



# Installation Guide and User Manual



*Boating Safety through Better Signaling*

## Signal Mate helps you to:

- Prepare for adverse conditions such as restricted visibility: fog, heavy rain and snow
- Reduce risks on our waterways — especially in danger/doubt or emergency situations
- Encourage the use of proper signaling
- Communicate your intentions with ease – day or night
- Comply with mandatory navigation regulations for boats 39' and larger
- Automated danger/doubt, distress modes
- Ready stand-by signaling with the push of a button
- Single or repeated signal output per navigation rules requirements
- Light sequence previews & LED indicators
- Red 660 nanometers wavelength LEDs for unaffected night vision.
- Dual-independent solid-state 20 amp shut-down protected outputs. No relay click interference.
- 360° light can be synchronized with horn for maneuvering, danger/doubt and distress, as allowed in USCG rules
- Unit can operate at 12, 24 and 36 volts
- Manual or automated operation
- High quality: silicon rubber splash-proof keypad, powder-coated aluminum casing
- Back-lit keypad comes on automatically at dusk
- Designed for new install or easy retrofit – console-mount or portable
- Convenient stand-alone portable contains controller, horn, 360° light, battery, chargers
- Encapsulated electronics for all-weather operation. Tested from 20°F to 125°F
- Multiple voltage operation with protected inputs & outputs
- Twist-lock 12V adapter for automated spotlight signaling or accessories
- Easy installation – wire-ready terminal blocks
- Made in U.S.A. Three year warranty



### Manufactured by:

Kimberlite Assemblers Inc.  
113 N. Collington Ave. • Baltimore, MD 21231  
main 410-675-4901 • fax 410-675-4927  
kimberlite@cavtel.net  
www.signalmate.com • info@signalmate.com



## **SIGNAL MATE SET -UP:**

Signal Mate can operate at 12, 24, or 36 volts DC. Make sure all devices are the same voltage. (If using different voltage devices, refer to Fig. 4 on page 11 for hook up.)

We will refer to a 12-volt system, as this is the most widely used, although other voltage sources would apply.

Choose location for easy access where unit is in reach for immediate use.

Mount unit using two #10 pan head screws through the holes provided on the stainless steel adjustable handle. Use nylon lock nuts for a secure installation.

The stainless steel handle can be easily adjusted for the viewing angle by loosening the two 'T' knobs on either side of the console unit, positioning the unit as desired and then tightening the 'T' knobs. The handle has an indent that mates the holes on the delrin spacer to keep the unit in the desired position.

The unit has a changeable fused input, and solid state protected outputs, allowing the unit to be wired directly to a battery for portable applications, or to be used without a dedicated switch/breaker.

Depending on the total amperage of the horn and light from the manufacture's specifications, choose and install the appropriate size fuse in holder marked 'F2' (Fig.1, page 4).

- Example 1: For a single small horn (6 to 7 amps), and a 1-amp 360° light choose the 10-amp fuse.
- Example 2: For duel trumpet air horn (18 amps), and a large spotlight (16 amps) totaling 34 amps, choose the 40-amp fuse.

Signal Mate's outputs are solid state shut-down protected for currents that exceed 20 amps. Current in rush limits are set at 90 amps to allow for motor startup currents and large filament bulbs, etc.

## **New installation using Signal Mate's input/output protection:**

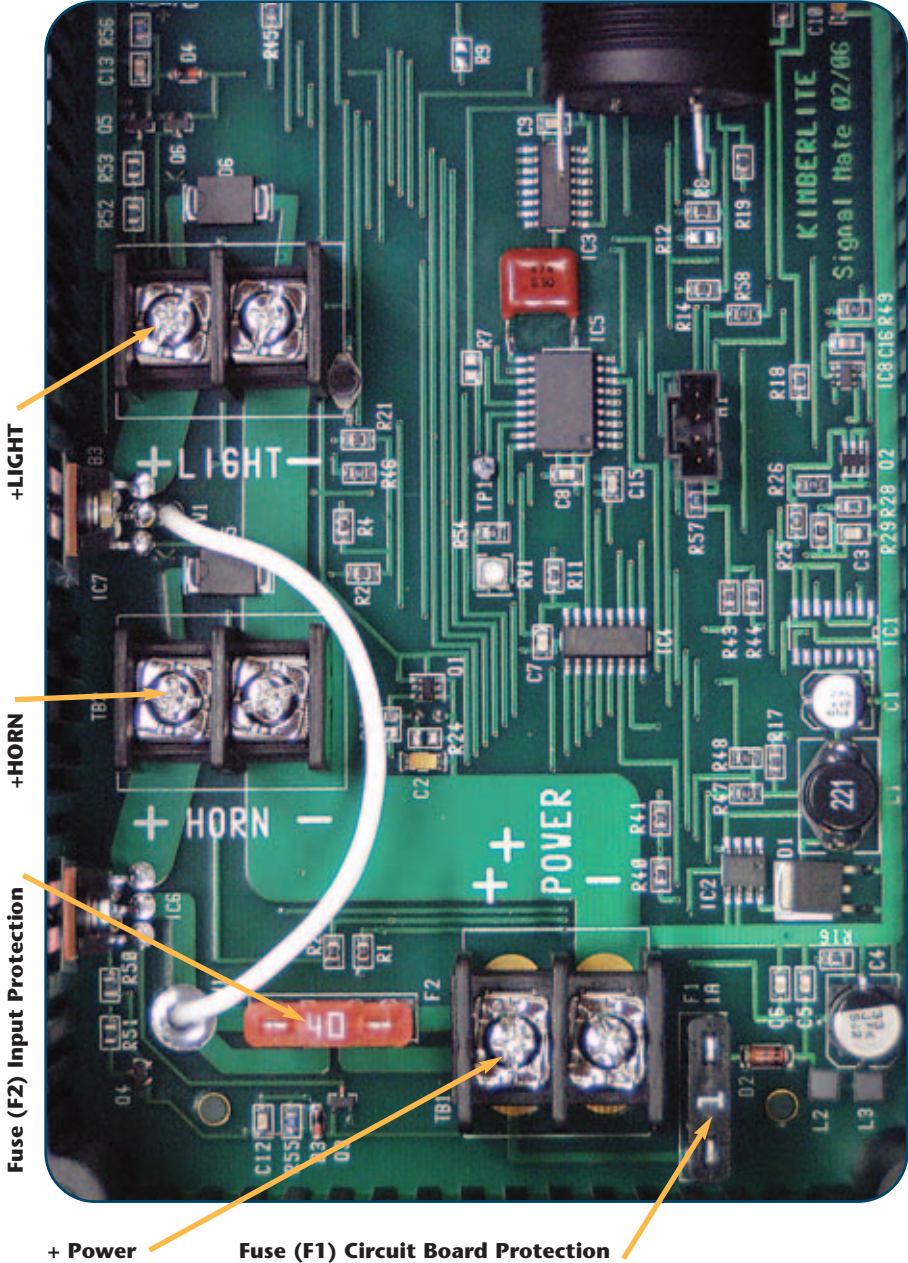
Supply voltage can be directly applied to Signal Mate with its fused input and protected outputs for portable applications, and where a dedicated switch/breaker may not be available or desired.

Choose wire size of the horn and light and 12-volt supply wires depending upon amperage and length of wire run using manufacture's rating and chart provided (Fig.2, page 5) for new installation.

Feed wires from the horn and light through the rubber grommet or strain relief on the back plate of Signal Mate allowing a little extra wire for service loop, and secure wires with tie-wrap provided.

Connect the wires to Signal Mate from the horn to the wire-ready terminal block marked 'HORN'. (Fig.1, page 4)

Fig. 1



' + HORN' = positive voltage (Polarity is observed for 12-volt for air horn motors.)

'HORN -' = negative voltage

Connect the wires to Signal Mate for the 360° light to the wire-ready terminal block marked 'LIGHT'. (Fig.1)

' + LIGHT' = positive voltage (Polarity is observed for LEDs and any other lights that have polarity marked.)

'LIGHT -' = negative voltage

Connect the positive voltage supply wire to the wire-ready terminal block marked '+ POWER'. (Fig.1)

Connect the negative voltage supply wire to the wire ready terminal block marked 'POWER -'. (Fig.1)

The output of Signal Mate is solid state with shut down protected for currents that exceed 20 amps. Current in rush limits are set at 90 amps to allow for motor startup currents and large filament bulbs, etc.

## CONNECTIONS TO BOAT:

### New installation of Horn and Light:

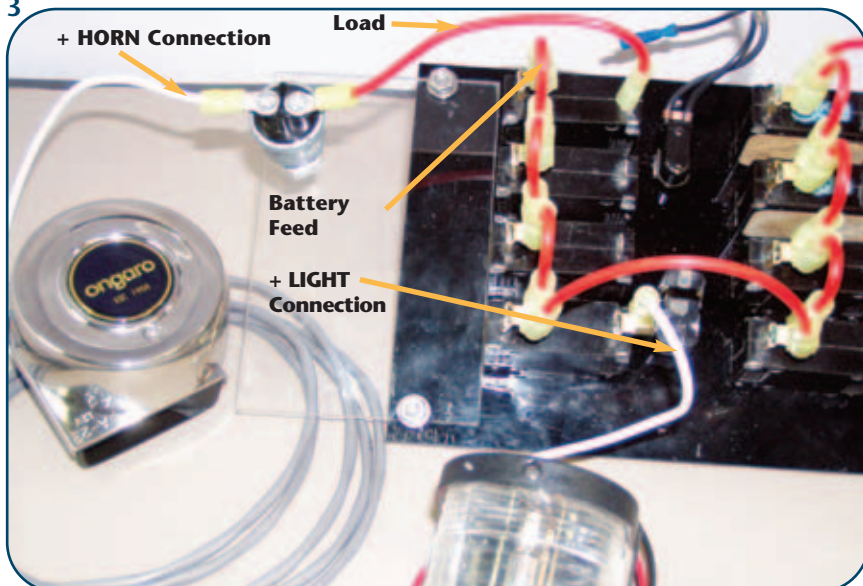
Choose wire size of the horn and light depending upon amperage and length of wire run using manufacture's rating and chart provided (Fig.2) for new installation.

**Fig. 2** Wire Size for 3% Voltage Drop at 12V

Length	5 Amps	10 Amps	15 Amps	20 Amps	25 Amps	30 Amps	40 Amps	50 Amps	60 Amps	70 Amps	80 Amps
15 ft.	16	12	10	10	8	8	6	6	4	4	4
20 ft.	14	12	10	8	8	6	6	4	4	4	2
25 ft.	14	10	8	8	6	6	4	4	2	2	2
30 ft.	12	10	8	6	6	4	4	2	2	2	1
40 ft.	12	8	6	6	4	4	2	2	1	1/0	1/0
50 ft.	10	8	6	4	4	2	2	1	1/0	1/0	2/0
60 ft.	10	6	6	4	2	2	1	1/0	2/0	2/0	3/0
70 ft.	10	6	4	2	2	2	1/0	2/0	2/0	3/0	3/0
80 ft.	8	6	4	2	2	1	1/0	2/0	3/0	3/0	4/0
90 ft.	8	4	4	2	1	1/0	2/0	3/0	3/0	4/0	
100 ft.	8	4	2	2	1	1/0	2/0	3/0	4/0	4/0	

If installing horn for the first time, connect the one wire from the horn back to a normally open push button switch mounted in a readily accessible area. *Note: If using an air horn with a 12-volt motor, connect the positive wire to the normally open push button switch.* Connect the other side of the normally open push button switch to a dedicated switch/breaker. This will be the load side of the switch/breaker. The other side of the switch/breaker is the 12-volt battery feed (Fig.3).

Fig. 3



Connect the other wire from the horn (or the negative, in the case of a 12-volt motor) back to the negative buss bar or negative battery terminal.

If installing a 360° light for the first time, connect one wire from the light back to a dedicated switch/breaker (Fig.3). *Note: observe polarity for LEDs and lights that have polarity marked. Use the positive wire.* Connect the other wire to the negative buss bar or negative battery terminal.

## RETROFITTING SIGNAL MATE TO A HORN OR LIGHT:

### Horn

Choose the wire size for the horn and light depending upon amperage and length of wire run from Signal Mate to the retrofitting connection point using manufacture's rating and chart provided (Fig.2, page 5).

If retrofitting to an existing horn, locate the horn switch (normally open push button switch) going to the horn. You want to choose the side of the normally open push button switch that goes directly to the horn (Fig.3). This is where you want to connect the positive wire from Signal Mate's terminal block marked '+ HORN' (Fig.1, page 4). Strip and crimp

the wire (depending on the existing type of termination) using a ring, captive fork, butt terminal, or use a gel splice connection.

The other side of the normally open button switch will be coming from the dedicated switch/breaker. This is the load side of the switch.

Signal Mate's negative terminal block marked 'HORN -' (Fig.1) is not needed for the retrofit installation. This negative 12-volt return wire is already run from the device to the negative buss bar or negative battery.

## Light

If retrofitting to an existing light, locate the switch/breaker going to the 360° light and choose the side of the switch/breaker going directly to the 360° light (Fig. 3). This is the load side of the switch. This is where you want to connect the positive wire from Signal Mate's terminal block marked '+ LIGHT' (Fig.1) to the 360° light. Strip and crimp the wire (depending on the existing type of termination) using a ring, captive fork, butt terminal, or use a gel splice connection.

The other side of the switch/breaker will be coming from the positive 12-volt supply from the battery or feed side.

*Note: Make sure Signal Mates terminal block marked '+ Light' is connected to the load side of the switch/breaker and not the feed side.*

Signal Mate's negative terminal block marked 'Light -' (Fig.1) is not needed for the retrofit installation. This negative 12-volt return wire is already run from the device to the negative buss bar or negative battery.

Signal Mate, connected in this manner, will allow the existing horn/light switches to be used, or Signal Mate can control the horn/light.

## Voltage Supply Wires

Choose wire size for Signal Mate's 12-volt supply wires depending upon total amperage for both the horn and light. Determine the length of the wires from Signal Mate to the 12-volt source. Use the manufacture's amperage rating and wire run length to determine the size of the supply wires. Use chart provided (Fig.2).

Connect the positive supply wire from Signal Mate's terminal block marked '+ POWER' (Fig.1) to the positive supply source (switch/breaker or positive battery terminal) using the appropriate terminal.

Connect the negative supply wire from Signal Mate's terminal block marked '- POWER' (Fig.1) to the negative supply source (buss bar or negative battery terminal) using the appropriate terminal.

## OPERATION:

With the supply voltage connected, Signal Mate's 'ON/OFF' button will illuminate for night access. Push the 'ON/OFF' button and the unit will come on and performs a LED's test. Signal Mate will now be in manual setting with both the horn graphics and the 'MANUAL LED illuminated.

In this start up condition, the horn can be used as a typical horn button by pressing the 'MANUAL' button. If the 'OUTPUT' button is pressed, the light graphics will illuminate and the horn graphic will be extinguished, indicating that now the light device will be the output. If the 'OUTPUT' button is pressed again, both the horn and light graphics will illuminate indicating both horn and light will be the output. Press the 'OUTPUT' again, and both horn and light graphics will go out. This indicates that neither, the horn or light will be the output to a device, and allows the operator to preview the 'OUTPUT' LED sequences during the automated modes or manual presses.

The outputs can be cycled by pressing the 'OUTPUT' button until the desired outputs are selected.

The 'MANUAL' button can be used for normal operations (See Quick Guide, back cover) such as signaling your intentions to other boats when crossing, meeting head on, or overtaking (See reference chart on page 5 for blast duration of International or Inland).

Signal Mate will allow you to simultaneously signal with both your horn and 360° light for maneuvering, which will greatly increase the communications between boats at night. It can be very difficult to determine which boat is signaling with only a horn.

When the 'MODE' button is pressed, 'MODE' will illuminate along with 'POWER MAKING WAY' found in the 'RESTRICTED VISIBILITY' section. Each press of the 'MODE' button will advance to the next selection. The choices will continue to loop around until the appropriate selection is made as follows:

## Restricted Visibility Modes

1. 'POWER MAKING WAY' – 5 second blast, every two minutes.
2. 'POWER NOT MAKING WAY' (under way but not moving) – two, 5 second blast, every two minutes.
3. All the conditions under # 3 are signaled by a 5 second blast, followed by two, 1 second blasts, every two minutes.
  - 'NUC' – Not Under Command – example; loss of steering.
  - 'RAM' – Restricted Ability to Maneuver – example; dredging, cable lying, buoy tender.
  - 'SAIL' – without propelling machinery.
  - 'FISH' – using apparatus – example; nets, lines, or trawls that restrict maneuverability.
  - 'TOWING' – Towing or Pushing another vessel.
4. 'TOWED & MANNED' – 5 second blast, followed by three, 1 second blast, every two minutes (immediately follows the signal made by the towing vessel).
5. 'AT ANCHOR' – 1 second blast, followed by a 5 second blast, followed by 1 second blast, every one minute.

Signal Mate can be set to select any one of the modes and any combination of outputs in the ready stand by condition waiting for either the 'SINGLE or REPEAT' button to be pressed to begin execution of the output sequence.

When the 'SINGLE' button is pressed while in the any of the modes,



Signal Mate will perform one sequence, and wait for the next key press. When the 'REPEAT' button is pressed, Signal Mate will continue to repeat the sequence at the proper time intervals for International and Inland waters. This sequence will continue until another button is pressed.

In addition to the 'RESTRICTED VISIBILITY' modes, there are also the 'DANGER/DOUBT' and the 'DISTRESS' modes.

The 'DANGER/DOUBT' signal should be used when a dangerous condition exist, or in doubt about the intentions of other boats which is signaled by five short rapid blast.

A 360- degree white light can supplement the 'DANGER/DOUBT' signal of the horn for International, and a 360° white or yellow light for Inland.

The 'DISTRESS' signal should be used when a vessel is in distress and requires assistance. The signal can be a continuous blast of the horn or an S.O.S. signaled with a horn, light or both. The International 'DISTRESS' signal of an S.O.S. is three  $\frac{1}{3}$  of a second blasts, three one-second blasts and three  $\frac{1}{3}$  of a second blast.

Signal Mate can also go into an 'INLAND DISTRESS' light mode (Inland use only) by pressing and holding the 'REPEAT' button for two seconds when in the S.O.S. mode. This allows the light to go on and off at a rate of 50 – 70 times per minute as required by the rules for distress for Inland waters.

**Reminder:** Sound and Light signals may be used simultaneously to signal Maneuvering, Danger/Doubt and Distress.

The last mode 'HORN OR LIGHT ON' allows the outputs to be switched on, and can be used to control the horn for a steady blast for distress; anchor light, or any other device connected to the outputs, or 12-volt port adapter.

Signal Mate comes factory wired with the 12-volt port wired to the switched 'LIGHT' terminal block for automated spotlight signaling. This 12-volt port wiring can be changed and wired to the 'POWER' terminal block for continuous 12-volt use without using Signal Mate.

Signal Mate is designed to provide back-lighting in conditions of reduced light or darkness. The light sensor located in the Signal Mate Logo senses light and will illuminate the back panel as needed.

*See next page for portable unit instructions.*

## PORTABLE UNIT:

Signal Mate's portable unit comes pre-wired and ready for use.

### Portable kit contains:

- High visibility, clear front carry bag
- Signal Mate controller
- AFI Horn and bracket
- 360° high intensity LED Light (2 nm. visibility)
- 12- volt, 7 AH, sealed AGM battery
- Charger with LED indicator with 12-volt plug for accessories
- 12-volt cigarette adapter
- 120-volt AC to 12-volt DC transformer

### To operate Portable Unit:

Remove horn and 360° light from bag.

Connect the positive (red) wire from Signal Mate to red positive battery terminal. Connect the negative (black) wire to black negative battery terminal.

Insert the horn bracket through the button- hole on top of the carry bag and slide the bracket into the slots (top and bottom) on the back of Signal Mate. Insert the horn facing away from the front panel to direct sound forward to bow of the boat.

For light signalling, attach the 360° light to the top of the horn using the industrial hook and loop provided. The 360° light comes with 15 ft. of wire for hoisting or placing at a higher location for better visibility. The LED has a blue potentiometer on the side of the base. This is an intensity adjustment for times of desired reduced intensity such as anchoring, or reduced battery consumption.

Store unused wire in bag and zipper bag closed. Signal Mate can be operated through the clear front during adverse conditions. The bag has a non- slip bottom and may be lashed down using the 'D' rings on the sides of the bag.

Follow the operation section of the manual for Signal Mate's operation.

### Charging Battery:

Recharge the battery after each use with the 12-volt DC Mini Power Station charger, and the 120 VAC to 12 VDC transformer. The 12-volt cigarette adapter can also be used, but will only charge efficiently when the battery voltage is 13.5 VDC or higher (typical alternator output). Connect charger to battery, red to positive battery terminal and black to negative battery terminal.

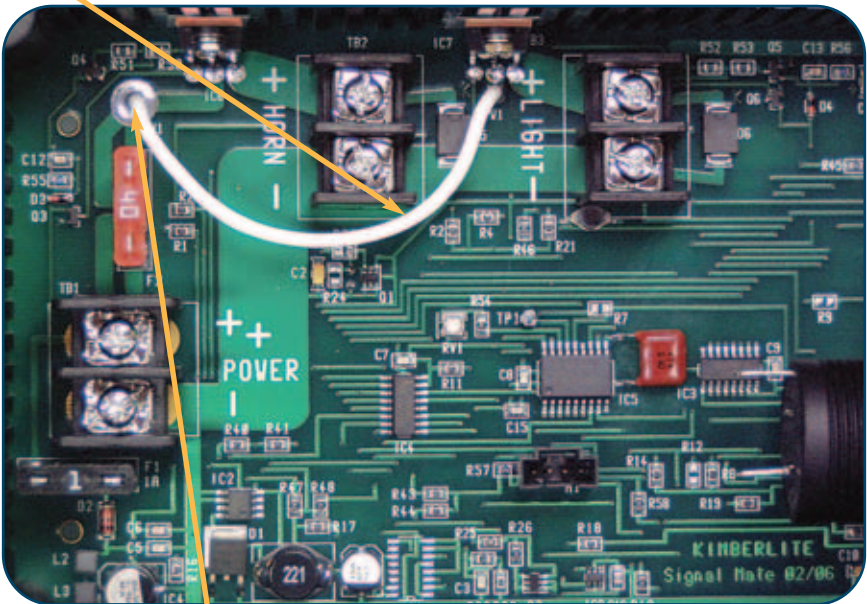
Plug in the 12-volt connector of the 120 VAC transformer into the end of mini charger, and then plug in the transformer into a 120 VAC outlet.

### Reminders

- The Red LED lamp indicates the charger is plugged in.
- The Green LED lamp indicates a full charge of the battery.
- Don't leave battery continually on charger, after green light comes on disconnect within 24 hours. If charger is left on, battery will lose storage capacity.
- For stand-by-use, top off the charge every 6 months.
- The 12-volt mini charger has a 12-volt receptacle for accessories.

**Fig. 4 – Multiple Voltage Inputs**

**Splice second voltage source to wire to IC7-V1 with appropriate fuse / breaker**



**Cut wire here**

## WARRANTY

Kimberlite Assemblers Inc. warrants that the equipment sold to you is free from defects and workmanship for a period of three (3) years from the date of purchase. At its option Kimberlite Assemblers will repair or replace defective equipment returned under this warranty.

An authorized representative of Kimberlite Assemblers must assign an RMA number, via phone or email, to the user making a claim under this warranty. The RMA number, the owner's full name, return address and postal (zip) code must be legibly printed on the box in which the returned equipment is shipped. Enclose a letter describing the defect for which the equipment is being returned. Please ensure this letter has the full contact information as above, including RMA number, date of purchase, phone number and email. Address and ship the box containing the equipment to:

Kimberlite Assemblers Inc.  
113 North Collington Avenue  
Baltimore, MD 21231, USA  
Attention: Warranty Repair - RMA # \_\_\_\_\_

This warranty will be voided by misapplication or maltreatment of the equipment as determined during incoming inspection by Kimberlite Assemblers Inc. You will be notified by a company representative of our determination regarding repairs.



Contact us at 410-675-4901 or [info@signalmate.com](mailto:info@signalmate.com) for an RMA number or additional information.

# Quick Guide to current Sound and Light Signals

Condensed from the ©U.S. Coast Guard Navigation Rules, (part D only)  
International – Inland: COMDTINST M16672.2D. Updated 2004\*.

## Part D - International / Inland

### Sound and Light Signals, Rules 32 - 37

KEY:  horn only       can use 360° light with the horn  
360° light: International - white. Inland - white or yellow.  
Visible 5nm. Visible 2nm. Sync light with horn

#### 32 Definitions




- (a) whistle . . . . . sound signaling blasts appliance (Annex III)
- (b) - short blast. . . . . 1 second duration
- (c) — prolonged blast . . . . 4-6 second duration

#### 33 Equipment for Sound Signals

- (a) vessel > 39<sup>1</sup>/<sub>3</sub> ft. shall have a whistle and bell (Annex III)
- (b) vessel < 39<sup>1</sup>/<sub>3</sub> ft. shall have means of making efficient sound signal

#### 34 Maneuvering and Warning Signals (international: vessels in sight.) (inland: vessels in sight; meeting/crossing within .5 nm.)

##### (a&b) International




-  - changing to STB (right)
-  - - changing to PORT (left)
-  no response needed from other vessel

##### Inland


- intend to go STB
- - intend to go PORT
- if in agreement, second vessel gives same signal
- if in doubt, 5 short, rapid blasts

-  - - - operating astern propulsion (international & inland)


##### (c) Overtaking – narrow channel/fairway

-  - - - - intend to overtake to STB
-  - - - - intend to overtake to PORT
-  - - - - if in agreement, second vessel gives this signal


- - - - intend to overtake to STB
- - - - intend to overtake to PORT
- if in agreement, second vessel returns same signal


-  (d) ••••• if in doubt, 5 short, rapid blasts (international & inland)

##### (e) Nearing bend / obscured

-  — if vessel has an obscured field of vision
- any approaching vessel returns same signal (both international & inland)






- if vessel has an obscured field of vision

-  (f) If whistles are 100+ meters apart, use only one for these signals


-  (g) — when power-driven vessel leaves dock/berth

#### 35 Sound Signals in Restricted Visibility (international & inland)



##### In or near area of restricted visibility, day or night

-  (a) — if under Power Making Way (every 2 min.)
-  (b) — — if under Power Not Making Way (every 2 min.)
-  (c) - - - every 2 minutes if:
  - NUC: Not Under Control (ex.: loss of steering)
  - RAM: Restricted Ability to Maneuver (ex.: dredging, cable laying, buoy tender)
  - CBD: Constrained by Draft (international only)
  - Sailing, Fishing using apparatus, Towing / Pushing
-  - - - - (if Towed & Manned (every 2 min.)) (immediately after signal made by towing vessel)
- Use (a) or (b) if pushing vessel / vessel being pushed are rigidly connected
-  - - - At Anchor (in addition, may signal every 1 min. immediately after ringing of bell and/or gong) (gong for vessels >100 meters only)

#### 36 Signal to Attract Attention (international & inland)

-  Signals not used elsewhere OR carefully direct searchlight beam toward danger

#### 37 Distress Signals (international & inland)

-  - - - - - (S.O.S.); high intensity light flashing at 50 - 70/min. (inland only)
-  — continuous blast

\*Note: No endorsement by or association with the United States Coast Guard is implied or stated. This is a summary of one section specific to sound & light. Entire manual is available at the United States Coast Guard Navigation Center website: [www.navcen.uscg.gov/mw/navrules/navrules.htm](http://www.navcen.uscg.gov/mw/navrules/navrules.htm).  
Provided free of charge as a navigation and/or education aid by Kimberlite Assemblers Inc., 113 N. Collington Ave., Baltimore, MD 21231.