

# 1ST MATE KIT

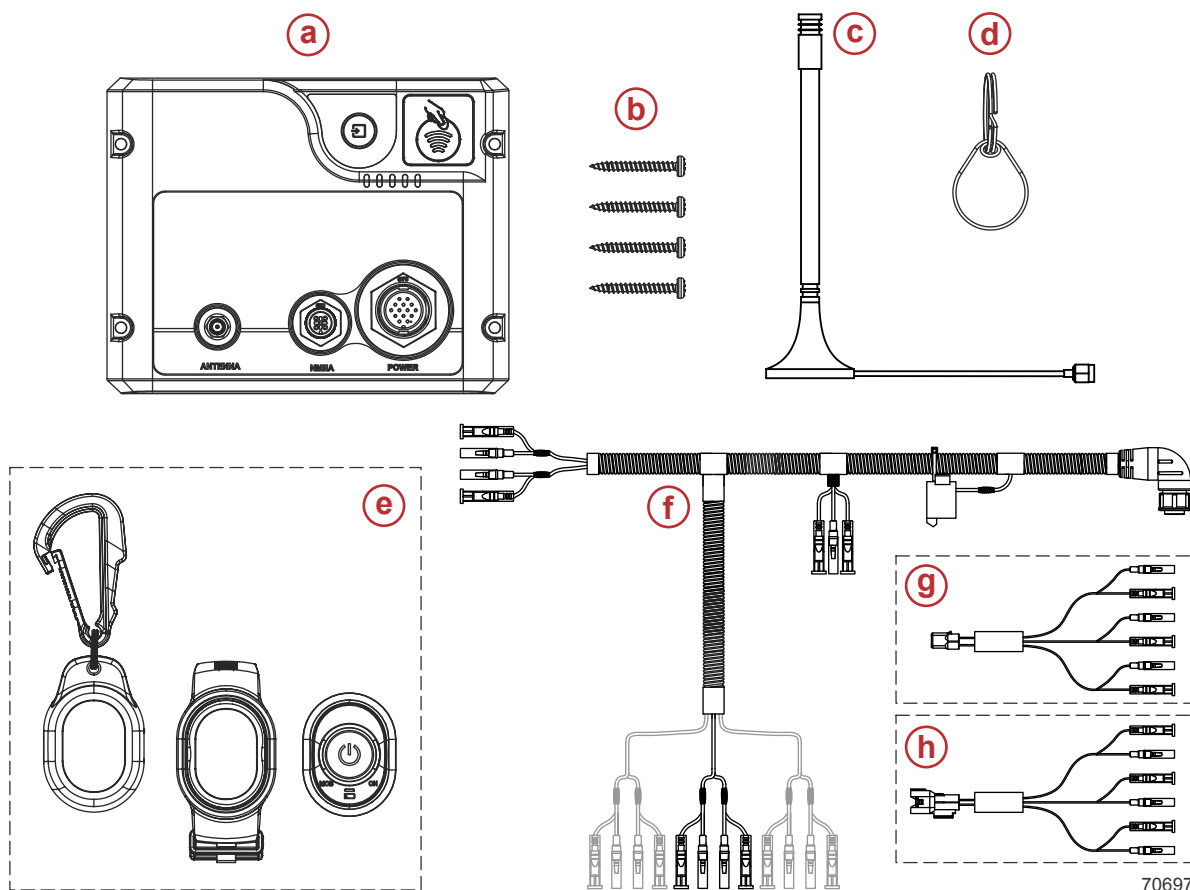
## FOR ALL LEADING ENGINE BRANDS

**IMPORTANT:** This document guides our dealers, boatbuilders, and company service personnel in the proper installation or service of our products. If you have not been trained in the recommended servicing or installation procedures for these or similar Mercury Marine products, have the work performed by an authorized Mercury Marine dealer technician. Improper installation or servicing of the Mercury product could result in damage to the product or personal injury to those installing or operating the product. Always refer to the appropriate Mercury Marine service manual for component removal and installation instructions.

**NOTE:** After completing installation, place these instructions with the product for the owner's future use.

**IMPORTANT:** This kit is compatible with CLOSE TO STOP kill switch circuits. This kit is not compatible with OPEN TO STOP kill switch circuits.

### Components Contained in Kit



Ref.	Qty.	Description	
a	1	1st Mate hub	
b	4	Screw	
c	1	Hub antenna	
d	1	NFC chip	
e	1	1st Mate driver fob kit	
f	1	1st Mate harness	Single
			Dual/Triple
g	1	6-pin extension harness—female	For Yamaha dual/triple applications only
h	1	6-pin extension harness—male	

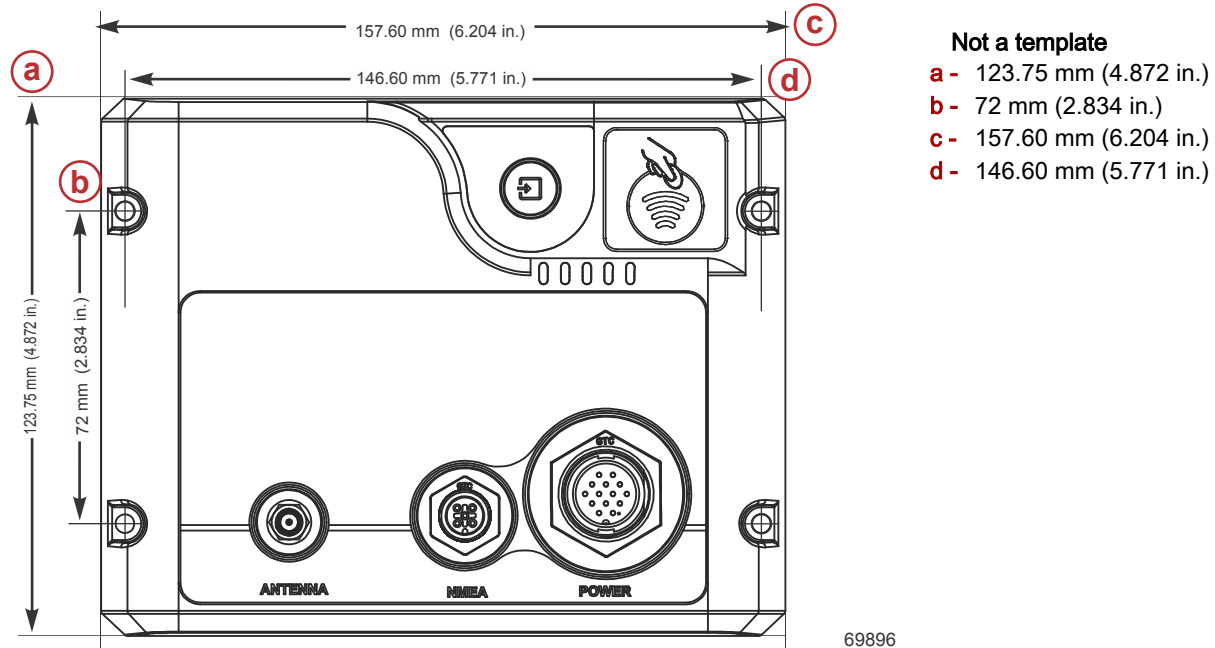
## Hub Installation

### ⚠ WARNING

Before working around electrical system components, disconnect the battery cables from the battery to prevent injury or damage to the electrical system due to an accidental short circuit.

1. Keep the hub at least two inches from other electronic devices to avoid signal interference.
2. Use the following dimensions to select the desired location for the hub. Mount the hub on a bulkhead or panel near the helm where it will be protected from the elements.

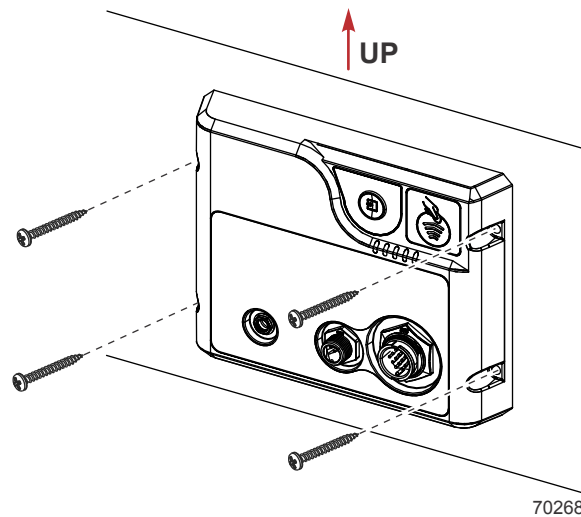
**IMPORTANT:** Minimum panel depth must be greater than 20 mm (0.79 in.). Use a 1/8 bit to drill pilot holes for the fasteners. Do not drill through the panel. Drawing measurements are for reference only. Do not use for a drilling template.



#### Not a template

- a** - 123.75 mm (4.872 in.)
- b** - 72 mm (2.834 in.)
- c** - 157.60 mm (6.204 in.)
- d** - 146.60 mm (5.771 in.)

**IMPORTANT:** Use the supplied fasteners to mount the hub on a panel or bulkhead with the front of the hub facing forward or aft, so that it is perpendicular to the vessel's center line. Do not overtighten the mounting fasteners.



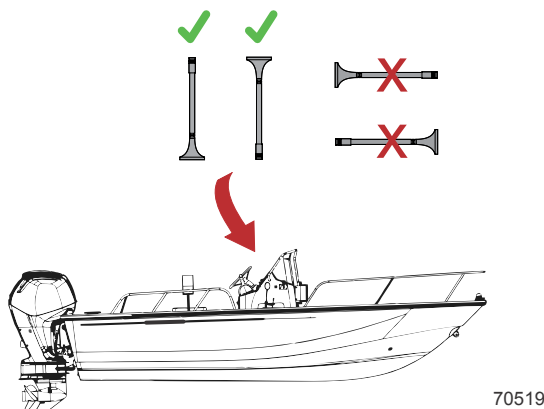
Recommended mounting orientation

## Antenna Installation

Use magnetic tape to mount the antenna in the console, overhead cabinet, or behind the helm. External antenna installations may require marine silicone sealant and a through-hole fitting.

1. Mount the antenna in an unobstructed location at least 30 cm (10 in.) away from other electronic equipment.
2. Connect the antenna harness to the hub.
3. Secure the antenna harness with cable ties.

**IMPORTANT:** The antenna must be mounted in a vertical position as indicated by the green check marks in the following illustration.



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## Harness Connections—Yamaha

**IMPORTANT:** If the vessel is equipped with a NMEA 2000 network it should be connected to the hub. A NMEA network is not required for the system to operate.

1. If a NMEA 2000 network is present, connect the network to the hub.
2. Connect the 14-pin harness connector to the hub.

## Power Connection

1. Locate the bullet connectors that join the key switch panel and the Yamaha helm harnessing.
2. Separate the black wire (12-volt ground) and red wire (12-volt source) bullet connectors.
3. Connect the hub harness red wire to the key switch panel red wire.
4. Connect the hub harness black wire to the key switch panel black wire.
5. Connect the remaining red hub harness wire to the Yamaha helm harnessing red wire.
6. Connect the remaining black hub harness wire to the Yamaha helm harnessing black wire.

**IMPORTANT:** The lanyard stop switch is typically located on the switch panel or panel mount remote control.

## Lanyard Stop Switch Connections—Single

1. Locate the lanyard stop switch.
2. Separate the lanyard stop switch wires from the key switch harness.
3. Connect one hub harness black/yellow wire to the lanyard switch white engine stop wire.
4. Connect the other hub harness black/yellow wire to the key switch harness white engine stop wire.
5. Connect one hub harness black wire to the lanyard switch black wire.
6. Connect the other hub harness black wire to the key switch harness black wire.
7. Attach the NFC chip to the engine key ring.

## Lanyard Stop Switch Connections—Dual and Triple

For multiple engine applications, see the detailed diagrams at [www.1stmate.net](http://www.1stmate.net).

## Harness Connections—All Other Leading Engine Brands

For all other leading engine brands, see the detailed diagrams at [www.1stmate.net](http://www.1stmate.net).

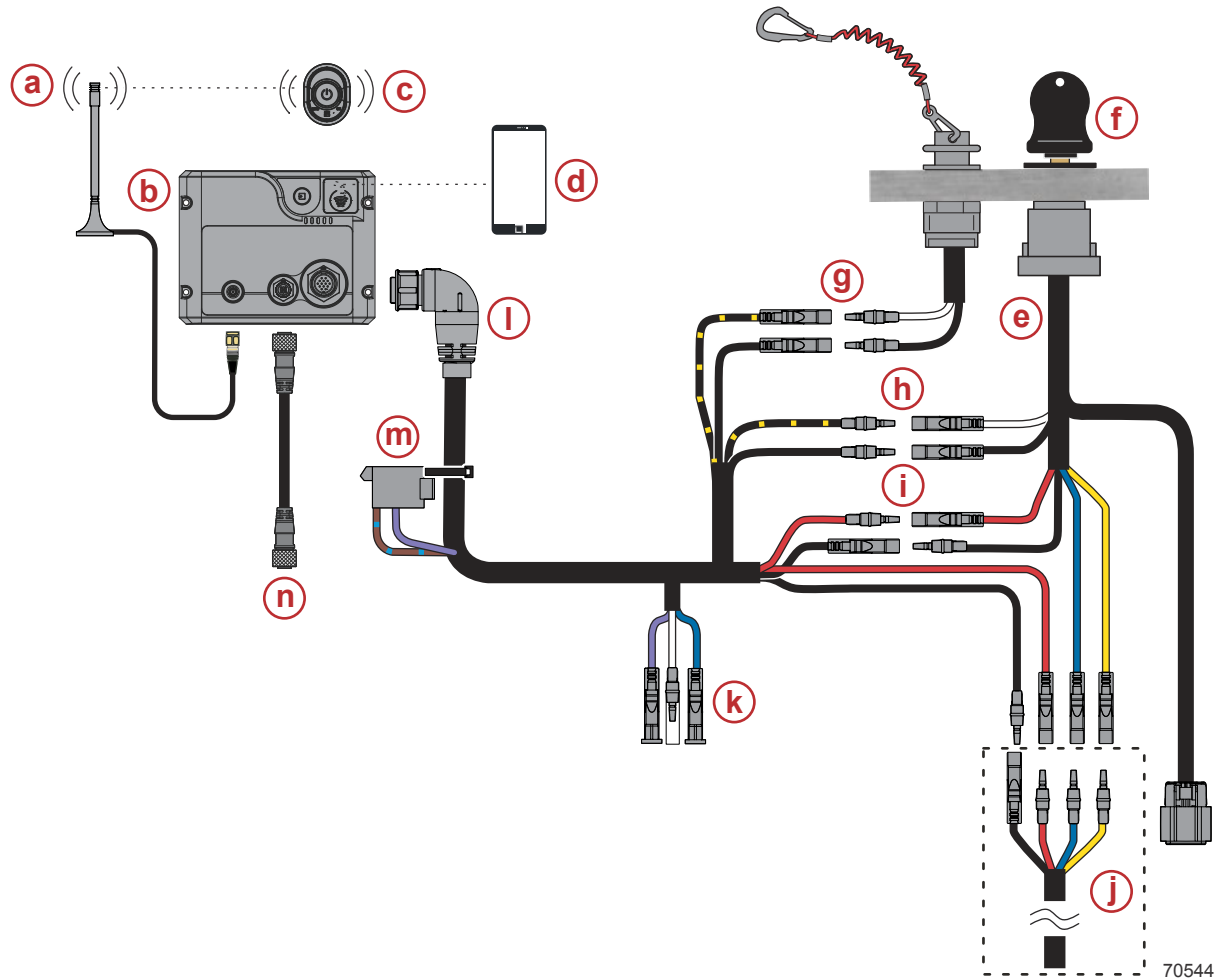
## Setup and Configuration

**IMPORTANT:** Store the 1st Mate driver fob kit in the owner's package, glove box, or console.

- The fob battery should be installed during the final vessel delivery or consumer sea trial.
- The 1st Mate system should be configured through the 1st Mate app when the boat is purchased by the end user (consumer).
- Download the 1st Mate app from the preferred app store at the time of sale.

## Diagrams—Yamaha

### Single Engine Applications



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- a** - Antenna
- b** - HUB
- c** - Driver fob
- d** - Mobile device
- e** - Key switch harness
- f** - Key switch
- g** - Lanyard connectors
- h** - Key switch stop circuit
- i** - Hub power
- j** - To Yamaha helm harness
- k** - Future use
- l** - Hub harness
- m** - Horn
- n** - NMEA 2000

## Technical Specifications

### Hub

General		Hub
Operating temperature range		–10 °C–70 °C (14 °F–158 °F)
Storage temperature range		–40 °C–85 °C (–40 °F–185 °F)
Operating humidity range		0–100%
Voltage source		13.8 V Nominal
Power consumption		10 mA in sleep (0.138 mW) 150 mA in active mode (2 W)
Frequencies	WiMEA	915 MHz FCC (US/CAN)
		868 MHz RED (EU)
		915 MHz ACMA (AU)
	Bluetooth	2.4 GHz
	NFC	13.56 MHz
RF Signal	WiMEA	10dBm max.
	Bluetooth	5dBm max.
	WiFi	20dBm max.
	NFC	100mW max.
Wireless peripherals		WiMEA, Bluetooth, WiFi, NFC
Hardware peripherals		NMEA2000
		SmartCraft

### Antenna

Item	Specifications	
Antenna	Frequency Range	824–960 MHz
	Polarization	Linear
	Gain	2.0dBi (Zentih)
	V.S.W.R.	< 2.0
	Impedance	50Ω
Mechanical	Cable	RG174
	Cable Length	2 Meters
	Connector	RP-SMA
	Mounting method	Magnet / 3M-tape
Environmental	Operating Temperature	-40 °C–85 °C (-40 °F–185 °F)
	Vibration	10–55 Hz with 1.5 mm amplitude 2 hours
	Environmentally Friendly	ROHS Compliant

Certifications and Compliance	Hub
Radio - hub	US: FCC Part 15c EU: R&TTE, EN 300 328, Maritime/CE
EMC - hub	US: CISPR 16-1 EU: EN 301 489-01 (V1.9.2), Class A
Flammability - fob	IEC 60950 1&22, CE-UL94
Imersion - fob	IEC 60945 IP68, Maritime/CE - 3 m (10 ft.) water resistant
Compliant materials	RoHS (2002/95/EC)
Compliant	ABYC A-33

ABYC A33 & E-11 Compliant. US Compliant (US Emergency engine/propulsion cut-off devices standard)

## For Products Sold in the US/CAN

Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**1st Mate Hub:** This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**1st Mate Fob:** This device has been tested and meets applicable limits for radio frequency (RF) exposure.

**Déclaration d'exposition aux radiations:** Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

**Radiation Exposure Statement:** This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.