



## GHP™ 10 Mercury® Verado® Adapter Kit Installation Instructions

To use the GHP 10 autopilot system with Mercury Verado engines, you must install the GHP 10 Mercury Verado Adapter Kit. Use the *GHP 10 Installation Instructions* (supplied with the GHP 10 autopilot system) and these installation instructions to install the GHP 10 autopilot system on your Mercury Verado-equipped boat.

### Installing the GHP 10 Autopilot System

The *GHP 10 Installation Instructions* explain the installation procedures to install the GHP 10 autopilot system, but the instructions do not cover the specific Mercury Verado hydraulic and tachometry connections (J Box Adapter Plug or Plugs).

Pages 2–6 contain Mercury Verado-specific instructions on installing the GHP 10 in the hydraulic system.

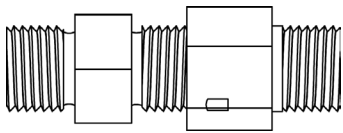
For instructions on installing the check valve assembly, see [page 8](#).

For instructions on installing the return hose and fitting kit, see [page 8](#).

For instructions on connecting the GHP 10 tachometer wiring to the Mercury J Box adapter plugs, see [page 9](#).

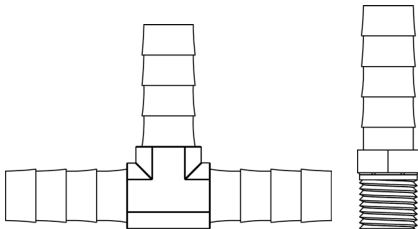
### Package Contents

- Hose Kit
  - 5 ft. (1.5 m) hose with 4-ORFS female fittings (1)
  - 4 ft. (1.2 m) hose with 4-ORFS female fittings (1)
  - 1 ft. (0.3 m) hose with 4-ORFS female fittings (1)
- Return Hose
  - 3/8 in. (9 mm) ID 6 ft. (1.8 m) hose (1)
  - Hose clamps (4)
- Mercury Synthetic Power-Steering fluid
- Ferrite Beads (4)



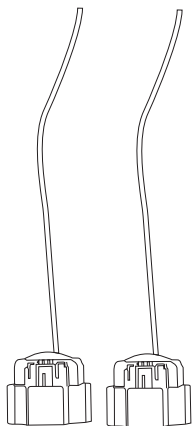
- Shadow Drive fittings
  - 4-ORFS male to 1/4" NPT (1)
  - 1/4" NPT male to 1/4" NPT female (1)

- Return Hose Fitting Kit

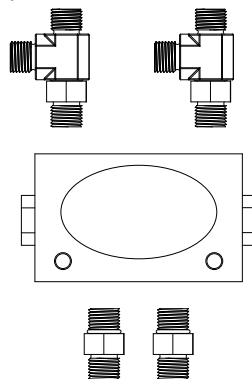


- T-fitting with 3/8 in. (9 mm) barbs for return hose (1)
- Barbed return fitting for pump end (1)

- Tachometer to J Box adapter plug (2)

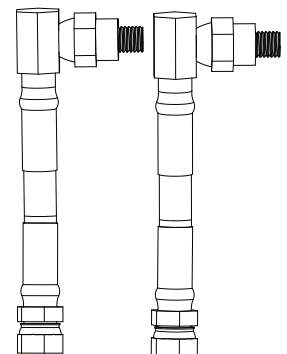


- Check Valve Assembly kit (sold separately - 1.2 L pump only) p/n: 010-11203-00



- 1/4 in. (6 mm) NPT male to 1/4 in. (6 mm) NPT female 90-degree fittings (2)
- 17 in. (0.4 m) cable tie wrap (1)
- Cable tie mount (1)
- #8 x 5/8 (16 mm) stainless steel screw

- Isolation Hose kit (sold separately - 1.2 L pump only) p/n: 010-11204-00



# Installing the GHP 10 in a Mercury Verado Hydraulic System

## NOTICE

Before starting the hydraulic installation, verify the type of hydraulic steering in the boat. If the hydraulic steering in your boat does not match any of the diagrams in this document, consult Garmin Product Support for specific installation procedures.

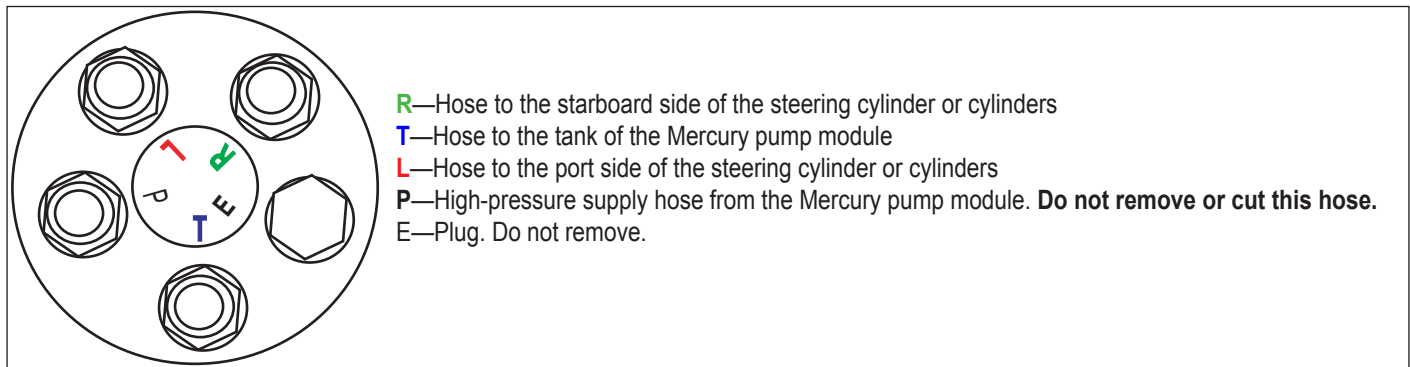
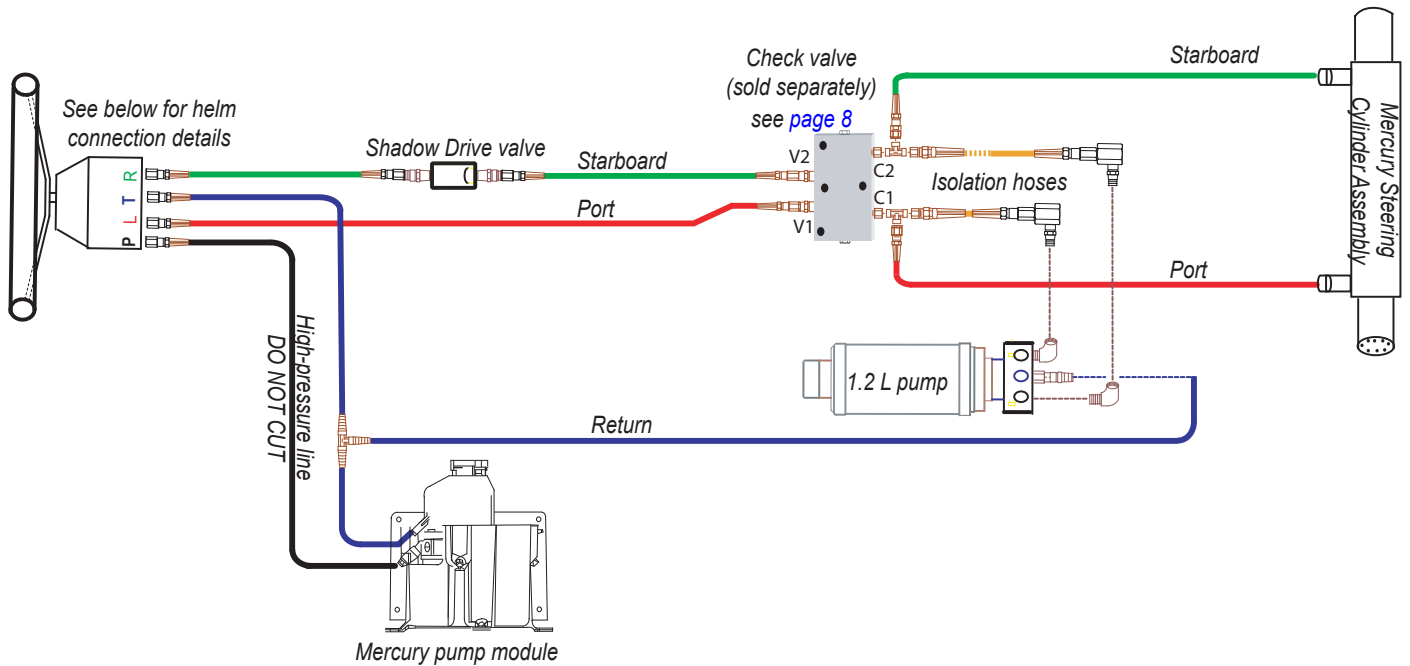
Because of the Mercury pump module, additional steps must be taken when installing the GHP 10 pump and shadow drive valve. Consult the hydraulic layout diagrams in this document to determine the best location to install the pump and shadow drive valve in the hydraulic system of your boat.

**NOTE:** If you are installing a 1.2 L pump in the hydraulic system, you must purchase the check valve assembly kit and isolation hose kit (sold separately) to ensure a proper hydraulic installation. For more information on the check valve assembly and isolation hose kits, see [page 8](#).

## 1.2 L (p/n: 010-11098-00) Pump Hydraulic Diagrams

### Installing a 1.2 L Pump in a Single-Helm Verado Hydraulic System

**NOTE:** Components in the diagram connected by dotted lines are directly connected to each other.



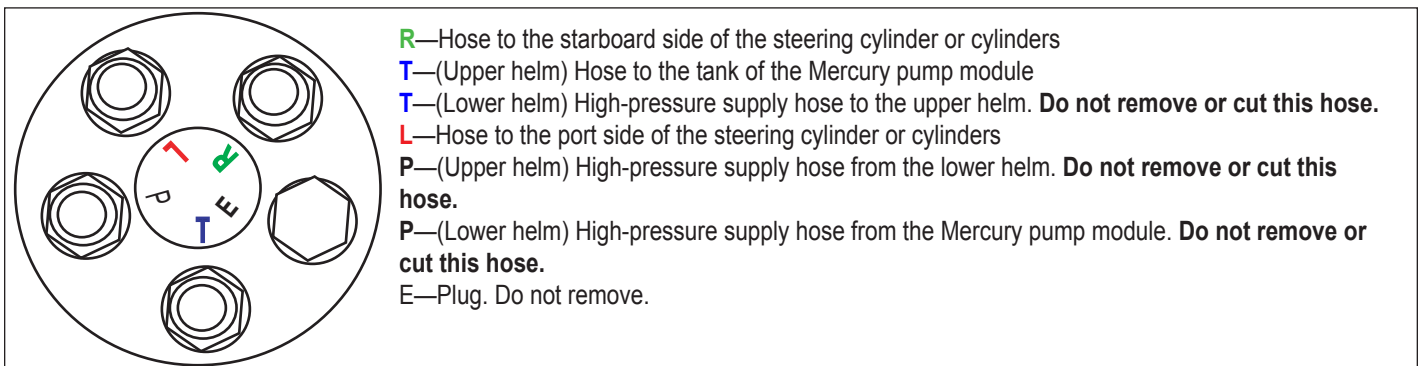
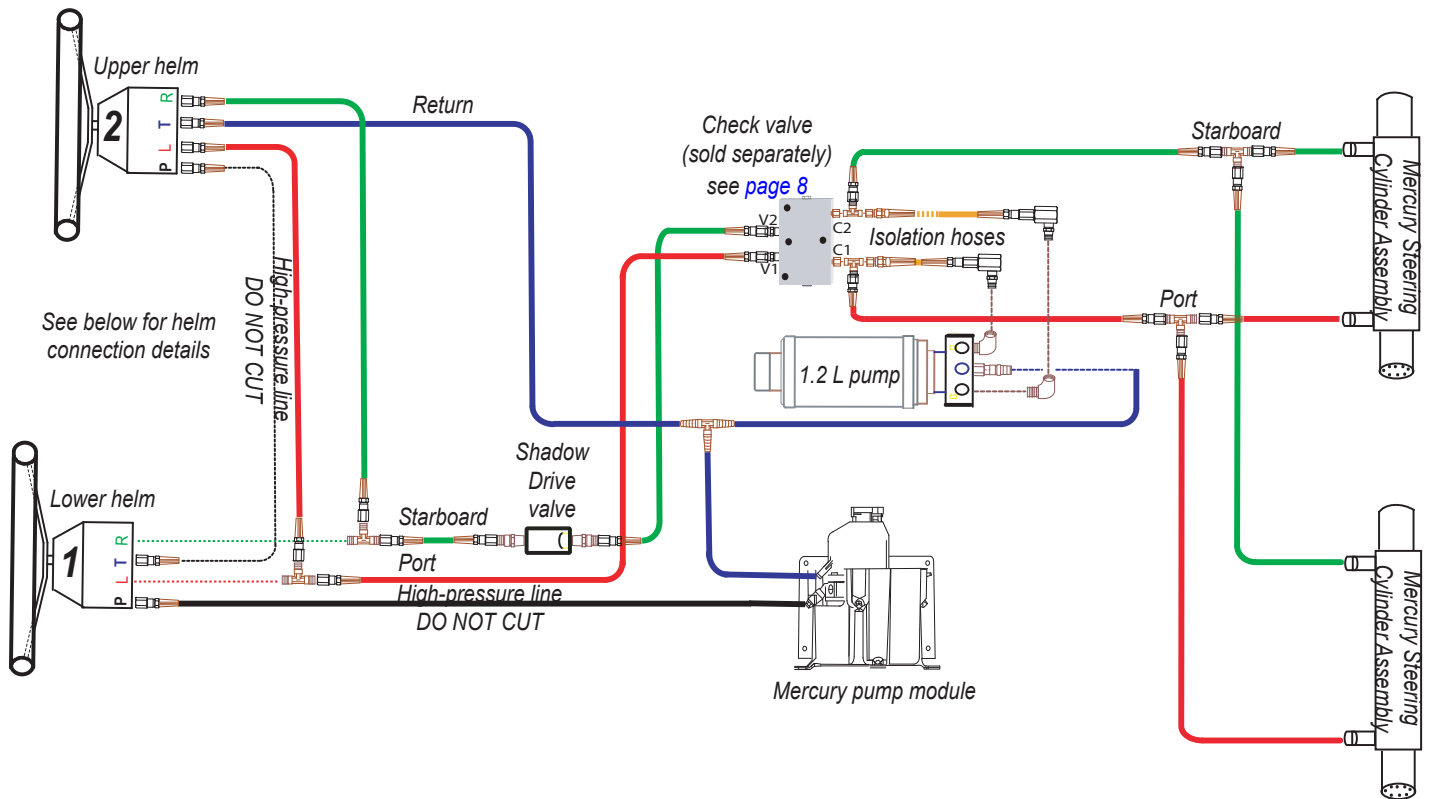
**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Do not install a tee fitting between the helm and the shadow drive valve.
- Do not install the shadow drive valve directly onto the helm; install a length of hydraulic hose between the helm and the shadow drive valve.

## Installing a 1.2 L Pump in a Dual-Helm Verado Hydraulic System

**NOTE:** Components in the diagram connected by dotted lines are directly connected to each other.



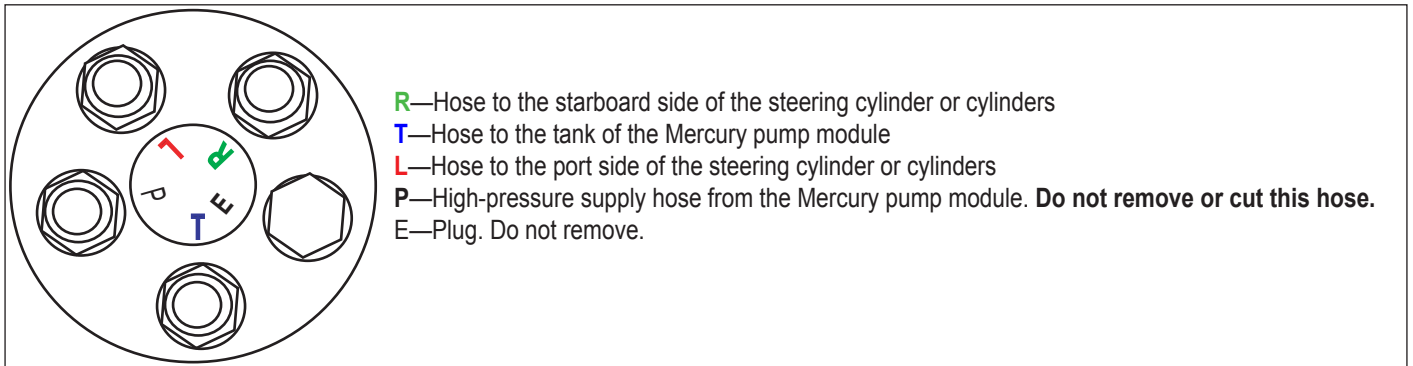
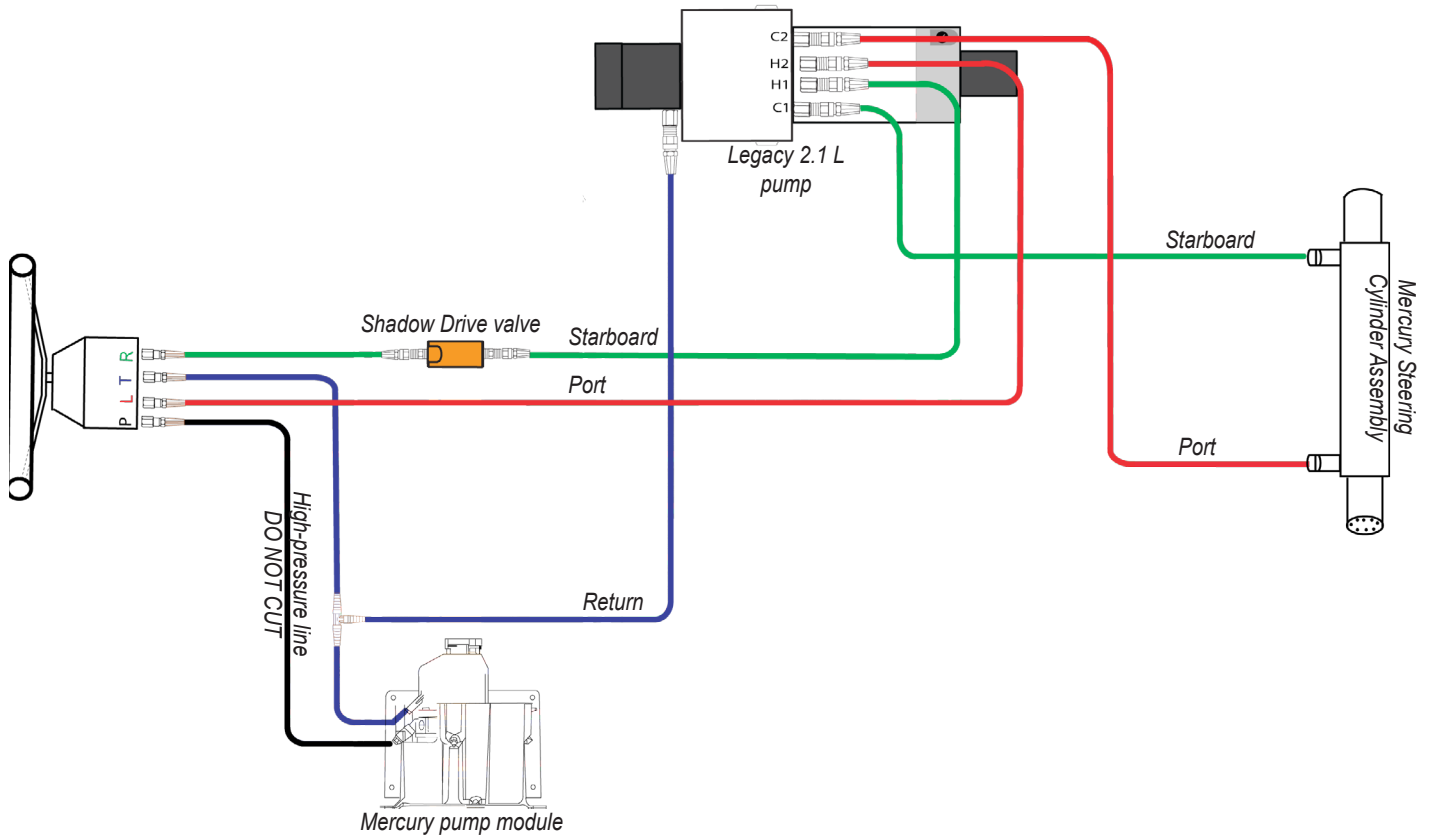
**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the upper helm or the “P” or “T” connectors on the lower helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Install the shadow drive valve between the tee fitting that connects the helms and the check valve to ensure that both helms activate the shadow drive valve.
- Do not install the shadow drive valve directly onto the helm or tee fitting that connects the helms; install a length of hydraulic hose between the helm or tee fitting and the shadow drive valve.

# Legacy 2.1 L (p/n: 010-11099-00) Pump Hydraulic Diagrams

## Installing a Legacy 2.1 L Pump in a Single-Helm Verado Hydraulic System



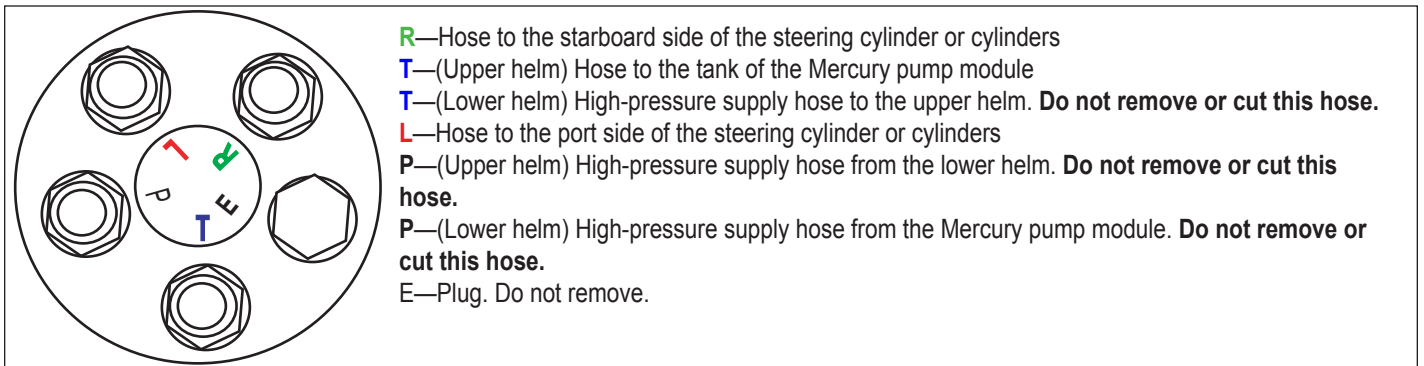
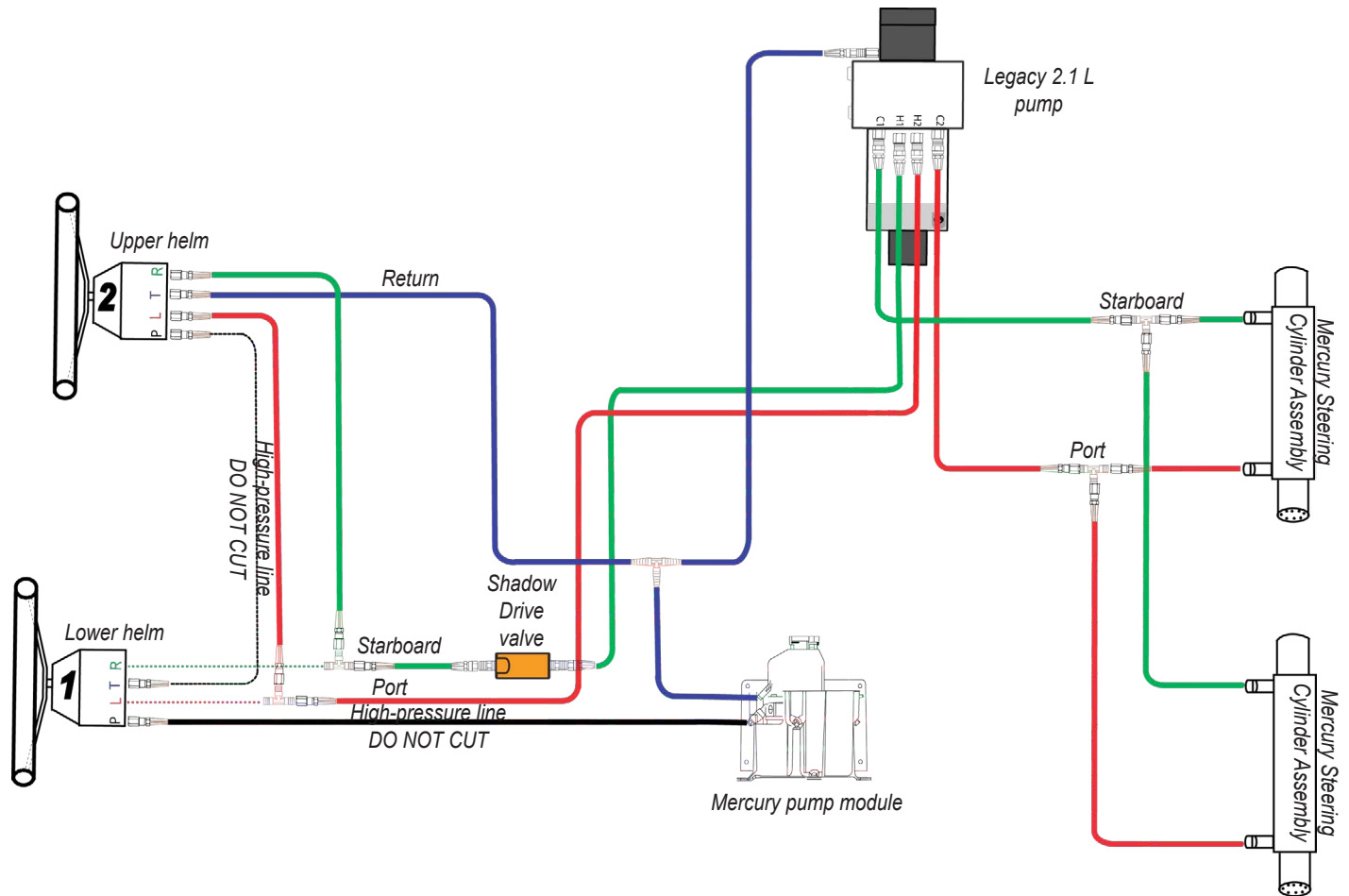
**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Do not install the shadow drive valve directly onto the helm; install a length of hydraulic hose between the helm and shadow drive valve.

## Installing a Legacy 2.1 L Pump in a Dual-Helm Verado Hydraulic System

**NOTE:** Components in the diagram connected by dotted lines are directly connected to each other.



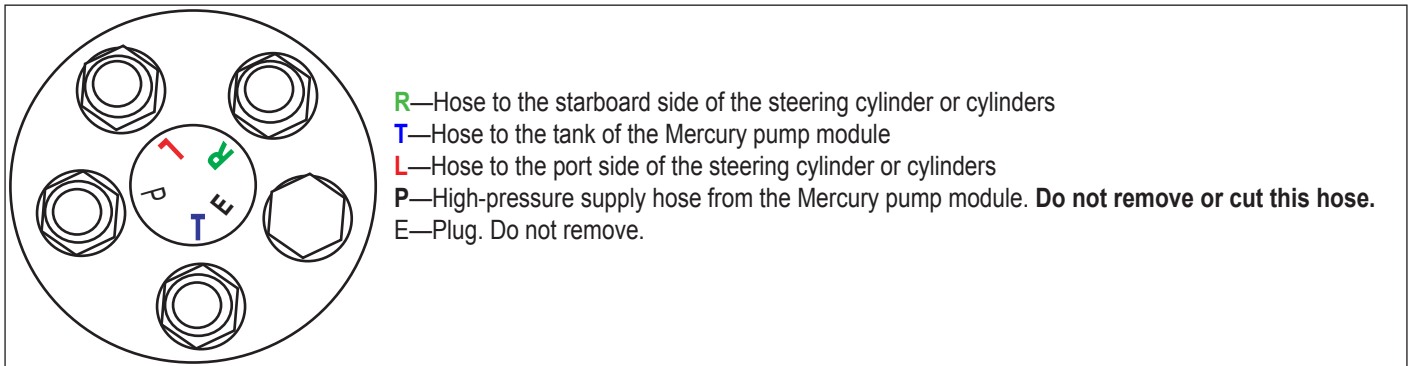
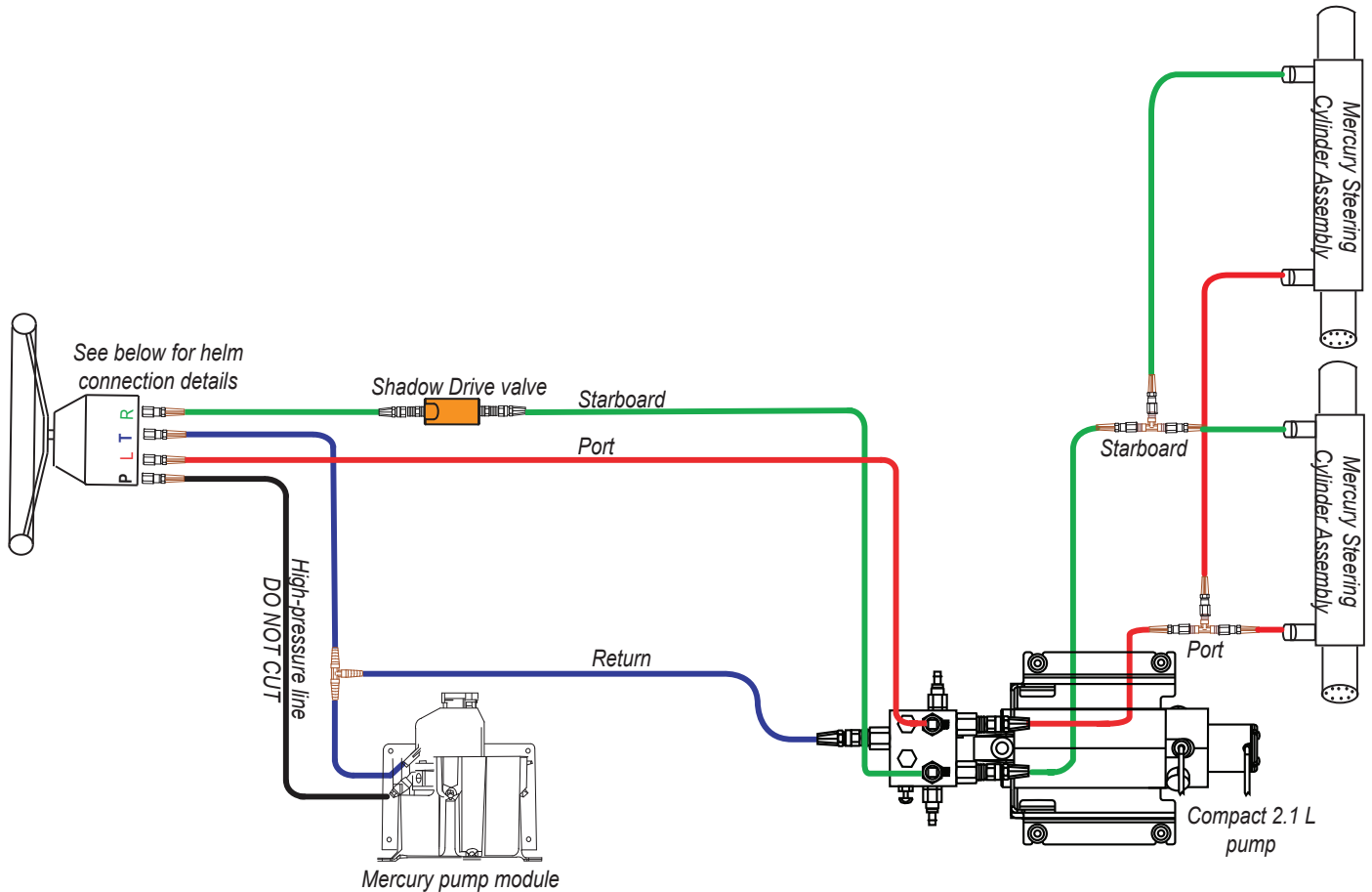
**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the upper helm or the “P” or “T” connectors on the lower helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Install the shadow drive valve between the tee fitting that connects the helms and the GHP pump to ensure that both helms activate the shadow drive valve.
- Do not install the shadow drive valve directly onto the helm or tee fitting that connects the helms; install a length of hydraulic hose between the helm or tee fitting and the shadow drive valve.

# Compact 2.1 L (p/n: 010-11099-10) Pump Hydraulic Diagrams

## Installing a Compact 2.1 L Pump in a Single-Helm Verado Hydraulic System



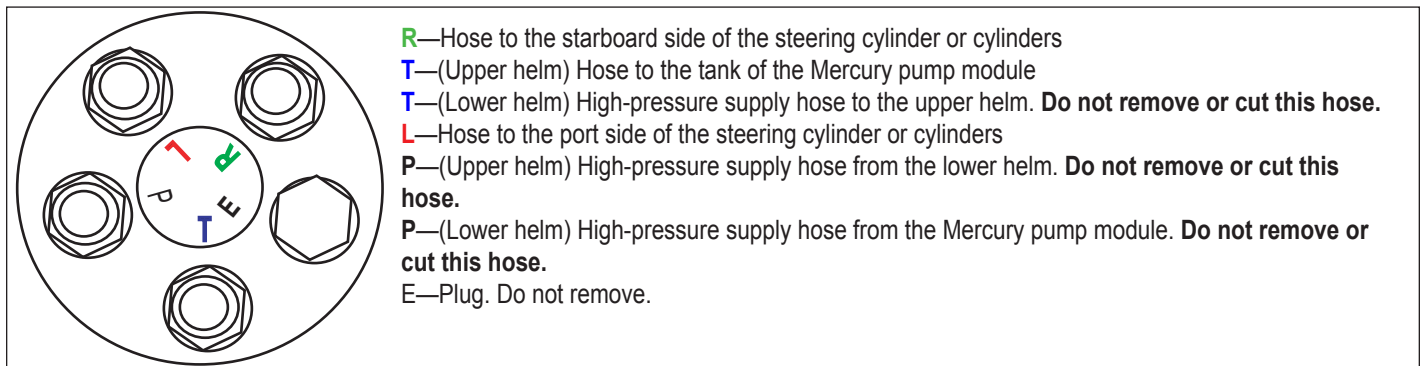
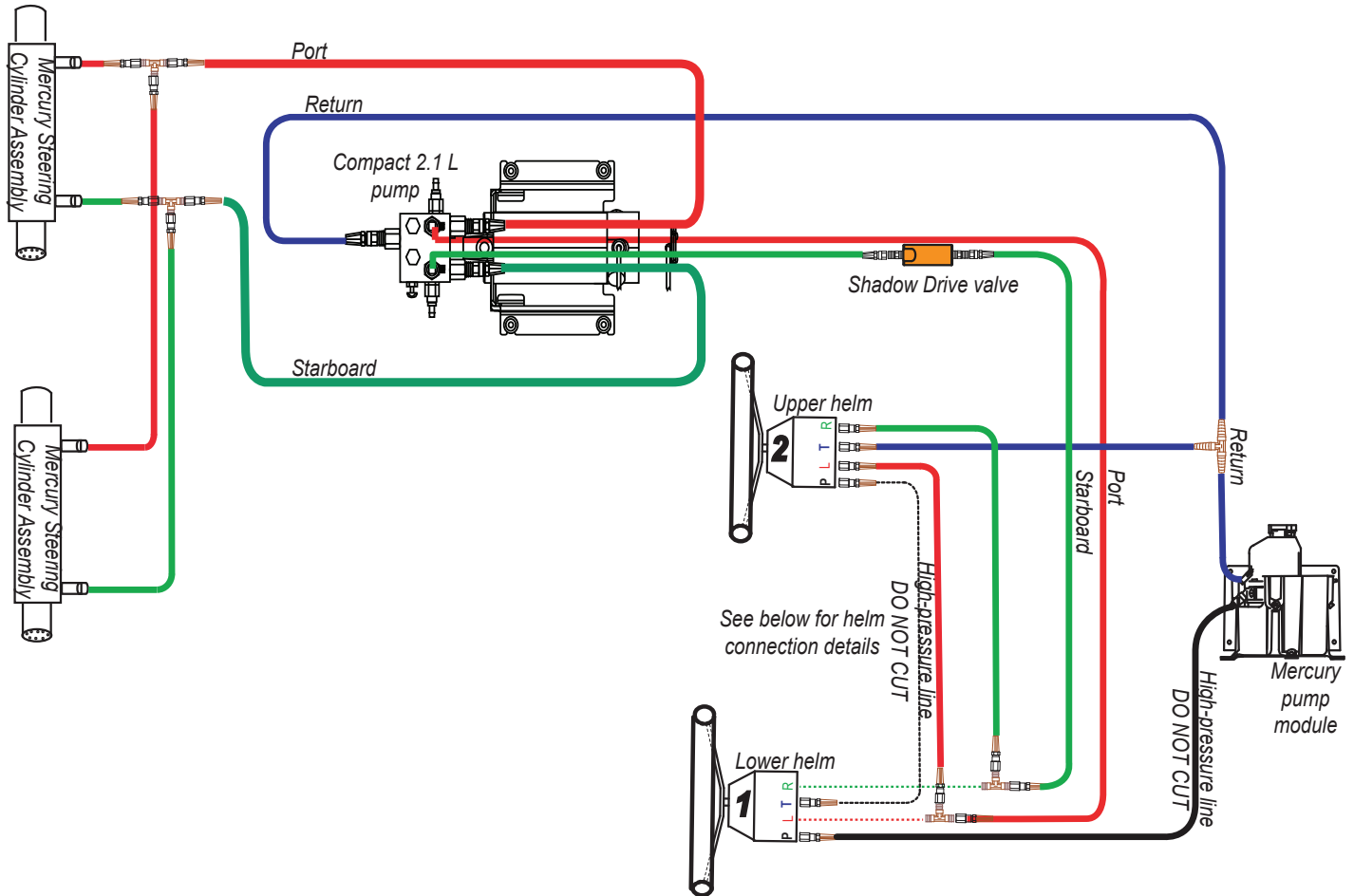
**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Do not install the shadow drive valve directly onto the helm; install a length of hydraulic hose between the helm and the shadow drive valve.

## Installing a Compact 2.1 L Pump in a Dual-Helm Verado Hydraulic System

**NOTE:** Components in the diagram connected by dotted lines are directly connected to each other.



**Helm Hose-Connection Assignments**

### Important Notes

- Do not cut or remove the high-pressure hydraulic hose that connects to the “P” connector on the upper helm or the “P” or “T” connectors on the lower helm.
- Install the shadow drive valve horizontally, as level as possible.
- Install the shadow drive valve in either the port or starboard hydraulic line.
- Install the shadow drive valve between the tee fitting that connects the helms and the GHP pump to ensure that both helms activate the shadow drive valve.
- Do not install the shadow drive valve directly onto the helm or tee fitting that connects the helms; install a length of hydraulic hose between the helm or tee fitting and the shadow drive valve.

## Installing the Check Valve and Isolation Hoses

The check valve and isolation hoses are required when installing the GHP 10 with a 1.2 liter pump to a Verado single- or dual-helm hydraulic system. It is recommended that you install the check valve and isolation hoses on the pump before installing the pump in your boat.

For this installation, you will need the following:

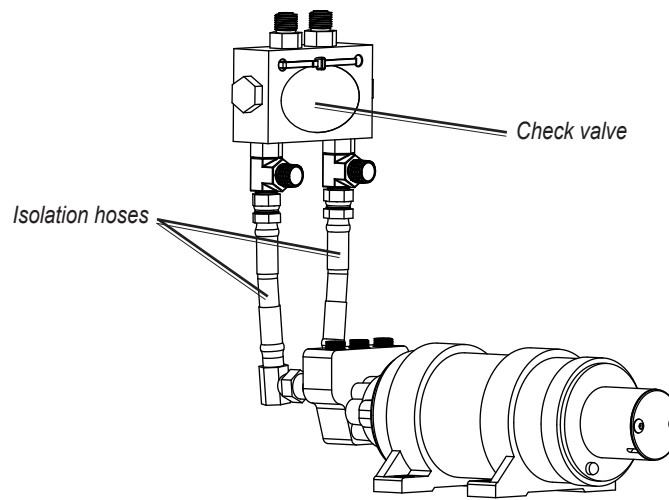
- 1.2 L pump
- Check valve assembly
- Cable tie mount
- Isolation hoses
- Thread sealant (Loctite® Pro Lock Tight® multipurpose anaerobic gel, part number 51604 or equivalent)

### Installing the Check Valve and Isolation Hoses on the 1.2 L Pump

Do not use Teflon tape on any hydraulic fitting. Use an appropriate thread sealant such as Loctite Pro Lock Tight multipurpose anaerobic gel, part number 51604, or equivalent, on all pipe threads in the hydraulic system.

**To install the check valve and isolation hoses on the 1.2 L pump in vertical orientation:**

1. Install the isolation hoses and check valve assembly to the GHP pump as shown in the illustration.



2. Mount the pump according to the instructions included with the unit.
3. Mount the cable tie mount to the surface to which you will secure the check valve.
4. Attach the check valve to the cable tie mount using the cable tie.

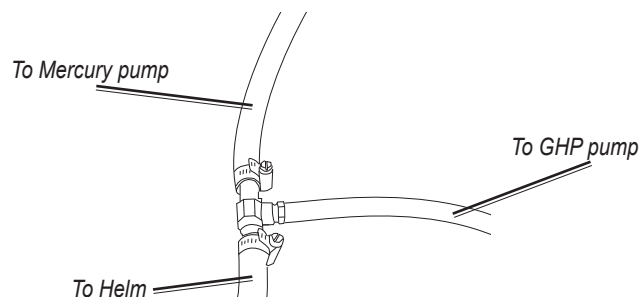
## Installing the Return Hose and Fitting Kit

The low pressure return hydraulic hose from the helm (upper helm only in dual-helm installations) to the Mercury pump module must be branched to run to the GHP pump as well. For this installation, you need the following:

- Return hose and clamps
- Return hose fitting kit

**To install the return hose:**

1. Cut the return hose in an appropriate location to add the branch to the GHP pump.
2. Install the tee fitting in the cut return hose and securely clamp the connections, as shown in the illustration.
3. Install the return hose on the remaining end of the tee fitting and securely clamp the connection, as shown in the illustration.





4. Screw the threaded end of the barbed/threaded fitting into the appropriate location on the GHP pump. Use an appropriate thread sealant such as Loctite Pro Lock Tight multipurpose anaerobic gel, part number 51604, or equivalent, on the threads.
5. Install the remaining free end of the return hose to the barbed fitting on the GHP pump.

## Installing the Mercury J Box Adapter Plug

The Mercury J Box adapter plug must be used when installing the GHP 10 in a Mercury Verado-equipped boat. Failure to use the adapter plug can void the warranty of both the GHP 10 and the Mercury Verado motor.

### To install the Mercury J Box adapter plug:

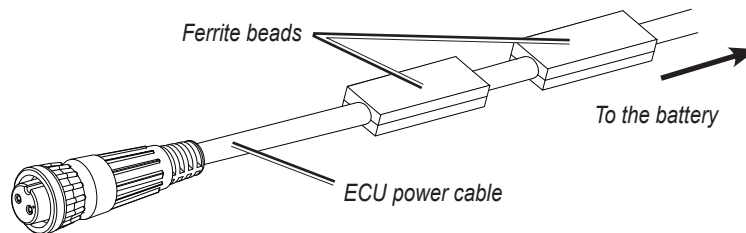
1. Connect the GHP 10 CCU positive (+) tachometer wire to the adapter plug wire.
2. Install the adapter plug into the Mercury Verado junction box.
3. Connect the GHP 10 CCU negative (-) tachometer wire to ground.

Use the following table to identify the appropriate wires on the GHP 10 and the Mercury J Box Adapter Plug or Plugs:

Engine Configuration	GHP 10 to J Box Adapter Plug	GHP 10 to Ground
Single engine	<i>Green and violet (twist together)</i>	<i>White and gray (twist together)</i>
Dual engines	<i>Port engine = violet</i>	<i>Gray</i>
	<i>Starboard engine = green</i>	<i>White</i>

## Installing the Ferrite Beads on the ECU Power Cable

Install two of the four included ferrite beads on the ECU power cable of the GHP 10 Autopilot system. Install the ferrite beads closer to the ECU than to the battery.



Open the ferrite beads and snap them closed around the power cable as shown in the illustration.

For the latest free software updates (excluding map data) throughout the life of your Garmin products, visit the Garmin Web site at [www.garmin.com](http://www.garmin.com).



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