL.**

Please look over our “Tips for Operating Your Vessel in Fog or in Distress Situations” on *page 38*. Your knowledge about safe operation in fog will complement your good decision to purchase a FogMate and will further ensure your safe operation in conditions of limited visibility.

This manual applies to both the 12 and 24 volt versions of FogMate. Note that you must use 12 volt FogMates on vessels with 12 volt POWER, and 24 volt FogMates on vessels with 24 volt POWER. The unit will not operate properly if supplied the wrong voltage POWER. 12 volt FogMates are potted in black epoxy. 24 volt FogMates use a grey epoxy potting compound.

# Choosing the Installation Type for Your Vessel

Choosing your FogMate installation type involves two steps:

1. Determining your vessel type
2. Choosing an installation type for your vessel type.

The U.S. Coast Guard specifies different blast patterns for vessels that are powered by motor vs. those that are powered by sail. FogMate has different installation types for each vessel type.

## Determining Your Vessel Type

**Motor vessel** - always powered by motor

**Sail vessel** - always powered by sail (you have no engine)

**Motor/Sail Vessel** - sometimes powered by motor, sometimes by sail

Now that you have determined your vessel type, turn to the page designated in the table below to select installation type.

Vessel Type	Go To Page
MOTOR	8
SAIL	9
MOTOR/SAIL	10

## Motor Powered Vessels

FogMate offers four installation types for motor powered vessels. The following will help you choose the installation type that is right for your vessel.

The first two options enable a fully functional installation of FogMate without making any panel cuts to your vessel's helm or adding any new switches. The second two options require the addition of a new, dedicated switch to your vessel for FogMate. Select the option below that matches your preferences.

- You prefer not to add any switches to your helm. You will use your navigation light switch to activate FogMate, and your horn switch to select the blast pattern.
  - If your helm has a single switch for underway/at anchor navigation lights - use installation type **MOTOR-1**.
  - If your helm has separate switches for bow lights and stern lights - use installation type **MOTOR-2**.
- You would like to add a new switch to your helm to turn FogMate on/off, and use your horn switch to select the blast pattern - use installation type **MOTOR-3**.
- You would like to add a new switch to your helm that will turn FogMate on and off. The same switch will select between UNDERWAY and STOPPED blast patterns, and will automatically start them. (Blast patterns for RESTRICTED MANEUVERABILITY and SOS-DISTRESS are still available and may be selected by using the horn switch) - use installation type **MOTOR-4**.

Once you have chosen your Installation type, proceed to the General Instructions... section (**page 11**) of this manual.



## Sail Powered Vessels

FogMate offers three installation types for sail powered vessels. The following will help you choose the installation type that is right for your vessel.

The first two options enable a fully functional installation of FogMate without making any panel cuts to your vessel's helm or adding any new switches. The third option lets you add a new, dedicated switch to your vessel for FogMate. Select the option below that matches your preferences.

- You prefer not to add any switches to your helm. You will use your navigation light switch to activate FogMate, and your horn switch to select the blast pattern. Then -
  - If your helm has a single switch for underway/at anchor navigation lights - use installation type **SAIL-1**.
  - If your helm has separate switches for bow lights and stern lights - use installation type **SAIL-2**.
- You would like to add a new switch to your helm to turn FogMate on/off. The UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY signals (which are the same for sail vessels) will start when the switch is turned on. You can still use your horn switch to select the DISTRESS blast pattern - use installation type **SAIL-3**.

Once you have chosen your Installation type, proceed to the General Instructions... section (**page 11**) of this manual.

## Motor and Sail Powered Vessels

FogMate offers two installation types for Motor/Sail powered vessels. Motor/Sail installations require at least one new helm switch in order to choose between Motor and Sail blast patterns. Select the option below that matches your preferences.

- You prefer to add only one new switch to your helm. The switch will activate FogMate and simultaneously select between Motor or Sail patterns. You will use your horn switch to select the specific blast pattern. You will need to provide one ON-OFF-ON “Double-Pole Double-Throw” (DPDT) switch. This is a readily available switch that can be purchased from your local marina or marine retailer. In this case, use installation type **MOTOR/SAIL-1**.
- You would like to add two new switches to your helm. One switch will select between blast patterns for MOTOR or SAIL vessels. The other switch will turn the FogMate controller on and off. This same switch will select between UNDERWAY and STOPPED patterns and automatically start them. The RESTRICTED MANEUVERABILITY and DISTRESS signals can be selected using the horn switch. In this case, use installation type **MOTOR/SAIL-2**.

## **General Instructions for All Installation Types and All Vessels**

The FogMate controller has been designed to make the installation as simple as possible. The supplied wiring harness is color coded and is already assembled with the proper connectors. The connectors are special push-on splicing connectors. There should be no need to cut any wires on your existing helm wiring.

Each of the installation types will follow these basic steps:

1. Disconnect the vessel's battery or turn the battery switch OFF while installing the FogMate controller.
2. Mount the FogMate controller behind the helm.
3. Connect the wiring harness to the switches and GROUND connections.
4. Connect the wiring harness to the FogMate controller.
5. Reconnect the vessel's battery or turn the battery switch ON.
6. Apply the Brief Operating Instructions label to your helm.
7. Test your installation.

The following is a little more detail on each of these steps. You can look ahead to the wiring chart for your particular installation type to follow along with the detailed instructions.

## ***Disconnect the Battery***

There is not much danger involved in installing your FogMate controller, but disconnecting power is good practice whenever you are working behind your helm. This can be accomplished in one of three ways:

- Disconnect the vessel's battery (POWER).
- If you have a battery switch, turn it OFF.
- If you have a main breaker that shuts off all power to the helm, turn it OFF.

## ***Mount the FogMate Controller***

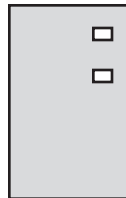
You will need to secure the FogMate controller to keep it from vibrating or bouncing in such a way that it could work the wiring connectors loose. The FogMate controller has two mounting holes to allow you to mount the controller to the back of the helm or other secure surface using screws or other appropriate fasteners. Two screws are included for this purpose. Alternatively, you could tie the controller to a wiring trunk or other rigid fixture using nylon cable ties.



## ***A few tips on connecting to switches***

The wiring diagrams in this manual follow the conventions of the American Boat and Yacht Council (ABYC). Vessels of recent vintage are likely to follow the color code standards, but older vessels may not. If your vessel's wiring does not follow the colors marked on the diagram for existing wiring, don't be concerned. Your vessel was probably manufactured before the color code standard was adopted. If this is the case, you will need to trace the wires from their destinations back to the helm to identify them.

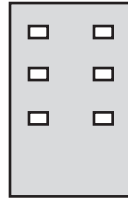
You may be working with SPST type switches or DPDT type switches depending on which installation type you chose.



*SPST Switch Outline*

SPST switches are simple on/off switches. You have two wires to connect, and it doesn't really matter which wire connects to which connector on the switch.

DPDT switches connect either the top or bottom contacts to the center contact. An ON-OFF-ON type of DPDT switch has a center OFF position in which the center contact is not connected to anything. It might be a challenge to figure out which position of the switch connects which two contacts. For most cases, if you guess wrong, you can simply swap the FogMate connections to the top and bottom row tabs.



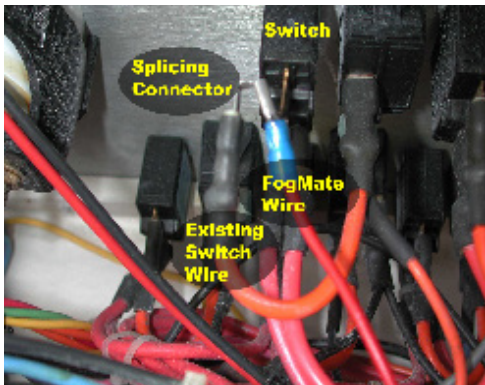
DPDT Switch Outline

Here's an extra tip for wiring to the pre-existing light switch which turns on the underway (bow and stern) or at anchor (stern only) lights. This is only done in the MOTOR-1, SAIL-1, and MOTOR/SAIL-1 installation types. Look at your installation type diagram. Notice that on the diagram, the bottom contacts on this switch are only connected on one side (i.e. stern light only). That side is the "at anchor" side.

## Connect the Wiring Harness to the Switches and Ground

The wiring harness is made up of seven color coded wires that are referenced by color labeled lines in the installation type diagrams. Most installation types do not use all wires in the harness.

The wires will have different connectors on the two ends. The U-shaped connectors are splicing connectors. These are located on the end of the wiring harness that connects to your helm switches. A splicing connector is



provided for connections that need to "double up" on the back of

a switch. The other end of the harness will have simple female connectors that connect directly onto the FogMate controller.

Look at the wiring diagram for the installation type you chose. Every colored wire going to a switch on the diagram should have a corresponding wire in the harness of the same color. You will need to connect the correct wire to the correct position on the switch. If the diagram shows that an existing wire (colored gray on the diagram) shares a switch connection with a harness wire, then:

- Disconnect the existing wire from the switch.
- Connect the existing wire to the male splice tab on the harness wire to be connected. Be careful when connecting the existing wire to the splice tab. Excessive force could bend or break the splice tab.
- Connect the female side of the splice connector to the switch, replacing the original connection.
  - Tie the two wires together to secure the connection with a cable tie.
  - Be sure all connections are secure. Marine vessels can be subject to sustained vibration that could shake connections loose if not firmly snapped in place.



## ***Connecting the HORN SWITCH and HORN Wires***

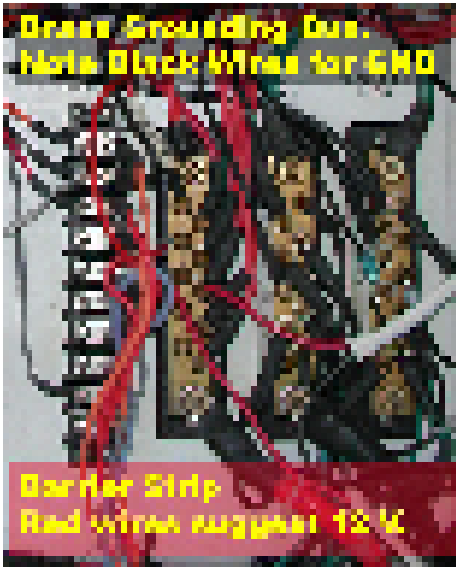
When activated, the FogMate controller behaves like a switch in parallel with your existing horn switch.

The horn switch is typically an SPST switch that connects vessel POWER to the horn, or connects GND to a horn relay (more typical of air horns). There are two wires that connect to the horn switch. The HORN signal (white stripe on orange) connects to the wire that goes to your horn or horn relay. The HORN SWITCH (orange stripe on white) connects to the other switch

contact and carries either POWER or GND depending on your horn installation.

## ***Making Connections to GROUND***

There are three signals that may need to be connected to the vessel's ground (GND). The GND wire (black) must be connected to GROUND for all installation types. The SAIL/MOTOR (white/black stripe) and INSTALL TYPE (white/green stripe ) wires may be connected to GROUND depending on the installation type that you chose.



You can usually find a ground connection from a brass terminal bar or a barrier strip behind the helm. There may also be a strip for POWER. Be sure you choose the one labeled GROUND or COMMON. Ground connections typically are made with black wires.

When you think you are done, double check your work. Count the number of color labeled

wires on your installation-type wiring diagram. You should be using that number of wires from the wiring harness. When you are convinced that your installation is successfully completed (that is, after you have tested it using the procedure on *page 18*), you should either remove any unused wires from the harness or tie back the ends and tape over the exposed connectors.



## **Connect the Wiring Harness to the FogMate Controller**

The connection tabs are labeled on the sides of the FogMate controller, and a color code icon is directly under each tab to indicate which wire color connects to that tab. Connecting the wiring harness to the FogMate controller is a simple matter of connecting the wires in the harness to the correct tab on the controller.

Not all installation types use all wires and tabs. Don't be concerned if you have unused tabs.



*This Motor-1 installation type only requires four connections.*

## **Re-connect the Battery**

Congratulations, your FogMate controller installation is almost complete. Now reconnect your vessel's POWER to the helm by reversing the procedure you selected on *page 12*.



# Apply the Helm Label

The operating instructions are summarized on this label. Apply it to a conspicuous surface so you can refer to it when you need to use FogMate. For some installation types you will select the blast pattern using your existing horn switch. For other installation types, a switch will select between the UNDERWAY and STOPPED patterns, while the RESTRICTED MANEUVERABILITY and DISTRESS signals can be selected using the existing horn switch. For these switch selected installations, the Helm Label can be trimmed as shown below.



Some users may wish to leave the Helm Label untrimmed, even in installations in which the right-hand portion of the label will not be needed for operation of the vessel's FogMate horn controller. Keeping the full label provides a quick reminder of the horn patterns you are likely to hear from other boats so that you can determine their activity, in addition to their presence.

Installation types MOTOR-4, SAIL-1, SAIL-2, SAIL-3, and MOTOR/SAIL-2 optionally may trim the helm label at the location indicated by the vertical line.

## ***Testing Your Installation***

Check your work before heading out to sea! Here is a quick test that should verify that you have wired the connections properly. You might be tempted to cover your horn to minimize the volume level during testing. Do not tightly cover the end of the horn. You could permanently damage your horn if you don't allow sufficient air to flow from the horn.

1. With the FogMate controller turned off, manually blast your horn. It should operate as it did before you installed the FogMate controller.
2. Following the operating instructions for your installation type, turn on the FogMate controller and sound a fog signal for UNDERWAY. Motor boats should hear a single Long (L) blast. Sail boats should hear a Long-Short-Short (LSS) blast. Motor/Sail boats should hear one of these two signals that corresponds to the setting of the Motor/Sail switch. Motor/Sailers should test the patterns for both Motor and Sail.
3. Turn off the FogMate controller. Following the operating instructions for your installation type, turn on FogMate and sound a fog signal for STOPPED. Motor boats should hear a two Long (LL) blasts. Sail boats should hear a Long-Short-Short (LSS) blast. Motor/Sail should hear one of these two signals that corresponds to the setting of your Motor/Sail switch. Motor/Sailers should test the patterns for both Motor and Sail.
4. After the blast pattern has been sounded for STOPPED, sound the horn manually during FogMate's quiet period. You should have control of the horn when it is not being sounded for an automated pattern.
5. Approximately two (2) minutes after the STOPPED blast pattern was sounded, it should sound again.
6. Turn off the FogMate controller. Your testing is complete!

# **FogMate Horn Controller Operating Instructions and Wiring Diagrams**

# MOTOR-1 Installation Type

## Operating Instructions

1. Turn on the navigation lights (either “underway” or “at anchor”) to activate FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY	1	LONG
STOPPED	2	LONG LONG
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the navigation lights for one second. If you want to proceed with the navigation lights on, but no blast pattern, simply turn the navigation lights back on. As long as you do not sound the horn within 3 seconds of turning on the lights, the FogMate controller will remain silent.

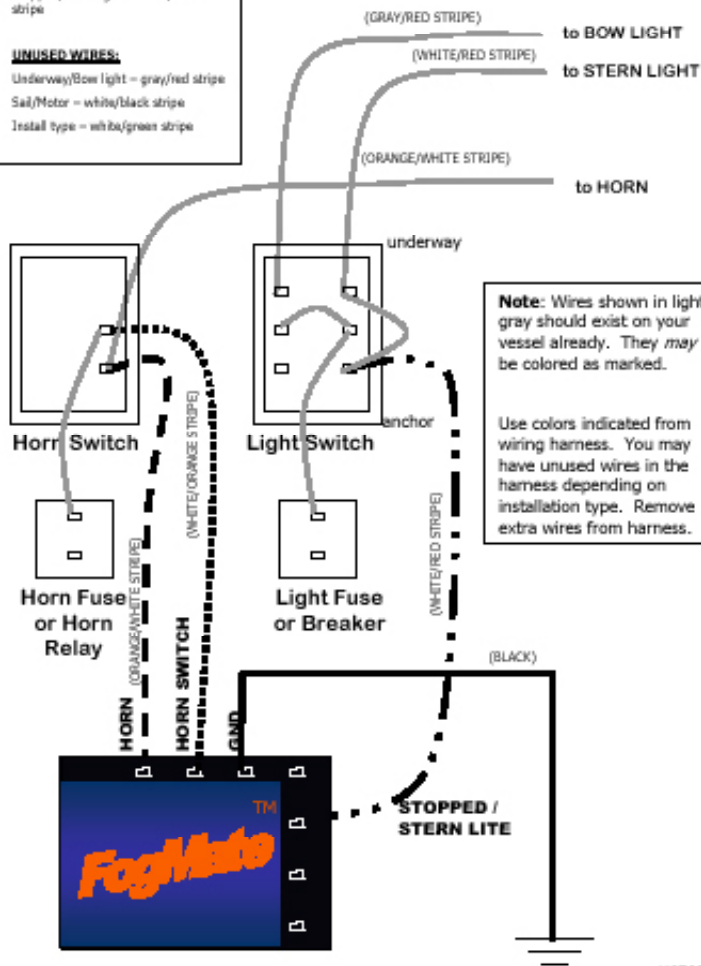
# MOTOR-1 Wiring Diagram

## WIRING HARNESS WIRES USED:

Horn = orange/white stripe  
 Horn Switch = white/orange stripe  
 Ground = Black  
 Stopped/Stern light = white/red stripe  
 Underway/Stem light = white/black stripe

## UNUSED WIRES:

Underway/Stem light = gray/red stripe  
 Sail/Motor = white/black stripe  
 Install type = white/green stripe



MOTOR-1

## MOTOR-2 Installation Type

### Operating Instructions

1. Turn on either the “bow light” or “stern light” switch to activate FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY	1	LONG
STOPPED	2	LONG LONG
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off **BOTH** navigation lights for one second. If you want to proceed with the navigation lights on, but no blast pattern, simply turn the navigation lights back on. As long as you do not sound the horn within 3 seconds of turning on the lights, the FogMate controller will remain silent.

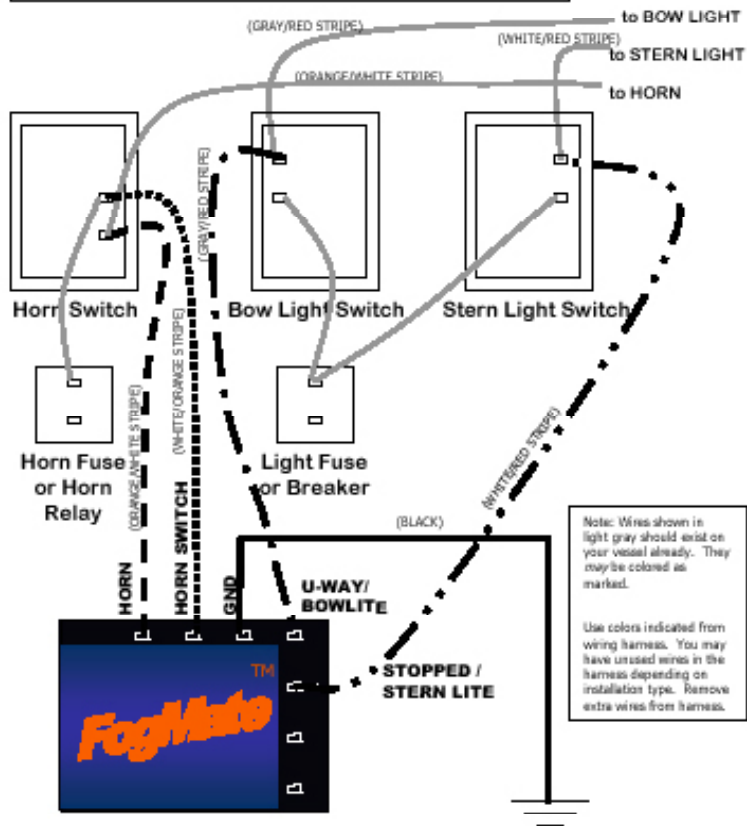
# MOTOR-2 Wiring Diagram

## WIRING HARNESS WIRES USED:

Horn – orange/white stripe  
 Horn Switch – white/orange stripe  
 Ground – Black  
 Underway/Bow light – gray/red stripe  
 Stopped/Stern light – white/red stripe

## UNUSED WIRES:

Sail/Motor – white/black stripe  
 Install type – white/green stripe



MOTOR-2

## MOTOR-3 Installation Type

### Operating Instructions

1. Turn on the FOG SIGNAL switch to activate FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY	1	LONG
STOPPED	2	LONG LONG
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the Fog Signal switch.





## MOTOR-4 Installation Type

### Operating Instructions

1. Turn on the Fog Signal switch to the UNDERWAY or STOPPED positions to activate the FogMate controller and immediately start the UNDERWAY or STOPPED blast patterns.
2. To start the RESTRICTED MANEUVERABILITY or DISTRESS patterns, press the horn switch on your helm within three seconds of activating the FogMate controller to select between these automated patterns. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the Fog Signal switch.



# SAIL-1 Installation Type

## Operating Instructions

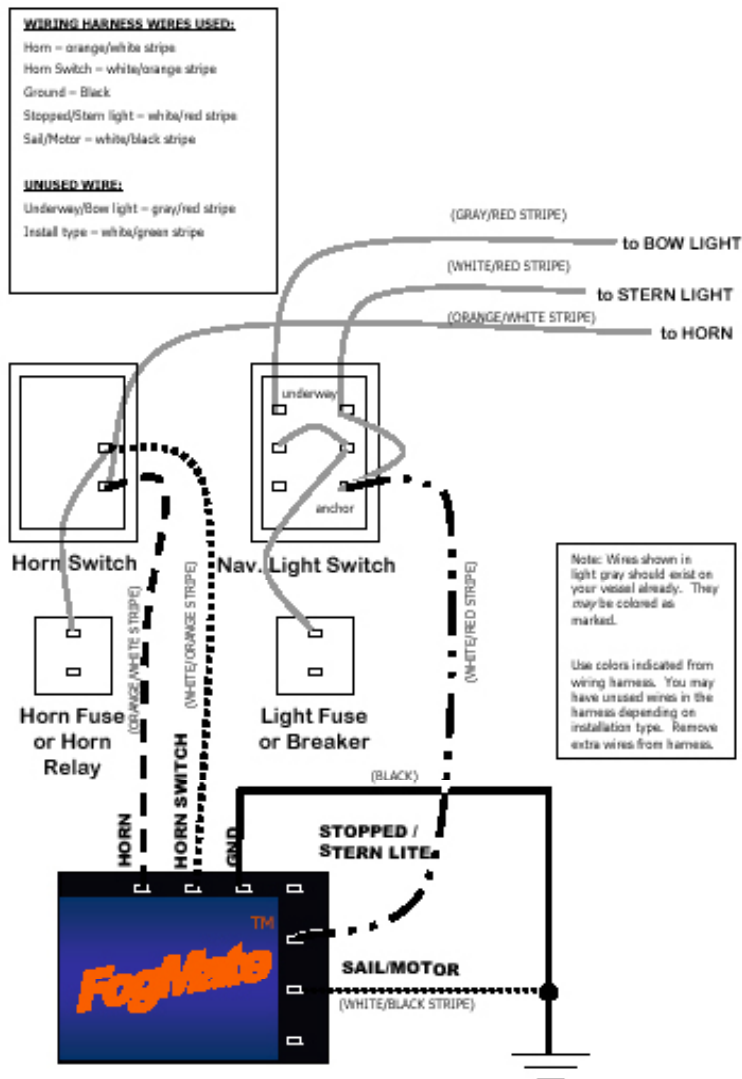
1. Turn on the navigation lights (either “underway” or “at anchor”) to activate FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. Note that the blast patterns for UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY are identical for vessels under sail. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY	1	LONG SHORT SHORT
STOPPED	2	LONG SHORT SHORT
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the navigation lights for one second. If you want to proceed with the navigation lights on, but no blast pattern, simply turn the navigation lights back on. As long as you do not sound the horn within 3 seconds of turning on the lights, the FogMate controller will remain silent.

# SAIL-1 Wiring Diagram



SAIL-1

## SAIL-2 Installation Type

### Operating Instructions

1. Turn on either the “bow light” or “stern light” switch to activate FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. Note that the blast patterns for UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY are identical for vessels under sail. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY, STOPPED, or RESTRICTED MANEUVERABILITY	1	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off **BOTH** navigation lights for one second. If you want to proceed with the navigation lights on, but no blast pattern, simply turn the navigation lights back on. As long as you do not sound the horn within 3 seconds of turning on the lights, the FogMate controller will remain silent.



## **SAIL-3 Installation Type**

### ***Operating Instructions***

1. Turn on the Fog Signal switch to activate the FogMate controller and immediately start the UNDERWAY, STOPPED or RESTRICTED MANEUVERABILITY blast patterns. Note that the blast patterns for UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY are identical for vessels under sail (LONG SHORT SHORT pattern).
2. To start the DISTRESS pattern, press the horn switch on your helm within three seconds of activating the FogMate controller to select this automated pattern. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

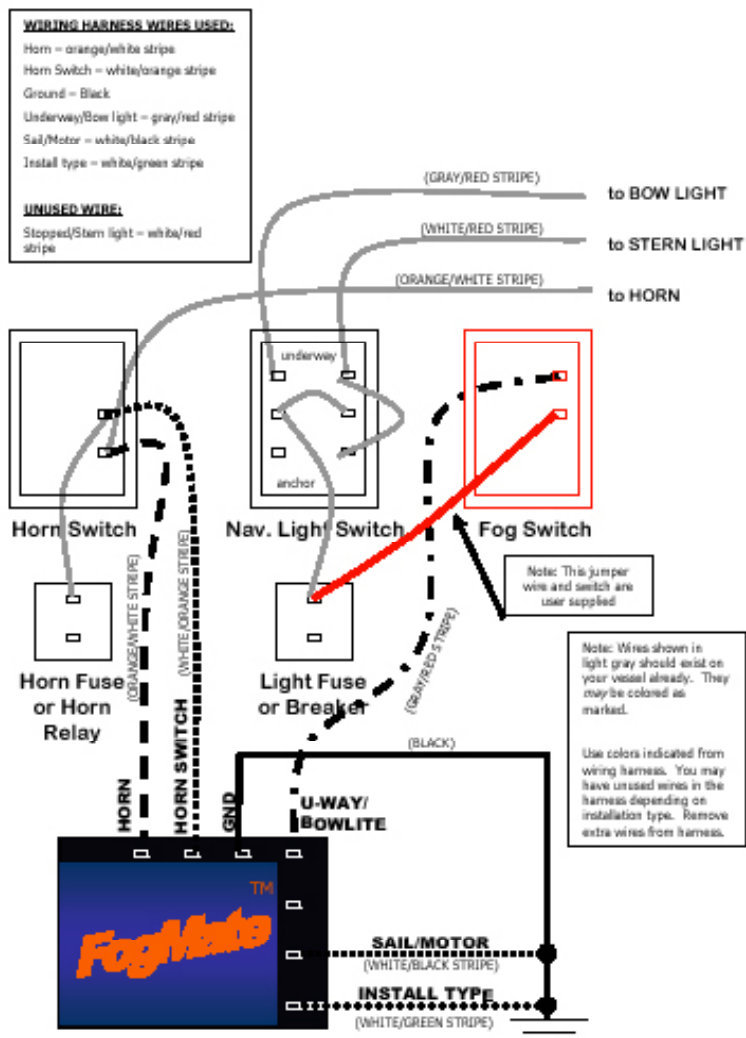
BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the Fog Signal switch.



# SAIL-3 Wiring Diagram



SAIL-3

# MOTOR/SAIL-1 Installation Type

## Operating Instructions

1. Turn on the SAILBOAT/MOTOR BOAT switch to either the SAIL or MOTOR position to activate the FogMate controller.
2. Press the horn switch on your helm to select the blast pattern. You must press the horn within three seconds of activating the FogMate controller to select an automated pattern. The blast pattern will be different for the SAIL and MOTOR positions. Note that the blast patterns for UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY are identical for vessels under sail. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
UNDERWAY (Power)	1	LONG
(Sail)		LONG SHORT SHORT
STOPPED (Power)	2	LONG LONG
(Sail)		LONG SHORT SHORT
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will respond with very short blasts of the horn to acknowledge the count, and start the selected blast pattern a few seconds later.

3. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
4. To end signaling, deactivate the FogMate controller by turning off the SAILBOAT/MOTOR BOAT switch.
5. To change patterns from MOTOR to SAIL or vice versa, simply turn OFF the SAILBOAT/MOTOR BOAT switch. Select the new pattern for the new vessel type by repeating the above steps from step 1.

# MOTOR/SAIL-1 Wiring Diagram

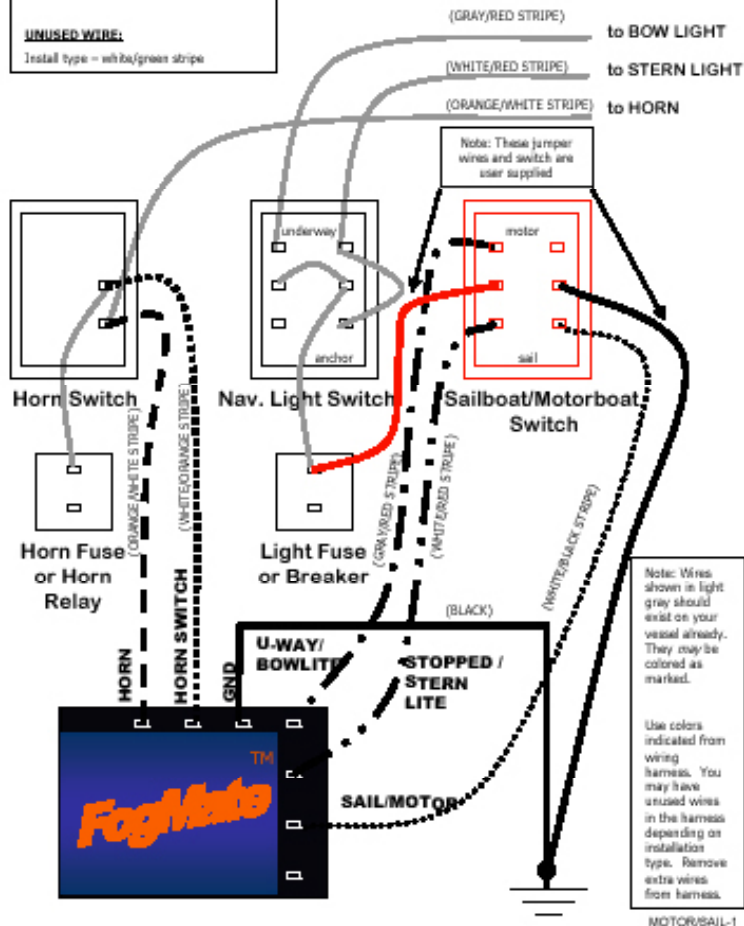
## WIRING HARNESS WIRES USED:

Horn = orange/white stripe  
 Horn Switch = white/orange stripe  
 Ground = Black  
 Underway/Bow light = gray/red stripe  
 Stopped/Stern light = white/red stripe  
 Sail/Motor = white/black stripe

## UNUSED WIRE:

Install type = white/green stripe

Note: In this configuration, blast pattern must be reselected using horn switch after switching from Motor to Sail or vice versa



# MOTOR/SAIL-2 Installation Type

## Operating Instructions

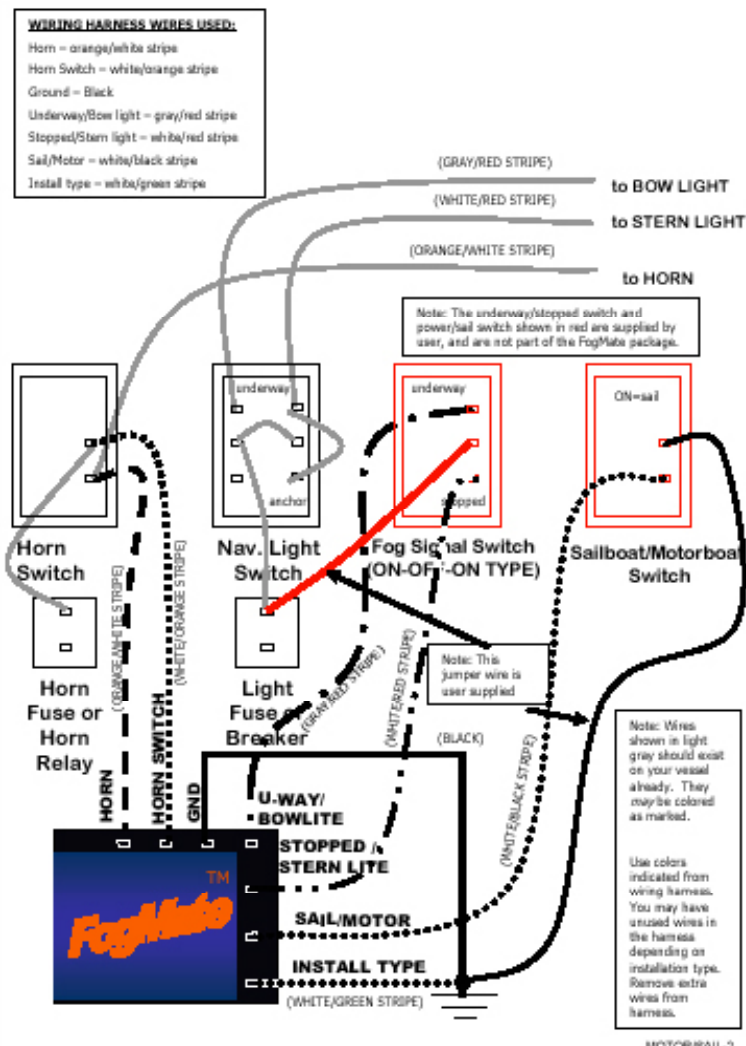
1. Set the SAILBOAT/MOTOR BOAT switch to either the SAIL or MOTOR position to indicate the vessel blast pattern types. Note that in this configuration, you can switch between MOTOR or SAIL without powering off the FogMate controller.
2. Turn on the Fog Signal switch to the UNDERWAY or STOPPED positions to activate the FogMate controller and immediately start the UNDERWAY or STOPPED blast patterns.
3. To start the RESTRICTED MANEUVERABILITY or DISTRESS patterns, press the horn switch on your helm within three seconds of activating the FogMate controller to select between these automated patterns. The blast pattern will be different for the SAIL and MOTOR positions. Note that the blast patterns for UNDERWAY, STOPPED, and RESTRICTED MANEUVERABILITY are identical for vessels under sail. Make sure the horn presses are distinct (at least ½ second long) and separated by at least ½ second of silence.

BLAST PATTERN	PRESS HORN COUNT	SELECTED PATTERN
RESTRICTED MANEUVERABILITY	3	LONG SHORT SHORT
DISTRESS - (S O S)	5	SSS LLL SSS

FogMate will start the selected blast pattern a few seconds later.

4. The pattern you selected repeats approximately every two minutes, but never longer than two minutes. During the silent period, you can manually blast your horn for normal navigational purposes. Distress (SOS) signals repeat faster than every two minutes.
5. To end signaling, deactivate the FogMate controller by turning off the Fog Signal switch.

# MOTOR/SAIL-2 Wiring Diagram



# **Tips for Operating Your Vessel in Fog or in Distress Situations**

## ***How Can a FogMate Controller Make Operating My Vessel Safer?***

In the year 2000, 17% of all boating fatalities were in conditions of fair to poor visibility. Many vessels install radar systems for operating in fog and darkness. However, every year there are a number of collisions in fog in which both vessels were operating with radar. Very few accidents occur in which both vessels are sounding their fog signals according to the USCG Navigation Rules (Rule 35). One of FogMate's intended uses is to automate the signaling of a vessel's horn in conditions of limited visibility to relieve the vessel's skipper from that task while he tends to the other duties of operating his vessel in fog or other conditions of limited visibility.

Every year, there are a number of boating disasters in which the occupants of a vessel are separated from the vessel. Examples include abandoning the vessel due to fire, and jumping overboard to attempt to help another victim already in the water.

There are many anecdotal instances that are well documented in the press. In these situations, FogMate can be used to repeatedly sound an SOS distress signal using the vessel's horn. This can be effective in attracting attention, and ultimately assistance from nearby vessels.

# ***What Are Conditions of Limited Visibility and What Are the Signaling Requirements?***

The USCG defines “limited visibility” in the Navigation Rules as

“...any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, smoke, or any other similar causes.”

Note that darkness is not considered a condition of limited visibility as far as operating and sounding rules are concerned. It is required that all vessels sound “limited visibility” signals in repeating patterns approximately every two minutes. Vessels over 12 meters in length have specific blast patterns that are required. For vessels under 12 meters, the same blast patterns are recommended, but only an

“... efficient sound signal at intervals of not more than 2 minutes” is required.”

FogMate automates signaling compliant with these requirements. When sound signals are used properly, one can determine not only that another vessel is in close proximity, but can also determine the vessel type, and whether the vessel is underway or is stopped.

## ***Using a FogMate Controller in Conditions of Limited Visibility***

### **Activating FogMate**

Activation of the FogMate controller is accomplished in different ways depending on the installation type. Refer to the Operating Instructions for your particular installation type.

### **Selecting Patterns**

Motor/Sailers must first set the switch to indicate whether they are operating under sail or motor power. The selection of a particular pattern is accomplished in different ways which depending on the installation type you chose. Refer to the Operating Instructions for your particular installation type.

There are four patterns supported by FogMate. The patterns are different depending on whether the vessel is sail or motor powered. The supported patterns are:

BLAST PATTERN	MOTOR POWERED VESSELS	SAIL POWERED VESSELS
UNDERWAY	LONG	LONG SHORT SHORT
STOPPED	LONG LONG	LONG SHORT SHORT
RES. MANEUVER.	LONG SHORT SHORT	LONG SHORT SHORT
DISTRESS	SSS LLL SSS	SSS LLL SSS

A long blast, as defined by the COLREGS is 4 seconds in duration. A short blast is 1 second in duration. All patterns but the DISTRESS pattern repeat approximately every two minutes. (FogMate intelligently varies the silent period between horn patterns; see “Active Anti-Synchronization,” page 41.) The DISTRESS pattern repeats after just a few seconds, and its individual blasts are considerably shorter than the limited visibility signals.

It is important to know which pattern to use to inform nearby vessels accurately of your vessel type and your intentions. Conversely, when you hear another vessel’s pattern, it is important to know what its pattern means so that you can plan evasive maneuvers. A reminder of the correct patterns to listen for are provided on your helm label.

- **Underway** - a vessel that is making way through the water. Note that UNDERWAY does not apply to vessels under sail.
- **Stopped** - a vessel that is stopped and making no way through the water. Note this is not the same as anchored. Adrift and moving with the wind or current is, technically speaking, stopped. Note that STOPPED does not apply to vessels under sail.



- **Restricted Maneuverability** - “A vessel not under command, a vessel restricted in her ability to maneuver, a vessel constrained by her draft, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel”
- **Distress** - any vessel in grave and imminent danger of sinking, or whose occupants are in danger of death or severe injury, or a vessel that otherwise requires assistance. For guidance on what does and does not constitute a distress situation, see *page 43*.

## **Once FogMate is Running**

Once you have activated your FogMate controller and selected the appropriate blast pattern, FogMate will take over operation of your vessel's horn. You can still operate your horn manually. If you need to change blast patterns you will need to power the FogMate controller OFF then back ON using your navigation light switch or “foghorn” switch (depending on which installation type you chose.)

## **Active Anti-Synchronization**

FogMate intelligently varies the silent period between horn blasts, guaranteeing that the silent period will never exceed 2 minutes. By incorporating random variations in the silent period, FogMate avoids the chance situation in which your vessel's horn sounds at exactly the same time as another vessel's horn. This situation could effectively synchronize your patterns with the other vessel and thus prevent either of you from hearing each other. By slightly altering the time between blasts on each cycle, you will never synchronize with another vessel.

That brings up the final thing you need to do ... LISTEN! You've taken the first steps to safe operation in the fog. FogMate will see to it that you can be heard. Now you need to listen for others. Make sure you periodically stop your engine and listen for a full two minutes for other vessels that may be sounding signals. Listen for engine sounds from those vessels that might not be signaling. Listen for bell buoys, or the sounds of traffic or breaking waves that could indicate you are approaching the shoreline.

## Other Tips for Safe Vessel Operation in Limited Visibility Situations

Here are a few other safety tips for operating in conditions of limited visibility. Many of these tips would equally apply to operating in darkness.

- Slow Down – Fog most often is present on calm days. Resist going fast simply because you can.
- Assign Lookouts – If you have a crew with you, set up lookouts at the bow *and* at the stern. Do not neglect the stern lookout, as collisions due to overtaking vessels are moderately common in fog.
- Use Navigation Lights and Sound Signals – do what you can to be seen and heard.
- Require Everyone Onboard to Wear PFDs – make no mistake about it: this is a dangerous situation.
- Monitor Radar – watch for vessels and objects that you are approaching, *and* that are approaching you.
- Use GPS or Dead Reckoning to Track your Location – if dead reckoning, **get a fix before the fog closes in**. Don't attempt to approach hazardous ledges, shoals, rocks, or jetties until the fog lifts. Resist the temptation to hug the shoreline, unless you know the area well.
- Avoid Congested Areas – your odds of collision increase with the number of neighboring vessels. Avoid shipping lanes, ferry routes, and areas characterized by traffic that is required to keep a strict schedule. Keep a safe distance from channel heads and buoys, as these popular waypoints may attract numerous vessels and create close quarters. Avoid the temptation to drop anchor near buoys.

A few more interesting items about fog are listed below. Keep these in mind the next time you are caught in the fog.

- Objects that appear abruptly out of fog or dense snow will appear larger and seem to move faster than they actually are. Consequently, you may have a few more precious seconds in which to act than it initially seems. Rehearse in your mind the steps you will take to avoid a collision or minimize an inevitable collision. Your first goal is to prevent a collision. If this is not possible, your next goal is to avoid perpendicular contact, especially broadside impact. You will minimize injuries and vessel damage by seeking as glancing a blow as possible.
- Use your horn. FogMate works in parallel with your vessel's horn. At any time, you may press your horn button to sound your vessel's horn without interrupting FogMate's cadence. If you sense an impending close quarters situation, manually sound your horn.
- Sounds in fog can be deceptive. Distant sounds may seem near and vice versa. The apparent direction of the source of the sounds may be misleading.
- Beware of "instrument blindness." It is easy to become mesmerized by instruments and lose track of time while adjusting and monitoring them. Don't become so fascinated by your instruments that you neglect to maintain a lookout and listen for other vessels.

## ***What is a Distress Situation?***

Boaters should activate FogMate's distress signaling mode in situations in which they would also make a distress call on VHF radio. Likewise, if in a particular situation a boater would not make a radio distress call, then the boater should probably not activate FogMate's distress signaling mode.

The distress signaling capability of your FogMate should NOT be overused. According to the Office of Boating Safety of the U.S. Coast Guard, the distress signal should only be used in **Distress** and **Distress Phase** situations.

In a **Distress** situation, a calamity has already occurred, and *life, limb, or property are in peril*. For example:

- Life — a passenger's life is in danger and requires immediate medical attention
- Limb — a passenger is at risk of permanent injury and requires immediate medical attention
- Property — a vessel is in danger of severe damage or sinking, e.g., by fire or taking on water.

In a **Distress Phase** situation, a calamity has not yet occurred, but there is reasonable certainty that grave and imminent danger to life, limb, or property will occur unless the vessel receives immediate assistance.

The guidelines above are traceable to the Coast Guard addendum to the U.S. National Search and Rescue Plan and to the International Maritime Organization's Search and Rescue Plan. In composing this manual, members of the safety community suggested the following comments and considerations.

- No radio, horn signal, or other distress communications should be used for inconvenient situations such as running out of bait or other supplies.
- Running aground, in the absence of other factors, does not necessarily constitute a Distress or Distress Phase situation. If a vessel has run aground, is not in danger of sinking, and no passengers are injured, then the vessel is not in distress. If the act of running aground has imperiled passengers or the vessel as described under Distress Situation, then a Distress Situation exists.
- Likewise, running out of fuel is not necessarily a Distress or Distress Phase Situation. If a vessel runs out of fuel, is within sight of land, has an operating radio, and no one is injured, then neither a Distress nor a Distress Phase Situation exists (a non-distress radio call to a towing service or marina may be appropriate). If, however, the vessel is out of sight of land and nightfall is approaching, then a Distress Phase Situation may exist.

**Special note** — A review of boating incident reports reveals a common accident pattern in which only two passengers are aboard. One passenger encounters a medical emergency, and the other passenger must decide whether to assist the victim first or call for help first. A victim who has hit his head while falling overboard is an example of such a situation. FogMate can act as a *virtual crew member* in these situations to signal a need for assistance.

## ***Using a FogMate Controller in Distress Situations***

- Power on FogMate according to the Operating Instructions for your installation type.
- Press the horn button 5 or more times.

FogMate will begin sounding an SOS pattern repeatedly. To end the pattern, simply turn FogMate off.

## COLREGS Reference

In 1972 the International Maritime Organization (IMO) adopted the *Convention on the International Regulations for Preventing Collisions at Sea*. This global convention is widely referred to as the COLREGS and has been incorporated into the Rules of the Road for the United States and many other national and local jurisdictions, occasionally with refinements for local nuances, "Inland" rules, etc. The section of the COLREGS that sets forth requirements and recommendations for sound signaling in limited visibility is COLREGS Part D, Rule 35. Note that this version of FogMate does not support the non-repetitive signals, or less commonly encountered rules (e) through (j). This Rule states:

In or near an area of restricted visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows:

- (a) A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast.
- (b) A power-driven vessel underway but stopped and making no way through the water shall sound at intervals of not more than 2 minutes two prolonged blasts in succession with an interval of about 2 seconds between them.
- (c) A vessel not under command, a vessel restricted in her ability to maneuver, a vessel constrained by her draught, a sailing vessel, a vessel engaged in fishing and a vessel engaged in towing or pushing another vessel shall, instead of the signals prescribed in paragraphs (a) or (b) of this Rule, sound at intervals of not more than 2 minutes three blasts in succession, namely one prolonged followed by two short blasts.
- (d) A vessel engaged in fishing, when at anchor, and a vessel restricted in her ability to maneuver when carrying out her work at anchor, shall instead of the signals prescribed in paragraph (g) of this Rule sound the signal prescribed in paragraph (c) of this Rule.

- (e) A vessel towed or if more than one vessel is towed the last vessel of the tow, if manned, shall at intervals of not more than 2 minutes sound four blasts in succession, namely one prolonged followed by three short blasts. When practicable, this signal shall be made immediately after the signal made by the towing vessel.
- (f) When a pushing vessel and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and shall give the signals prescribed in paragraphs (a) and (b) of this Rule.
- (g) A vessel at anchor shall at intervals of not more than one minute ring the bell rapidly for about 5 seconds. In a vessel of 100 meters or more in length the bell shall be sounded in the forepart of the vessel and immediately after the ringing of the bell the gong shall be sounded rapidly for about 5 seconds in the after part of the vessel. A vessel at anchor may in addition sound three blasts in succession, namely one short, one prolonged and one short blast, to give warning of her position and of the possibility of collision to an approaching vessel.
- (h) A vessel aground shall give the bell signal and if required the gong signal prescribed in paragraph (g) of this Rule and shall, in addition, give three separate and distinct strokes on the bell immediately before and after the rapid ringing of the bell. A vessel aground may in addition sound an appropriate whistle signal.
- (i) A vessel of less than 12 meters in length shall not be obliged to give the above-mentioned signals but, if she does not, shall make some other efficient sound signal at intervals of not more than 2 minutes.
- (j) A pilot vessel when engaged on pilotage duty may in addition to the signals prescribed in paragraphs (a), (b) or (g) of this Rule sound an identity signal consisting of four short blasts.

■

## Warranty

TSX Products Corp. (TSX) warrants this product to be free from defects in workmanship and material under normal use and service for a period of twelve (12) months from the date of sale. In the event a product is found to be defective within the warranty period, TSX's only obligation, and BUYER's only remedy shall be replacement or repair of the defective product at TSX facilities, or at an authorized service center at TSX's option.

Shipping costs to TSX facilities shall be borne by BUYER and the repaired or replaced product shall be *returned* to BUYER at TSX's expense using the company's standard shipping carrier. If faster delivery is required, BUYER shall be charged for the return shipment. Replacement parts and repair labor (but not installation labor) will be provided at no charge during the warranty period. All replaced parts and units shall become the property of TSX. The following conditions shall void all warranties:

- Units altered or repaired without TSX approval in writing
- Units failing due to physical damage occurring after delivery to BUYER
- Units with missing, altered, or damaged serial numbers
- Units that fail due to misuse, carelessness, improper maintenance, or negligence by any party other than TSX or its assigns
- Units failing due to entry into sealed areas without the written approval of TSX
- Units that are damaged or destroyed by fire, acts of nature, or insurable events

The preceding warranty is in lieu of any and all other warranties, either express or implied. Any other warranties, express or implied, are disclaimed by TSX. The remedies of BUYER shall be limited to repair or replacement of the unit. TSX shall not be liable for, unless otherwise specifically agreed to in writing, any other damages, including but not limited to loss of property, loss of profits or revenue, loss of use, cost of capital, or claims of BUYER's customers or employees.



## Support

If you have questions about the installation or operation of your FogMate horn controller, contact us from 0830 to 1700 hours (that's 8:30 am to 5:00 pm) Eastern time. You can also visit our website at [www.FogMate.com](http://www.FogMate.com) 24 hours a day!

*Telephone*      800-TSX-PROD (800-879-7763)  
781-769-1800  
*Facsimile*      781-255-1980  
*Email*            [support@fogmate.com](mailto:support@fogmate.com)

Should you encounter any problems with your controller, contact us for a Return Authorization number (RA number) before you return your FogMate. We cannot accept any returned units without an RA number.

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