




SERVICE MANUAL

Number 31

**5.0L/5.7L/6.2L MPI
GASOLINE ENGINE**

Notice

Throughout this publication, Dangers, Warnings and Cautions (accompanied by the International HAZARD Symbol ) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. **OBSERVE THEM CAREFULLY!**

These Safety Alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus Common Sense operation, are major accident prevention measures.

DANGER

Immediate hazards which will result in severe personal injury or death.

WARNING

Hazards or unsafe practices which could result in severe personal injury or death.

CAUTION

Hazards or unsafe practices which could result in minor personal injury or product or property damage.

Notice to Users of This Manual

This service manual has been written and published by the Service Department of Mercury Marine to aid our dealers' mechanics and company service personnel when servicing the products described herein.

It is assumed that these personnel are familiar with marine product servicing procedures. Furthermore, it is assumed that they have been trained in the recommended service procedures of Mercury MerCruiser product, including the use of mechanics' common hand tools and the special Mercury Marine or recommended tools from other suppliers.

We could not possibly know of and advise the marine trade of all conceivable procedures and of the possible hazards and/or results of each method. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy himself that neither his nor the products safety will be endangered.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication. As required, revisions to this manual will be sent to all dealers contracted by us to sell and/or service these products.

We reserve the right to make changes to this manual without prior notification.

Refer to dealer service bulletins, operation maintenance and warranty manuals and installation manuals for other pertinent information concerning the products described in this manual.

Precautions

It should be kept in mind, while working on the product, that the electrical system and ignition system are capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings are exposed during service they should be covered to protect against accidental entrance of foreign material which could enter the cylinders and cause extensive internal damage when the engine is started.

It is important to note, during any maintenance procedure replacement fasteners must have the same measurements and strength as those removed. Numbers on the heads of the metric bolts and on the surfaces of metric nuts indicate their strength. American bolts use radial lines for this purpose, while most American nuts do not have strength markings. Mismatched or incorrect fasteners can result in damage or malfunction, or possibly personal injury. Therefore, fasteners removed should be saved for reuse in the same locations whenever possible. Where the fasteners are not satisfactory for re-use, care should be taken to select a replacement that matches the original.

Engine Mechanical Components

Many of the engine mechanical components are designed for marine applications. Unlike automotive engines, marine engines are subjected to extended periods of heavy load and wide open throttle operation and, therefore, require heavy-duty components. Special marine engine parts have design and manufacturing specifications that are required to provide long life and dependable performance. Marine engine parts also must be able to resist the corrosive action of salt or brackish water that will rust or corrode standard automotive parts within a short period of time.

Failure to use recommended Quicksilver service replacement parts can result in poor engine performance and/or durability, rapid corrosion of parts subjected to salt water and possibly complete failure of the engine.

Replacement Parts

Use of parts other than the recommended service replacement parts, will void the warranty on those parts that are damaged as a result.

WARNING

Electrical, ignition and fuel system components on Mercury MerCruiser Engines and Stern Drives are designed and manufactured to comply with U.S. Coast Guard Rules and Regulations to minimize risks of fire or explosion.

Use of replacement electrical, ignition or fuel system components, which do not comply to these rules and regulations, could result in a fire or explosion hazard and should be avoided.

When servicing the electrical, ignition and fuel systems, it is extremely important that all components are properly installed and tightened. If not, any electrical or ignition component opening would permit sparks to ignite fuel vapors from fuel system leaks, if they existed.

Models Covered in This Manual

Sterndrive (MCM)	Serial Number
5.0L MPI Alpha and Bravo	0M300000
350 MAG MPI Alpha and Bravo	
350 MAG MPI Alpha and Bravo Horizon	
MX 6.2 MPI	
MX 6.2 MPI Horizon	

Inboard and Tow Sports (MIE)	Serial Number
350 MAG MPI Inboard	0M310000
350 MAG MPI Horizon Inboard	
MX 6.2 MPI Inboard	
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350 MAG MPI Tow Sports	

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DRIVES

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POWER STEERING

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Crankcase Oil

To help obtain optimum engine performance and to provide maximum protection, we strongly recommend the use of Quicksilver 4-Cycle 25W-40 Marine Engine Oil. This oil is a special blend of 25-weight and 40-weight oils for marine engines. If not available, a good grade, straight weight, detergent automotive oil of the correct viscosity, with an API classification of SH, CF/CF-2, may be used.

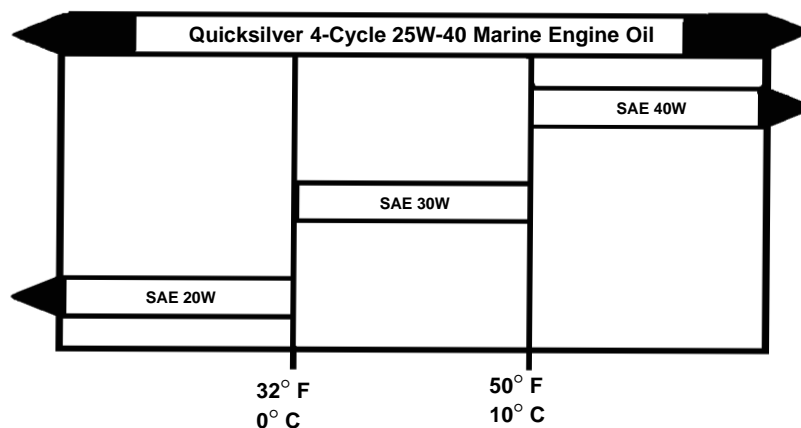
In those areas where Quicksilver 4-Cycle 25W-40 Marine Engine Oil or a recommended straight weight oil are not available, a multi-viscosity 20W-40 or, as a second but less preferable choice, 20W-50, with API service ratings of SH, CF/CF-2 may be used.

IMPORTANT: The use of non-detergent oils, multi-viscosity oils (other than Quicksilver 25W-40 or a good quality 20W-40 or 20W-50), synthetic oils, low quality oils or oils that contain solid additives are specifically not recommended.

The chart below is a guide to crankcase oil selection. The oil filter should always be changed when changing the engine oil.

⚠ CAUTION

Mercury MerCruiser or Quicksilver 4-Cycle oil is recommended for use for your engine. Severe engine damage may result from the use of an inferior oil.



AIR TEMPERATURE

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Overfilled Crankcase Oil

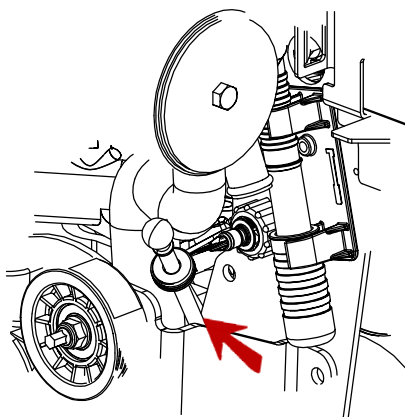
An overfilled crankcase (oil level being too high) can cause a fluctuation or drop in oil pressure and rocker arm clatter on Mercury MerCruiser engines. This condition results in the engine crankshaft splashing and agitating the oil, causing it to foam (become aerated). The aerated oil causes the hydraulic valve lifters to bleed down. This, in turn, results in rocker arm clatter and loss of engine performance, due to the valves not opening properly.

Care must be taken when checking the engine oil level. The oil level must be maintained between the ADD mark and the FULL or OK RANGE mark on the dipstick. To ensure that you are not getting a false reading, ensure the following:

- Boat at rest in the water, or
- If the boat is on a trailer, raise or lower the bow until the boat is setting at the approximate angle that it would be if setting at rest in the water.
- Allow sufficient time for the oil to drain into the crankcase if the engine has just been operated or oil has just been added.

Checking

1. Stop the engine. Allow approximately five minutes for the oil to drain into the oil pan. The boat must be at rest in the water.



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2. Remove the dipstick. Wipe it clean and reinstall it fully into the dipstick tube.
3. Remove the dipstick and observe the oil level. The oil level must be between the FULL or OK RANGE and ADD marks. Fill as necessary with the specified fluid.

All Models	Capacity Liters (U.S. qts)	Fluid Type
Crankcase Oil (With Filter) ¹	5.25 (5-1/2)	4-Cycle 25W-40 Marine Engine Oil

¹ Always use dipstick to determine exact quantity of oil or fluid required.

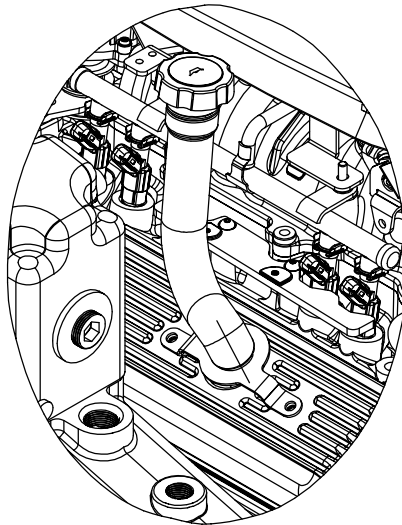
Filling

⚠ CAUTION

ENVIRONMENTAL HAZARD! Discharge of oil or oil waste into the environment is restricted by law. Do not spill oil or oil waste into the environment when using or servicing your boat. Contain and dispose of oil or oil waste as defined by local authorities.

IMPORTANT: Do NOT overfill the crankcase with oil.

1. Remove the oil fill cap.



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MIE Shown, MCM Similar

2. Add the specified oil to bring the level up to, but not over the FULL or OK RANGE mark on the dipstick.

All Models	Capacity Liters (U.S. qts)	Fluid Type
Crankcase Oil (With Filter) ¹	5.25 (5-1/2)	4-Cycle 25W-40 Marine Engine Oil

¹ Always use the dipstick to determine the exact quantity of oil or fluid required.

Changing Oil and Filter

Refer to the Maintenance schedule for the change interval. The crankcase oil should be changed before placing the boat in storage.

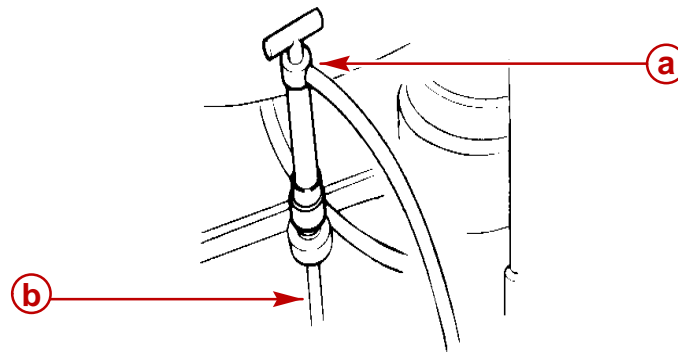
IMPORTANT: Change the crankcase oil when the engine is warm from operation. Warm oil flows more freely, carrying away more impurities. Use only the recommended engine oil (refer to Specifications).

QUICK DRAIN OIL

1. Pull the tether through the bilge drain.
2. Place the oil drain hose in a suitable container.
3. Remove the drain plug from the oil drain hose.
4. After the oil has drained completely, install the drain plug in the oil drain hose.
5. Push the hose through the bilge drain and install the plug.
6. Proceed to ALL MODELS.

CRANKCASE OIL PUMP

1. Remove the dipstick.
2. Insert the hose end of the crankcase oil pump onto an appropriate container and using the handle, pump until the crankcase is empty.



- a** - Crankcase Oil Pump
b - Dipstick

3. Remove the pump.
4. Install the dipstick.
5. Proceed to ALL MODELS.

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