

Maintenance interval chart

Use the following chart as a guideline for general maintenance.

Adjust the maintenance intervals according to the operating conditions of the outboard motor.

Item	Remarks	Initial		Every		Refer to page
		10 hours (1 month)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
Anodes (external)	Check/replace		○	○		3-15
Battery	Check/charge	○				3-16
Cooling water passages	Clean		○	○		3-8
Top cowling	Check				○	3-3
Fuel filter (can be disassembled)	Check/replace	○	○	○		3-3
Fuel system	Check	○	○	○		3-3
Gear oil	Change	○		○		3-14
Lubrication points	Lubricate			○		3-16
Engine idle speed (EFI models)	Check/adjust				○	3-8
PCV (Pressure Control Valve)	Check				○	5-37
Power trim and tilt unit	Check				○	3-13
Propeller and cotter pin	Check/replace		○	○		3-15
Shift link/shift cable	Check/adjust				○	3-11
Thermostat	Check				○	3-7
Throttle link/throttle cable/ throttle pick-up timing	Check/adjust				○	3-8, 3-10
Water pump	Check				○	6-9, 6-36
Engine oil	Check/change	○		○		3-4
Oil filter	Change				○	3-5
Spark plugs	Clean/adjust/ replace	○			○	3-6
Timing belt	Check/replace			○	○	3-6, 5-16

NOTE:

When operating in salt water, turbid or muddy water, the engine should be flushed with clean water after each use.

Item	Remarks	Every			Refer to page
		500 hours (2.5 years)	1,000 hours (5 years)	2,000 hours (10 years)	
Timing belt	Replace		○		5-16
Valve clearance (DOHC)	Check/adjust	○			5-12
Anodes (internal)	Check/replace		○		—
Balancer	Replace			○	—

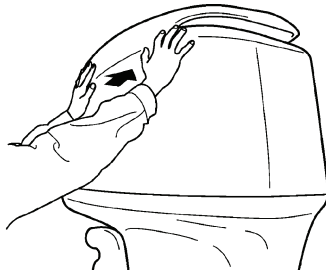
NOTE:

When using lead or high-sulfur gasoline, checking valve clearance may be required more frequently than every 500 hours.

Top cowling

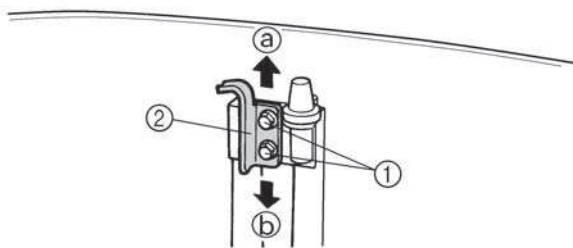
Checking the top cowling

1. Check the fitting by pushing the cowling with both hands. Adjust if necessary.



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2. Loosen the bolts ①.
3. Move the hook ② up or down slightly to adjust its position.

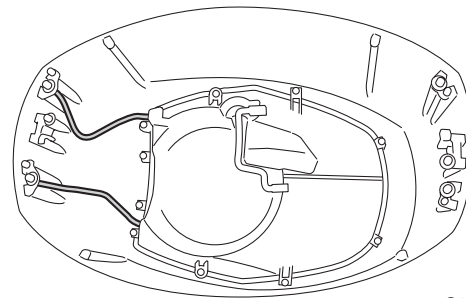


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NOTE:

- To loosen the fitting, move the hook in direction ①.
- To tighten the fitting, move the hook in direction ②.

4. Tighten the bolts.
5. Check the fitting again and, if necessary, repeat steps 2–4.
6. Check the top cowling hose for cracks or damage. Replace if necessary.

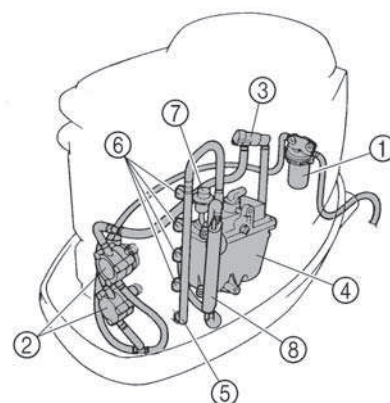


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Fuel system

Checking the fuel joint and fuel hoses (fuel joint-to-fuel injector)

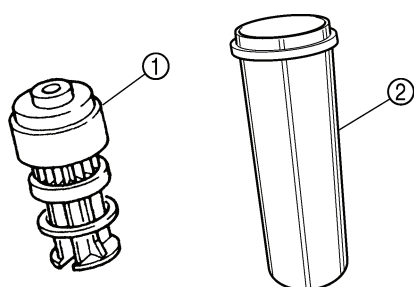
1. Remove the spark plug wire cover.
2. Check the low-pressure fuel hose connections and fuel joints for leaks. Replace if necessary. Also, check the fuel filter ①, fuel pumps ②, and fuel filter ③ for leaks or deterioration. Replace if necessary.
3. Check the high-pressure fuel hose connections for leaks. Replace if necessary. Also, check the vapor separator ④, fuel rail ⑤, fuel injectors ⑥, pressure regulator ⑦, and fuel cooler ⑧ for leaks or deterioration. Replace if necessary.



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Checking the fuel filter

1. Check the fuel filter element ① for dirt and residue and check the fuel filter cup ② for foreign substances and cracks. Clean the cup with straight gasoline and replace the element if necessary.



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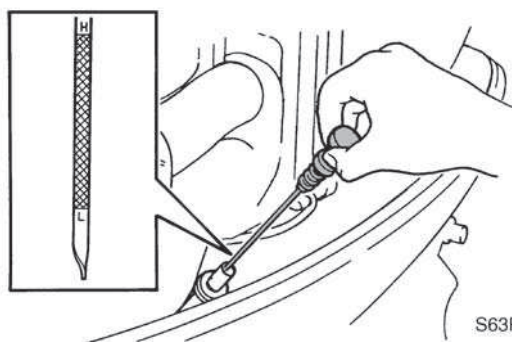
NOTE:

Be sure not to spill any fuel when removing the fuel filter cup.

Power unit

Checking the engine oil

1. Place the outboard motor in an upright position.
2. Remove the engine oil dipstick, wipe it clean, and then insert it back into the oil filler hole.
3. Remove the dipstick again to check the oil level and to check the oil for discoloration and its viscosity.



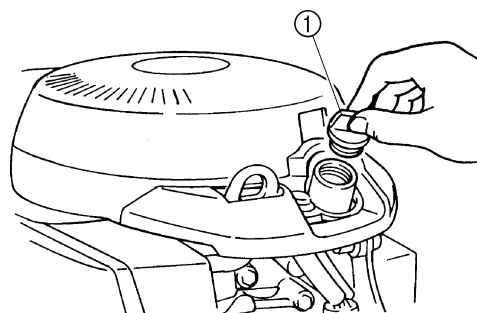
S63P3050

NOTE:

- Change the oil if it appears milky or dirty.
- If the engine oil is above the maximum level mark (H), extract sufficient oil using an oil changer or drain it until the level is between (H) and (L).
- If the engine oil is below the minimum level mark (L), add sufficient oil until the level is between (H) and (L).

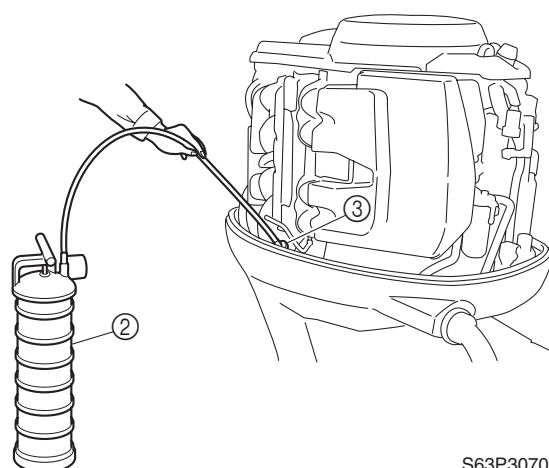
Changing the engine oil using an oil changer

1. Start the engine, warm it up, and then turn it off.
2. Remove the engine oil dipstick and oil filler cap (1).



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3. Insert the tube of the oil changer (2) into the dipstick guide (3).



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4. Operate the oil changer to extract the oil.

NOTE:

Be sure to clean up any oil spills.

5. Pour the specified amount of the recommended engine oil into the oil filler hole.



Recommended engine oil:

4-stroke motor oil

API: SE, SF, SG, SH, or SJ

SAE: 10W-30 or 10W-40

Oil quantity:

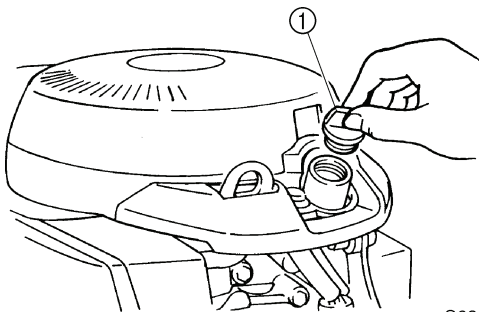
Without oil filter replacement:

5.2 L (5.5 US qt, 4.6 Imp qt)

6. Install the oil filler cap and dipstick, and then start the engine and warm it up for 5 minutes.
7. Turn the engine off, and then check the oil level and correct it if necessary.

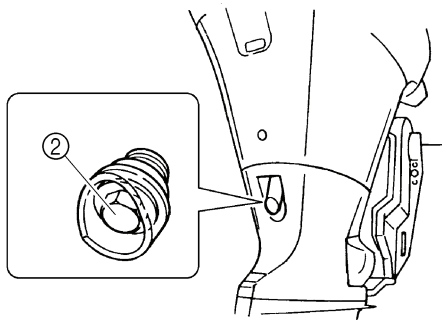
Changing the engine oil by draining it

1. Start the engine, warm it up, and then turn it off.
2. Remove the engine oil dipstick and oil filler cap ①.



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3. Place a drain pan under the drain hole, and then remove the drain bolt ② and let the oil drain completely.



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NOTE:

Be sure to clean up any oil spills.

4. Install the drain bolt, and then tighten it to the specified torque.



Drain bolt:
27 N·m (2.7 kgf·m, 20.0 ft·lb)

5. Pour the specified amount of the recommended engine oil into the oil filler hole.



Recommended engine oil:

4-stroke motor oil

API: SE, SF, SG, SH, or SJ

SAE: 10W-30 or 10W-40

Oil quantity:

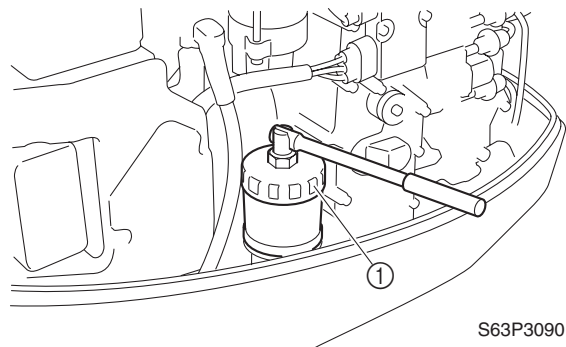
Without oil filter replacement:

5.2 L (5.5 US qt, 4.6 Imp qt)

6. Install the oil filler cap and dipstick, and then start the engine and warm it up for 5 minutes.
7. Turn the engine off, and then check the oil level and correct it if necessary.

Replacing the oil filter

1. Extract the engine oil with an oil changer or drain it.
2. Place a rag under the oil filter, and then remove the oil filter using a 72.5 mm (2.9 in) oil filter wrench.



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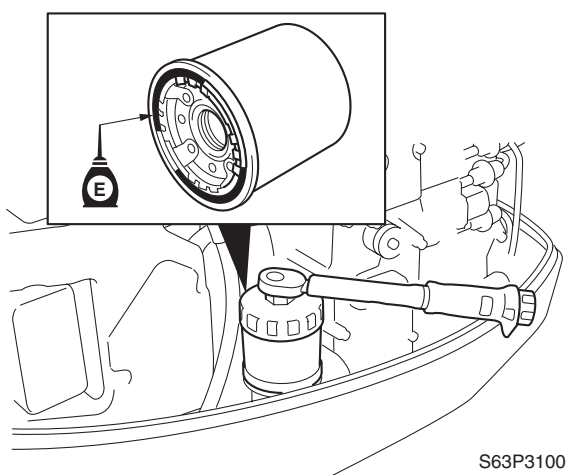
NOTE:

- Wait more than 5 minutes after turning the engine off to replace the oil filter.
- Be sure to clean up any oil spills.



Oil filter wrench ①:
(commercially available)

3. Apply a thin coat of engine oil to the O-ring of the new oil filter.
4. Install the oil filter, and then tighten it to the specified torque using a 72.5 mm (2.9 in) oil filter wrench.



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Oil filter:
18 N·m (1.8 kgf·m, 13.3 ft·lb)

5. Pour the specified amount of the recommended engine oil into the oil filler hole.

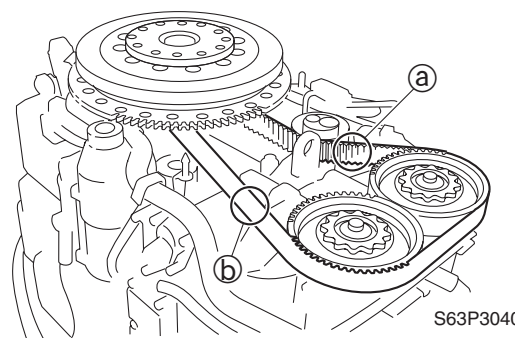


Recommended engine oil:
4-stroke motor oil
API: SE, SF, SG, SH, or SJ
SAE: 10W-30 or 10W-40
Oil quantity:
With oil filter replacement:
5.4 L (5.7 US qt, 4.8 Imp qt)

6. Install the oil filler cap and dipstick, and then start the engine and warm it up for 5 minutes.
7. Turn the engine off, and then check the oil level and correct it if necessary.

Checking the timing belt

1. Remove the flywheel magnet cover.
2. While turning the flywheel magnet clockwise, check the interior (a) and the exterior (b) of the timing belt for cracks, damage, or wear. Replace if necessary.
3. Turn the crankshaft clockwise two turns to take up slack in the timing belt.



Replacing the timing belt

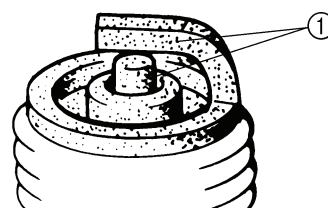
NOTE: _____
For replacement procedures, see Chapter 5, "Replacing the timing belt."

Checking the valve clearance

NOTE: _____
For checking procedures, see Chapter 5, "Checking the valve clearance."

Checking the spark plugs

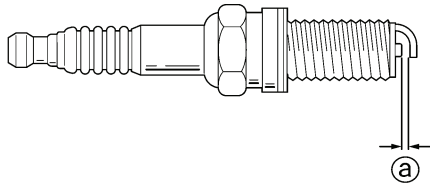
1. Disconnect the spark plug wires, and then remove the spark plugs.
2. Clean the electrodes (1) with a spark plug cleaner or wire brush. Replace the spark plug if necessary.



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3. Check the electrodes for erosion and excessive carbon or other deposits, and the gasket for damage. Replace the spark plug if necessary.

4. Check the spark plug gap ①. Adjust if out of specification.



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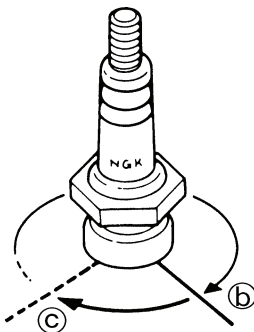
Specified spark plug:

LFR5A-11 (NGK)

Spark plug gap ①:

1.0–1.1 mm (0.039–0.043 in)

5. Install the spark plugs, tighten them finger tight ②, then to the specified torque using a spark plug wrench ③.



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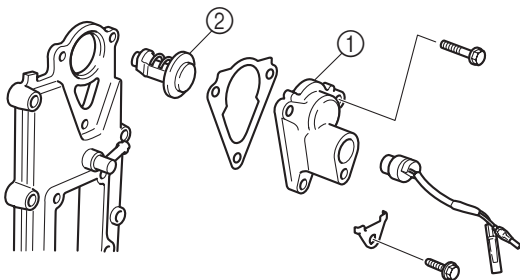


Spark plug:

25 N·m (2.5 kgf·m, 18.4 ft·lb)

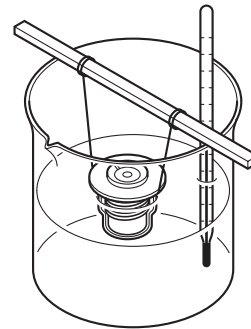
Checking the thermostat

1. Remove the flywheel magnet cover.
2. Remove the cover ① and thermostat ②.



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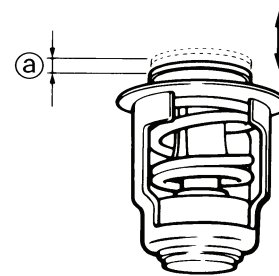
3. Suspend the thermostat in a container of water.



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4. Place a thermometer in the water and slowly heat the water.

5. Check the thermostat valve opening at the specified water temperatures. Replace if out of specification.



S69J5E50

Water temperature	Valve lift ①
58–62 °C (136–144 °F)	0.05 mm (0.0020 in) (valve begins to lift)
above 70 °C (158 °F)	more than 4.3 mm (0.17 in)

6. Install the thermostat and cover, and then tighten the cover bolts to the specified torques in two stages.



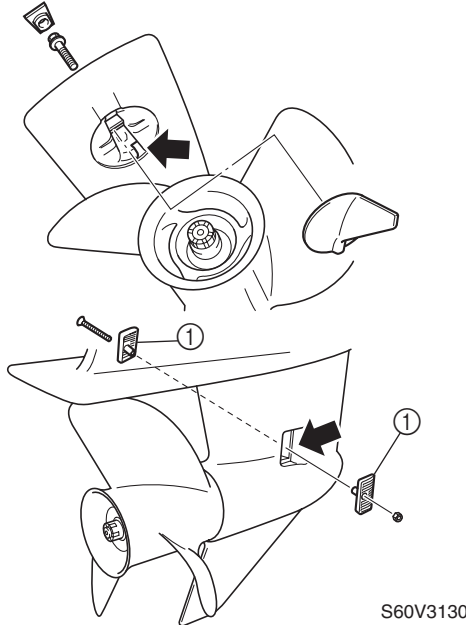
Thermostat cover bolt:

1st: 6 N·m (0.6 kgf·m, 4.4 ft·lb)

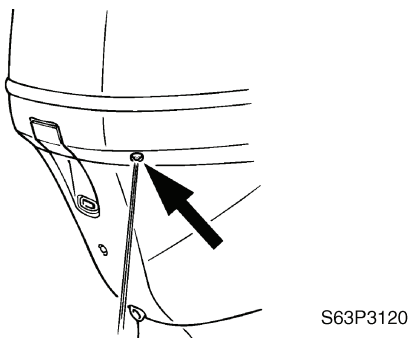
2nd: 12 N·m (1.2 kgf·m, 8.9 ft·lb)

Checking the cooling water passage

1. Check the cooling water inlet cover ① and cooling water inlet for clogs. Clean if necessary.



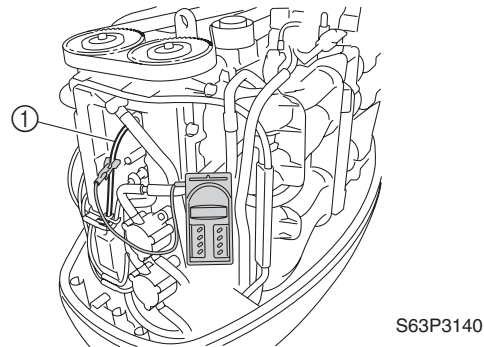
2. Place the lower unit in water, and then start the engine.
3. Check for water flow at the cooling water pilot hole. If there is no water flow, check the cooling water passage inside the out-board motor.



Control system

Checking the engine idle speed

1. Start the engine and warm it up for 5 minutes.
2. Attach the special service tool to spark plug wire #1 ①, and then check the engine idle speed.



Digital tachometer: YU-39951-B



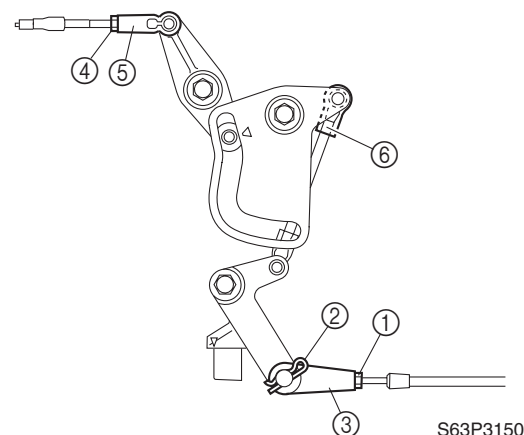
Engine idle speed: 700 ± 50 r/min

Adjusting the throttle link and throttle cable

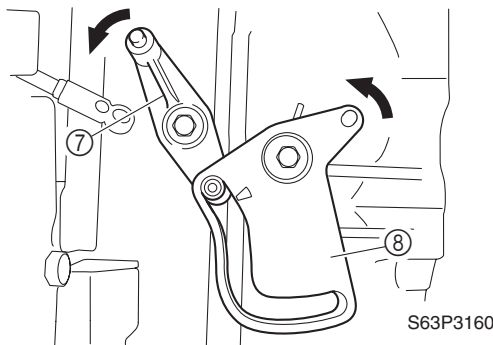
NOTE:

- Be sure to synchronize the throttle valves before adjusting the throttle cable.
- For synchronizing procedures, see Chapter 4, "Synchronizing the throttle valves."

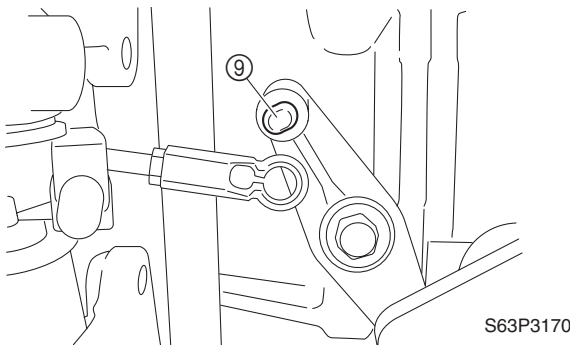
1. Remove the intake silencer.
2. Loosen the locknut ①, remove the clip ②, and then disconnect the throttle cable joint ③.
3. Loosen the locknut ④, and then disconnect the throttle link rod joint ⑤ and the link rod joint ⑥.



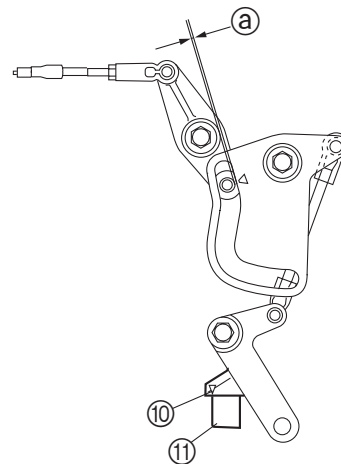
4. Turn throttle lever 1 ⑦ and the throttle cam ⑧ counterclockwise so that they are in the positions shown in the illustration.



5. Check that the throttle valves are fully closed, and then adjust the throttle link rod joint to align its hole with the ball joint ⑨ on throttle lever 1.

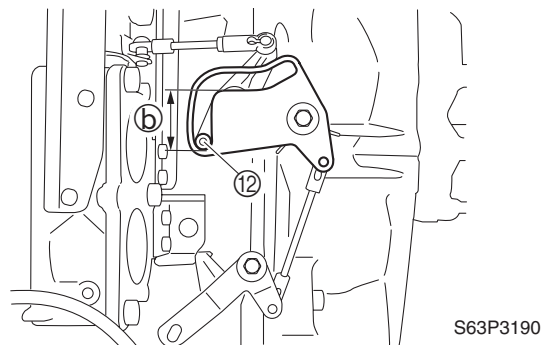


6. Connect the throttle link rod joint ⑤, and then tighten the locknut ④.
7. Connect the link rod joint ⑥.
8. Contact the stopper ⑩ on the throttle lever 2 to the fully closed stopper ⑪ on the cylinder block and check for clearance ③ between the throttle cam roller and the throttle cam.



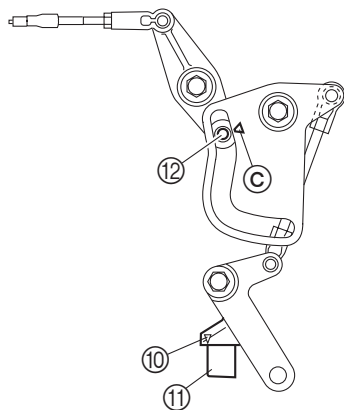
NOTE: _____
If there is no clearance, loosen the locknut ④ and the throttle link rod joint one turn, and then repeat steps 6 and 8.

9. Operate throttle lever 2 to check that the throttle valves fully close and fully open.



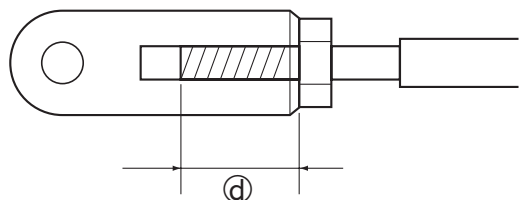
NOTE: _____
The throttle valves are fully open when the throttle cam roller ⑫ is within the range ③ shown in the illustration.

10. Contact the stopper ⑩ on the throttle lever 2 to the fully closed stopper ⑪ on the cylinder block and check that throttle cam roller ⑫ is aligned with the alignment mark ③.



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11. Adjust the position of the throttle cable joint until its hole is aligned with the set pin on throttle lever 2.



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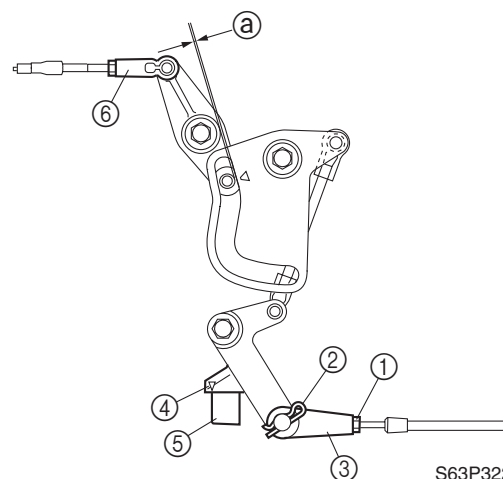
CAUTION:

The throttle cable joint must be screwed in a minimum of 8.0 mm (0.31 in) ④.

12. Connect the cable joint, install the clip, and then tighten the locknut.
13. Check the throttle cable for smooth operation and, if necessary, repeat steps 1–12.

Adjusting the throttle link and throttle cable operation (using a thickness gauge)

1. Remove the intake silencer.
2. Loosen the locknut ①, remove the clip ②, and then disconnect the throttle cable joint ③.
3. Contact the stopper ④ on the throttle lever 2 to the fully closed stopper ⑤ on the cylinder block and adjust the throttle link rod joint ⑥ so that the specified clearance ⑧ between the throttle cam roller and the throttle cam is obtained.

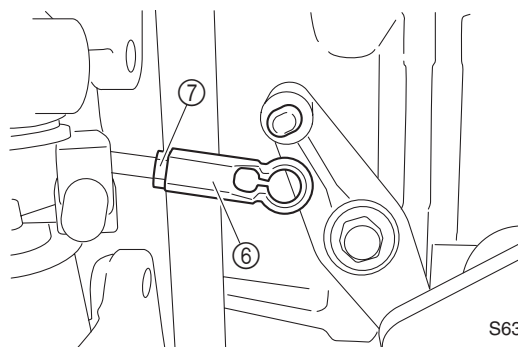


S63P3220



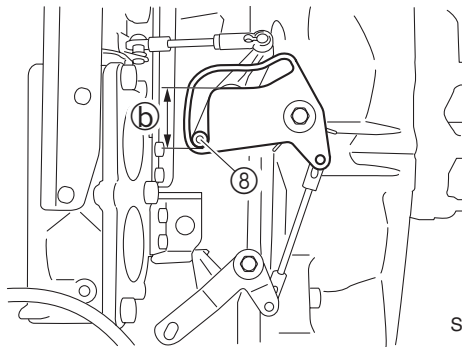
Clearance ⑧: 0.5 mm (0.02 in)

4. Connect the throttle link rod joint ⑥, and then tighten the locknut ⑦.



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5. Operate throttle lever 2 to check that the throttle valves fully close and fully open.

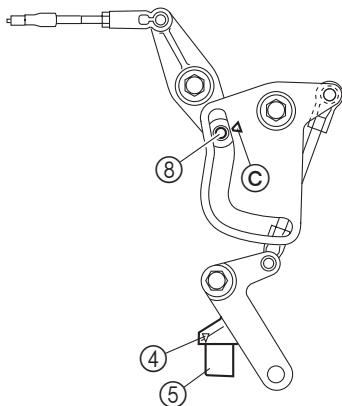


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NOTE:

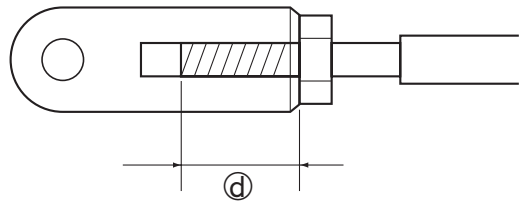
The throttle valves are fully open when the throttle cam roller ⑧ is within the range ⑥ shown in the illustration.

6. Contact the stopper ④ on the throttle lever 2 to the fully closed stopper ⑤ on the cylinder block and check that throttle cam roller ⑧ is aligned with the alignment mark ③.



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7. Adjust the position of the throttle cable joint until its hole is aligned with the set pin on throttle lever 2.



S63P3210

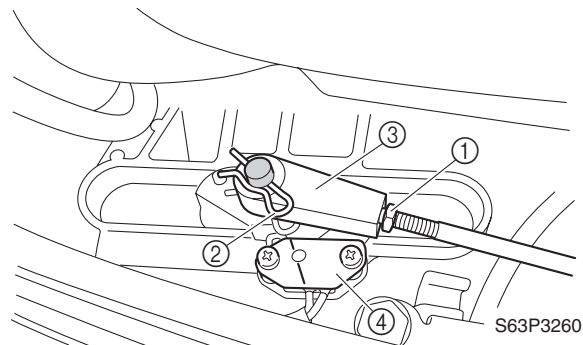
CAUTION:

The throttle cable joint must be screwed in a minimum of 8.0 mm (0.31 in) ①.

8. Connect the cable joint, install the clip, and then tighten the locknut.
9. Check the throttle cable for smooth operation and, if necessary, repeat steps 1–8.

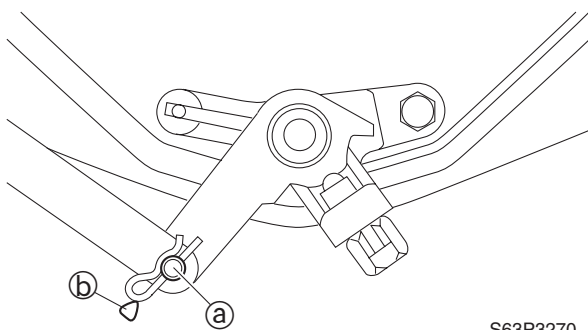
Checking the gear shift operation

1. Check that the gear shift operates smoothly when shifting it from neutral to forward or reverse. Adjust the shift cable length if necessary.
2. Set the gear shift to the neutral position.
3. Loosen the locknut ①, remove the clip ②, and then disconnect the shift cable joint ③.



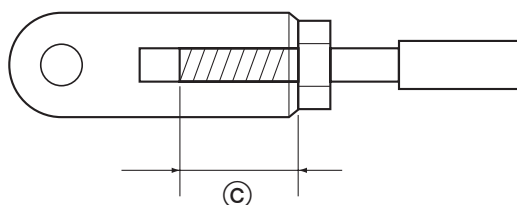
S63P3260

4. Adjust the position of the shift lever until the pin on the lever is aligned with the line on the shift position switch plate ④.
5. Align the center of the set pin ① with the alignment mark ② on the bottom cowl.



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6. Adjust the position of the shift cable joint until its hole is aligned with the set pin.



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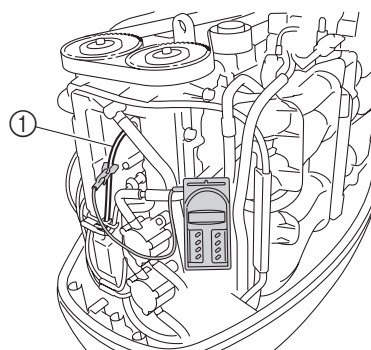
CAUTION:

The shift cable joint must be screwed in a minimum of 8.0 mm (0.31 in) (c).

7. Connect the cable joint, install the clip, and then tighten the locknut.
8. Check the gear shift for smooth operation and, if necessary, repeat steps 3–7.

Checking the ignition timing

1. Start the engine and warm it up for 5 minutes.
2. Attach the special service tool to spark plug wire #1 ①, and then check the engine idle speed.

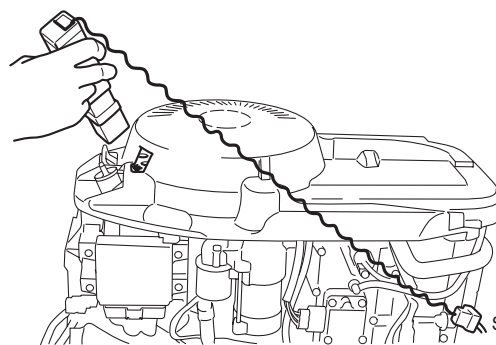


S63P3140



Digital tachometer: YU-39951-B

3. Attach the special service tool to spark plug wire #1.

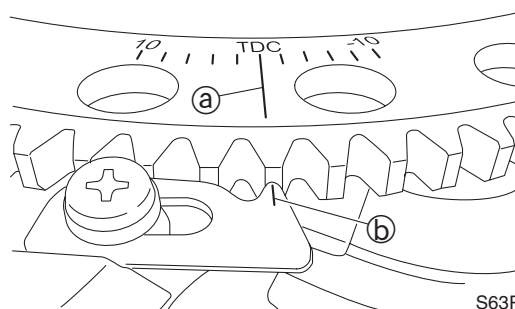


S63P3280



Battery powered timing light:
YM-33277-A

4. Check that the “TDC” mark ① on the fly-wheel magnet is aligned with the mark ② on the pointer.



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Ignition timing at engine idle speed:
TDC

Power trim and tilt unit

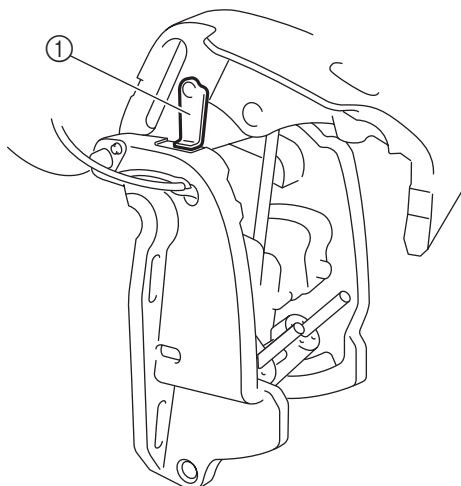
Checking the power trim and tilt operation

1. Fully tilt the outboard motor up and down a few times and check the entire trim and tilt range for smooth operation. Check the power trim and tilt fluid level if necessary.

NOTE:

Be sure to listen to the winding sound of the power trim and tilt motor for smooth operation.

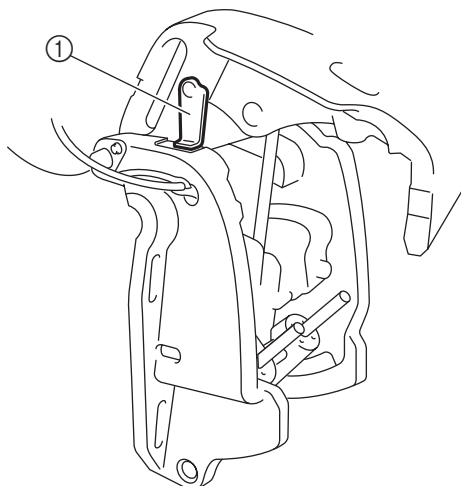
2. Fully tilt the outboard motor up, and then support it with the tilt stop lever ① to check the lock mechanism of the lever.



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Checking the power trim and tilt fluid level

1. Fully tilt the outboard motor up, and then support it with the tilt stop lever ①.

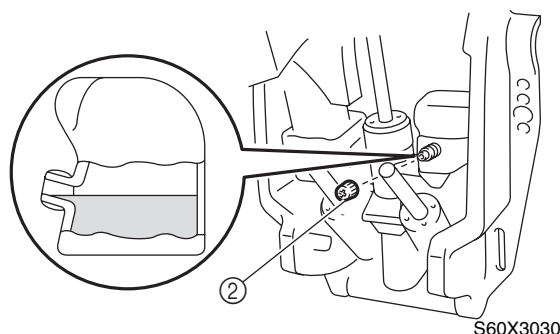


S60X3020

⚠ WARNING

After tilting up the outboard motor, be sure to support it with the tilt stop lever. Otherwise, the outboard motor could suddenly lower if the power trim and tilt unit should lose fluid pressure.

2. Remove the reservoir cap ②, and then check the fluid level in the reservoir.



S60X3030

NOTE:

If the fluid is at the correct level, the fluid should overflow out of the filler hole when the reservoir cap is removed.

3. If necessary, add sufficient fluid of the recommended type until it overflows out of the filler hole.



Recommended power trim and tilt fluid:

ATF Dexron II

4. Install the reservoir cap, and then tighten it to the specified torque.



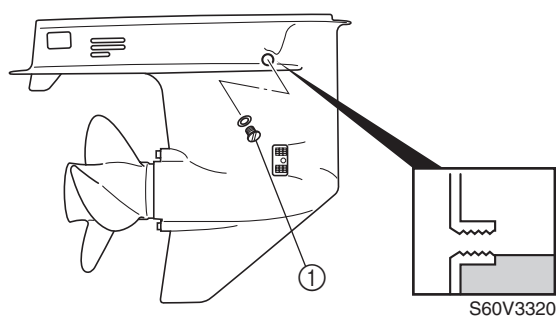
Reservoir cap:

0.7 N·m (0.07 kgf·m, 0.5 ft·lb)

Lower unit

Checking the gear oil level

1. Fully tilt the outboard motor down.
2. Remove the check screw ①, and then check the gear oil level in the lower case.



NOTE:

If the oil is at the correct level, the oil should overflow out of the check hole when the check screw is removed.

- If necessary, add sufficient gear oil of the recommended type until it overflows out of the check hole.

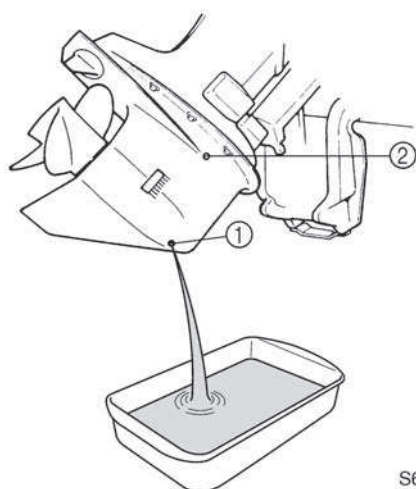


Recommended gear oil:
GEAR CASE LUBE
SAE: 90

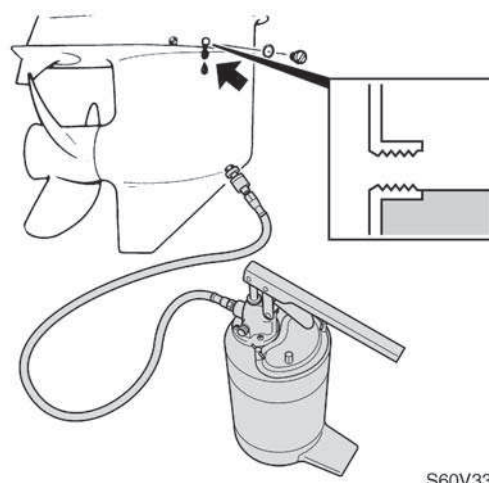
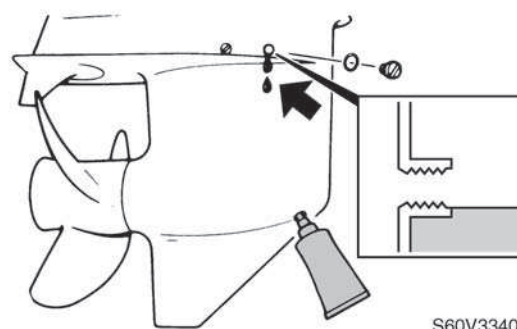
- Install the check screw.

Changing the gear oil

- Tilt the outboard motor up slightly.
- Place a drain pan under the drain screw (1), remove the drain screw, then the check screw (2) and let the oil drain completely.



- Check the oil for metal and discoloration, and its viscosity. Check the internal parts of the lower case if necessary.
- Insert a gear oil tube or gear oil pump into the drain hole and slowly fill the gear oil until oil flows out of the check hole and no air bubbles are visible.



Recommended gear oil:
GEAR CASE LUBE
SAE: 90

Oil quantity:

Regular rotation model:
980 cm³
(33.1 US oz, 34.6 Imp oz)

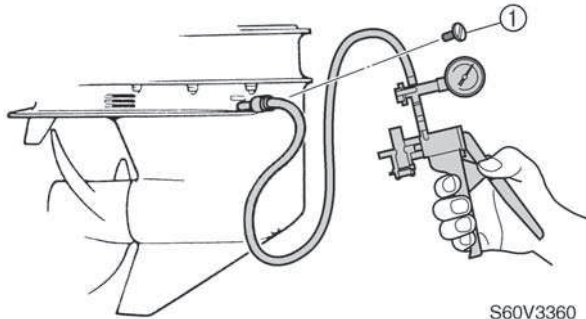
Counter rotation model:
870 cm³
(29.4 US oz, 30.7 Imp oz)

- Install the check screw and quickly install the drain screw.



Checking the lower unit for air leakage

1. Remove the check screw ①, and then install the special service tool.



S60V3360



Pressure/vacuum tester:
YB-35956-A

2. Apply the specified pressure to check that the pressure is maintained in the lower unit for at least 10 seconds.

CAUTION:

Do not over pressurize the lower unit, otherwise the oil seals can be damaged.

NOTE:

Cover the check hole with a rag when removing the tester from the lower unit.

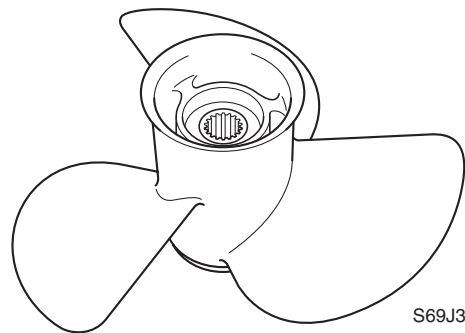


Lower unit holding pressure:
70 kPa (0.7 kgf/cm², 10 psi)

3. If pressure drops below specification, check the drive shaft and propeller shaft oil seals for damage.

Checking the propeller

1. Check the propeller blades and splines for cracks, damage, or wear. Replace if necessary.

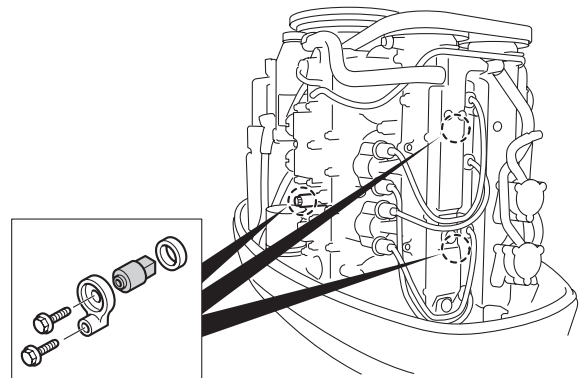


S69J3580

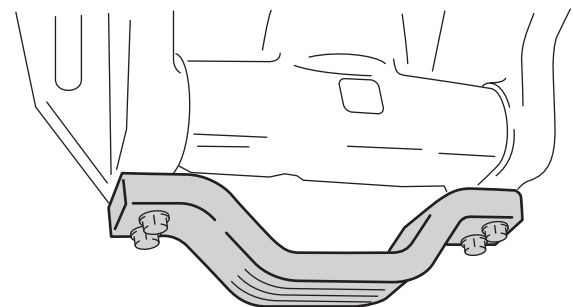
General

Checking the anodes

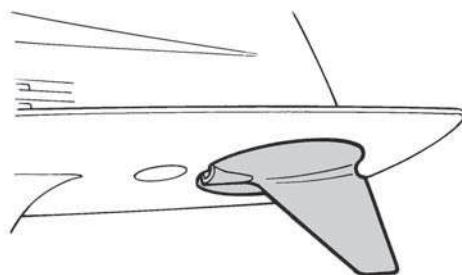
1. Check the anodes and trim tab for scales, grease, or oil. Clean if necessary.



S63P3300



S60X3080



S69J3610

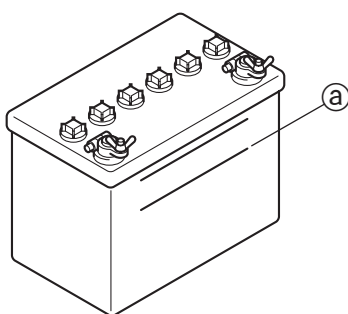
CAUTION:

Do not oil, grease, or paint the anodes or the trim tab, otherwise they will be ineffective.

2. Replace the anodes or trim tab if excessively eroded.

Checking the battery

1. Check the battery electrolyte level. If the level is at or below the minimum level mark ②, add distilled water until the level is between the maximum and minimum level marks.



S69J3620

2. Check the specific gravity of the electrolyte. Fully charge the battery if out of specification.

⚠ WARNING

Battery electrolyte is dangerous; it contains sulfuric acid which is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

Antidote (EXTERNAL):

- SKIN – Wash with water.
- EYES – Flush with water for 15 minutes and get immediate medical attention.

Antidote (INTERNAL):

- Drink large quantities of water or milk followed with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Batteries generate explosive, hydrogen gas. Always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- DO NOT SMOKE when charging or handling batteries.

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.

NOTE:

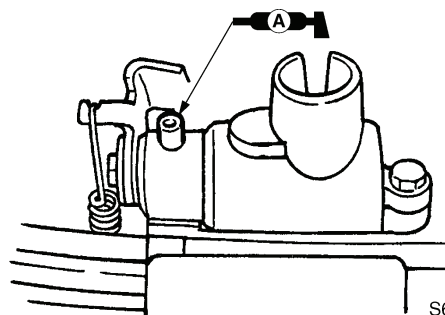
- Batteries vary per manufacturer. The procedures mentioned in this manual may not always apply, therefore, consult the instruction manual of the battery.
- Disconnect the negative battery lead first, then the positive battery lead.



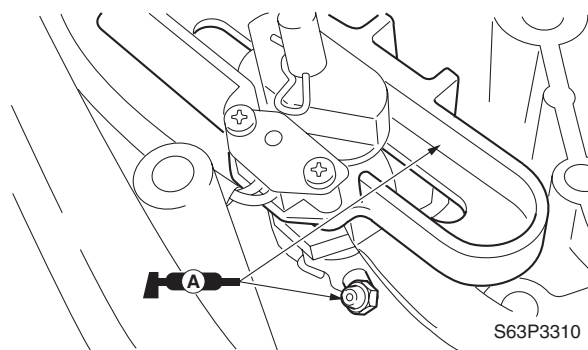
Electrolyte specific gravity:
1.280 at 20 °C (68 °F)

Lubricating the outboard motor

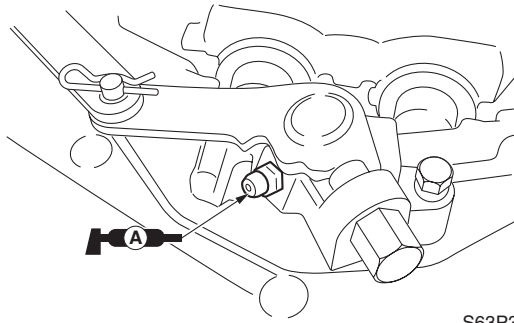
1. Apply water resistant grease to the areas shown.



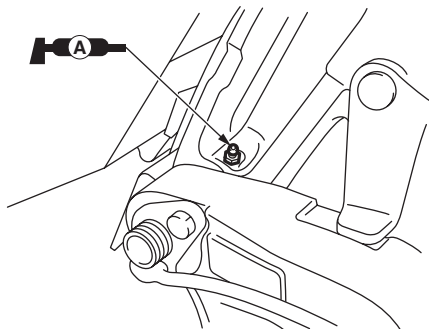
S69J3630



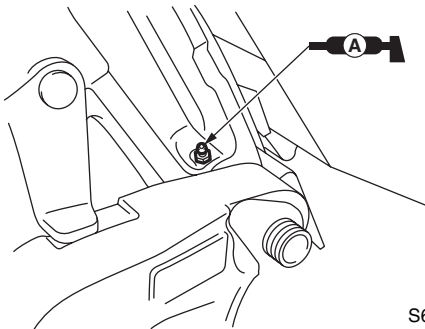
S63P3310



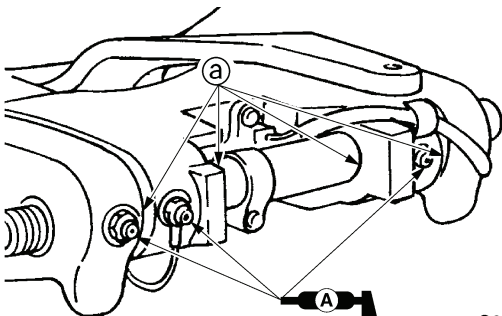
S63P3320



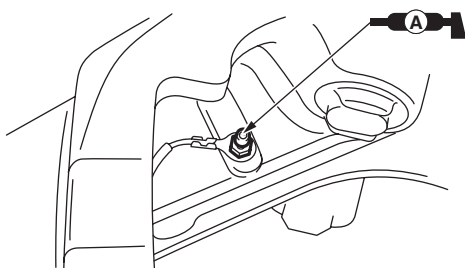
S60X3090



S60X3100



S63P3330

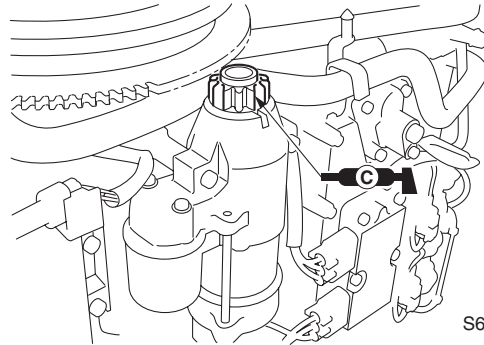


S60X3120

NOTE:

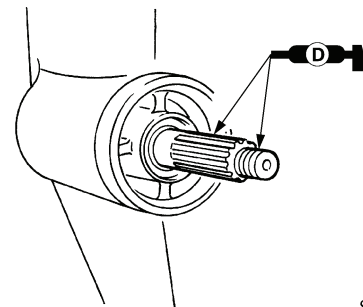
Apply grease to the grease nipple until it flows from the bushings @.

2. Apply low temperature resistant grease to the areas shown.



S63P3340

3. Apply corrosion resistant grease to the areas shown.



S69J3720