POWER STEERING PUMP - GEN C

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.

Components Contained in Kit

Qty.	Description
1	Power steering pump assembly
2	SAE 0W-30 Full Synthetic Power Steering Fluid

Notice for Models with Joystick Piloting for Outboards

For installation on models with Joystick Piloting for Outboards, refer to the Joystick Piloting for Outboards installation or service manual.

Notice for Any Multiple Engine Application 350 hp and Higher

Applications with multiple 350 hp engines must have a minimum of two steering cylinders. When installing two cylinders in this type of application, it is necessary to use a 50 cc or greater displacement helm to limit the number of turns lock-to-lock.

Notice for 200 hp and Higher Models

NOTE: *On some large/heavy* ***dual****-outboard boats, the steering forces generated in extreme maneuvers may create loads that exceed the pump's pressure capacity, where the operator may feel intermittent periods of load feedback at the steering wheel. The steering wheel may feel hard to turn for brief periods during these extreme maneuvers. If this happens and steering performance is deemed unacceptable for the application, a second steering cylinder can be installed. When using a second steering cylinder, the 40 cc helm should be replaced with a 50 cc helm.*

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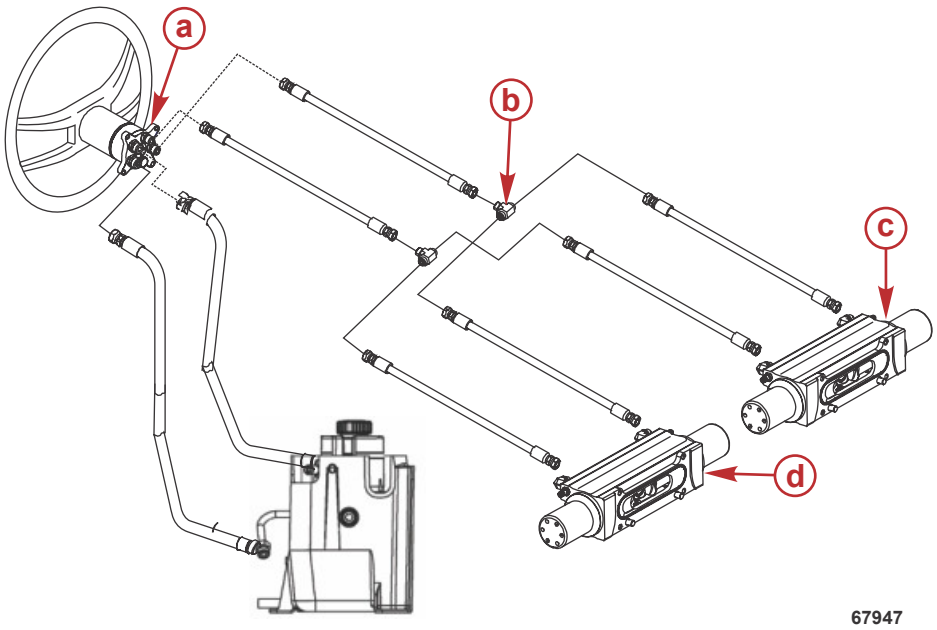
Integrated steering cylinder



a - 50 cc helm
b - T-fitting
c - Starboard cylinder
d - Port cylinder

Notice for Twin-Engine Catamaran Applications

On twin-engine catamaran applications, after installing the cylinders, the system must be bled with the tie bar disconnected, to ensure that both cylinders travel their full span.

Selecting a Location for the Power Steering Pump

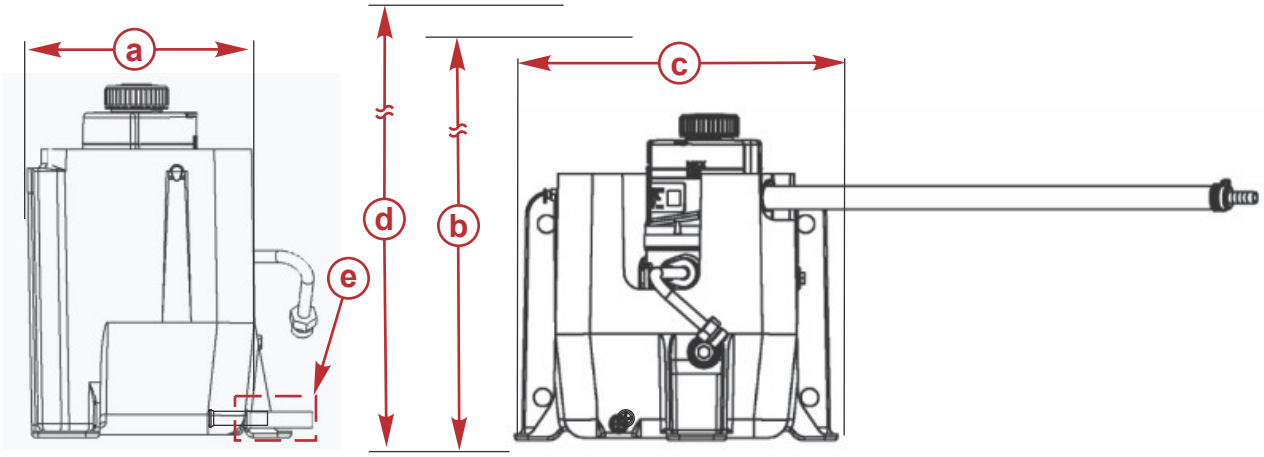
⚠ WARNING

Dirt or contaminants in the hydraulic steering system can damage the steering system's internal components. Damaged components can lead to serious injury or death due to loss of boat control. Do not allow dirt or contamination to enter the helm, lines, or cylinder of this steering system and perform all hydraulic inspections, service, or assembly procedures in a clean work area.

Select a mounting location (on the floor or the side of the internal bulkhead) for the installation of the power steering pump that meets the following requirements:

- Do not mount the pump on an angle greater than 15° off of vertical.
- The pump electrical wiring must reach the battery.
- The power steering signal driver must reach the thrust vector module (TVM) using only the supplied extension harness.
- The pump should be mounted in an area that allows sound enclosure, cover removal, and easy access to the fill cap.
- Do not mount the pump in a location where the pump can fill with water.
- Install the pump in an area where bilge water will not contaminate the pump.
- The pump must be mounted with enough room to allow proper operation of the drain.
- To reduce transmitted noise, mount the pump on a wood or fiberglass surface. Avoid mounting the pump on aluminum or steel surfaces.
- To reduce noise on aluminum or metal hulls, isolate the steering hoses from the hull with suitable nonabrasive hangers.

Required Mounting Clearance for the Power Steering Pump



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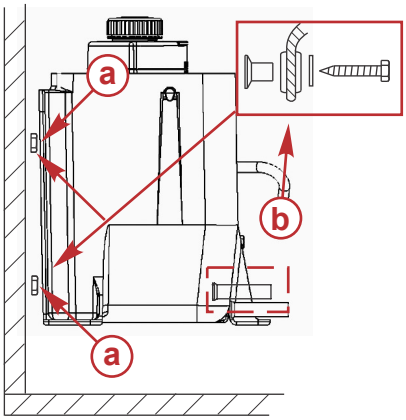
a - 215 mm (8-1/2 in.)
b - 310 mm (12-7/32 in.) to the top cover (not shown)
c - 285 mm (11-1/4 in.)

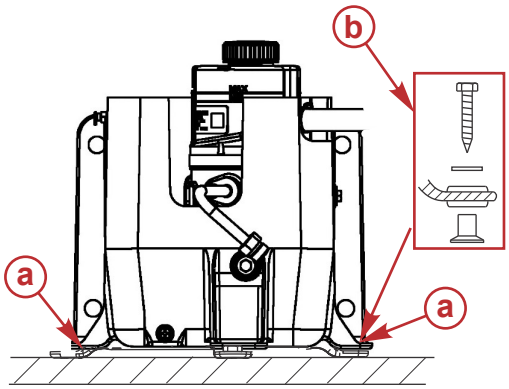
IMPORTANT: Leave enough room to the side of the pump to allow for the proper installation of the hydraulic lines.

d - 432 mm (17 in.) clearance required for cover removal
e - 76 mm (3.0 in.) clearance in front of the unit for proper operation of the drain

Installing the Power Steering Pump

1. The power steering pump can be mounted in either of two ways:
   - On the side of an internal bulkhead
   - On the floor
2. Mount the power steering pump at the selected location, using appropriate fastening hardware suitable for the type of material and thickness of the mounting surface.





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Mounted on the side of an internal bulkhead

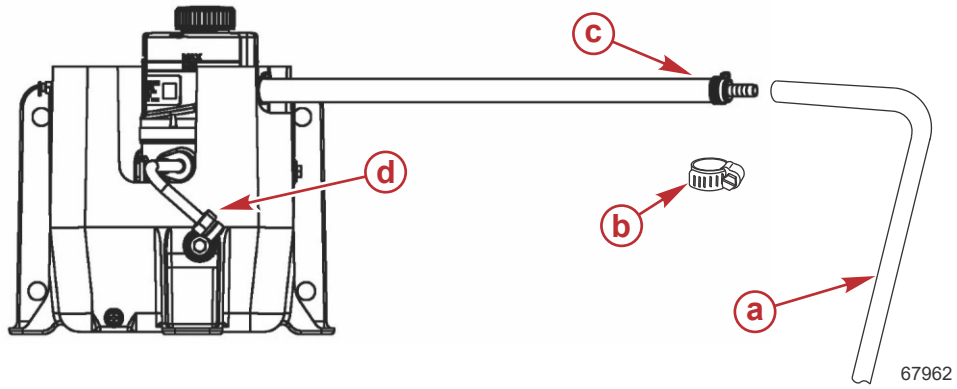
Mounted on the floor

a - Lag screws or through-bolts (3 or 4)
b - Mounting hardware

Connection of the Hydraulic Hoses to the Power Steering Pump

1. Remove and discard the yellow protector cap from the reservoir.

2. Connect the low-pressure hydraulic hose from the steering helm to the low-pressure fitting on the pump reservoir as shown. Fasten the hose to the fitting with a hose clamp.



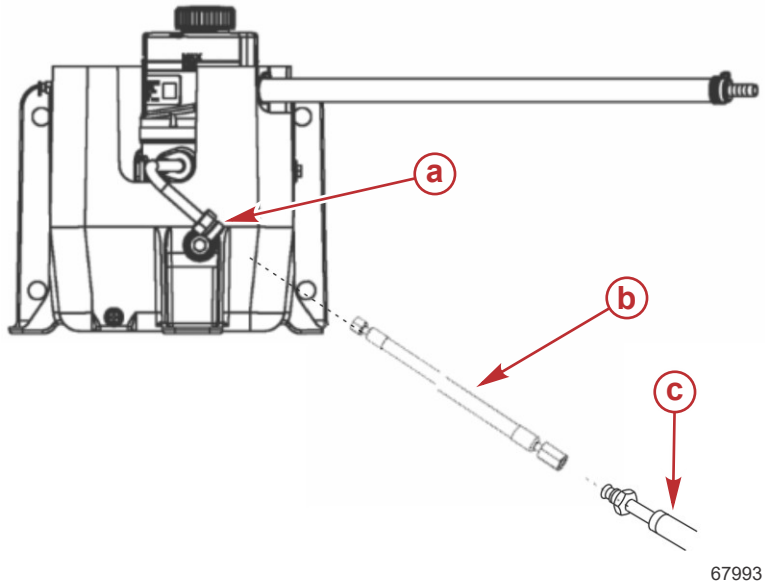
- **a -** Low-pressure hydraulic hose from steering helm
- **b -** Hose clamp
- **c -** Pump low-pressure hydraulic hose
- **d -** High-pressure fitting

3. Connect the high-pressure hydraulic hose from the steering helm. Tighten to the specified torque.

Description	Nm	lb-in.	lb-ft
High-pressure hydraulic hose	36.6	–	27

NOTE: *For an existing installation/retrofit, an adapter is needed to go between the pump ORFS fitting to the pressure connection. Also the dampener hose should be removed. Tighten to the specified torque.*

Description	Nm	lb-in.	lb-ft
High-pressure adapter hydraulic hose	36.6	–	27



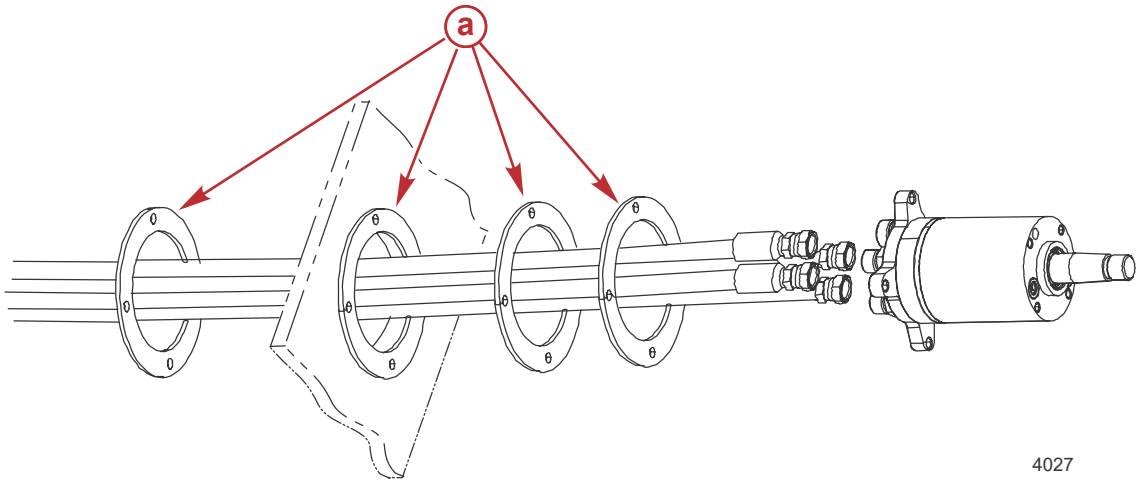
- **a -** High-pressure hydraulic pump fitting
- **b -** Adapter hose for existing installation/ retrofit
- **c -** Pressure hose

Connection of the Hydraulic Hoses to the Steering Helm

NOTE: *Hoses must be routed up through the steering helm opening in the dash and secured to the helm fittings prior to mounting the steering helm.*

1. Place the steering hoses through one backing plate on the internal side of the dashboard. Route the steering hoses through the drilled opening, and place the required amount of backing plates on the hoses on the external side of the dashboard.

NOTE: *The number of backing plates varies depending on helm displacement.*

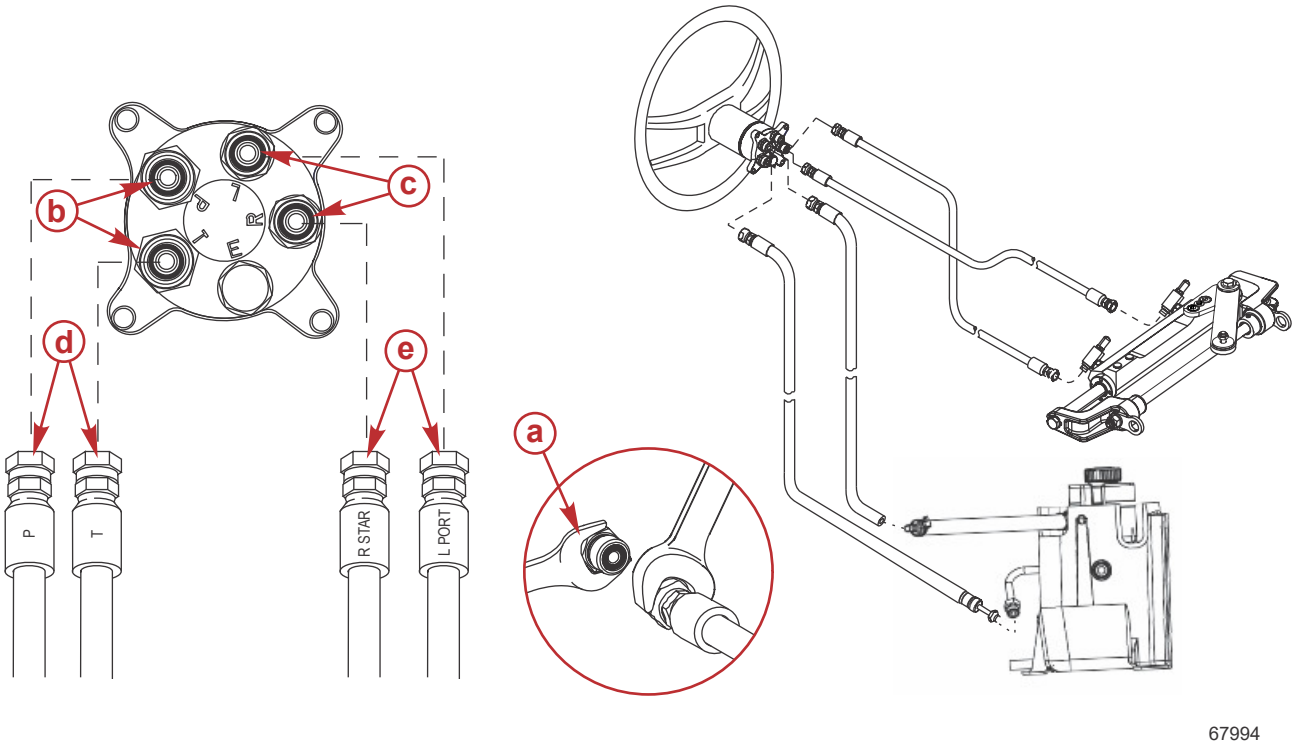


a - Backing plates

Steering Hose Connections to Steering Cylinder

IMPORTANT: The hydraulic steering hose connections at the steering cylinders differ between the bolt-on steering cylinders used on the CMS outboards and the integrated steering cylinders used on the AMS outboards. Please refer to the following diagrams and tables.

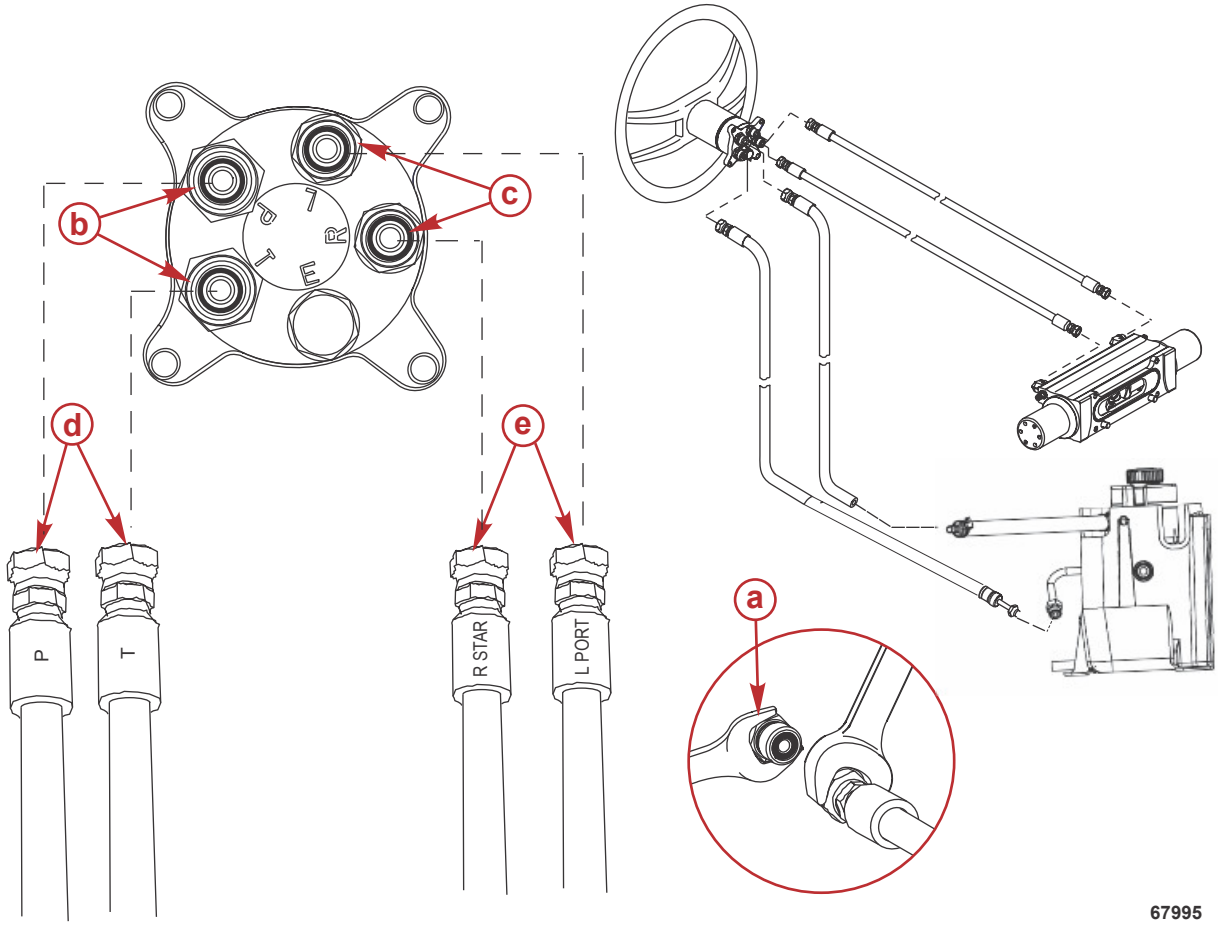
CMS Models—Power Steering



a - Thin wrench
b - Helm hex fitting wrench size (P and T) - 19 mm (3/4 in.)
c - Helm hex fitting wrench size (R and L) - 16 mm (5/8 in.)
d - Hydraulic hose hex fitting wrench size (P and T) - 21 mm (13/16 in.)
e - Hydraulic hose hex fitting wrench size (R STAR and L PORT) - 18 mm (11/16 in.)

Helm Fitting ID Mark	Hose ID Mark	Description
P	P	Pressure from pump to helm
T	T	Tank low-pressure return to pump
R	R STAR	Hose connects to Port side of steering cylinder
L	L PORT	Hose connects to Starboard side of steering cylinder

AMS Models—Power Steering



- **a -** Thin wrench
- **b -** Helm hex fitting wrench size (P and T) - 19 mm (3/4 in.)
- **c -** Helm hex fitting wrench size (R and L) - 16 mm (5/8 in.)
- **d -** Hydraulic hose hex fitting wrench size (P and T) - 21 mm (13/16 in.)
- **e -** Hydraulic hose hex fitting wrench size (R STAR and L PORT) - 18 mm (11/16 in.)

Helm Fitting ID Mark	Hose ID Mark	Description
P	P	Pressure from pump to helm
T	T	Tank low-pressure return to pump
R	R STAR	Hose connects to Starboard side of steering cylinder
L	L PORT	Hose connects to Port side of steering cylinder

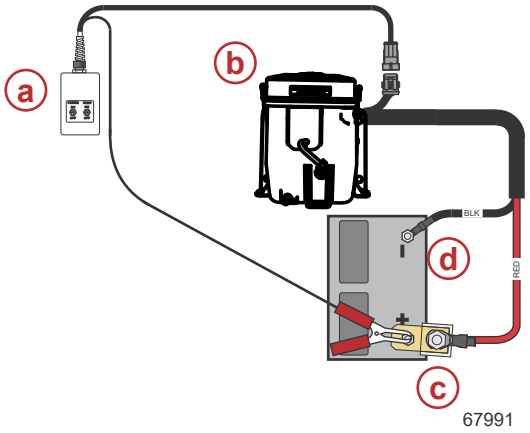
Filling the Power Steering System (Engine Not Running)

All Models Except Integrated Power Steering Cylinder Engines

Use SAE 0W-30 Full Synthetic Power Steering Fluid in the power steering system. In an emergency, if the recommended power steering fluid is not available, any full synthetic engine oil can be temporarily used. The power steering fluid should then be drained and replaced with SAE 0W-30 Full Synthetic Power Steering Fluid as soon as possible, to avoid a loss of performance in the power steering system.

Fluid Type	Capacity	Mercury Part Number
SAE 0W-30 Full Synthetic Power Steering Fluid	1–2 L (1–2 US qt) depending on length of steering hoses	92-858077K01

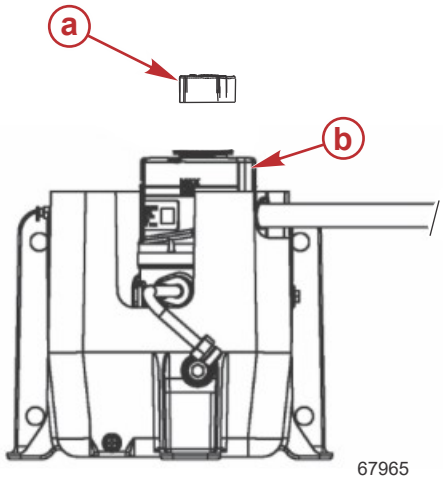
1. Disconnect the power steering signal harness from the engine signal harness.
2. Connect the power steering primer module kit to the power steering pump and a 12-volt positive (+) power source as shown.



a - Power steering primer module
b - Power steering pump
c - 80-amp cube fuse
d - Primary battery

Power Steering Module Primer Kit	91-895040K01
 5547	Bleeds the power steering system without running the engine.

3. Remove the fill cap from the power steering pump.
4. Fill the pump tank with the recommended power steering fluid.



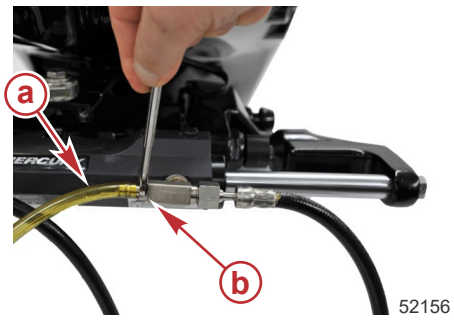
a - Fill cap
b - Full level

IMPORTANT: The power steering module primer has two switches, POWER—ON and OFF, and PUMP—ON and OFF. To power up and activate the power steering pump, there are three steps: 1) Turn the POWER switch to the ON position to power up the pump, 2) Wait for two seconds, then, 3) Turn the PUMP switch to the ON position to activate the pump.

IMPORTANT: Do not run the pump out of fluid. If the pump draws air during bleeding, the resulting rebleeding will take two to three times longer than the initial bleeding.

5. Power up and activate the pump until the fluid level drops halfway. Turn off both switches on the power steering primer module and refill the pump tank. Repeat this operation until the pump tank stays full.
6. Power up and activate the pump while slowly turning the steering wheel toward the full lock position in one direction. Carefully monitor the fluid level until the fluid level drops halfway. Stop turning the steering wheel and refill the pump tank. Repeat this operation, turning the steering wheel from full lock to full lock 10 times, or until the pump tank stays full.

7. To bleed any air left in the steering system, power up and activate the pump. Turn the steering wheel in one direction until the full lock position is met.
8. Attach an 8 mm (5/16 in.) I.D. transparent bleed hose to the bleed valve on the end of the steering cylinder that the front of the engine is farthest away from. Route the bleed hose into the pump tank. Do not bleed power steering fluid into a different container, as this will only be pumping fluid out of the system that was just filled up.
9. Open the bleed valve to release any remaining air in the power steering system. Allow adequate time, depending on the length of the power steering hose, for air to escape from the system. Tighten the bleed valve securely and remove the bleed hose.



a - Bleed hose
b - Bleed valve in steering cylinder

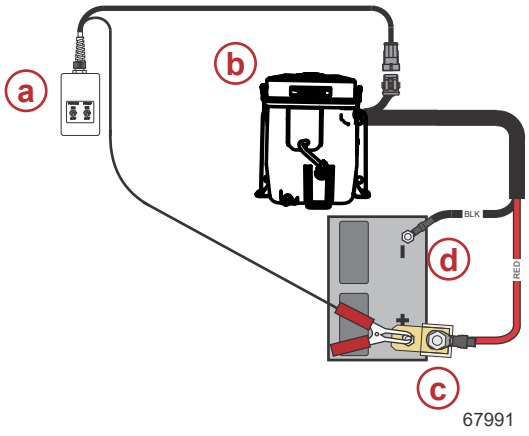
10. Turn the steering wheel to the opposite full lock position, and repeat steps 8 and 9.
11. Replace the fill cap on the power steering pump.
12. Turn off both switches, remove the power steering primer module, and connect the power steering signal harness from the engine to the pump.
13. If desired, the power steering system can be checked after sitting overnight to remove any air that may be left in the system. Repeat the steps for bleeding the steering system, preceding.

Integrated Power Steering Cylinder Models (AMS)

Use SAE 0W-30 Full Synthetic Power Steering Fluid in the power steering system. In an emergency, if the recommended power steering fluid is not available, any full synthetic engine oil can be temporarily used. The power steering fluid should then be drained and replaced with SAE 0W-30 Full Synthetic Power Steering Fluid as soon as possible, to avoid a loss of performance in the power steering system.

Fluid Type	Capacity	Mercury Part Number
SAE 0W-30 Full Synthetic Power Steering Fluid	1–2 L (1–2 US qt) depending on length of steering hoses	92-858077K01

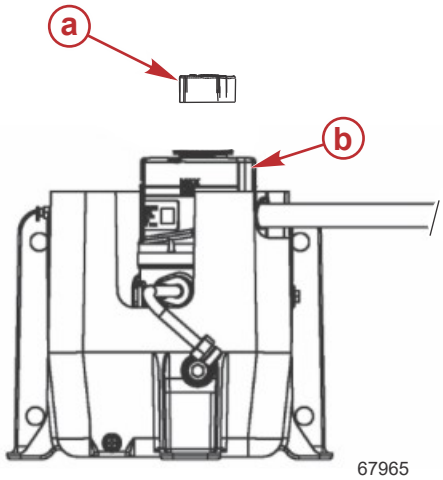
1. Disconnect the power steering signal harness from the engine signal harness.
2. Connect the power steering primer module kit to the power steering pump and a 12-volt positive (+) power source as shown.



a - Power steering primer module
b - Power steering pump
c - 80-amp cube fuse
d - Primary battery

Power Steering Module Primer Kit	91-895040K01
 5547	Bleeds the power steering system without running the engine.

3. Remove the fill cap from the power steering pump.
4. Fill the pump tank with the recommended power steering fluid.



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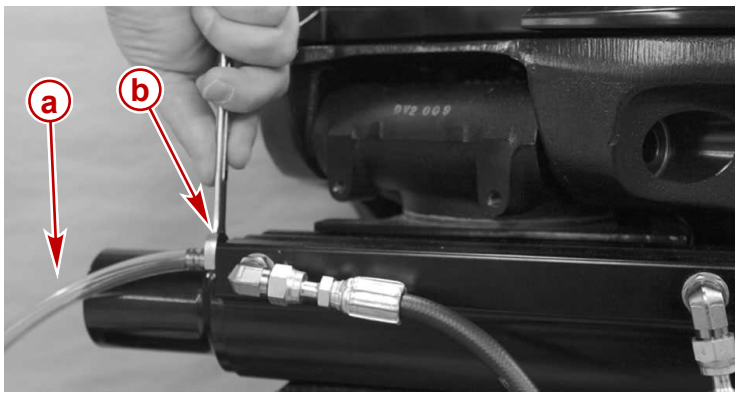
a - Fill cap
b - Full level

IMPORTANT: The power steering module primer has two switches, POWER—ON and OFF, and PUMP—ON and OFF. To power up and activate the power steering pump, there are three steps: 1) Turn the POWER switch to the ON position to power up pump, 2) Wait for two seconds, then, 3) Turn the PUMP switch to the ON position to activate pump.

IMPORTANT: Do not run the pump out of fluid. If the pump draws air during bleeding, the resulting rebleeding will take two to three times longer than the initial bleeding.

5. Power up and activate the pump until the fluid level drops halfway. Turn off both switches on the power steering primer module and refill the pump tank. Repeat this operation until the pump tank stays full.
6. Power up and activate the pump while slowly turning the steering wheel toward the full lock position in one direction. Carefully monitor the fluid level until the fluid level drops halfway. Stop turning the steering wheel and refill the pump tank. Repeat this operation turning the steering wheel from full lock to full lock 10 times until the pump tank stays full.
7. To bleed any air left in the steering system, power up and activate the pump. Turn the steering wheel in one direction until the full lock position is met.
8. Attach an 8 mm (5/16 in.) I.D. transparent bleed hose to the bleed valve on the end of the steering cylinder that the front of the engine is nearest to. Route the bleed hose into the pump tank. Do not bleed power steering fluid into a different container, as this will only be pumping fluid out of the system that was just filled up.
9. Open the bleed valve to release any remaining air in the power steering system. Allow adequate time, depending on the length of the power steering hose, for air to escape from system. Tighten the bleed valve securely and remove the bleed hose.



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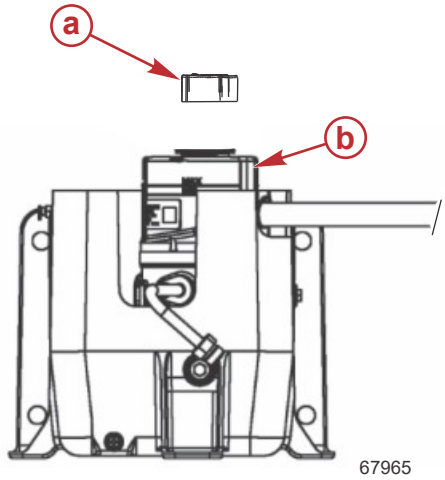
a - Bleed hose
b - Bleed valve in steering cylinder

10. Turn the steering wheel to the opposite full lock position, and repeat steps 8 and 9.
11. Replace the fill cap on the power steering pump.
12. Turn off both switches, remove the power steering primer module, and connect the power steering signal harness from the engine to the pump.
13. If desired, the power steering system can be checked after sitting overnight to remove any air that may be left in the system. Repeat steps for bleeding steering system, preceding.

Filling the Power Steering System with the Engine Running

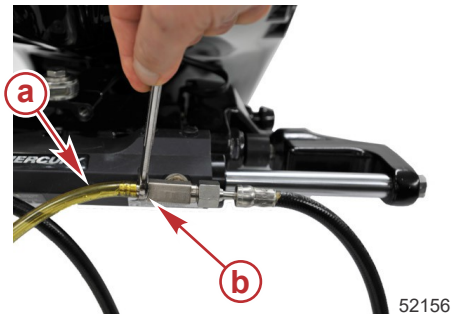
All Models Except Integrated Power Steering Cylinder Engines

1. Remove the fill cap from the power steering pump.
2. Fill the pump tank with the recommended power steering fluid.



a - Fill cap
b - Full level

3. Start and run the engine until the power steering pump fluid level drops halfway. Turn off the engine and refill the pump. Repeat this operation, until the pump tank stays full.
4. Start and run the engine while slowly turning the steering wheel toward the full lock position in one direction. Carefully monitor the fluid level until the fluid level drops halfway. Stop turning the wheel, turn off the engine, and refill the pump tank. Repeat this operation, turning the steering wheel to full lock to full lock 10 times, or until the pump tank stays full.
5. To bleed any air left in the steering system, start and run the engine. Turn the steering wheel in one direction until the full lock position is met.
6. Attach an 8 mm (5/16 in.) I.D. transparent bleed hose to the bleed valve on the end of the steering cylinder that the front of the engine is farthest away from. Route the bleed hose into the pump tank. Do not bleed the power steering fluid into a different container, as this will only be pumping fluid out of the system that was just filled up.
7. Open the bleed valve to release any remaining air in the power steering system. Allow adequate time, depending on the length of the power steering hose, for air to escape from the system. Tighten the bleed valve securely and remove the bleed hose.



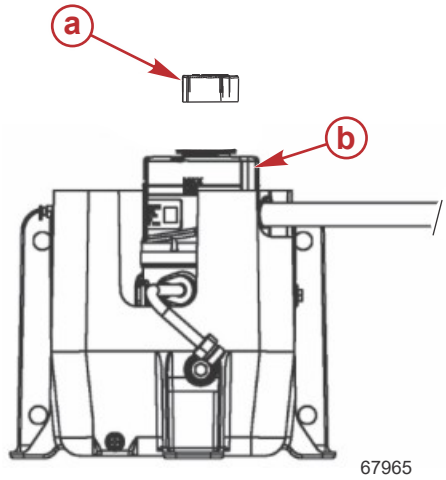
a - Bleed hose
b - Bleed valve in steering cylinder

8. Turn the steering wheel to the opposite full lock position, and repeat the procedure for bleeding the steering system.
9. Replace the fill cap on the power steering pump.
10. If desired, the power steering system can be checked after sitting overnight to remove any air that may be left in the system. Repeat the steps for bleeding the steering system, preceding.

Integrated Power Steering Cylinder Models (AMS)

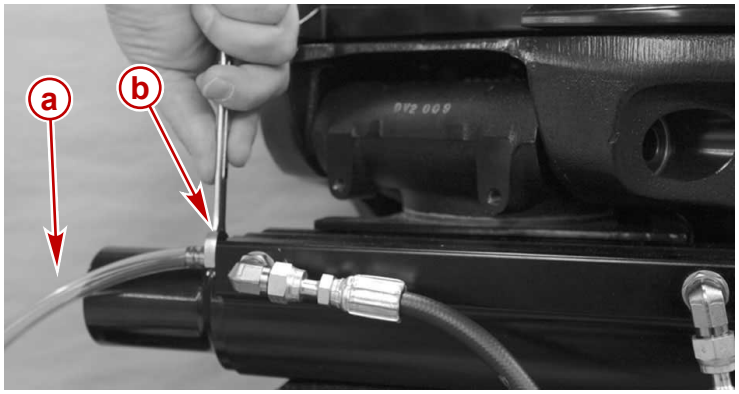
1. Remove the fill cap from the power steering pump.

2. Fill the pump tank with the recommended power steering fluid.



a - Fill cap
b - Full level

3. Start and run the engine until the power steering pump fluid level drops halfway. Turn off the engine and refill the pump. Repeat this operation until the pump tank stays full.
4. Start and run the engine while slowly turning the steering wheel toward the full lock position in one direction. Carefully monitor the fluid level until the fluid level drops halfway. Stop turning the wheel, turn off the engine, and refill the pump tank. Repeat this operation turning the steering wheel from full lock to full lock 10 times, or until the pump tank stays full.
5. For bleeding any air left in the steering system, start and run the engine. Turn the steering wheel in one direction until the full lock position is met.
6. Attach an 8 mm (5/16 in.) I.D. transparent bleed hose to the bleed valve on the end of the steering cylinder that the front of the engine is nearest to. Route the bleed hose into the pump tank. Do not bleed power steering fluid into a different container, as this will only be pumping fluid out of the system that was just filled up.
7. Open the bleed valve to release any remaining air in the power steering system. Allow adequate time, depending on the length of the power steering hose, for air to escape from the system. Tighten the bleed valve securely and remove the bleed hose.



a - Bleed hose
b - Bleed valve in steering cylinder

8. Turn the steering wheel to the opposite full lock position, and repeat the procedure for bleeding the steering system.
9. Replace the fill cap on the power steering pump.
10. If desired, the power steering system can be checked after sitting overnight to remove any air that may be left in the system. Repeat the steps for bleeding the steering system, preceding.

Gen C Standard Power Steering Pump Specifications

Pump control	Two speed pump logic control	
Pump flow	Low speed	4.0 L (4.23 US qt) per minute
	High speed	5.0 L (5.28 US qt) per minute
Available helms	32 cc, 40 cc, 50 cc	
Helm tank bolt orifice requirement (diameter)	Primary bolt orifice	2.8 mm (0.110 in.)
	Secondary insert orifice	3.0 mm (0.118 in.)

Products of Mercury Marine
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