

Wiring Instructions

About Marsh Marine Connectors

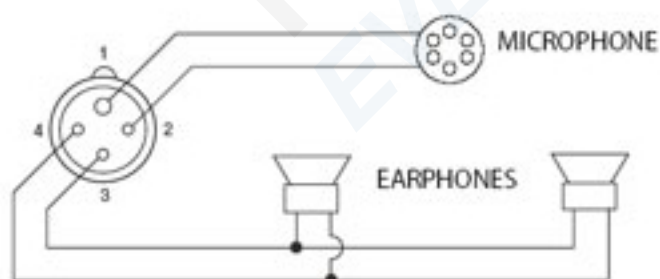


Marsh Marine Connectors are used throughout the diving industry as a convenient means to connect the divers hat to the umbilical. Most wiring errors occur because of a misunderstanding of the pin relationship of the male and female connectors.

4-Wire, Version "A"

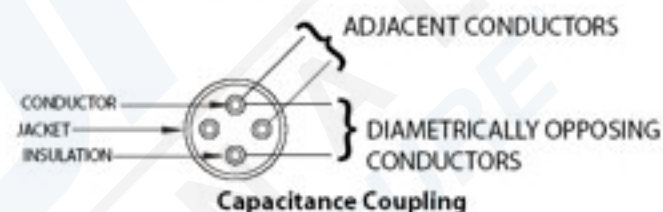
The US Navy and many commercial helmet/mask manufacturers utilize the standard 4-wire configuration (separate microphone and ear phone) for diver communications. Most of these systems use 4 pin Marsh Marine connectors with the microphone connected to pins #1 and #2 and the earphones connected to pins #3 and #4. Even though this configuration has been done for years there are few problems associated with this wiring scheme.

- It is easy to miss-wire the umbilical because pins #2 and #4 are mirror images of each other on the two mating Marsh Marine connectors.
- There is the potential for cross coupling between the pairs which can result in an oscillation occurring (very much like acoustic feedback). The symptoms are a loud howl which starts as the volume level is increased. This can often (but not always) be confirmed by reversing the microphone connections, which will change the characteristics of the howl or even eliminate the feedback. Even though the feedback is eliminated, there will still be distortion which results in audio which is not as clear or intelligible. The technical reason for this is the difference in spacing between the conductors (changes the capacitive coupling) which creates an unbalanced condition for the input amplifier over the radio. This results in less than perfect communications, and an unreliable system because one day it seems to work fine and the next it doesn't. Works with one hat but not another, works with one umbilical but not another. This condition affects all diver communications systems, regardless of manufacture.
- These problems tend to be worse when using SO or SJO cable for communications



The Male and Female 4 pin Marsh Marine Connectors are mirror images of each other (this is true of any male/female connector), because of this there can be confusion when wiring them.

When viewing the end of the Male Marsh Marine the large pin (12 o'clock position) is pin #1, pin #2 is at the 3 o'clock position, pin #3 is at the 6 o'clock position and pin #4 is at 9 o'clock. When viewing the end of a Female Marsh Marine pins #2 and #4 are reversed. The Male connector is attached to the helmet and the Female attached to the umbilical. Do not rely on the color of the wire to identify the pin-out, as there is no standard between manufacturers that a given color will always be used for a particular pin.



4-Wire, Version "B"

Amron has discovered a better way to wire umbilicals and helmets which will improve the performance of all diver radios. We have found that we can virtually eliminate capacitive coupling (and the resulting oscillation or distortion) in almost any length of cable by simply using opposing pairs of wires for each circuit. By using the opposing pairs of wires for each circuit. By using opposing pairs throughout the cable and Marsh Marine, we balance the effects of the capacitive coupling, enhancing the performance of any diver communications system. Note: The relationship of the opposing pairs needs to be maintained through the cable also.

- When using pins #1 and #3 for microphone and pins #2 and #4 for the earphone we reduce the chance of the miss-wiring the Marsh Marine connectors to the umbilical or hat.
- The radio volume levels increase without the associated feedback or cable distortion problems
- This technique also allows for the use of SO or SJO cable without the problems of feedback or distortion.

