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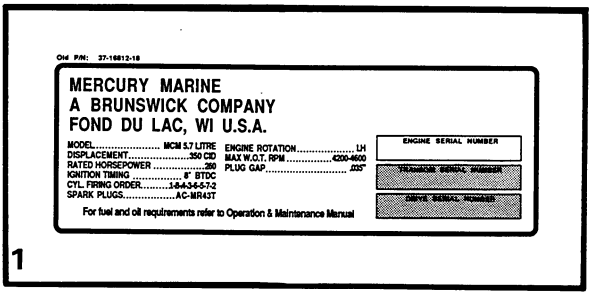
Alpha One V6/V8 Models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MERCURY MARINE
A BRUNSWICK COMPANY
FOND DU LAC, WI U.S.A.
MODEL..... MCM 5.7 LITRE
DISPLACEMENT..... 350 CID
RATED HORSEPOWER 260
IGNITION TIMING ..... 8° BTDC
CYL. FIRING ORDER..... 1-8-4-3-6-5-7-2
SPARK PLUGS..... AC-MR43T
ENGINE ROTATION..... LH
MAX W.O.T. RPM..... 4200-4600
PLUG GAP..... .035"
ENGINE SERIAL NUMBER
TRANSOM SERIAL NUMBER
DRIVE SERIAL NUMBER
For fuel and oil requirements refer to Operation & Maintenance Manual
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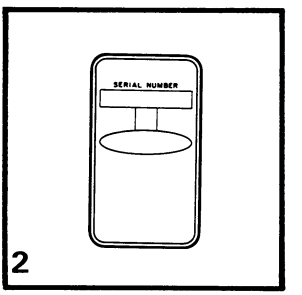
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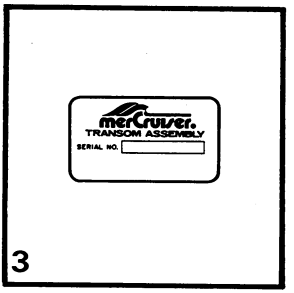
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TRANSOM ASSEMBLY
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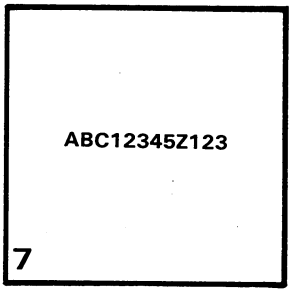
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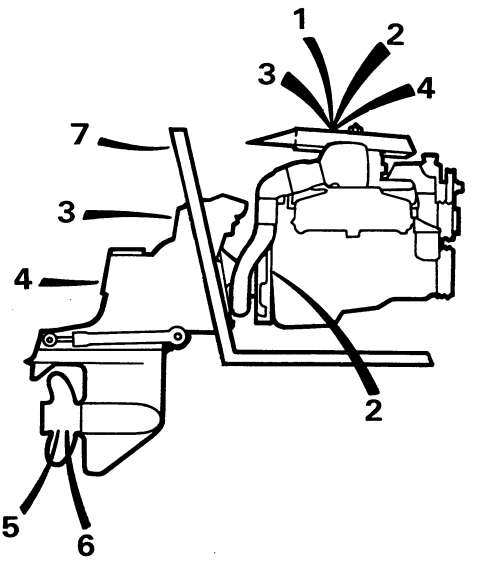
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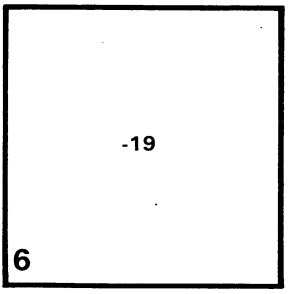
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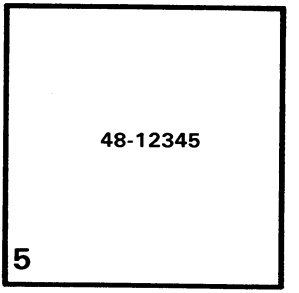
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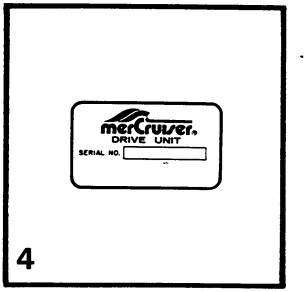
merCruiser.
DRIVE UNIT
SERIAL NO.
4

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The description and specifications contained herein were in effect at the time this guide was approved for printing. Mercury Marine, whose policy is one of continuous improvement, reserves the right to discontinue models at any time, or to change specifications or designs, without notice and without incurring obligation.

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READ THIS MANUAL THOROUGHLY

If you don't understand any portion, contact your dealer for a demonstration of actual starting and operating procedures.

NOTICE
Throughout this publication, and on your power package, **WARNINGS** and **CAUTIONS,** accompanied by the International Hazard Symbol ⚠, may be used to alert the installer/user 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 with these special instructions while performing the service, plus "common sense" operation, are major accident prevention measures.

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

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

IMPORTANT - Indicates information or instructions that are necessary for proper operation and/or maintenance.

⚠ WARNING
The operator (driver) is responsible for the correct and safe operation of the boat, the equipment aboard and the safety of all occupants aboard. We strongly recommend that the operator read this Operation and Maintenance Manual and thoroughly understand the operational instructions for the power package and all related accessories before the boat is used.

⚠ WARNING
The following advantages and disadvantages of a Lanyard Stop Switch should be considered before electing to use, or not to use, such a switch.

ADVANTAGES: The purpose of a Lanyard Stop Switch is to stop the engine when the operator leaves the control station, either accidentally by falling into the boat, or by falling or being ejected overboard. This is most likely in certain types of boats such as low-sided bass boats and high-performance boats. It is also likely as a result of poor operating practices such as sitting on the back of the seat at planing speeds, standing at planing speeds, operating at high speeds in shallow or obstacle-infested waters, drinking and driving, or daring, high-speed boat maneuvers.

DISADVANTAGES: Inadvertent activation of the switch is also a possibility. This could cause any or all of the following potentially hazardous situations:

- Loss of balance and falling forward of unstable boat passengers - a particular concern in bow rider type boats.
- Loss of power and directional control in heavy seas, strong current or high winds.
- Loss of control when docking.

As we cannot possibly know of and advise the boating public of all conceivable boat/power package types and/or poor operating practices, the final decision of whether or not to use a Lanyard Stop Switch rests with you, the owner/driver.

We strongly recommend that other occupants be instructed on proper starting and operating procedures so they will be prepared should they be required to operate the power package and boat in an emergency.

⚠ WARNING
It is difficult for persons standing or floating in the water to move clear if they see a powerboat heading toward them, even at slow speed. Shift the unit to neutral and shut off engine when your boat is near people in the water.

Serious injury is likely if a person in the water is struck by a moving boat, gear housing, propeller, or accessory rigidly attached to your boat or motor.

⚠ WARNING
The use of accessories not manufactured or sold by Mercury Marine is not recommended for use with your MerCruiser unit. If your MerCruiser unit is equipped with an accessory not manufactured by Mercury Marine, be sure to read the Operation and Maintenance Manual for that accessory before operation. If you haven't been supplied with such a manual, contact your dealer or the manufacturer of the accessory to secure the applicable manual.

BOATING SAFETY AND SEAMANSHIP

Boating safety and seamanship courses are periodically offered by the following national, state and provincial organizations:

- Coast Guard Auxiliary.
- Power Squadrons.
- Red Cross.
- State or provincial agencies, charged with water safety enforcement.

In the United States:

To help locate the course nearest you, contact Boat/U.S. Foundation's toll-free national boating safety education hotline at 1-800-336-BOAT.

You should also review the NMMA Sources of Waterway Information booklet. It lists regional sources of safety, cruising and local navigation and is available at no charge by writing to:

Sources of Waterway Information
National Marine Manufacturers Association
410 N. Michigan Avenue
Chicago, IL 60611 U.S.A.

We strongly recommend that all powerboat operators attend one of these courses.

OPERATION AND MAINTENANCE

It is the operator's responsibility to perform all safety checks; to ensure that all lubrication and maintenance instructions are complied with for safe operation; and to return the unit to an Authorized MerCruiser Dealer for a periodic checkup.

Normal maintenance service and replacement parts are the responsibility of the owner/operator and as such, are not considered defects in workmanship or material within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

Proper maintenance and care of your power package will ensure optimum performance, and will keep your overall operating expenses at a minimum. See your Authorized MerCruiser Dealer for service aids.

WATER WISDOM

- Do not overload! Know your boat's operating and loading limitations.
- Check safety equipment on board.
- Know your boating area and avoid hazardous locations.
- Know signs of weather change and avoid foul weather and rough-sea boating.
- Tell someone where you are going and when you expect to return.
- Know boating's "Rules of the Road" (signals and navigation).
- Be on the alert! Watch "the other guy", the water and your wake.
- Do not drink alcoholic beverages and drive a boat. Some state laws apply to boats as well as motor vehicles.

In order to safely enjoy the waterways, there are a few precautions that should be observed. Check with authorities in regard to local and other governmental boating regulations and restrictions. In addition, here are suggestions of safety equipment to carry when boating:

- Approved life jackets for each person on board.
- Approved throwable personal flotation device.
- Approved fire extinguisher(s); paddle or oar.
- Signal devices: flashlight, rockets or flares, flag and whistle or horn.
- Spare propeller.
- Tools for necessary minor repairs; first aid kit and book.
- Anchor and extra anchor line; waterproof storage containers.
- Manual bilge pump and extra drain plugs; compass and map or chart of area.
- Spare operating equipment; batteries, bulbs, fuses, etc.
- Transistor radio; drinking water.

HIGH-PERFORMANCE BOAT OPERATION

If this product is to be used on a high-speed, high-performance boat application, we urge you to request an initial orientation and familiarization demonstration ride with your dealer and, to obtain a copy of "Hi-Performance Boat Operation" booklet, Part No. 90-86168. This booklet is available for a nominal fee from your Authorized MerCruiser Dealer or Mercury Marine.

CONDITIONS AFFECTING OPERATION

WEIGHT DISTRIBUTION

Positioning of weight (passengers and gear) inside the boat has the following effects:

A. Shifting weight to rear (stern).

- Generally increases speed and engine RPM.
- At extremes, can cause boat to porpoise.
- Causes bow to bounce in choppy water.
- Increases danger of following wave splashing into boat when coming off plane.

B. Shifting weight to front (bow).

- Improves ease of planing.
- Improves rough water ride.
- At extremes, can cause boat to veer back and forth (bow steer).

BOTTOM OF BOAT

To maintain maximum speed, the following conditions of the boat bottom should be observed.

A. Clean, free of barnacles and marine growth.

B. Free of distortion; nearly flat where it contacts the water.

C. Straight and smooth, fore and aft.

Marine vegetation may accumulate when boat is docked. This growth must be removed before operation; it may clog water inlets and cause engine to overheat.

CAVITATION

Cavitation occurs when water flow cannot follow the contour of a fast-moving underwater object, such as a gear housing or propeller. Cavitation permits the propeller to speed up, but the boat speed to reduce. Cavitation can seriously erode the surface of the gear housing or propeller. Common causes of cavitation are:

A. Weeds or other debris snagged on propeller or gear housing.

B. Bent propeller blade or damaged gear housing skeg.

C. Raised burrs or sharp edges on propeller or gear housing.

CONDITIONS AFFECTING OPERATION (Continued)

VENTILATION

Ventilation is caused by surface air or exhaust gases which are introduced around the propeller resulting in propeller speedup and a reduction in boat speed. Excessive ventilation is annoying and usually caused by:

A. Drive unit trimmed out too far.

B. A missing propeller diffuser ring.

C. A damaged propeller or gear housing, which allows exhaust gases to escape between propeller and gear housing.

D. Drive unit installed too high on transom.

PROPELLER SELECTION

Select a propeller that will allow the power package to operate at or near the top of the recommended full throttle RPM range with a normal load. Maximum engine speed (RPM) for propeller selection exists when boat speed is maximum and trim is minimum for the speed. (High RPM, caused by an excessive trim angle, should not be used in determining correct propeller.) Normally, there is a 300 to 500 RPM change between propeller pitches. Full throttle RPM range is listed in SPECIFICATIONS.

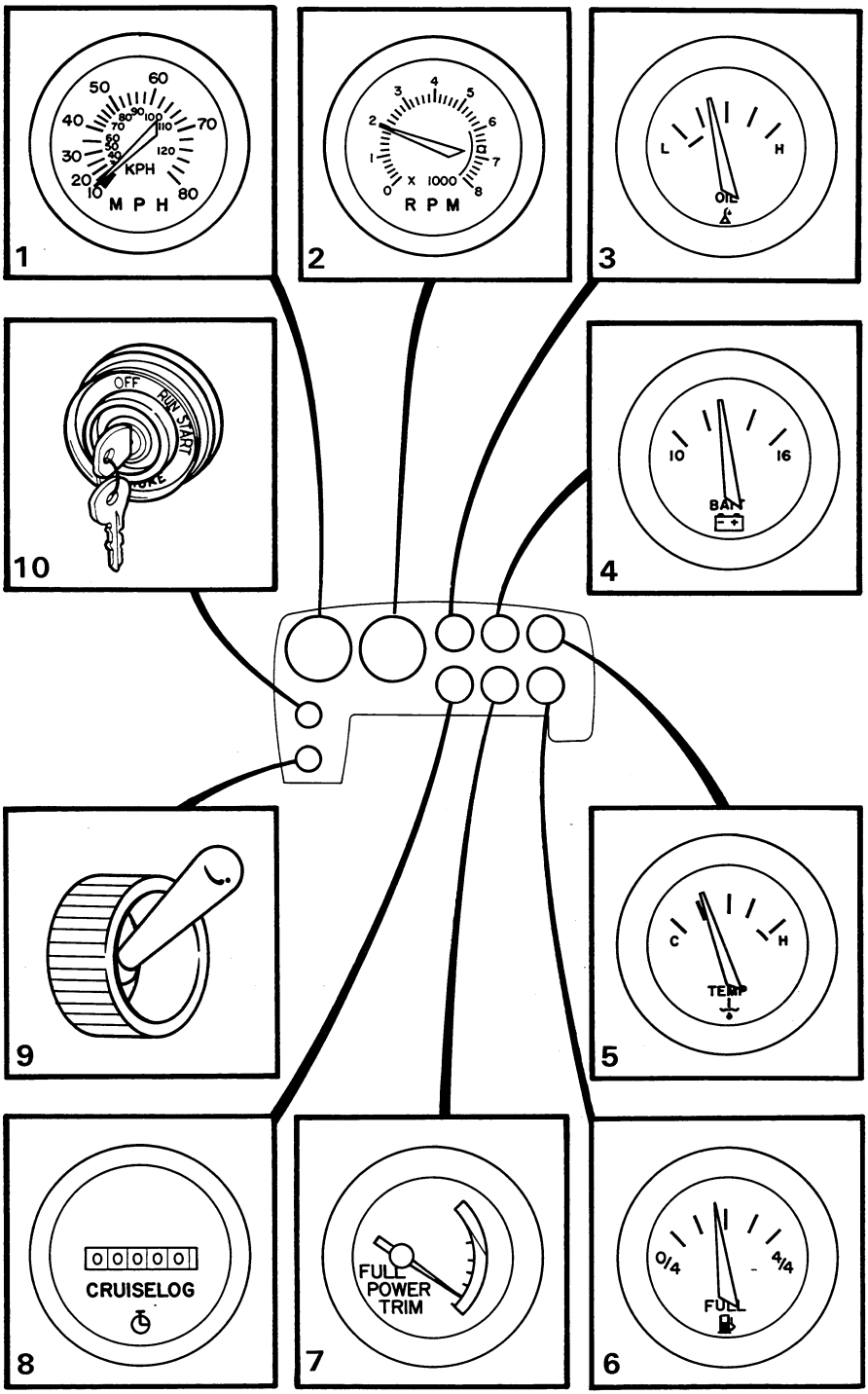
If full throttle operation is below the recommended range shown in SPECIFICATIONS, the propeller must be changed to prevent loss of performance and possible engine damage.

After initial propeller installation, the following common problems may require that the propeller be changed to a lower pitch:

- Warmer weather and greater humidity cause an RPM loss.
- Operating in a higher elevation causes an RPM loss.
- Operating with a damaged propeller or dirty boat bottom or gear housing causes an RPM loss.
- Operating with an increased load (additional passengers, pulling skiers, etc.).

For better acceleration, such as is needed for water skiing, use next lower pitch propeller; however, do not operate at full throttle when using ski propeller but not pulling skiers.

Propellers are available for specific boating requirements. Consult your Authorized MerCruiser Dealer for recommendations.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4/4
FUEL

OPERATION

INSTRUMENTATION

The following is a brief explanation of instrumentation typically found on some boats. The owner/operator should be familiar with all instruments and their functions on the boat.

1 Speedometer - indicates boat speed.

2 Tachometer - indicates engine RPM.

3 Oil Pressure Gauge - indicates engine oil pressure.

4 Battery Meter - indicates battery voltage.

5 Water Temperature Gauge - indicates engine operating temperature.

6 Fuel Gauge - indicates fuel tank volume.

7 Power Trim Gauge - indicates drive unit angle (trim up/out and down/in).

8 Hour Meter - records engine running time.

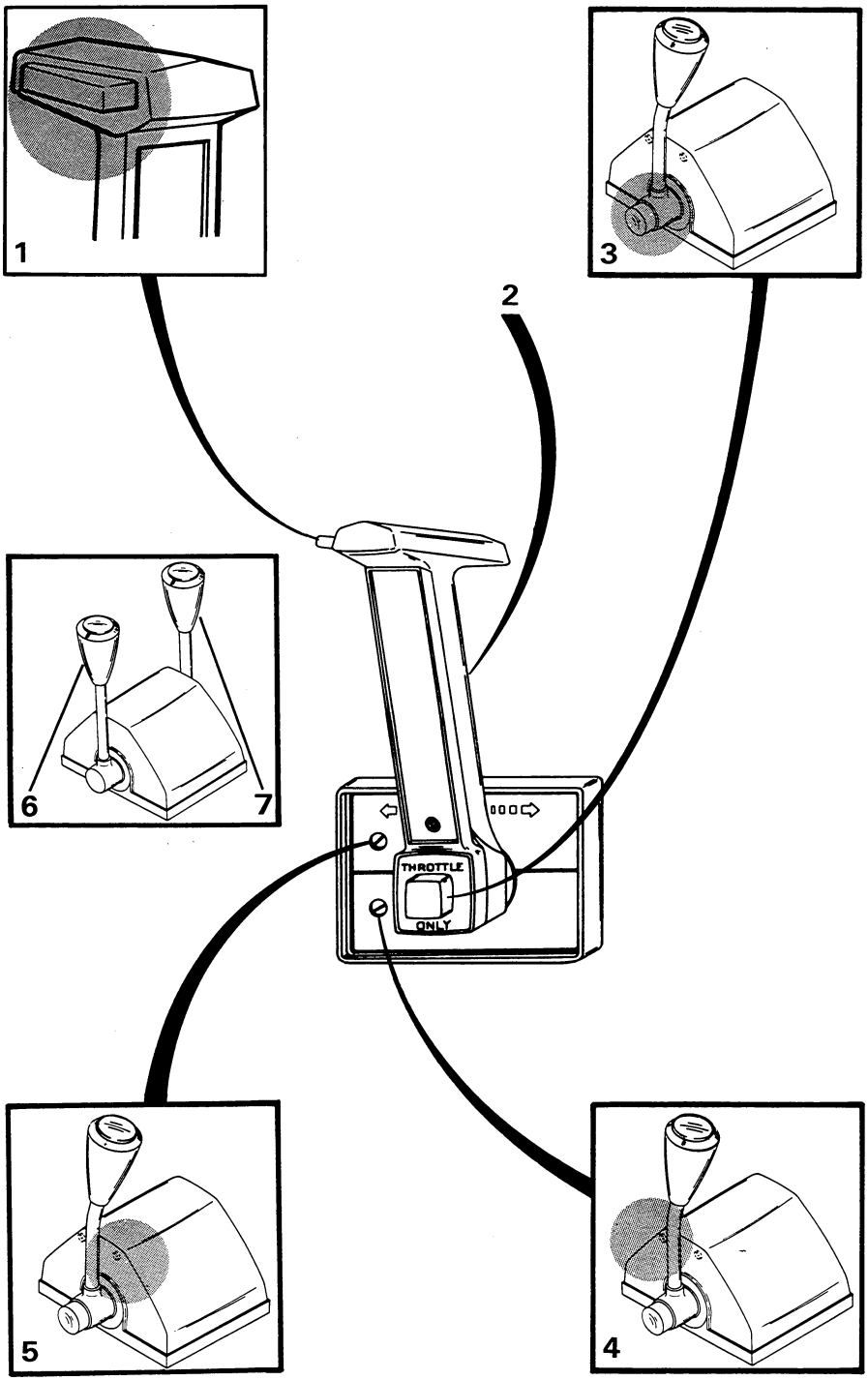
9 Bilge Blower Switch - must be operated for five minutes to ventilate bilge.

10 Ignition Switch - allows operator to start and stop engine.

MODELS WITH AUDIO WARNING SYSTEM

Warning buzzer will sound if: (1) cooling system water temperature rises too high or, (2) engine oil pressure gets too low. If buzzer sounds, stop engine immediately. If cause for warning buzzer sounding cannot be found, consult your MerCruiser Dealer.

IMPORTANT: Warning buzzer also will sound if ignition key is turned to RUN position and engine is not started within 7 to 14 seconds. This allows operator to frequently test the operation of the audio warning system. It is recommended that warning system be tested at least once every 5 hours of operation.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THROTTLE
ONLY
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4

OPERATION
(Continued)

REMOTE CONTROLS

Your boat may be equipped with one of many Quicksilver® remote controls available. All controls feature an integral safety switch that allows starting engine in NEUTRAL only. Also, all controls may not have all features shown. If boat is equipped with a remote control other than shown, consult your dealer for a description and/or demonstration of the control.

1 Neutral Lock Bar - must be squeezed before control handle can be moved from NEUTRAL.

2 Control Handle - controls both shift and throttle. First 45° of movement is for shifting.

3 THROTTLE ONLY Button - allows engine throttle advancement without shifting gears to assist engine starting.

4 FRICTION Screw - adjusts control handle friction so motor speed can be set and driver does not have to hold handle. Turn screw clockwise to increase friction. Do not thread screw all the way out.

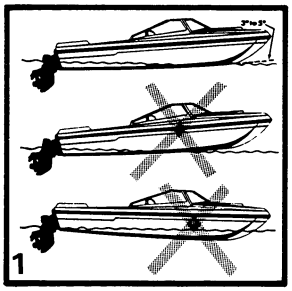
5 DETENT Screw - controls the effort needed to move control handle out of NEUTRAL. To increase tension, turn screw clockwise; the decrease, turn screw counterclockwise. Do not thread screw all the way out.

6 Shift Lever - shifts unit into gear with full lever movement. Move lever forward to shift to FORWARD gear. Move lever backward to shift to REVERSE gear. Lever in full vertical position shifts to NEUTRAL.

⚠ CAUTION
Never shift unit into or out of gear unless throttle lever is at idle RPM.

7 Throttle Lever - allows engine RPM to be increased or decreased.

IMPORTANT: Boats equipped with dual power packages may have both shift levers on one control and both throttle levers on the other control.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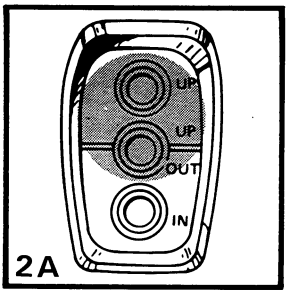
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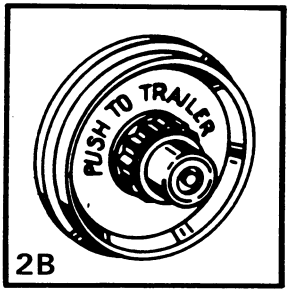
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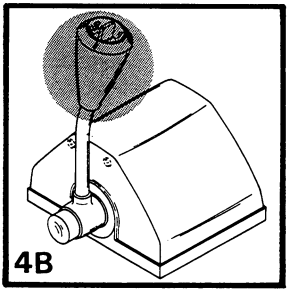
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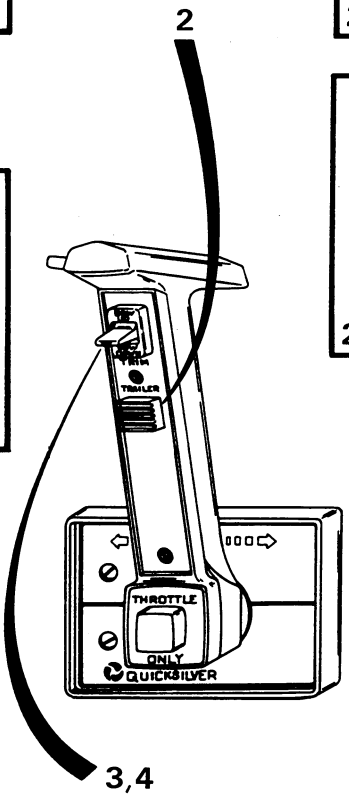
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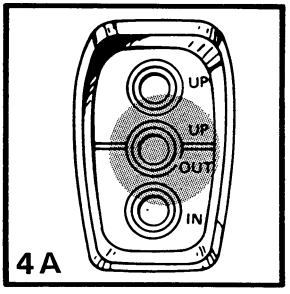
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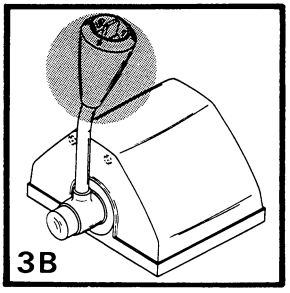
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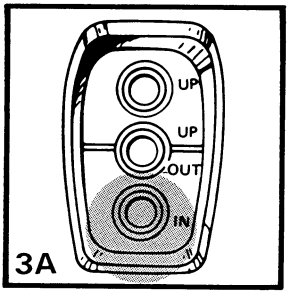
UP
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OPERATION (Continued)

POWER TRIM

The Power Trim™ system allows operator to raise and lower drive unit for trailering, beaching, launching and shallow water operation. Power Trim also allows operator to adjust drive unit angle, while underway, to provide ideal boat angle for varying load and water conditions.

1 In most cases, best overall performance is obtained with drive unit adjusted so boat will run at a 3° to 5° angle to water.

Trimming Drive Unit Up/Out Will:

- Lift bow of boat.
- Generally increase top speed.
- Increase clearance over submerged objects.
- Cause boat to accelerate and plane off slower.
- In excess, cause porpoising and/or propeller ventilation.
- Cause overheating if trimmed up/out beyond gimbal ring support flanges.

⚠ CAUTION

Never trim drive unit up/out using TRAILER switch while boat is underway. Use extreme caution when operating with drive unit raised. Severe damage to drive unit may result if unit is raised beyond the gimbal ring support flanges at engine speeds above 1200 RPM.

Trimming Drive Unit Down/In Will:

- Help boat accelerate and plane off quicker.
- Generally improve ride in choppy water.
- In most cases, reduce boat speed.

Power Trim Operation

IMPORTANT: If TRAILER button(s) are held depressed after drive unit reaches end of upward travel, an internal circuit breaker will open and pump will stop. Should this happen, release button(s) and allow motor to cool for about one minute. Circuit breaker will reset and Power Trim operation may be resumed.

2 Trailer Position - Press button until drive unit reaches desired height.

2A If equipped with three-button control panel, simultaneously press center and UP buttons until drive unit reaches desired height.

2B If equipped with Trailer Only button, press until drive unit reaches desired position.

3 Lower Drive Unit - Press DOWN on Trim switch until drive unit reaches desired position.

3A If equipped with three-button control panel, press IN button until drive unit reaches desired position.

3B If equipped with Trim switch in top of control handle, move switch back (DOWN) until drive unit reaches desired position.

4 Trim Up/Out - Press UP on Trim switch until drive unit reaches desired trim position.

4A If equipped with three-button control panel, press center UP/OUT button until drive unit reaches desired trim position.

4B If equipped with Trim switch in top of control handle, move switch forward (UP) until drive unit reaches desired trim position.

OPERATION (Continued)

STARTING, SHIFTING AND STOPPING

⚠ WARNING

Before starting engine, operate bilge blower for at least five minutes to remove any explosive fumes from engine compartment. If boat is not equipped with a bilge blower, open engine hatch and leave open while starting engine.

IMPORTANT: Observe the following:

- Do not start engine without water being supplied to seawater pickup pump (to prevent pump or engine damage).

- Do not operate starter motor continuously for more than 30 seconds.

- When engine starts, quickly reduce throttle setting to avoid exceeding 1500 RPM.

- Never shift drive unit unless engine is at idle RPM.

A. Check all items listed in OPERATION CHART.

B. Perform any other necessary checks, as indicated by your dealer, or specified in your boat owner's manual.

C. Place drive unit in full down/in position.

D. Place control handle in NEUTRAL.

E. Position throttle setting as follows: COLD ENGINE - Move control/throttle lever to full throttle, then return to about 1/4 throttle. In extreme cold it may be necessary to pump lever more than once.

WARM ENGINE - Move control/throttle lever to 1/4 throttle position.

FLOODED ENGINE - Move control/throttle lever to full throttle. Be prepared to decrease engine speed to 1000-1500 RPM as soon as engine starts.

F. Turn ignition key to START. Release key when engine starts and allow switch to return to RUN position. Move control/throttle lever back to decrease engine RPM to 1000-1500 RPM if necessary.

G. Check oil pressure gauge immediately after engine starts. If oil pressure is not within specified range (see SPECIFICATIONS), stop engine immediately and determine cause.

H. If engine is cold, run engine for 1 or 2 minutes at fast idle (1000-1500 RPM).

I. After engine has warmed up, check water temperature gauge to ensure that engine temperature is not abnormally high. If it is, stop engine immediately and determine cause.

J. Be sure charging system is functioning correctly.

K. Observe power package for fuel, oil, water and exhaust leaks.

L. To shift drive unit, return control/throttle lever to NEUTRAL. Move control/shift lever with a firm, quick motion forward to shift to FORWARD gear, or backward to shift to REVERSE. After shifting drive unit, advance throttle to desired setting.

M. Move control/shift lever to NEUTRAL and allow engine to drop to IDLE speed. If engine has been run at high speed for a long period of time, allow engine to cool by running at IDLE speed for 3 to 5 minutes.

N. Turn ignition key to OFF.

OPERATION
(Continued)

OPERATION CHART

BEFORE STARTING	AFTER STARTING	WHILE UNDERWAY	AFTER STOPPING
Open engine hatch.	Observe all gauges to check condition of engine. If not normal, stop engine.	Observe all gauges to monitor engine condition.	Turn ignition key OFF.
Turn battery switch ON, if so equipped.	Check for fuel, oil, water, fluid and exhaust leaks, etc.		Turn battery switch OFF, if so equipped.
Operate bilge blowers, if so equipped.	Check shift and throttle control operation.		Close fuel valve.
Open fuel shut-off valve.	Check steering operation		Close seacock, if so equipped.
Open seacock, if so equipped.			Flush cooling system if in salt-water area.
Place drive unit in full down/in position.			
Perform all other checks specified by your dealer and/or boat builder.			

ADDITIONAL INFORMATION

20-HOUR BREAK-IN PERIOD

IMPORTANT: The first 20 hours of operation is the engine break-in period. Correct break-in is essential to obtain minimum oil consumption and maximum engine performance. During this break-in period, the following rules must be observed:

- Do not operate below 1500 RPM for extended periods of time for first 10 hours. Shift into gear as soon as possible after starting and advance throttle above 1500 RPM **if conditions permit safe operation.**

- Do not operate at one speed consistently for extended periods.

- Do not exceed 3/4 throttle during first 10 hours. During next 10 hours, occasional operation at full throttle is permissible (5 minutes at a time maximum).

- Avoid full throttle acceleration from IDLE speed.

- Do not operate at full throttle until engine reaches normal operating temperature.

- Frequently check crankcase oil level. Add oil if needed. It is normal for oil consumption to be high during break-in period.

- After 20-hour break-in period, drain crankcase oil and replace oil filter (see MAINTENANCE). Fill crankcase with correct oil (see SPECIFICATIONS).

20-HOUR CHECKUP

After first 20 hours of operation, an Authorized MerCruiser Dealer should be contacted for the following maintenance. The boat owner is responsible for any charges.

- Change crankcase oil and filter.

- Check all fluid levels.

- Cooling System - Inspect all hoses for damage and deterioration; check all hose clamps for adequate tightness.

- Check carburetor adjustment.

- Inspect ignition system and timing.

- Check for loose, missing or damaged parts.

- Check shift and throttle cable adjustments - lubricate and inspect for loose, damaged or missing parts.

- Steering System - Lubricate and inspect for loose, damaged or missing parts.

- Inspect all drive belts.

- Check engine alignment.

- Complete Engine Exhaust System - Inspect for damage and deterioration; check all hose clamps for adequate tightness.

FREEZING TEMPERATURE OPERATION

IMPORTANT: If boat is operated during periods of freezing temperature, precautions must be taken to prevent freezing damage to power package. Refer to OUT OF SEASON STORAGE for draining instructions.

DRIVE UNIT IMPACT PROTECTION

The Power Trim hydraulic system is designed to provide impact protection for drive unit. If a submerged object is struck while boat is moving forward, the hydraulic system will cushion kickup of drive unit as it clears the object, reducing damage to unit. After drive unit has cleared object, the hydraulic system allows drive unit to return to original operating position, preventing loss of steering control and engine overspeed.

ADDITIONAL INFORMATION (Continued)

Use extreme caution when operating in shallow water or where underwater objects are known to be present. Use extreme care to prevent striking submerged objects while operating in REVERSE. No impact protection is provided in REVERSE.

If drive unit should strike a submerged object, stop engine as soon as possible and inspect drive unit for damage. If damage is present or suspected, boat should be taken to an Authorized MerCruiser Dealer for thorough inspection and necessary repair. Operating a damaged drive unit could cause additional damage to other parts of drive unit, or could affect control of boat. If continued running is necessary, do so at greatly reduced speeds.

IMPORTANT: Impact protection system cannot be designed to ensure total protection from impact damage under all conditions.

TRAILERING BOAT

Boat can be trailered with drive unit in up or down position. Adequate road clearance is required between road and gear housing skeg when trailering with drive unit in down position.

If adequate road clearance is a problem, place drive unit in full trailer position and support with an optional trailer kit which is available from your Authorized MerCruiser Dealer.

ATTENTION REQUIRED AFTER SUBMERSION

- Before recovery, contact an Authorized MerCruiser Dealer.

- After recovery, immediate service by an Authorized MerCruiser Dealer is required to prevent serious damage to power package.

SPECIFICATIONS

FUEL REQUIREMENTS

IMPORTANT: Use of improper gasoline can cause severe engine damage. Engine damage resulting from use of improper gasoline is considered misuse of engine, and damage caused thereby will not be covered under the limited warranty.

The use of any good grade leaded regular, unleaded regular or premium gasolines with a minimum posted octane rating of 86 (research octane number 90), are satisfactory for use in your engine. (High-performance models are exceptions.) However, gasolines containing alcohol, either methyl alcohol (methanol) or ethyl alcohol (ethanol) may cause increased:

- Corrosion of metal parts.

- Deterioration of elastomer and plastic parts.

- Fuel permeation through flexible fuel lines.

- Wear and damage of internal engine parts.

- Starting and operating difficulties.

Some of these adverse effects are due to the tendency of gasolines containing alcohol to absorb moisture from the air, resulting in a phase of water and alcohol separating from the gasoline in the fuel tank.

The adverse effects of alcohol are more severe with methyl alcohol (methanol) and are worse with increasing alcohol content.

SPECIFICATIONS (Continued)

WARNING

FIRE AND EXPLOSION HAZARD: Fuel leakage from any part of fuel system can be a fire and explosion hazard which can cause serious bodily injury or death. Careful periodic inspection of entire fuel system is mandatory, particularly after storage. All fuel components including fuel tanks, whether plastic, metal or fiberglass, fuel lines, primer bulbs, fittings, fuel filters and carburetors should be inspected for leakage, softening, hardening, swelling or corrosion. Any sign of leakage or deterioration requires replacement before further engine operation.

Because of possible adverse effects of alcohol in gasoline, it is recommended that only alcohol-free gasoline be used where possible. If only fuel containing alcohol is available, or if the presence of alcohol is unknown, increased inspection frequency for leaks and abnormalities is required.

IMPORTANT: When operating a MerCruiser engine on gasoline containing alcohol, storage of gasoline in the fuel tank for long periods should be avoided. Long periods of storage, common to boats, create unique problems. In cars, alcohol-blend fuels normally are consumed before they can absorb enough moisture to cause trouble, but boats often sit idle long enough for phase separation to take place. In addition, internal corrosion may take place during storage if alcohol has washed protective oil films from internal components.

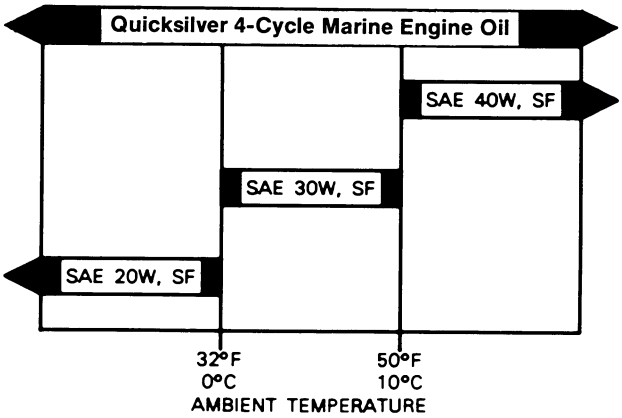
CRANKCASE OIL

To help obtain optimum engine performance and to provide maximum protection, we strongly recommend the use of Quicksilver 4-Cycle Marine Engine Oil. If not available, a good grade, straight weight, detergent automotive oil of correct viscosity, with an API classification of SF, may be used.

The chart below is a guide to crankcase oil selection. Oil filter should always be changed with oil.

In those areas where recommended straight weight oil is not available, a multi-viscosity 20W-40 (SF) or, as a second but less preferable choice, 20W-50 (SF) may be used.

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



SPECIFICATIONS (Continued)

ENGINE

MODEL	4.3	5.0	4.3LX	5.0LX
Horsepower[1]	175	200	205	230
Kilowatts[1]	131	148	153	170
Displacement	262 C.I.D. (4.3L)	305 C.I.D. (5L)	262 C.I.D. (4.3L)	305 C.I.D. (5L)
Engine Type	V6	V8	V6	V8
Bore	4.00 In. (101.6 mm)	3.74 In. (94.99 mm)	4.00 In. (101.6 mm)	3.74 In. (94.99 mm)
Stroke	3.48 In. (88.39 mm)			
Compression Ratio	9.3:1			
Compression Pressure	180 psi (1241 kPa)	150 psi (1035 kPa)	180 psi (1241 kPa)	150 psi (1035 kPa)
Maximum RPM @ W.O.T.	4400-4800 RPM	4200-4600 RPM	4400-4800 RPM	4200-4600 RPM
Idle RPM in Forward Gear	650-700 RPM			
Fuel Pump Pressure	3-7 psi (21-48 kPa)			
Oil Pressure @ 2000 RPM	30-55 psi (207-379 kPa)			
Min. Oil Pressure @ Idle	4 psi (28 kPa)			
Thermostat	143° F (62° C)			

[1] At Flywheel

MODEL	5.7	350 MAGNUM
Horsepower[1]	260	270
Kilowatts[1]	194	201
Displacement	350 C.I.D. (5.7L)	
Engine Type	V8	
Bore	4.00 In. (101.6 mm)	
Stroke	3.48 In. (88.39 mm)	
Compression Ratio	9.3:1	
Compression Pressure	150 psi (1035 kPa)	
Maximum RPM @ W.O.T.	4200-4600 RPM	
Idle RPM in Forward Gear	650-700 RPM	
Fuel Pump Pressure	3-7 psi (21-48 kPa)	
Oil Pressure @ 2000 RPM	30-55 psi (207-379 kPa)	
Min. Oil Pressure @ Idle	4 psi (28 kPa)	
Thermostat	143° F (62° C)	

[1] At Flywheel

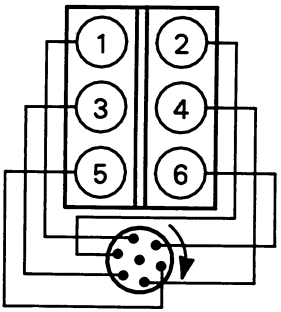
SPECIFICATIONS (Continued)

TUNE-UP

MODEL	4.3	5.0	4.3LX	5.0LX
Spark Plug Type	AC-MR43T or Champion RV8C	AC-MR44T or Champion RV8C	AC-MR43T or Champion RV8C	AC-MR44T or Champion RV8C
Spark Plug Gap	.035 In. (.9 mm)			
Timing @ Idle RPM	8° BTDC			
Firing Order	A	B	A	B
Electrical System	12-volt Negative (-) Ground			
Alternator Rating	55 Amps			
Recommended Battery Rating	Minimum 400 Amps - Cold Cranking Amperage	Minimum 305 Amps - Cold Cranking Amperage	Minimum 400 Amps - Cold Cranking Amperage	Minimum 305 Amps - Cold Cranking Amperage

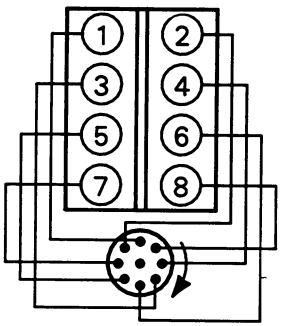
MODEL	5.7	350 MAGNUM
Spark Plug Type	AC-MR43T or Champion RV8C	
Spark Plug Gap	.035 In. (.9 mm)	
Timing @ Idle RPM	8° BTDC	
Firing Order	B	
Electrical System	12-Volt Negative (-) Ground	
Alternator Rating	55 Amps	
Recommended Battery Rating	Minimum 350 Amps - Cold Cranking Amperage	

A
L.H. ROTATION
FRONT



Firing Order
1-6-5-4-3-2

B
L.H. ROTATION
FRONT



Firing Order
1-8-4-3-6-5-7-2

SPECIFICATIONS (Continued)

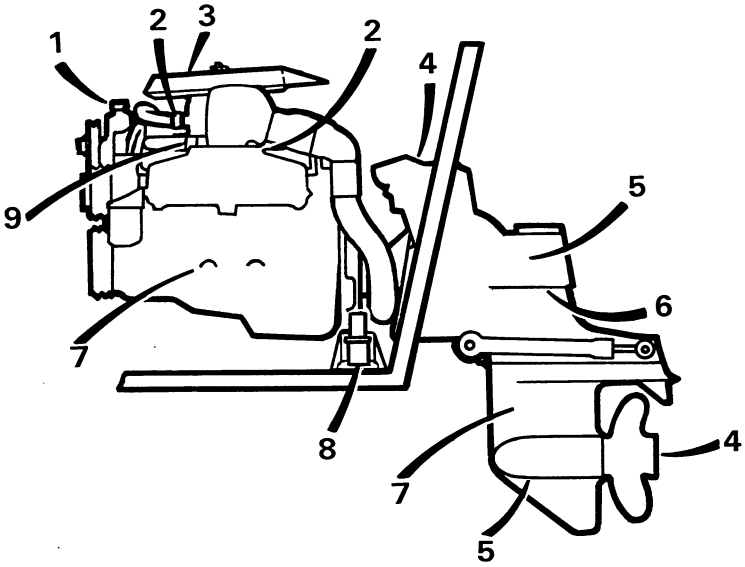
CAPACITIES

MODEL	4.3	5.0	4.3LX	5.0LX
Crankcase Oil Capacity w/New Filter[1]	Approx. 4.5 U.S. Quarts (4.28L)	Approx. 5 U.S. Quarts (4.73L)	Approx. 4.5 U.S. Quarts (4.28L)	Approx. 5.5 U.S. Quarts (5.2L)
Drive Unit Oil Capacity	Approximately 32 fl. oz. (946ml)			
Seawater Cooling System[2]	15 U.S. Qts. (14.1 L)			
Closed Cooling System	20 U.S. Qts. (19.3 L)			

[1]Always use dipstick to determine exact quantity of oil required.
[2]Seawater Cooling System capacity information is for winterization use only.

MODEL	5.7	350 MAGNUM
Crankcase Oil Capacity w/New Filter[1]	Approx. 5.5 U.S. Quarts (5.2L)	
Drive Unit Oil Capacity	Approximately 32 fl. oz. (946ml)	
Seawater Cooling System[2]	15 U.S. Qts. (14.1 L)	
Closed Cooling System	20 U.S. Qts. (19.3 L)	

[1]Always use dipstick to determine exact quantity of oil required.
[2]Seawater Cooling System capacity information is for winterization use only.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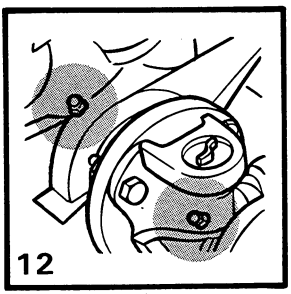
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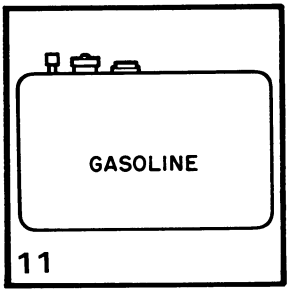
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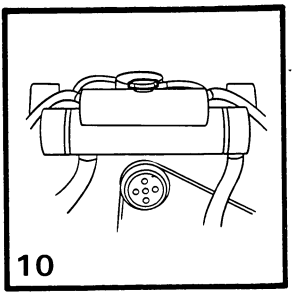
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MAINTENANCE

WARNING
Always disconnect battery cables from battery before working around electrical system components to prevent injury to yourself or damage to electrical system.

IMPORTANT: Refer to MAINTENANCE CHART for complete listing of all scheduled maintenance to be performed. Some listings can be done by owner/operator, while others should be performed by an Authorized MerCruiser Dealer. Before attempting maintenance or repair procedures not covered in this manual, it is recommended that a MerCruiser Service Manual(s) be purchased and read thoroughly.

MAINTENANCE AIDS

1 Power Steering System - Quicksilver Power Trim and Steering Fluid, or Dexron II Automatic transmission fluid (ATF).

2 All Pivot Points - SAE 30W motor oil.

3 Fogging (Winterizing) Engine - Quicksilver Storage Seal or SAE 20W motor oil.

4 Exposed Portion of Steering Cable and Propeller Shaft - Quicksilver Special Lubricant 101.

5 Stern Drive Unit - Quicksilver Gear Lube.

6 All Grease Fittings, Universal Joints, Engine Coupler and Splined Universal Joint Shaft - Quicksilver 2-4-C Marine Lubricant.

7 All Exterior Surfaces - Quicksilver Primer and Spray Paint and Quicksilver Corrosion Guard.

8 Power Trim System - Quicksilver Power Trim and Steering Fluid, or SAE 10W-30 motor oil.

9 Crankcase Oil - Quicksilver 4-Cycle Marine Engine Oil. (Refer to SPECIFICATIONS for alternatives and oil recommendations for varying ambient temperatures.)

10 Closed Cooling System Coolant - 50/50 mixture of ethylene glycol antifreeze (must meet GM specification 1825 M) and tap water. Areas where temperatures generally do not go below 32° F (0° C), rust inhibitor and tap water is acceptable.

11 Gasoline Stabilizer - Quicksilver Marine Fuel System Treatment and Stabilizer.

12 Grease Fittings on Drive Shaft Extension Models - Quicksilver 2-4-C Marine Lubricant.

MAINTENANCE (Continued)

MAINTENANCE CHART

Only perform maintenance which applies to your particular power package.

● = **To Be Performed by Owner**
■ = **To Be Performed by an Authorized MerCruiser Dealer**
F = **Freshwater Areas Only**
S = **Saltwater Areas Only**

TASK	INTERVAL			
Location and Service	Weekly	Every 50 Hours or 60 Days	Every 100 Hours or 120 Days	At Least Once a Year
Engine Crankcase Oil - Check level	●			
Closed Cooling Coolant - Check level	●			
Ignition System - Check timing; adjust if needed				■
Crankcase Oil and Oil Filter - Change			■	■
Power Steering Fluid - Check level	●			
Stern Drive Unit Oil - Check level	●			
Steering System - Lubricate and inspect for loose, damaged or missing parts		S■	F■	■
Battery - Check level and inspect for damage	●			
Electrical System (Entire) - Check for loose or damaged wiring		S■	F■	■

MAINTENANCE
(Continued)

MAINTENANCE CHART
(Continued)

TASK	INTERVAL			
Location and Service	Weekly	Every 50 Hours or 60 Days	Every 100 Hours or 120 Days	At Least Once a Year
Fuel Pump Sight Tube - Check for fuel	●			
Cooling System Hoses and Clamps - Inspect for damage and deterioration. Check clamps for tightness		S■	F■	■
Engine Exhaust System- Inspect for damage, deterioration and restrictions. Check clamps for tightness		S■	F■	■
Drive Belts (All) - Inspect condition and check tension			●	●
Ignition System - Clean and inspect condition			■	■
Flame Arrestor and Crankcase Ventilation Hose - Clean and inspect			■	■
Continuity Circuit - Check components for loose connections, broken or frayed wires		S■	F■	■
Shift and Throttle Cable and Linkage - Lubricate and inspect for loose, damaged or missing parts		S■	F■	■
Power Trim Pump Oil - Check level	●			

MAINTENANCE
(Continued)

MAINTENANCE CHART
(Continued)

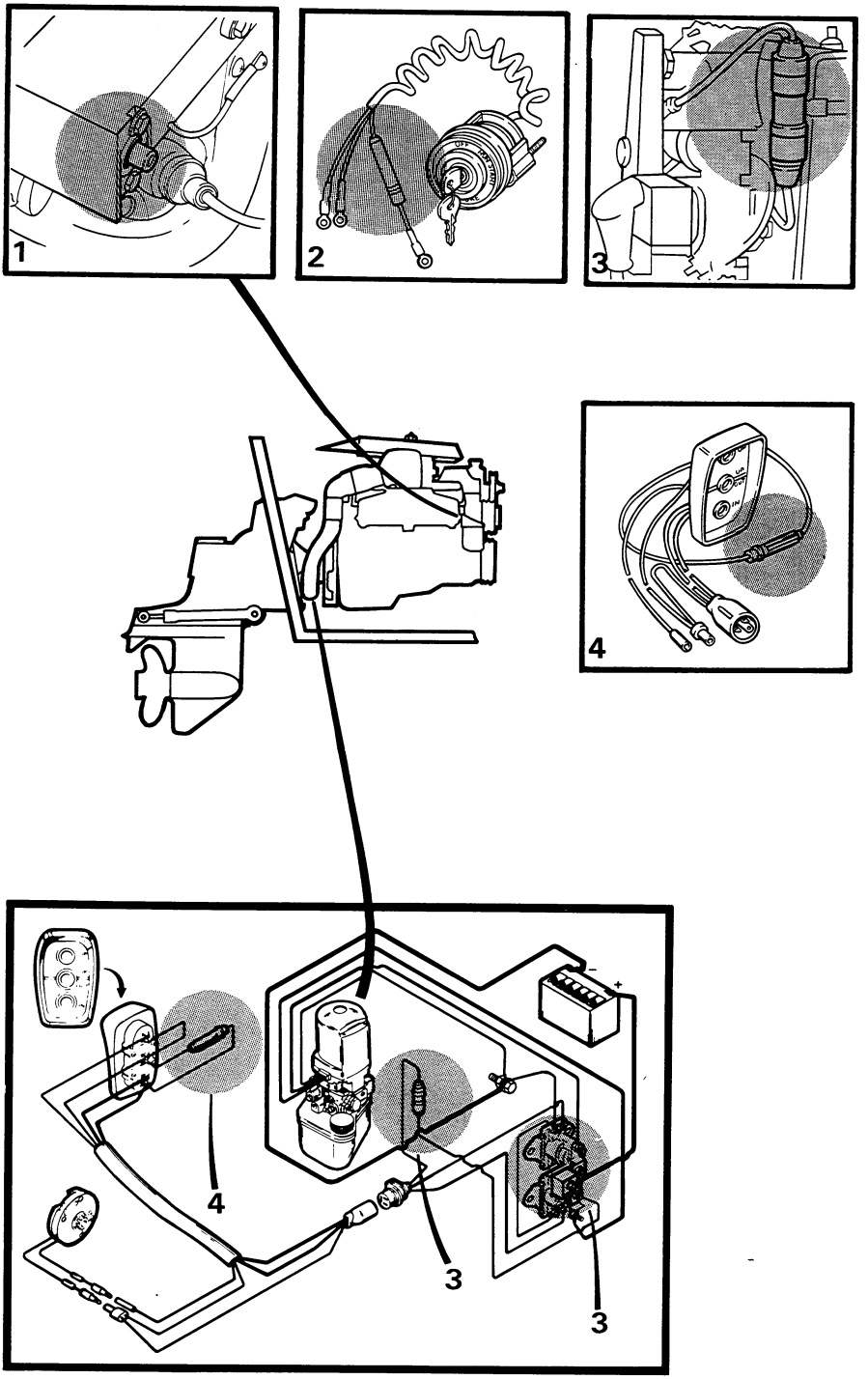
TASK	INTERVAL			
Location and Service	Weekly	Every 50 Hours or 60 Days	Every 100 Hours or 120 Days	At Least Once a Year
Stern Drive Unit Oil - Change			■	■
Propeller Shaft - Lubricate		S●	F●	●
Transom Gimbal Housing Assembly Swivel Shaft and Pin, Hinge Pins and Gimbal Bearing - Lubricate		S■	F■	■
Engine Coupling, Stern Drive Unit Universal Joint Shaft Splines and Cross Bearings - Lubricate			■	■
Drive Shaft Extension Models Only - Lubricate		S■	F■	■
Engine Alignment - Check			■	■
Fuel Filters - Replace				■
Power Package Exterior Surfaces - Clean and paint				●
Steering Head and Remote Control - Inspect and lubricate				■
Quicksilver MerCathode® System - Test output				■
Closed Cooling Coolant - Test for alkalinity				■

MAINTENANCE (Continued)

MAINTENANCE CHART (Continued)

TASK	INTERVAL			
Location and Service	Weekly	Every 50 Hours or 60 Days	Every 100 Hours or 120 Days	At Least Once a Year
Heat Exchanger - Clean seawater section				■
Cooling System - Flush seawater section	S● AFTER USE EACH DAY			
Power Package Exterior Surfaces - Spray with rust preventive		S●	F●	●
Closed Cooling Coolant - Replace	■ EVERY 2 YEARS			
Zinc Alloy Trim Tab, Anodic Heads, Anodic Plate and Quicksilver Anti-Corrosion Anode Kit (Optional) - Inspect for erosion	●			
Gear Housing Water Pickups* - Check for marine growth or debris	●			
Carburetor - Adjust				■

*Closed Cooled Models - a second water pickup for engine cooling is in the thru-hull fitting.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MAINTENANCE
(Continued)

OVERLOAD PROTECTION ELECTRICAL SYSTEM

If an electrical overload occurs, a fuse will blow or the circuit breaker will trip open. The cause must be found and corrected before replacing fuse or resetting circuit breaker.

1 A circuit breaker provides protection for engine wiring harness and instrumentation power lead. Reset by pushing RESET button IN.

In an emergency, when engine must be operated and cause for high current draw cannot be located and corrected, turn OFF or disconnect all accessories connected to engine and instrumentation wiring.

Reset circuit breaker. If breaker remains open, electrical overload has not been eliminated. Further checks must be made on electrical system.

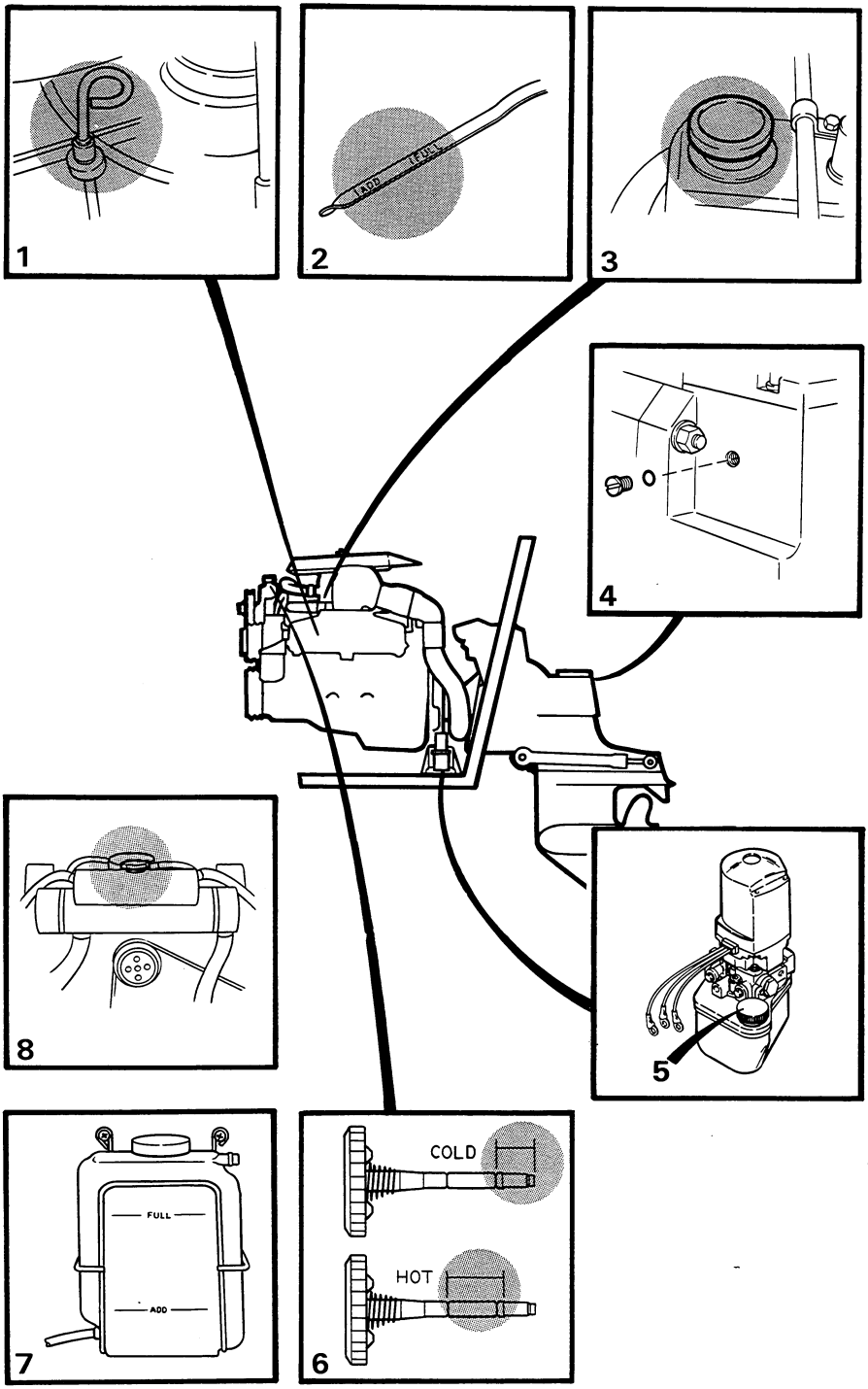
2 A 20 amp fuse may be located in ignition switch "I" terminal lead to protect electrical system. Check for blown fuse if key is turned to START and nothing happens (and circuit breaker is not tripped).

3 The Power Trim System is protected from overload by 110 amp fuse and a 20 amp in-line fuse on Power Trim pump.

4 Quicksilver Three-Button Power Trim Control Panel is further protected by a 20 amp in-line fuse.

MODELS WITH MERCATHODE SYSTEM

A 20 amp in-line fuse is in wire connected to positive (+) terminal on controller. If fuse is blown, system will not operate.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ADD
FULL
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COLD
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FULL
ADD
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MAINTENANCE
(Continued)

CHECKING FLUID LEVELS

Crankcase Oil

Stop engine. Allow approximately five minutes for oil to drain into oil pan. Boat must be at rest in water.

1 Remove dipstick. Wipe clean and reinstall fully into dipstick tube.

2 Remove dipstick and observe oil level. Oil level must be between FULL and ADD. If oil level is below ADD:

3 Remove oil filler cap. Add specified oil (refer to page 18) to bring level up to, but not over, FULL mark on dipstick.

IMPORTANT: Do not overfill crankcase oil.

Drive Unit Oil

4 Remove OIL VENT screw and sealing washer from drive shaft housing. Oil should come up to OIL VENT hole. If oil level is low, fill drive unit through OIL VENT hole until correct level is reached. Reinstall sealing washer and OIL VENT screw. Tighten securely.

IMPORTANT: If more than 2 fl. oz. (59ml) of Quicksilver Gear Lube is required to fill drive unit, a seal may be leaking. Contact your Authorized MerCruiser Dealer for service. Damage to unit may occur due to lack of lubrication.

Power Trim Pump

Place drive unit in full down/in position.

5 Remove fill cap from reservoir, check that "caplug" is removed from filler neck, and observe oil level. Level must be up to, but not over bottom of filler neck. Add Quicksilver Power Trim and Steering Fluid or SAE 10W-30 motor oil, if required, to bring level to bottom of filler neck. Replace cap. (5A) **The fill cap is vented; frequently check that vent hole is open and unrestricted.**

Power Steering Pump

Stop engine and position drive unit straight back.

6 Remove FILLCAP/DIPSTICK and observe level. Add specified fluid if required. Reinstall FILLCAP/DIPSTICK.

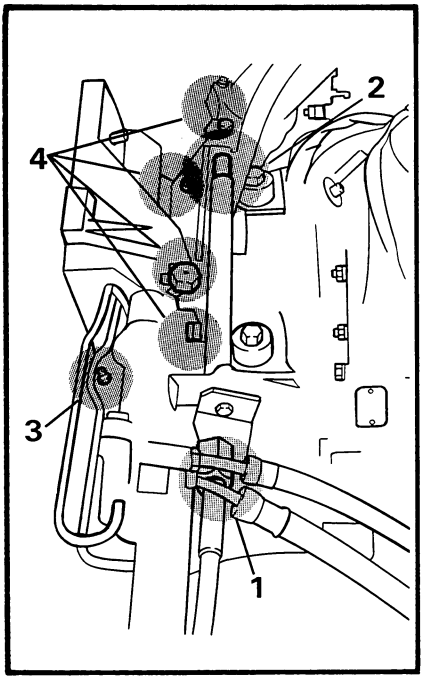
IMPORTANT: If fluid is not visible in pump, contact your Authorized MerCruiser Dealer.

Engine Coolant - Closed Cooled Models Only

⚠ WARNING
Do not remove coolant cap when engine is hot. Coolant may discharge violently.

7 Check coolant level in coolant recovery bottle. Add specified coolant as required.

8 Periodically remove cap from coolant reservoir to ensure that coolant recovery system is functioning properly. Coolant level must be at top of reservoir filler neck. If coolant is low, inspect gasket in cap for damage and replace if necessary. To have cap tested, contact your Authorized MerCruiser Dealer. Inspect coolant recovery system for leaks.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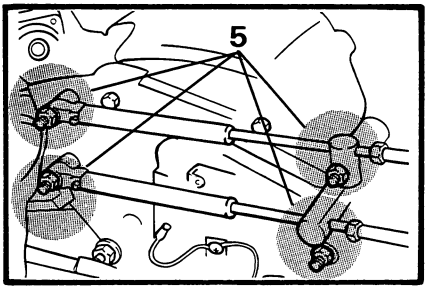
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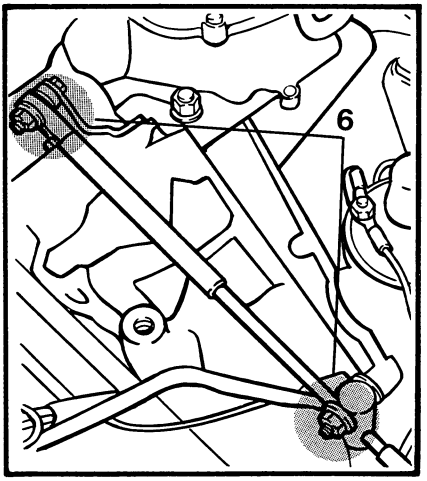
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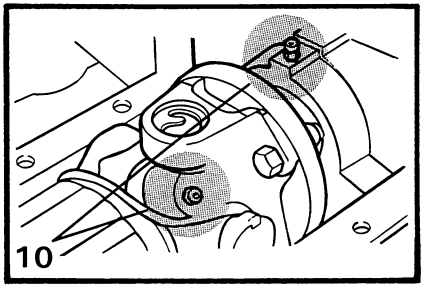
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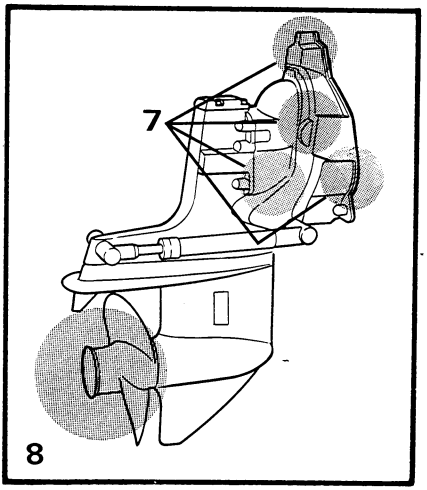
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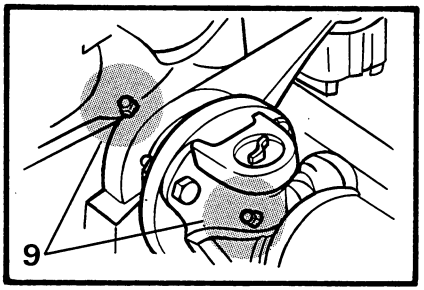
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MAINTENANCE
(Continued)

LUBRICATION

Steering System

If Steering Cable Has Grease Fittings:

1 With cable fully retracted into cable housing, lubricate fitting with 2-4-C Marine Lubricant.

⚠ WARNING
Do not grease steering cable while extended. Hydraulic lock could occur and cause loss of steering control.

If steering cable does not have grease fitting, inner wire of cable cannot be greased.

2 With steering cable fully extended, lubricate exposed part of cable with 2-4-C Marine Lubricant.

3 Lubricate control valve fitting with 2-4-C Marine Lubricant.

4 Lubricate steering system pivot points with SAE 30W motor oil.

On dual engine boats, lubricate all pivot points, including tie bar pivot points, with SAE 30W motor oil.

Shift Cable

5 Lubricate pivot points with SAE 30W motor oil.

Throttle Cable

6 Lubricate pivot points with SAE 30W motor oil.

Drive Unit and Transom Assembly

7 Lubricate upper and lower swivel pins, both hinge pins, and gimbal bearing, with 2-4-C Marine Lubricant.

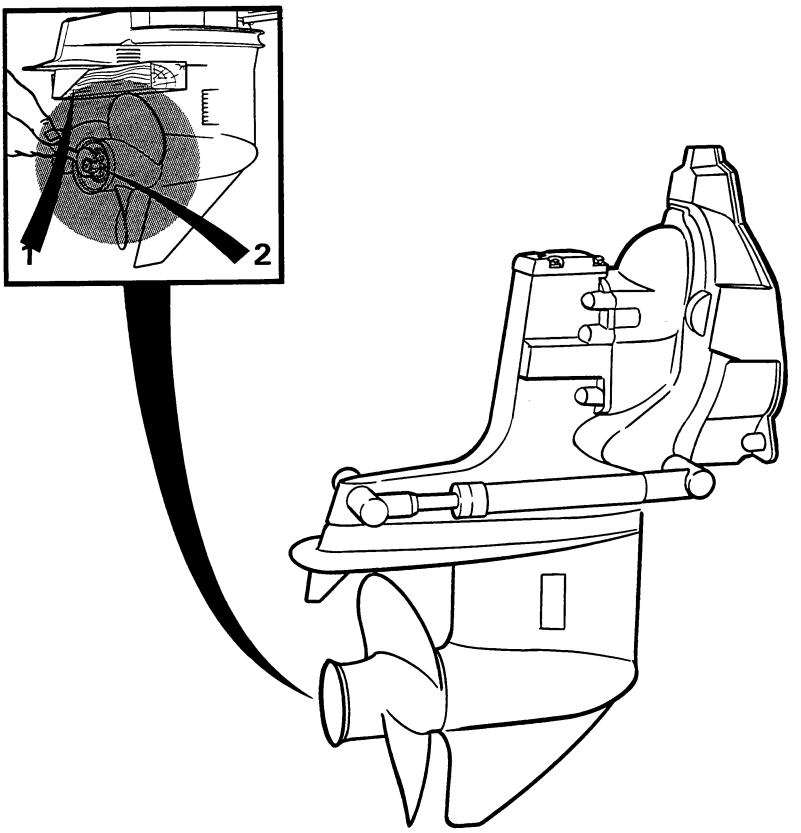
8 For propeller shaft lubrication, see PROPELLER.

NOTE: Engine coupling, universal joints and shaft splines are greased with Quicksilver 2-4-C Marine Lubricant. Contact your Authorized MerCruiser Dealer for this service.

Drive Shaft Extension Models Only

9 Lubricate drive shaft grease fittings, at transom end, with 2-4-C Marine Lubricant.

10 Lubricate drive shaft grease fittings, at engine end, with 2-4-C Marine Lubricant.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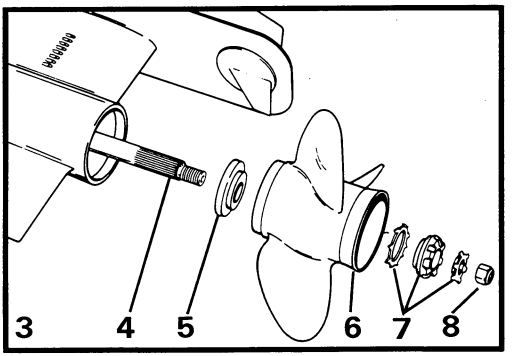
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MAINTENANCE
(Continued)

PROPELLER

WARNING
Remote Control must be in NEUTRAL and ignition key removed from switch before removing and/or installing propeller.

WARNING
Place a block of wood between antiventilation plate and propeller to protect hands from propeller blades and to prevent propeller from rotating when removing propeller nut.

CAUTION
Periodically check propeller nut for tightness during boating season. A minimum of 55 lbs. ft. (75 N.m) torque is required.

Removal

1 Place wood block between propeller blade and antiventilation plate to prevent rotation. Straighten bent tabs on tab washer.

2 Turn propeller shaft nut counterclockwise to remove nut.

3 Slide tab washer, spline washer, continuity washer, propeller and thrust hub off propeller shaft.

Repair

Some damaged propellers can be repaired. See your dealer.

Installation

IMPORTANT: If reusing tab washer, carefully inspect tabs for cracks or other damage. Replace tab washer if condition is questionable.

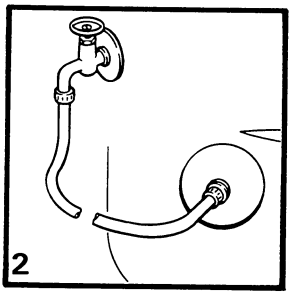
4 Apply a liberal coat of one of the following Quicksilver lubricants to propeller shaft: Anti-Corrosion Grease, Special Lubricant 101, or 2-4-C Marine Lubricant.

5 Slide thrust hub into propeller hub, with stepped side toward propeller hub.

6 Align splines and place propeller and thrust hub on propeller shaft.

7 Place continuity washer, spline washer and tab washer onto shaft.

8 Install propeller nut. Tighten nut securely. A minimum of 55 lbs. ft. (75 N.m) torque is required. Bend three tabs on tab washer down into grooves in spline washer. After first use, bend the three tabs straight, retighten propeller nut to minimum 55 lbs. ft. torque (75 N.m). Bend tabs back down into spline washer. Check propeller at least after 20 hours of operation. Do not operate with loose propeller.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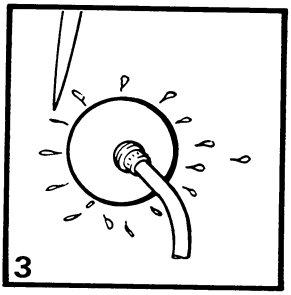
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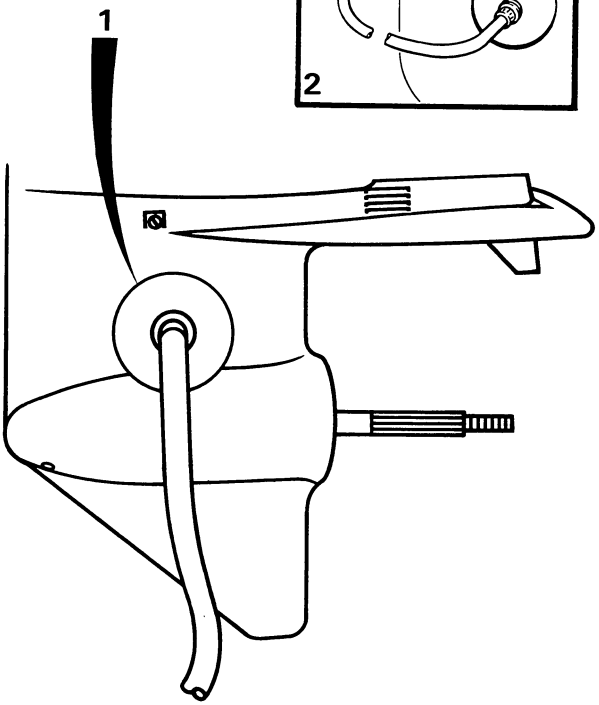
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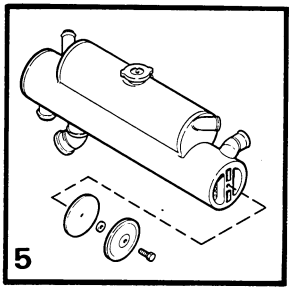
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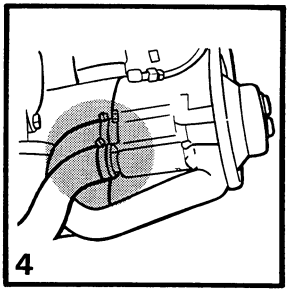
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MAINTENANCE
(Continued)

FLUSHING COOLING SYSTEM

⚠ WARNING
When flushing, be certain the area around propeller is clear, and no one is standing nearby. To avoid possible injury, remove propeller.

⚠ CAUTION
Do not run engine above 1500 RPM when flushing. Suction created by seawater pickup pump may collapse flushing hose, causing engine and/or drive unit to overheat.

⚠ CAUTION
Watch temperature gauge on dash to ensure that engine does not overheat.

To prevent silt and/or salt buildup in cooling system, flush with freshwater at specified intervals.

Seawater Cooled Models

If flushing cooling system with boat in water, raise drive unit to TRAILER position, install flushing attachment and lower drive unit to full down/in position.

1 Install Quicksilver flushing attachment (or equivalent) over water intake openings in gear housing.

2 Connect hose between flushing attachment and water tap.

3 With drive unit in normal operating position, partially open water tap (about 1/2 maximum). Place remote control in NEUTRAL, idle speed position and start engine. Operate engine at idle speed, in NEUTRAL, for about 10 minutes, or until discharge water. is clear. Stop engine, shut off water and remove flushing attachment.

Closed Cooled Models

4 Disconnect water inlet hose from aft end of seawater pickup pump. Using appropriate connector, connect hose between connector and water tap. Partially open water tap (about 1/2 maximum).

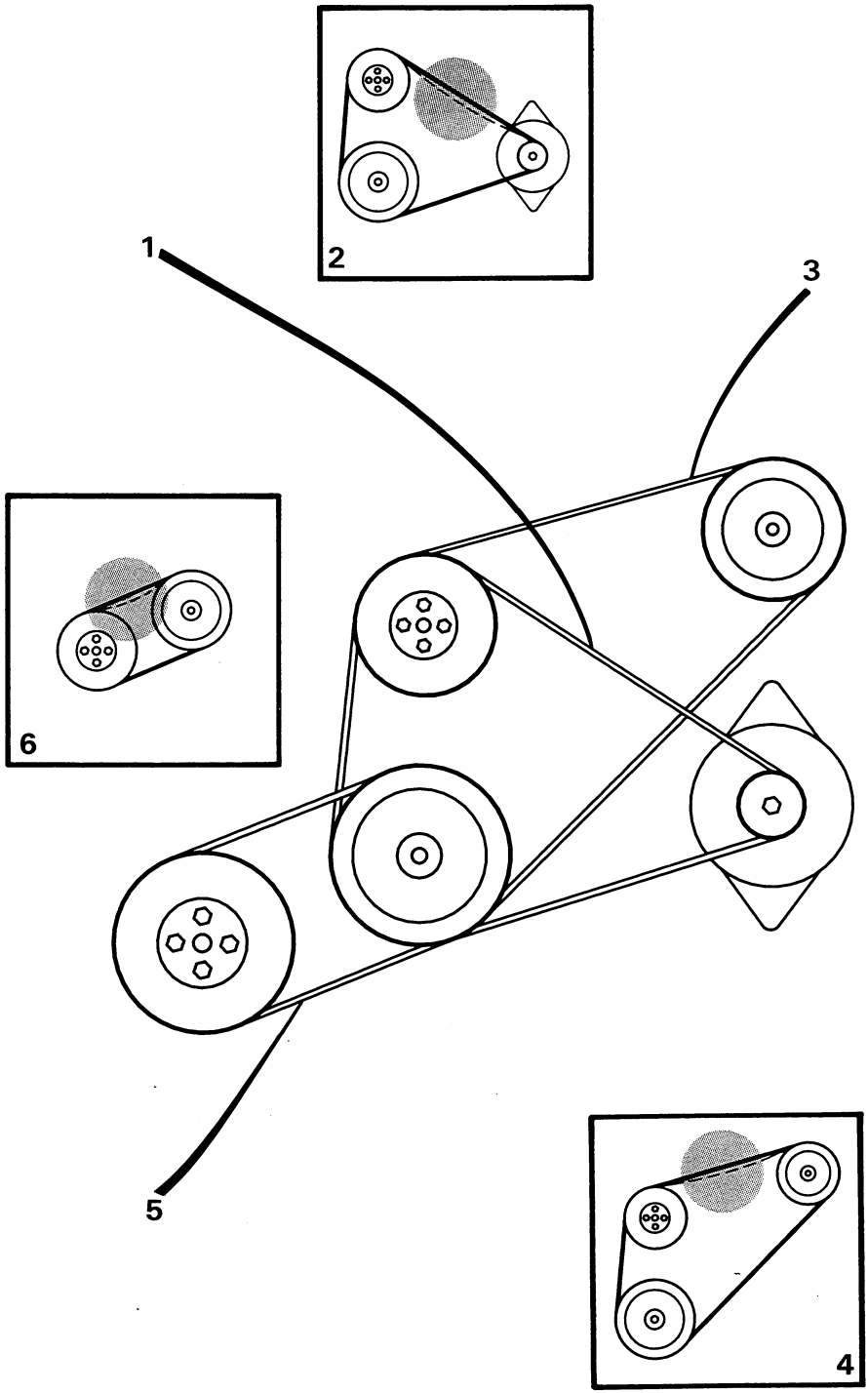
Place remote control in NEUTRAL, idle speed position and start engine. Operate engine at idle speed, in NEUTRAL, for about 10 minutes, or until discharge water is clear. Stop engine. Shut off water, remove flushing connector from pump inlet and reconnect water inlet hose. Tighten hose clamp securely.

Cleaning Seawater Section of Heat Exchanger - Closed Cooled Models Only

Seawater section of heat exchanger should be cleaned at least once a year or whenever decreased cooling efficiency is noticed.

5 Remove bolts securing end plates to each end of heat exchanger. Remove end plates, sealing washers and gaskets. Discard sealing washers and gaskets and clean gasket material from end plates and heat exchanger.

Clean water passages in heat exchanger by inserting a suitable size wire brush into each passage. Use compressed air to blow loose particles out. Apply Quicksilver Perfect Seal to both sides of new end plate gaskets. Assemble new gaskets, new sealing washers and end plates onto heat exchanger. Install bolts and tighten securely. Start engine and inspect cooling system for leaks.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MAINTENANCE
(Continued)

DRIVE BELTS

⚠ WARNING
Make sure engine is shut off and ignition key is removed before inspecting belts.

All drive belts must be periodically inspected for condition and tension.

Perform the following inspections of alternator drive belt, power steering pump drive belt (if so equipped) and seawater pickup pump drive belt (closed cooling models).

If any drive belts need replacement or tension needs adjustment, see your Authorized MerCruiser Dealer.

1 Alternator Drive Belt - Inspect drive belt for excessive wear or damage.

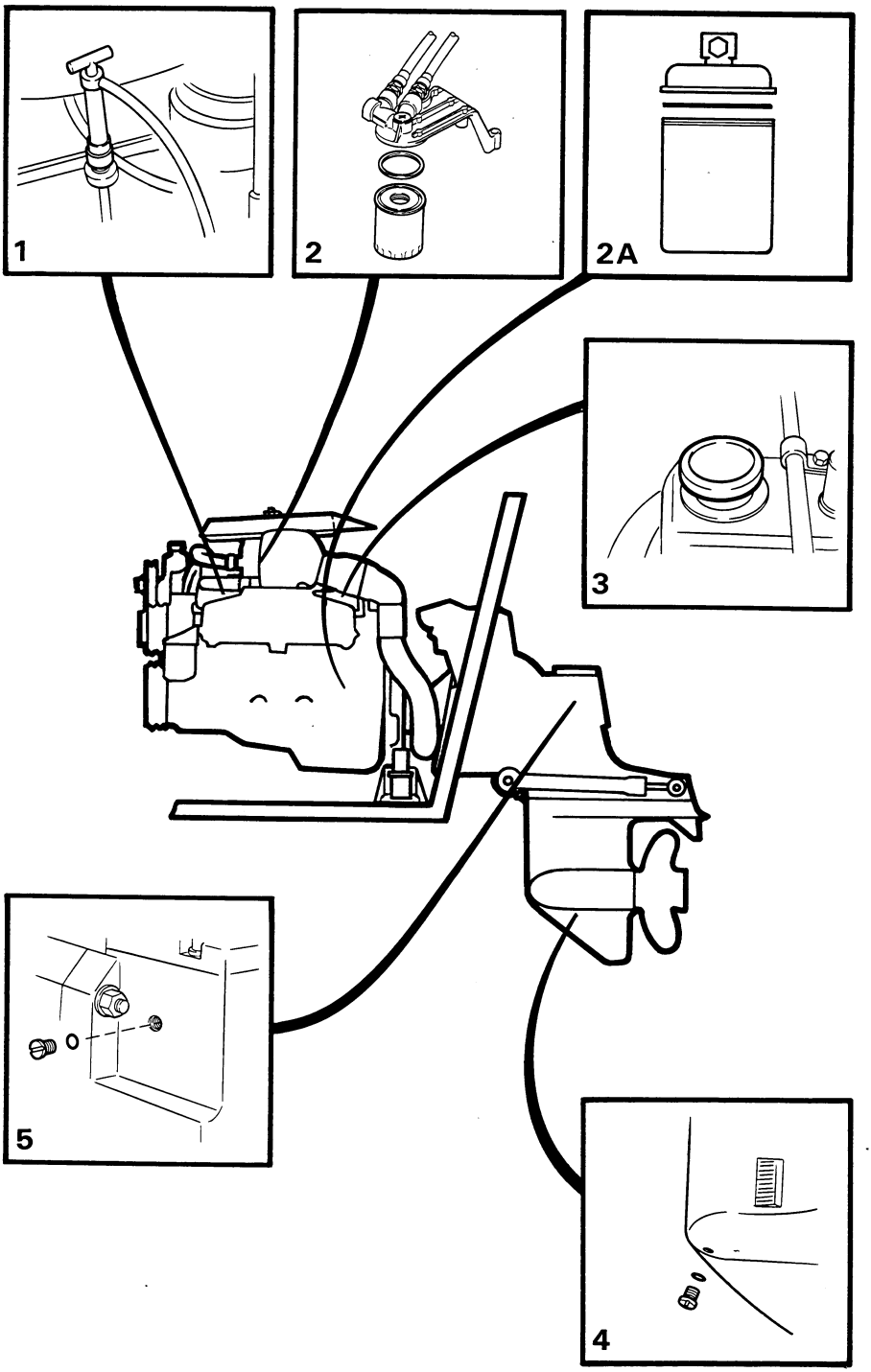
2 Check belt tension by depressing upper strand of belt at point shown. Belt should depress 1/2 in. (13 mm).

3 Power Steering Pump Drive Belt - Inspect drive belt for excessive wear or damage.

4 Check belt tension by depressing upper strand of belt at point shown. Belt should depress 1/4 in. (6mm).

5 Seawater Pickup Pump Drive Belt (Closed Cooled Models) - Inspect drive belt for excessive wear or damage.

6 Check belt tension by depressing upper strand of belt at point shown. Belt should depress 1/4 in (6mm).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MAINTENANCE
(Continued)

CHANGING FLUIDS

See MAINTENANCE CHART for lubricant change frequency. Lubricant should be changed before placing boat in storage.

Power Trim or Power Steering fluids do not require changing.

Coolant in closed cooling system should be changed at specified intervals by your Authorized MerCruiser Dealer.

Crankcase Oil and Filter

IMPORTANT: Change oil when engine is warm from operation. Warm oil flows more freely, carrying away more impurities. Use only recommended motor oil (see SPECIFICATIONS).

1 With engine at normal operating temperature, remove dipstick. Install Quicksilver Crankcase Oil Pump onto dipstick tube.

Insert hose end of crankcase oil pump into an appropriate container and, using pump handle, pump until crankcase is empty. Remove crankcase oil pump.

2 or **2A** Turn oil filter counterclockwise (to left); remove and discard old oil filter and old sealing ring.

Coat sealing ring on new filter with motor oil. Install new sealing ring and filter by turning clockwise (to right). Tighten filter securely. Do not overtighten.

3 Remove oil filler cap. Add correct type oil (see "SPECIFICATIONS," page 18) to bring level up to, but not over FULL mark on dipstick.

IMPORTANT: Always use dipstick to determine exactly how much oil is required.

Drive Unit Oil

IMPORTANT: Use only specified gear lubricant in drive unit. (See SPECIFICATIONS).

Place drive unit in full trim-limit position.

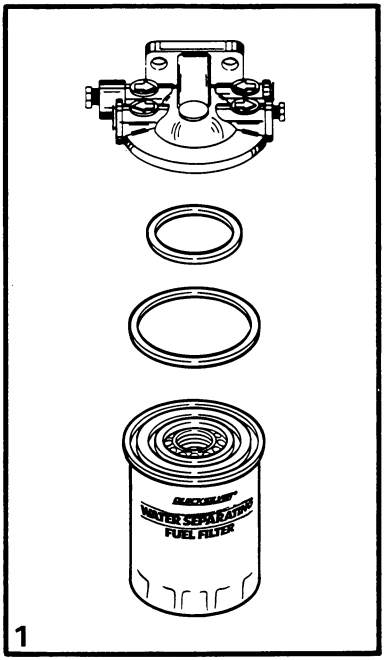
4 Remove OIL FILL/DRAIN screw and sealing washer.

5 Remove OIL VENT screw and sealing washer. Allow oil to drain completely.

IMPORTANT: If any water drained from OIL FILL/DRAIN hole, or if oil appears milky brown, drive unit is leaking and should be checked immediately by your Authorized MerCruiser Dealer.

Lower drive unit so anti-ventilation plate is level. Fill drive unit, through OIL FILL/DRAIN hole, with Quicksilver Gear Lube until an air-free stream of lubricant flows from OIL VENT hole (approximately 4 tubes). While holding tube in OIL FILL/DRAIN hole, install sealing washer and OIL VENT screw and tighten securely.

Remove tube from OIL FILL/DRAIN hole. Quickly install sealing washer and OIL FILL/DRAIN screw. Tighten securely. Recheck oil level after first use.



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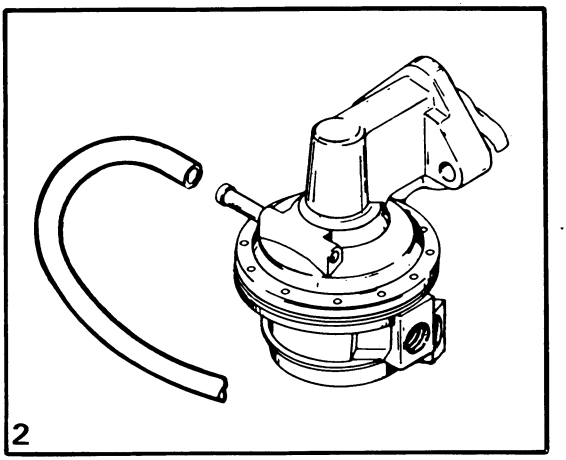
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MAINTENANCE
(Continued)

WATER SEPARATING FUEL FILTER (IF SO EQUIPPED)

WARNING
Be careful when changing water separating fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Be sure ignition key is OFF. Do not smoke or allow spark or open flame in area when changing fuel filter. Wipe up any spilled fuel immediately.

1 Remove water separating fuel filter (by turning counterclockwise) and sealing ring(s) from mounting bracket and discard.

Coat sealing rings on new filter with motor oil. Thread filter clockwise onto bracket and tighten securely by hand. Do not use a filter wrench.

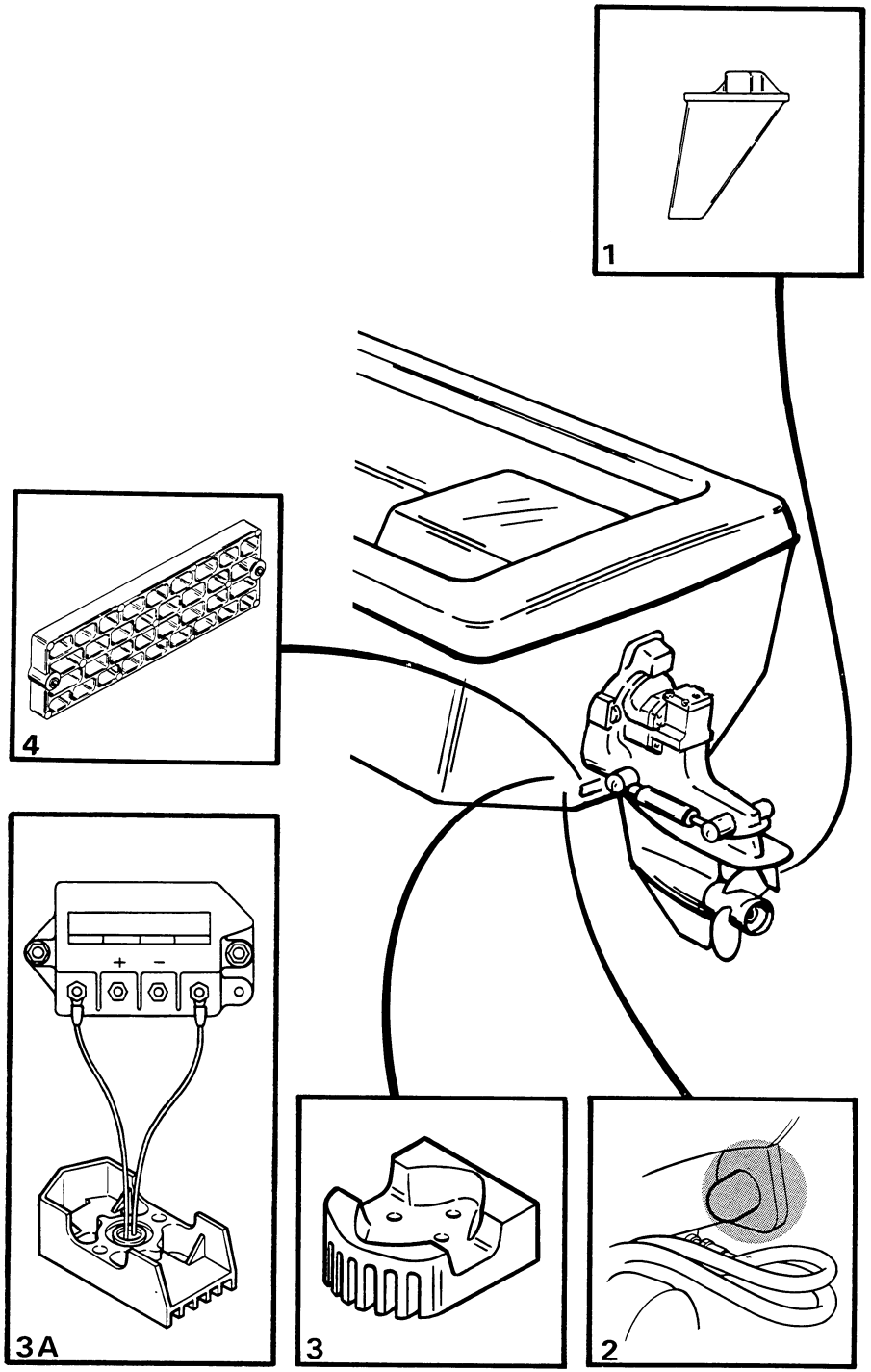
Start and run engine. Check filter connection for gasoline leaks. If leaks exist, recheck filter installation. If leaks continue, stop engine immediately and contact your Authorized MerCruiser Dealer.

WARNING
Make sure no leaks exist before closing engine hatch.

FUEL PUMP SIGHT TUBE INSPECTION

2 The engine fuel pump is equipped with a sight tube which gives visible evidence of a ruptured fuel pump diaphragm.

If fuel is visible in tube, fuel pump should be replaced by your Authorized MerCruiser Dealer immediately.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MAINTENANCE
(Continued)

CORROSION AND CORROSION PROTECTION

Whenever two or more dissimilar metals (like those found on the stern drive) are submerged in a conductive solution, such as saltwater, polluted water, or water with a high mineral content, a chemical reaction takes place causing electrical current to flow between metals. The electrical current flow causes the metal that is most chemically active, or anodic, to erode. This is known as galvanic corrosion and, if not controlled, it will in time cause the need for replacement of power package components exposed to water.

IMPORTANT: Replace zinc sacrificial anodes if eroded 50% or more.

In addition to the corrosion protection devices, the following steps should be taken to inhibit corrosion.

- Paint all exposed metal surfaces below water line on boat, transom assembly and drive unit (except drain holes, zinc anodes, MerCathode system, and items specified by boat manufacturer) with good quality marine paint.

IMPORTANT: If antifouling protection is required, Tri-Butyl-Tin-Adipate (TBTA) base antifouling paints are recommended on MerCruiser boating applications. In areas where Tri-Butyl-Tin-Adipate base paints are prohibited by law, copper base paints can be used on the boat hull and transom. Do not apply paint to the MerCruiser drive unit or transom assembly. In addition, care must be taken to avoid an electrical interconnection between the MerCruiser Product and the paint. Corrosion damage that results from the improper application of copper base paint will not be covered by the limited warranty.

IMPORTANT: Do not paint zinc anodes or MerCathode system.

- Spray power package components on inside of boat every 2-3 weeks with Quicksilver Corrosion Guard to protect finish from dulling and corrosion. External power package components may also be sprayed.
- All lubrication points (especially steering system, shift and throttle linkages) should be kept well lubricated.
- Flush cooling system periodically (preferably after each use).

1 Zinc Trim Tab - serves as a sacrificial anode. Remove plug from drive shaft housing to access attaching screw and insert 3/8" allen wrench. Unthread attaching screw and remove trim tab. **Do not remove screw.** Install new trim tab (Trailing edge of trim tab must be set straight back) and tighten screw securely. Install plug.

2 Zinc Heads - serve as sacrificial anodes. Unscrew anodic heads counterclockwise with pliers. Using new gaskets, install new anodic heads and tighten securely.

3 Zinc Block - is mounted to underside of gimbal housing and serves as a sacrificial anode. Remove two bolts to change block.

3A MerCathode System (if so equipped) - Electrode assembly replaces zinc block on bottom of gimbal housing. Also replace anodic bolt heads with plastic caps.

System should be tested to ensure adequate output.

Test should be made where boat is moored, using Quicksilver Reference Electrode and Test Meter. Contact your Authorized MerCruiser Dealer to arrange for this test.

4 Zinc Anode Kit (if so equipped) - Mounted to boat transom. Acts as a sacrificial anode. Replace as required.

MISCELLANEOUS MAINTENANCE

Battery

All lead acid batteries discharge when not in use. Recharge every 30 to 45 days, or when specific gravity drops below battery manufacturer's specifications.

Refer to specific instructions and warnings accompanying your battery. If this information is not available, observe the following precautions when handling a battery.

⚠ WARNING
Do not use jumper cables and a booster battery to start engine. Do not recharge a weak battery in the boat. Remove battery and recharge in a ventilated area away from fuel vapors, sparks or flames.

⚠ WARNING
Batteries contain acid which can cause severe burns—Avoid contact with skin, eyes and clothing. Batteries also produce hydrogen and oxygen gases when being charged. This explosive gas escapes fill/vent cell caps, and may form an explosive atmosphere around the battery for several hours after it has been charged; sparks or flames can ignite the gas and cause an explosion which may shatter the battery and could cause blindness or other serious injury.

Safety glasses and rubber gloves are recommended when handling batteries or filling with electrolyte. Hydrogen gases that escape from the battery during charging are explosive. When charging batteries, be sure battery compartment or area where batteries are located, is well-vented. Battery electrolyte is a corrosive acid and should be handled with care. If electrolyte is spilled or splashed on any part of the body, immediately flush the exposed area with liberal amounts of water and obtain medical aid as soon as possible.

BOTTOM OF BOAT

To maintain maximum speed, the following conditions of the boat bottom should be observed:

- Clean, free of barnacles and marine growth.
- Free of distortion, nearly flat where it contacts water.
- Straight and smooth, fore and aft.

Antifouling Paints

See Antifouling Paint recommendations and related information on previous page.

IMPORTANT: Refer to CORROSION AND CORROSION PROTECTION for additional information.

INSPECTION AND MAINTENANCE

Inspect power package often, and at regular intervals, to help maintain its top operating performance, and correct potential problems before they occur. The entire power package should be checked carefully, including all accessible engine parts.

Check for loose, damaged or missing parts, hoses and clamps; tighten or replace as required.

Check plug leads and electrical leads for damage.

Remove and inspect propeller. If badly nicked, bent or cracked, see your dealer.

Repair nicks and corrosion damage on power package exterior finish. Use Quicksilver spray paints - see your Authorized MerCruiser Dealer.

OUT OF SEASON STORAGE

POWER PACKAGE LAYUP

IMPORTANT: This service should be performed by an Authorized MerCruiser Dealer.

CAUTION
Refer to FLUSHING COOLING SYSTEM before proceeding.

- Fill fuel tank(s) with fresh gasoline (that does not contain alcohol) and a sufficient amount of Quicksilver Gasoline Stabilizer and Conditioner to treat gasoline. Follow instructions on container.

IMPORTANT: If boat is to be placed in storage (with fuel containing alcohol in fuel tanks), carburetors must be run dry at idle RPM. Fuel tanks should be drained completely and Quicksilver Gasoline Stabilizer and Conditioner added to any fuel remaining in the tank. Also, refer to FUEL REQUIREMENTS.

IMPORTANT: Before starting engine, a water source must be attached to the seawater intake openings in gear housing. Follow all warnings, and flushing attachments procedures stated, in "FLUSHING COOLING SYSTEM," on page 37.

- Run engine sufficiently to bring it up to normal operating temperature. Shut off engine and change oil and oil filter.

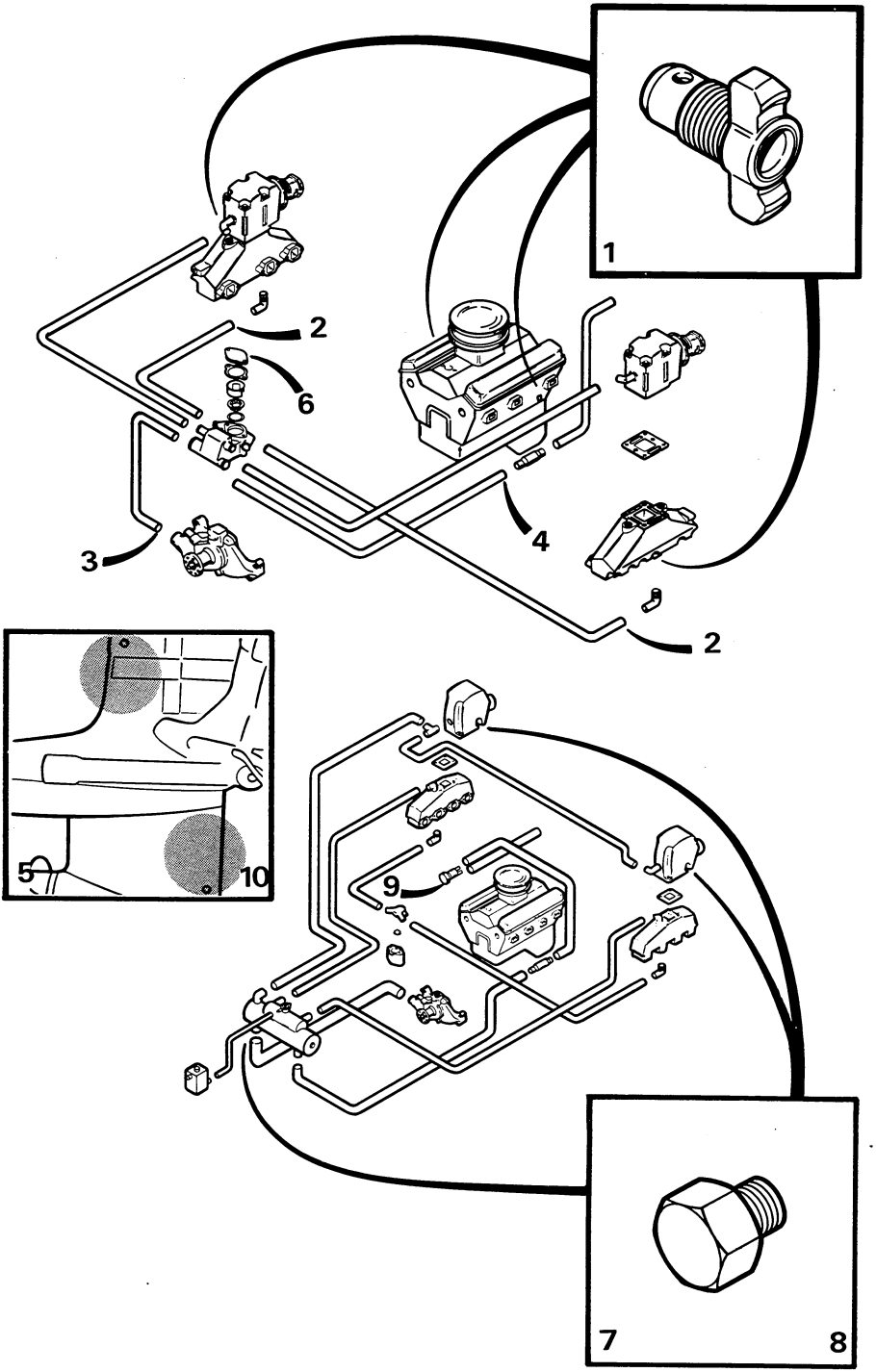
- Flush cooling system, following procedure on page 37.

WARNING
Be sure engine compartment is well-ventilated and no gasoline vapors are present during the following operation — to prevent a potential fire hazard.

- Remove flame arrestor and restart engine. While operating engine at fast idle (1000-1500 RPM), fog internal surfaces of engine by squirting approximately 8 ounces (227 grams) of Quicksilver Storage Seal (or, if not available, SAE 20W motor oil) into carburetor bores. Stall engine by squirting last 2 ounces (57 g) of Storage Seal (or oil) rapidly into carburetor. Turn ignition key to OFF position.

- Close fuel shutoff valve, if so equipped.

CAUTION
Stern drive unit should be stored in full "down" position. Universal Joint bellows may develop a "set" if unit is stored in raised position and may fail when unit is returned to service.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OUT OF SEASON STORAGE
(Continued)

DRAINING INSTRUCTIONS

⚠ CAUTION

If boat is to remain in water after draining, seawater inlet hose must be removed and plugged to prevent a siphoning action that may occur, allowing seawater to flow from the drain holes or removed hoses.

IMPORTANT: Observe the following information to ensure complete draining of cooling system.

- **Boat must be as level as possible.**
- **A wire should be inserted into all drain holes to ensure there are no obstructions in passages.**

Seawater Cooled Models

⚠ CAUTION

Seawater section of cooling system MUST BE COMPLETELY drained for winter storage, or immediately after cold weather use, if the possibility of freezing temperatures exist. Failure to comply may result in trapped water causing freeze and/or corrosion damage to engine.

1 Remove 4 petcocks.

Loosen hose clamps and remove the following hoses:

2 From exhaust manifolds.

3 From engine circulating pump.

4 From power steering fluid cooler.

5 Make sure drive shaft housing water drain holes and gear housing water drain hole are open.

NOTE: It may be necessary to lift or bend hoses to allow water to drain completely.

After cooling system has been drained completely, install petcocks, reconnect hoses and tighten all hose clamps securely.

Crank engine over, slightly, with starter motor, to purge any water trapped in seawater pickup pump. Do not allow engine to start.

6 For additional assurance against freezing and rust, remove thermostat cover and thermostat. Fill engine cooling system with a 50-50 mixture of antifreeze and tap water. Using new gasket, reinstall thermostat and cover. Tighten cover bolts securely.

Perform all checks, inspections, lubrication and fluid changes outlined in MAINTENANCE CHART under AT LEAST ONCE A YEAR.

Closed Cooled Models Only

IMPORTANT: Closed cooling section must be kept filled year-round with recommended coolant. If engine will be exposed to freezing temperatures, make sure closed cooling section is filled with an ethylene glycol antifreeze and water solution properly mixed to protect engine to lowest temperature to which it will be exposed.

IMPORTANT: Drain seawater section of closed cooling system only.

7 Remove drain plugs from both exhaust elbows.

8 Remove drain plug from heat exchanger.

9 Remove hoses from seawater pickup pump inlet and power steering fluid cooler outlet.

10 Make sure drive shaft housing water drain holes and gear housing water drain hole are open.

After seawater section of cooling system has been drained completely, coat threads of drain plugs with Perfect Seal and reinstall.

Crank engine over slightly, with starter motor, to purge any water trapped in seawater pickup pump. DO NOT allow engine to start.

After draining, perform all checks, inspections, lubrication and fluid changes outlined in MAINTENANCE CHART under AT LEAST ONCE A YEAR.

OUT OF SEASON STORAGE
(Continued)

BATTERY WINTER STORAGE

Follow battery manufacturer's instructions for storage. If not available, use the following instructions:

- Remove battery.
- Remove grease and dirt from top surface.
- Cover plates with distilled water to manufacturer's specifications.
- Grease terminal bolts.
- Store battery in cool, dry place. Do not store on a concrete surface. Place on a dry wood board or thick plastic base.
- Every 30 to 45 days, check water level and recharge battery according to manufacturer's specifications. Do not fast charge.

CAUTION
A discharged battery can be damaged by freezing.

- When replacing battery in service, remove excess grease from terminals, recharge as necessary and reinstall in boat.

Contact your dealer or local automotive garage for this service if you cannot perform it.

POWER PACKAGE RECOMMISSIONING

WARNING
To prevent possible injury or damage to equipment, do not install battery until all maintenance has been performed on engine.

- Check that all cooling system hoses are connected properly and hose clamps are tight.

CAUTION
When installing battery, be sure to connect NEGATIVE (-) battery cable to NEGATIVE (-) battery terminal and POSITIVE (+) battery cable to POSITIVE (+) battery terminal. If battery cables are reversed, electrical system damage will result.

- Install fully-charged battery. Clean battery cable clamps and terminals and reconnect cables. Tighten clamps securely. Coat terminals with a battery terminal anti-corrosion spray to help retard corrosion.
- Perform all checks in OPERATION CHART in the BEFORE STARTING column.

CAUTION
Refer to FLUSHING COOLING SYSTEM before starting engine.

- Start engine and closely observe instrumentation to make sure that all systems are functioning correctly.
- Carefully inspect engine for fuel, oil, fluid, water and exhaust leaks.
- Check steering system, shift and throttle control for proper operation.
- Check fuel pump sight tube for evidence of fuel (indicating a ruptured fuel pump diaphragm).

TROUBLESHOOTING

STARTER MOTOR WILL NOT CRANK ENGINE, OR CRANKS IT VERY SLOWLY

Possible Cause	Remedy
• Battery switch turned off	• Turn switch on.
• Remote control not in neutral position	• Position control lever in neutral.
• Open circuit breaker or blown fuse	• Check and reset circuit breaker or replace fuse.
• Loose or dirty electrical connections or damaged wiring	• Check all electrical connections and wires (especially battery cables). Clean and tighten faulty connection.
• Bad battery	• Test and replace if bad.

ENGINE WILL NOT START, OR IS HARD TO START

Possible Cause	Remedy
• Improper starting procedure	• Read starting procedure.
• Empty fuel tank or fuel shutoff valve closed	• Fill tank or open valve.
• Faulty fuel pump	• Check sight tube for fuel. Have Authorized MerCruiser Dealer replace pump, if fuel is present.
• Choke not operating properly	• Check choke linkages for freedom of movement.
• Engine flooded	• Do not attempt to start engine for at least 5 minutes. Refer to STARTING, SHIFTING AND STOPPING.
• Faulty ignition system component	• Service ignition system.
• Clogged fuel filters	• Replace filters.
• Stale or contaminated fuel	• If contaminated, drain tank. Fill with fresh fuel.
• Fuel line or tank vent line kinked or clogged	• Replace kinked lines or blow out lines with compressed air to remove obstruction.

TROUBLESHOOTING
(Continued)

ENGINE RUNS ROUGH, MISSES AND/OR BACKFIRES

Possible Cause	Remedy
• Choke not operating properly	• Check choke linkages for binding or an obstruction.
• Idle speed too low	• Check idle speed and adjust, if necessary.
• Faulty ignition system component	• Service ignition system.
• Clogged fuel filters	• Replace filters.
• Stale or contaminated fuel	• If contaminated, drain tank. Fill with fresh fuel.
• Kinked or clogged fuel line or fuel tank vent line	• Replace kinked line or blow out line with compressed air to remove obstruction.
• Flame arrestor plugged with foreign material	• Clean flame arrestor.

POOR PERFORMANCE

Possible Cause	Remedy
• Throttle not fully open	• Inspect throttle cable and linkages for operation.
• Damaged or improper propeller	• Replace.
• Excessive bilge water	• Drain and check for cause of entry.
• Boat overloaded or load improperly distributed	• Reduce load or redistribute load more evenly.
• Boat bottom fouled or damaged	• Clean or repair as necessary.
• Flame arrestor dirty	• Clean flame arrestor.

TROUBLESHOOTING
(Continued)

EXCESSIVE ENGINE TEMPERATURE

Possible Cause	Remedy
• Seacock closed	• Open.
• Drive belt loose or in poor condition	• Replace and/or adjust belt.
• Seawater pickups obstructed	• Remove obstruction.
• Faulty thermostat	• Replace.
•* Coolant level low in closed cooling section	•* Check for cause of low coolant level and repair. Fill system with proper coolant solution.
•* Heat exchanger cores plugged with foreign material	•* Clean heat exchanger.
•* Loss of pressure in closed cooling section	•* Check for leaks. Clean, inspect and test pressure cap.
•* Closed cooling section dirty	•* Clean.
• Faulty seawater pickup pump	• Repair.
• Seawater discharge restricted or plugged	• Clean exhaust elbows.

*Closed Cooled Models Only

INSUFFICIENT ENGINE TEMPERATURE

Possible Cause	Remedy
• Faulty thermostat	• Replace.

TROUBLESHOOTING
(Continued)

LOW ENGINE OIL PRESSURE

Possible Cause	Remedy
• Insufficient oil in crankcase	• Check and add oil.
• Excessive oil in crankcase (causing it to become aerated)	• Check and remove required amount of oil. Check for cause of excessive oil (improper filling, bad fuel pump, etc.).
• Diluted or improper viscosity oil	• Change oil and oil filter, using correct grade and viscosity oil. Determine cause for dilution (excessive idling, faulty fuel pump, etc.).

BATTERY WILL NOT COME UP ON CHARGE

Possible Cause	Remedy
• Excessive current draw from battery	• Turn off non-essential accessories.
• Loose or dirty electrical connections or damaged wiring	• Check all associated electrical connections and wires (especially battery cables). Clean and tighten faulty connections. Repair or replace damaged wiring.
• Alternator drive belt loose or in poor condition	• Replace and/or adjust.
• Unacceptable battery condition	• Test battery.

REMOTE CONTROL OPERATES HARD, BINDS, HAS EXCESSIVE FREE-PLAY OR MAKES UNUSUAL SOUNDS

Possible Cause	Remedy
• Insufficient lubrication on shift and throttle linkage fasteners	• Lubricate.
• Loose or missing shift and throttle linkage fasteners	• Check all linkages. If any are loose or missing, see Authorized MerCruiser Dealer immediately.
• Obstruction in shift or throttle linkages	• Remove obstruction.
• Shift or throttle cable kinked	• Straighten cable, or have dealer replace cable if damaged beyond repair.

TROUBLESHOOTING
(Continued)

STEERING WHEEL TURNS HARD OR JERKY

Possible Cause	Remedy
•* Low power steering pump fluid level	•* Refill system with fluid.
•* Drive belt loose or in poor condition	•* Replace and/or adjust.
• Insufficient lubrication on steering system components	• Lubricate.
• Insufficient lubrication on transom gimbal housing assembly swivel shaft and pin	• Lubricate.
• Loose or missing steering fasteners or parts	• Check all parts and fasteners. If any are loose or missing, see Authorized MerCruiser Dealer immediately.
•* Contaminated power steering fluid	•* Drain and replace.

*Power Steering Models

POWER TRIM DOES NOT OPERATE (ELECTRIC MOTOR DOES NOT RUN)

Possible Cause	Remedy
• Blown fuse	• Replace fuse.
• Loose or dirty electrical connections or damaged wiring	• Check all associated electrical connections and wires (especially battery cables). Clean and tighten faulty connection. Repair or replace wiring.

POWER TRIM DOES NOT OPERATE (ELECTRIC MOTOR RUNS BUT DRIVE UNIT DOES NOT MOVE)

Possible Cause	Remedy
• Pump oil level low	• Fill pump with oil.
• Drive unit binding in gimbal ring	• Check for obstruction.