MERCURY Diesel

Service Bulletin

Bulletin No. 2016-67R1
OEM No. 2016-67R1

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Zeus Joystick System Changes

NOTICE
Revised July 2016. This bulletin supersedes the previous bulletin number 2016-67 July 2016.

Models Affected

Models Covered	Serial Number Or Year
Zeus products	0M975122 and above

Scope

Worldwide

Situation

The intention of this bulletin is to inform dealers and OEM's of the following new components along with a brief description of how they look and function.

The following new Joystick components are explained in this bulletin along with Zeus Joystick Piloting products. For detailed instructions on installations and functions, refer to the appropriate installation manual.

- Helm sensor assembly
- Global positioning system (GPS)/inertial measurement unit (IMU)
- Joystick
- New helm harness changes
- VesselView Link
- VesselView 502
- VesselView 702
- Operational features
- Rigging kit table
- Auxiliary Joystick table
- Current production pod model table
- Service pod model table

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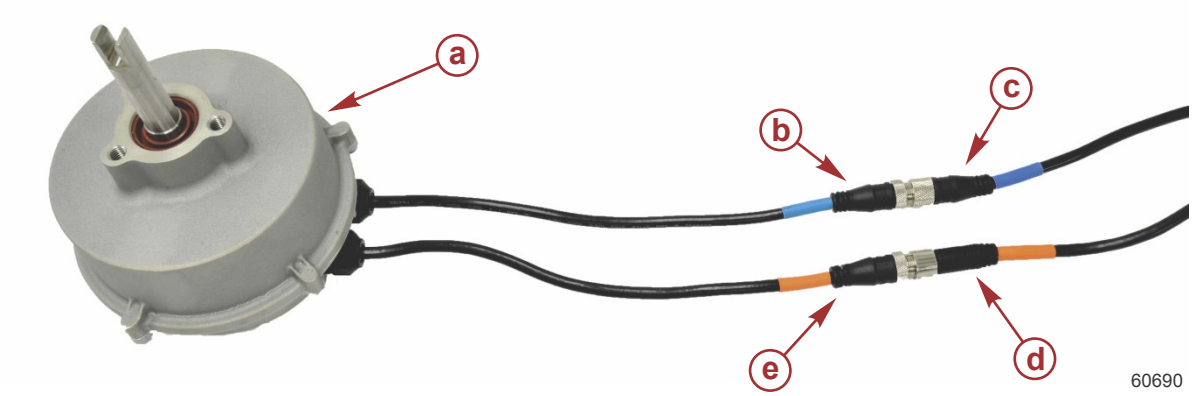
Helm Sensor Assembly

Helm Sensor Assembly Overview

The following illustration covers the electrical connections of the unit:



Helm sensor assembly connections

- **a -** Helm sensor assembly
- **b -** Helm sensor assembly CAN P (blue) connection
- **c -** Helm harness CAN P (blue) connection
- **d -** Helm harness CAN H (orange) connection
- **e -** Helm sensor assembly CAN H (orange) connection

The following items are a few key points of the helm sensor assembly.

- Each helm must have a helm sensor assembly.
- The helm sensor assembly is fully redundant between the port and starboard systems.
- The helm sensor assembly provides resistive end stops.
- The maximum drop length is 7 m (23 ft).

GPS/IMU

GPS/IMU Overview

The GPS antenna and IMU have been combined into one unit yet the individual features have not changed.

The following information covers the mounting recommendations, functionality, and calibration of the GPS/IMU:

GPS/IMU

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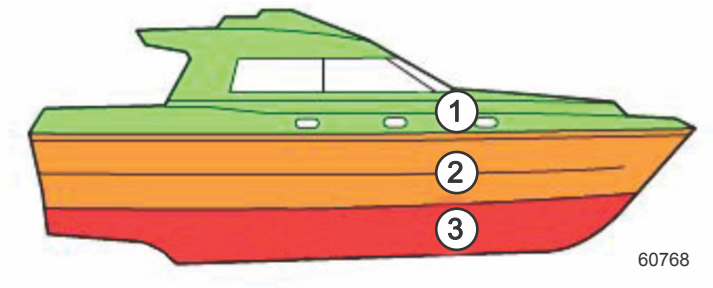
Mounting Recommendations

The illustration and table highlights the desired mounting location.



Location	Location description
1	This location (above the deck) provides optimal GPS performance.
2	This location (inside the boat) may obstruct the GPS performance.
3	This location (inside the boat) is not recommended for GPS installation.

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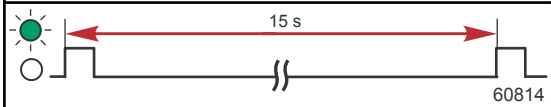
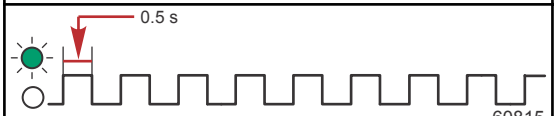
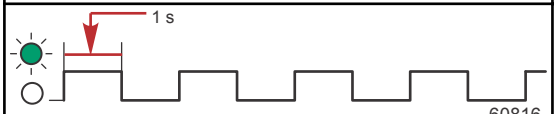
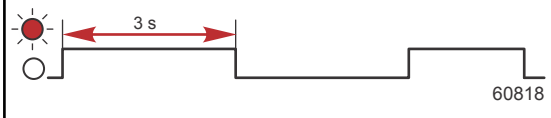
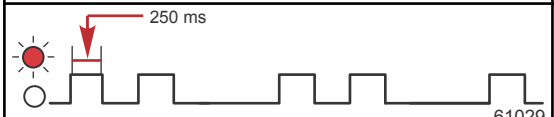
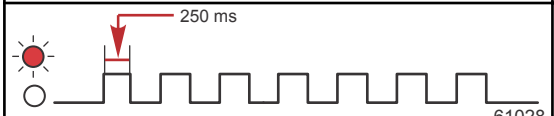
Functionality

The light on the top of the GPS/IMU indicates the status of the unit while it is powered up. Refer to the following table for more information:

LED Color	LED Code	Status	Action Required
	Green light—1 blink every 15 seconds.	Normal operation	None
	Green light—1 flash every 0.5 second.	Unit is initializing and is in a Not Ready status.	None—normal power up takes <1 minute.
	Green light—1 flash every 1 second.	GPS sensor is initializing and is in a Not Ready status.	None—typically lasts 3–5 minutes out of the box, after factory reset, or software update.
	Green light—1 flash every 2 seconds.	Compass linearizing	None—normal operation.
	Red light—1 flash every 3 seconds.	Internal fault/error, GPS No signal.	Confirm unit has clear view of sky and unit isn't damaged. If so, contact Mercury Marine Technical Support.
	Red light—2 flashes every 4 seconds.	No CAN bus detected.	Check all wiring connections. Then contact Mercury Marine Technical Support.
	Red light—7 flashes every 9 seconds.	Power and CAN bus detected but no transfer or receive (TX/RX).	Contact Mercury Marine Technical Support.

Calibration

Calibration of the GPS/IMU is not required. To program a Heading offset, use CDS G3.

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Joystick

Joystick Overview

The following photos illustrate the visual differences between the two designs of the joystick.

NOTE: *The initial production of the joystick will have the external noise suppressor in-line and will be short-term. Long-term production of the joystick will have the noise suppressor incorporated inside the joystick. Either joystick can be used, the functionality remains the same between the two designs of the joystick.*

This photo depicts the joystick with an external noise suppressor.

Joystick with external noise suppressor

This photo depicts the joystick with an internal noise suppressor.

Joystick with internal noise suppressor

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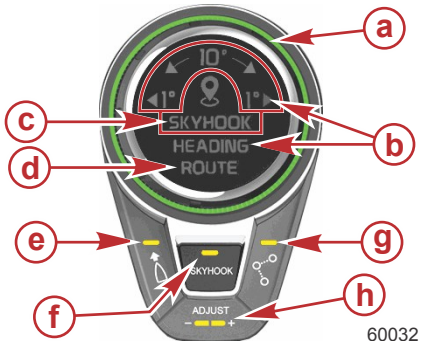
The following illustration and table gives an overview of how the joystick functions:



Ref	Description	Notes
a	Light ring	The light ring will illuminate, flash, pulse, or rotate, to indicate a large variety of states. Refer to the individual operation for specifics. The light ring will flash when an input error occurs.
b	Heading mode course adjustment indicators and textual indicator	The course adjustment indicators illuminate when the system is in auto heading mode. They remind the operator that: • Twisting the joystick to the right will change the heading by 10° starboard • Twisting the joystick to the left will change the heading by 10° port • Bumping the joystick to the right will change the heading by 1° starboard • Bumping the joystick to the left will change the heading by 1° port The textual indicator illuminates whenever the auto heading mode is engaged.
c	Skyhook mode indicators	Both the textual indicator SKYHOOK and the Skyhook icon illuminate when Skyhook mode is engaged.
d	Route textual indicator	Illuminates when the route (waypoint sequencing) mode is engaged.
Trackpad Lights		
e	Heading button light	Illuminates when the auto heading mode is engaged.
f	Skyhook button light	Illuminates when Skyhook is engaged.
g	Route (waypoint sequencing) button light	Illuminates when the route (waypoint sequencing) mode is engaged.
h	Adjust button lights	These two light segments illuminate to indicate the degree of fine-tuning applied to each function. Refer to the individual function description for details.

New Helm Harness Changes

Previous Mercury Marine Joystick products (Zeus, Axius, and JPO—design I) required an external power and ground at the helm harness. This was accomplished by connecting the main power relay harness to the **STBD POWER DISCONNECT** connector on the helm harness. Refer to callout **b** in the following illustration.

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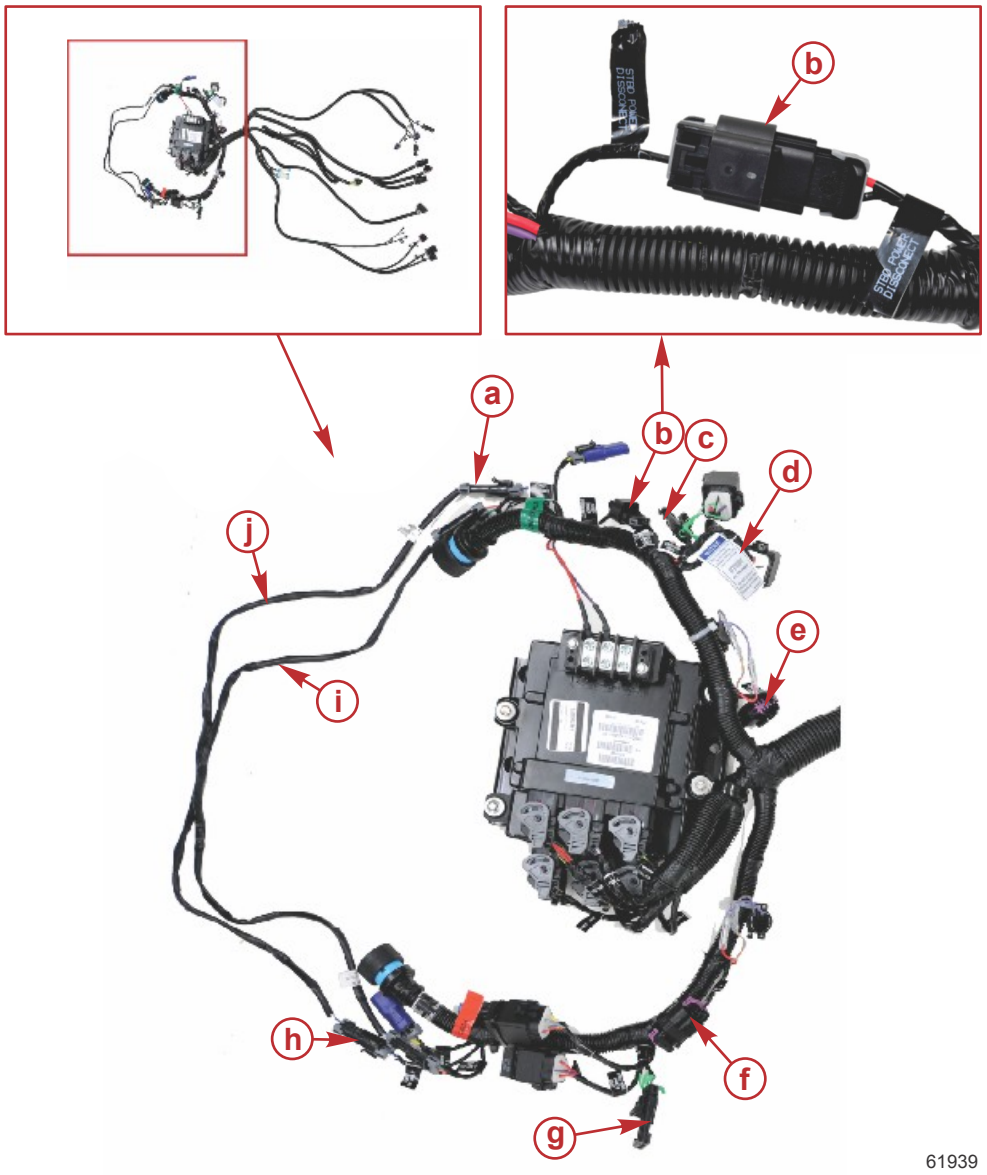
Current Mercury Marine Joystick products (JPO—design II, JPS, and Zeus Joystick Piloting) no longer require a main power relay harness to be connected to the helm harness. The **STBD POWER DISCONNECT** connector must remain connected. Refer to callout **b** in the following illustration.



Dual-engine helm harness, helm panel end

- **a -** CAN P—also known as CAN 1 connectors
- **b -** STBD POWER DISCONNECT
- **c -** Starboard switched load
- **d -** OEM Skyhook—under tag
- **e -** Starboard tachometer link
- **f -** Port tachometer link
- **g -** Port switched load
- **h -** CAN H—also known as CAN 3 connectors
- **i -** CAN H link—for triple-engine and quad-engine applications
- **j -** CAN P link—for triple-engine and quad-engine applications

VesselView Link

VesselView Link Overview

The VesselView Link allows the joystick piloting system to communicate with NMEA 2000 components, such as an approved multifunction display (MFD) or chartplotter.

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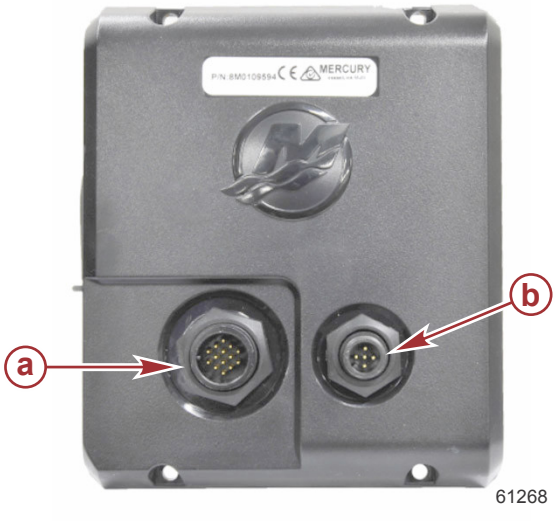
IMPORTANT: The VesselView Link can be used in a single or multiengine application. For Zeus applications, the multiengine VesselView Link must be ordered. Ensure you choose the correct part number since the part numbers are different between the single and multiengine application.



VesselView Link

a - VesselView Link (SmartCraft) connector

b - NMEA 2000 connector

VesselView Link Connections

Connect the VesselView Link harness to the SmartCraft junction box. Different connection options may exist, depending on your application.

IMPORTANT: Connecting the VesselView Link harness to the multiwake SmartCraft junction box for multiengine applications is required to allow the VesselView Link module to be powered up when either key switch is turned on.

VesselView 502

VesselView 502 Overview

The following information covers some key features of the VesselView 502:

- Touchscreen with no buttons
- VesselView Link module required
- Mounting options:
  - Flush mount
  - Surface mount
- Internal Wi-Fi
- Internal bluetooth
- Internal GPS (10 Hz)
- Broadband sonar with built-in compressed high-intensity radiated pulse (CHIRP)

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- Full featured chartplotter

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VesselView 502

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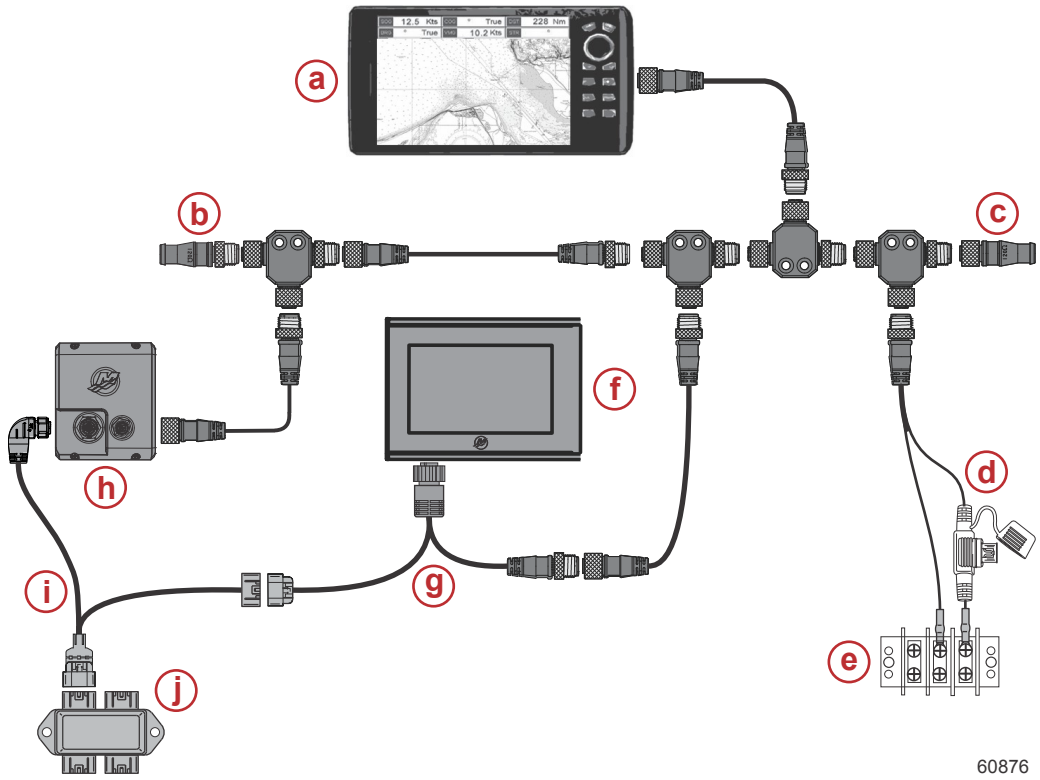
VesselView 502 Connections

The following diagram is an example of how the VesselView 502 could be installed.



Typical NMEA communication connection

- **a -** Chartplotter or multifunction display
- **b -** 120 ohm termination resistor, male
- **c -** 120 ohm termination resistor, female
- **d -** NMEA 2000 fused power source
- **e -** Power bus
- **f -** VesselView 502
- **g -** VesselView 502 harness
- **h -** VesselView Link controller
- **i -** VesselView Link harness
- **j -** Junction box

VesselView 702

VesselView 702 Overview

The following information covers some key features of the VesselView 702:

- Touchscreen with buttons
- VesselView Link module required
- Mounting options:
  - Flush mount
  - Surface mount
- Wi-Fi capability (requires GoFree Wi-Fi module)
- Internal bluetooth
- Internal GPS (10 Hz)

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- Supports sonar with additional hardware for compressed high-intensity radiated pulse (CHIRP)
- Full featured chartplotter
- Supports backup camera

VesselView 702

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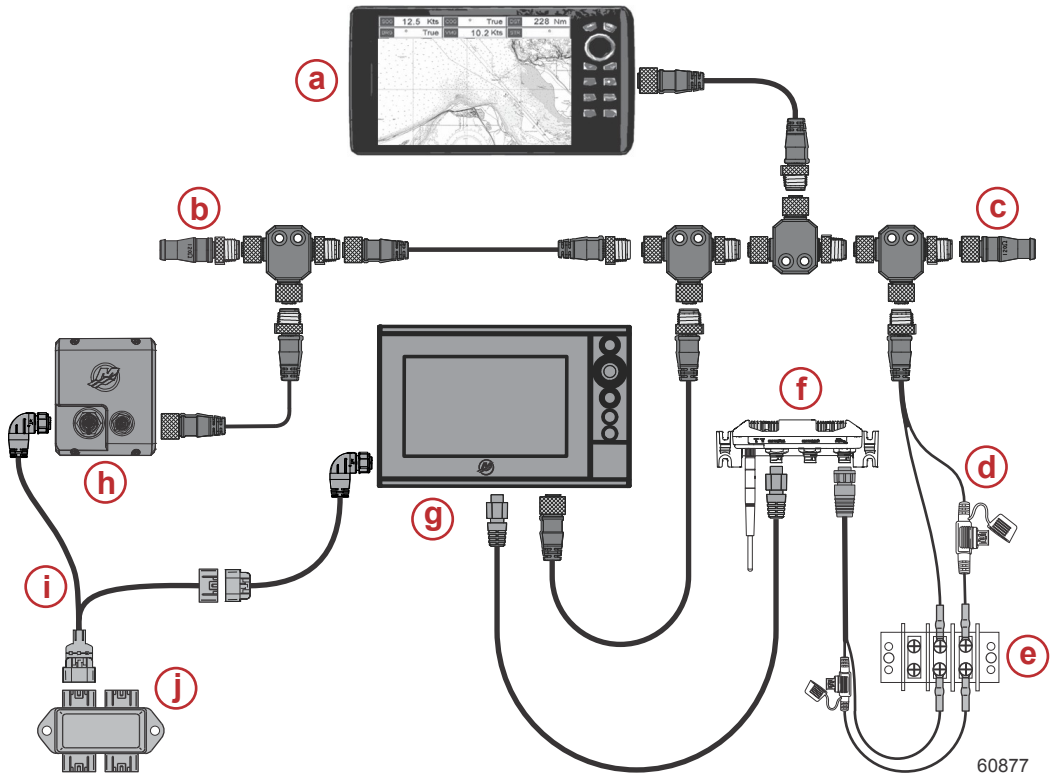
VesselView 702 Connections

The following diagram is an example of how the VesselView 702 could be installed.



Typical NMEA communication connection

- **a -** Chartplotter or multifunction display
- **b -** 120 ohm termination resistor, male
- **c -** 120 ohm termination resistor, female
- **d -** NMEA 2000 fused power source
- **e -** Power bus
- **f -** Wi-Fi module

  NOTE: *The Wi-Fi module is a wireless bridge that adds wireless functionality to compatible multifunction displays which will allow future software updates to be delivered to the VesselView 702 via the Wi-Fi module.*
- **g -** VesselView 702
- **h -** VesselView Link controller
- **i -** VesselView Link harness
- **j -** Junction box

Operational Features

The following descriptions define how the Zeus joystick piloting system positions the pods during various operational transitions, depending on the position of the steering wheel.

Key-Up

No action taken; the pods do not move.

Engine Start Up

The pods will steer to a position that will match the steering wheel position (within one revolution) relative to the steering wheel center position.

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Exiting Joystick

The pods will move to the center position and the steering wheel will take the current position as the new center. To return the steering wheel to its original (true) center, operate the boat normally and the system will gradually align the center position of the pods to the original (true) center of the steering wheel.

Exiting Skyhook

The pods will move to the center position and the steering wheel will take the current position as the new center. To return the steering wheel to its original (true) center, operate the boat normally and the system will gradually align the center position of the pods to the original (true) center of the steering wheel.

Exiting Route or Heading Mode

The pods will not move from their last position without steering input. The steering wheel position will not match the pods position, but will steer the boat with any input to the steering wheel. Normal operations of the boat will gradually align the center position of the pods to the original (true) center of the steering wheel.

Rigging Kit Table

NOTE: *When rigging a boat with two stations, the main station and second station kits are required.*

Application	Main Station Kit Part Number	Second Station Kit Part Number
Dual	8M0116489	8M0116374
Triple	8M0117126	8M0117127

Auxiliary Joystick Table

Application	Auxiliary Joystick Part Number
Auxiliary joystick kit (dual pod/engine)	8M0115487
Auxiliary joystick kit (triple pod/engine)	8M0115490

Resistor Pack Table

NOTE: *When installing a second or third auxiliary joystick, you must replace the existing resistor pack that is included in the auxiliary joystick kit with one of the following part numbers based on the application.*

Resistor Pack Part Numbers	
Resistor pack for second auxiliary joystick	898091T02
Resistor pack for third auxiliary joystick	898091T03

Vessel Interface Panel (VIP) Kit—Includes SIM

NOTE: *Old and new VIPs are not compatible. Do not intermix old and new VIPs together on the same vessel.*

VIP Kit Part Number	
VIP Rigging Kit (one per pod)	8M0119038

Current Production Pod Model Table

NOTE: *All pods installed must have the same end model identifier. Do not intermix LH and KH pods together on the same vessel.*

Reference the following table for the current KH and LH production pod models.

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KH Pod Model Number	LH Pod Model Number	Gear Ratio	Pod Model Description
5P4AG94KH	5P4AG94LH	1.34	Port pod QSM with drop box
5Q4AG94KH	5Q4AG94LH		Starboard pod QSM with drop box
5C4AG94KH	5C4AG94LH		Center pod QSM with drop box
5P4AL84KH	5P4AL84LH	1.50	Port pod CAN ZF QSC with drop box
5Q4AL84KH	5Q4AL84LH		Starboard pod CAN ZF QSC with drop box
5P4DB74KH	5P4DB74LH	1.79	Port pod QSC with drop box
5Q4DB74KH	5Q4DB74LH		Starboard pod QSC with drop box
5C4DB74KH	5C4DB74LH		Center pod QSC with drop box
5P4DA74KH	5P4DA74LH	1.95	Port pod QSB with drop box
5Q4DA74KH	5Q4DA74LH		Starboard pod QSB with drop box
5C4DA74KH	5C4DA74LH		Center pod QSB with drop box
5P4CZ64KH	5P4CZ64LH	2.06	Port pod QSB with drop box
5Q4CZ64KH	5Q4CZ64LH		Starboard pod QSB with drop box
5C4CZ64KH	5C4CZ64LH		Center pod QSB with drop box
5P4AZ54KH	5P4AZ54LH	2.06	Port pod QSB without drop box
5Q4AZ54KH	5Q4AZ54LH		Starboard pod QSB without drop box
5C4AZ54KH	5C4AZ54LH		Center pod QSB without drop box
5P4CY64KH	5P4CY64LH	2.24	Port pod QSB with drop box
5Q4CY64KH	5Q4CY64LH		Starboard pod QSB with drop box
5C4CY64KH	5C4CY64LH		Center pod QSB with drop box
5P4AY54KH	5P4AY54LH	2.24	Port pod QSB without drop box
5Q4AY54KH	5Q4AY54LH		Starboard pod QSB without drop box
5C4AY54KH	5C4AY54LH		Center pod QSB without drop box

Service Pod Model Table

Reference the following table for the current service replacement of the KP and LP pod models.

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KP Pod Model Number	LP Pod Model Number	Gear Ratio	Pod Model Description
5P4AG94KP	5P4AG94LP	1.34	Port pod QSM with drop box
5Q4AG94KP	5Q4AG94LP		Starboard pod QSM with drop box
5C4AG94KP	5C4AG94LP		Center pod QSM with drop box
5P4AL84KP	5P4AL84LP	1.50	Port pod CAN ZF QSC with drop box
5Q4AL84KP	5Q4AL84LP		Starboard pod CAN ZF QSC with drop box
5P4DB74KP	5P4DB74LP	1.79	Port pod QSC with drop box
5Q4DB74KP	5Q4DB74LP		Starboard pod QSC with drop box
5C4DB74KP	5C4DB74LP		Center pod QSC with drop box
5P4DA74KP	5P4DA74LP	1.95	Port pod QSB with drop box
5Q4DA74KP	5Q4DA74LP		Starboard pod QSB with drop box
5C4DA74KP	5C4DA74LP		Center pod QSB with drop box
5P4CZ64KP	5P4CZ64LP	2.06	Port pod QSB with drop box
5Q4CZ64KP	5Q4CZ64LP		Starboard pod QSB with drop box
5C4CZ64KP	5C4CZ64LP		Center pod QSB with drop box
5P4AZ54KP	5P4AZ54LP	2.06	Port pod QSB without drop box
5Q4AZ54KP	5Q4AZ54LP		Starboard pod QSB without drop box
5C4AZ54KP	5C4AZ54LP		Center pod QSB without drop box
5P4CY64KP	5P4CY64LP	2.24	Port pod QSB with drop box
5Q4CY64KP	5Q4CY64LP		Starboard pod QSB with drop box
5C4CY64KP	5C4CY64LP		Center pod QSB with drop box
5P4AY54KP	5P4AY54LP	2.24	Port pod QSB without drop box
5Q4AY54KP	5Q4AY54LP		Starboard pod QSB without drop box
5C4AY54KP	5C4AY54LP		Center pod QSB without drop box

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