PERIODIC MAINTENANCE

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the motor operating at peak performance and economy.
Maintenance intervals should be judged by number of hours or months, whichever comes first.

NOTE:
More frequent servicing should be performed on outboard motors that are used under severe conditions.

PERIODIC MAINTENANCE CHART

Interval / Item to be serviced	Initial 20 hrs. or 1 month	Every 50 hrs. or 3 months	Every 100 hrs. or 6 months	Every 200 hrs. or 12 months
Spark plug	—	—	I	R
Breather hose & Fuel line	I	I	I	I
	Replace every 2 years.			
Engine oil	R	—	R	R
Gear oil	R	—	R	R
Lubrication	—	I	I	I
Anodes & Bonding wires	—	I	I	I
Battery	—	I	I	I
Engine oil filter	R	—	—	R
Fuel filter	—	I	I	I
	Replace every 400 hours or 2 years.			
Ignition timing	—	—	—	I
Carburetor	I	—	I	I
Idle speed	I	—	—	I
Valve clearance	I	—	—	I
Water pump	—	—	—	I
Water pump impeller	—	—	—	R
Propeller nut & pin	I	—	I	I
Bolt & Nuts	T	—	T	T

I: Inspect and clean, adjust, lubricate or replace, if necessary **T:** Tighten **R:** Replace

MAINTENANCE AND TUNE-UP PROCEDURES

This section describes servicing procedures for each periodic maintenance requirement.

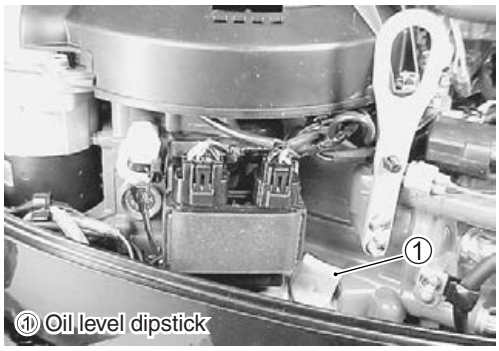
ENGINE OIL/ENGINE OIL FILTER

ENGINE OIL LEVEL CHECK

Inspect oil level before every use.

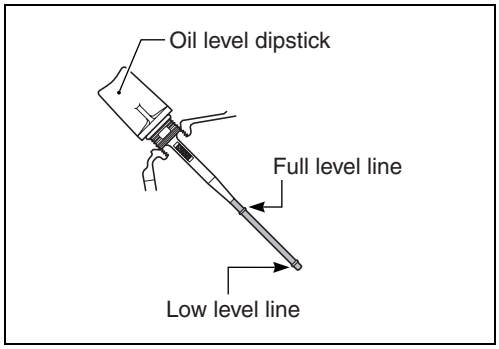
1. Place outboard motor upright on a level surface.
2. Remove motor cover.
3. Remove oil level dipstick (oil filler cap) and wipe it clean.
4. Reinsert dipstick fully into filler hole, then remove to check oil level.

NOTE:
Do not screw oil level dipstick to check the oil level.



5. Oil level should be between full level Max. mark (line) and low level Min. mark (line).

   If level is low, add recommended oil to full level line (Max.).



Recommended oil:
- **4 stroke motor oil**
- **API classification: SE, SF, SG, SH, SJ**
  or NMMA FC-W Classification: SE, SF, SG, SH, SJ
- **Viscosity rating: SAE 10W-40**
  or NMMA FC-W 10W-40

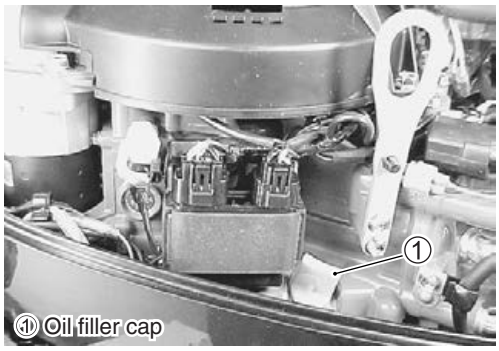
ENGINE OIL CHANGE/ENGINE OIL FILTER REPLACEMENT

ENGINE OIL
Change initially after 20 hours (1 month) and every 100 hours (6 months).

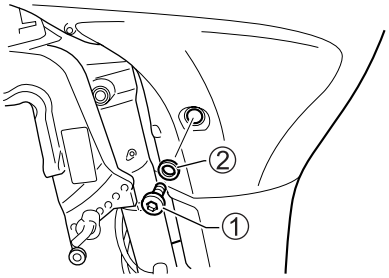
ENGINE OIL FILTER
Replace initially after 20 hours (1 month) and every 200 hours (12 months).

NOTE:
- *Engine oil should be changed while engine is warm.*
- *When replacing engine oil filter, change engine oil at the same time.*

1. Place outboard motor upright on a level surface.
2. Remove oil level dipstick (oil filler cap).
3. Place a container under engine oil drain plug.
4. Remove engine oil drain plug and gasket to drain engine oil.



① Oil filler cap

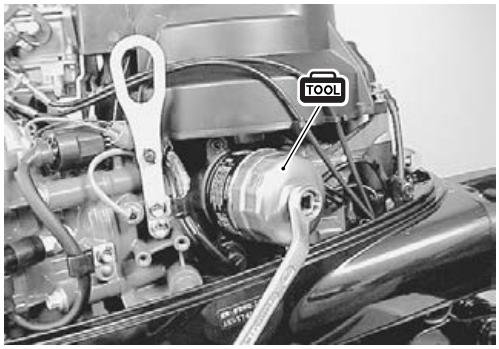


① Oil drain plug ② Gasket

5. ENGINE OIL FILTER REPLACEMENT

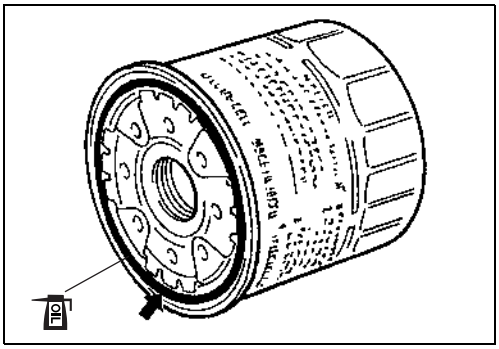
NOTE:
For engine oil change only, go to step 6.

To replace engine oil filter:
(1) Place a shop cloth under oil filter before removal to absorb any oil released.
(2) Using oil filter wrench to loosen the oil filter, then remove filter and O-ring.



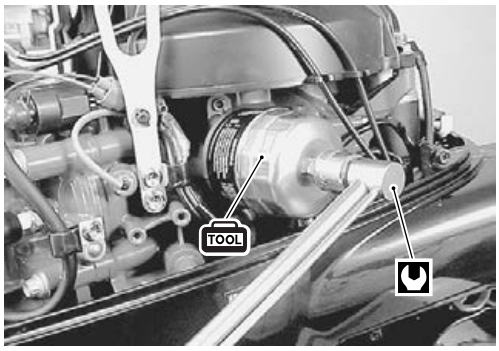
TOOL 09915-47341: Oil filter wrench

NOTE:
Before fitting new oil filter, be sure to oil O-ring.



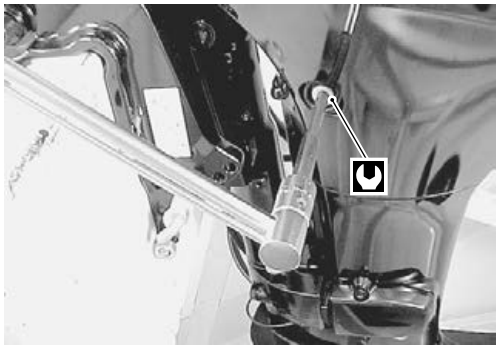
(3) Screw new filter on by hand until filter O-ring contacts the mounting surface.
(4) Tighten filter 3/4 turn from point of contact with mounting surface using an oil filter wrench.

Engine oil filter: 14 N·m (1.4 kg-m, 10.0 lb-ft), Plus 3/4 turn



6. Install new gasket and oil drain plug.
Tighten engine oil drain plug to specified torque.

Engine oil drain plug: 13 N·m (1.3 kg-m, 9.5 lb-ft)

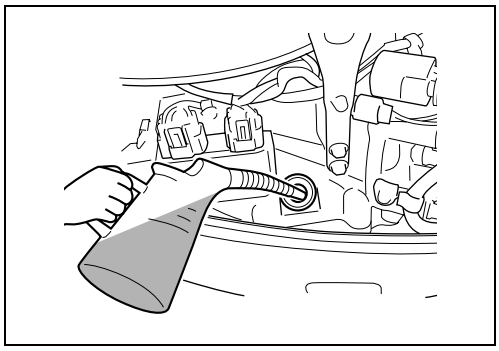


CAUTION

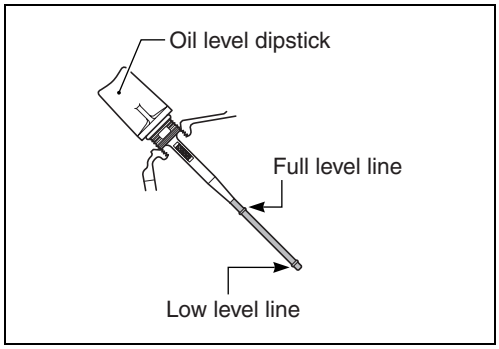
Do not reuse gasket once removed. Always use a new gasket.

7. Pour recommended engine oil into oil filler opening, then install oil level dipstick (oil filler cap).

Engine oil amounts
Oil change only: 1.5 L (1.6/1.3 US/Imp. qt)
Oil filter change: 1.8 L (1.9/1.6 US/Imp. qt)



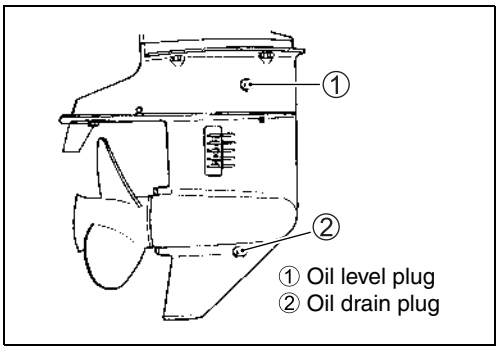
8. Start engine and allow it to run for several minutes at idle speed.
Check oil filter for oil leakage.
Turn off engine and wait for approx. two minutes, then recheck engine oil level.



GEAR OIL

Change initially after 20 hours (1 month) and every 100 hours (6 months).

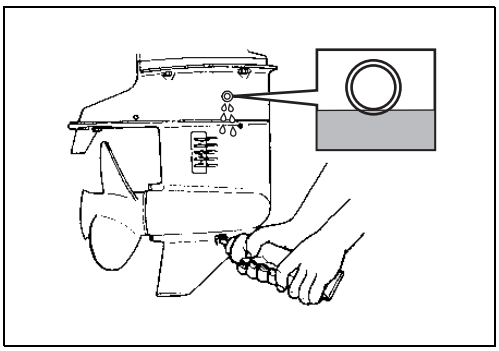
1. Place outboard motor upright on a level surface.
2. Place a container under the lower unit.
3. Remove lower gear oil drain plug first, then remove gear oil level plug and drain gear oil.



4. Fill with recommended gear oil through oil drain hole until oil just starts to flow out from oil level hole.

   Gear oil amount: 420 ml (14.2/14.8 US/Imp. oz)

   Recommended oil:
   SUZUKI OUTBOARD MOTOR GEAR OIL or
   SAE #90 HYPOID GEAR OIL



5. Install oil level plug before removing oil filler tube from drain hole.
6. Install oil drain plug.

CAUTION

Do not reuse gaskets once removed. Always use a new gasket.

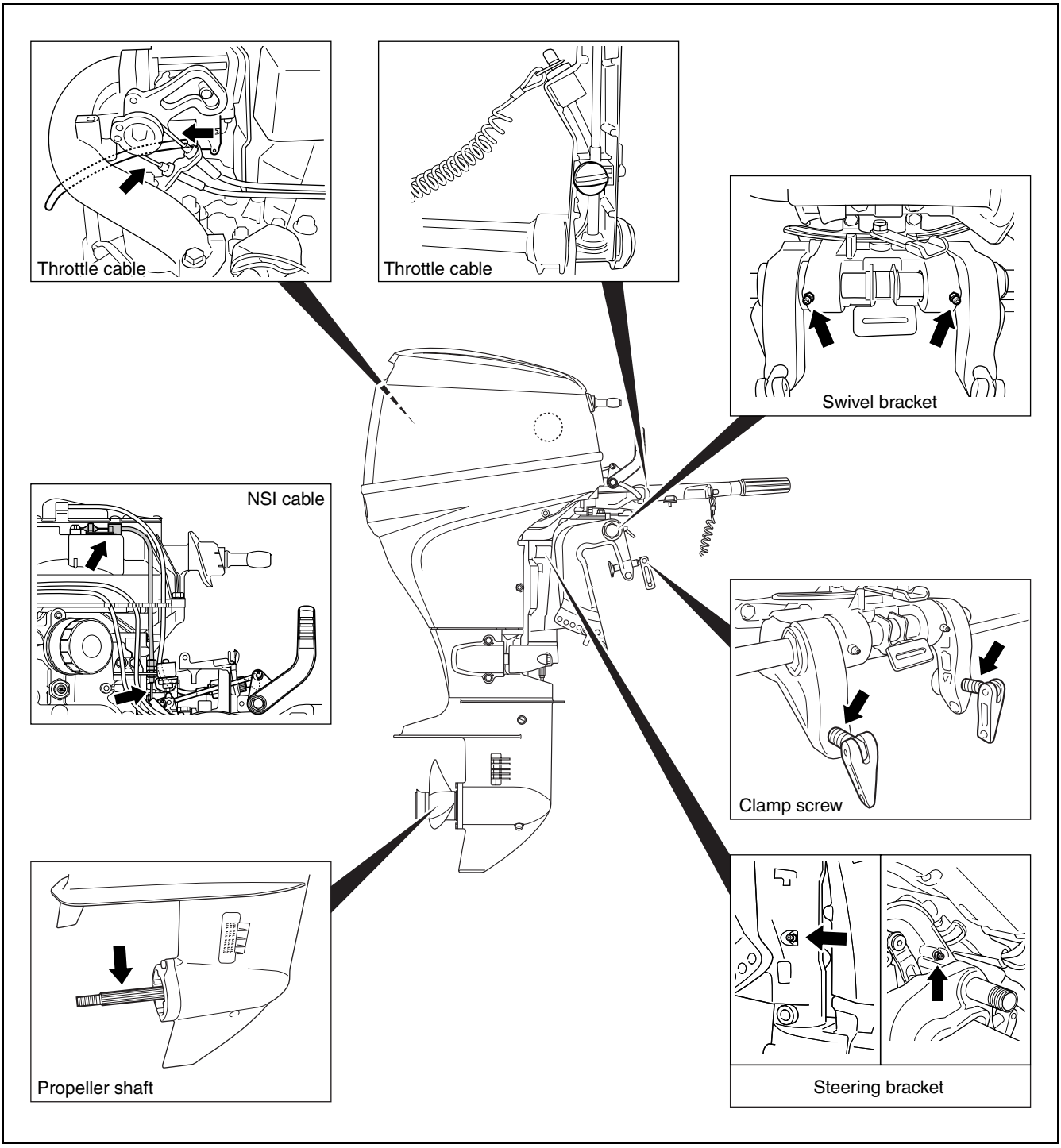
NOTE:
To avoid a possible low gear oil level, recheck gear oil level 10 minutes after doing procedure in step 6. If oil level is low, add additional gear oil until level is correct.

LUBRICATION

Inspect every 50 hours (3 months).

Apply SUZUKI Water Resistant Grease to the following points.

W/R G's **99000-25160: SUZUKI WATER RESISTANT GREASE**



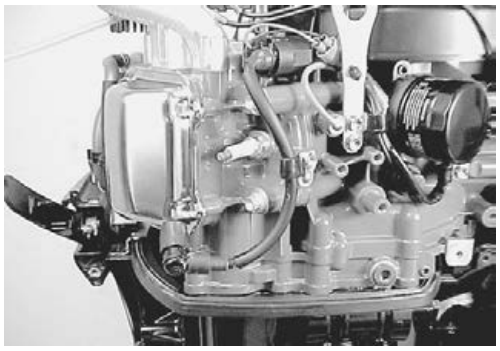
SPARK PLUG

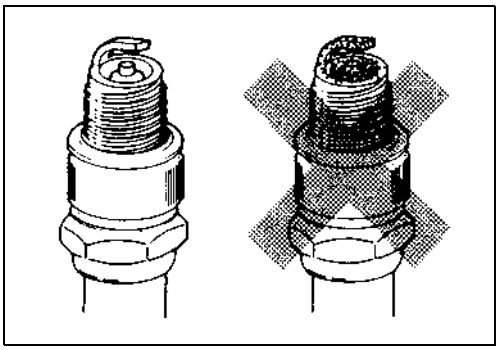
- **Inspect every 100 hours (6 months).**
- **Replace every 200 hours (12 months).**

Standard spark plug: NGK BKR6E

CAUTION

Only resistor (R) type spark plugs must be used with this engine. Using a non-resistor spark plug will cause ignition system malfunctions.





CARBON DEPOSIT

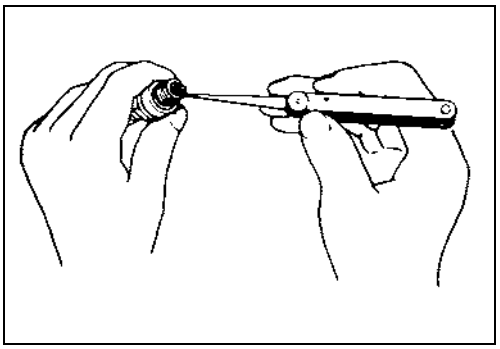
Inspect for a carbon deposit on spark plug base.
If carbon is present, remove it with a spark plug cleaning machine or by carefully using a pointed tool.

SPARK PLUG GAP

Measure spark plug gap with a thickness gauge.
Adjust to within specified range if gap is out of specification.

Spark plug gap: 0.7 – 0.8 mm (0.028 – 0.031 in)

TOOL 09900-20803: Thickness gauge

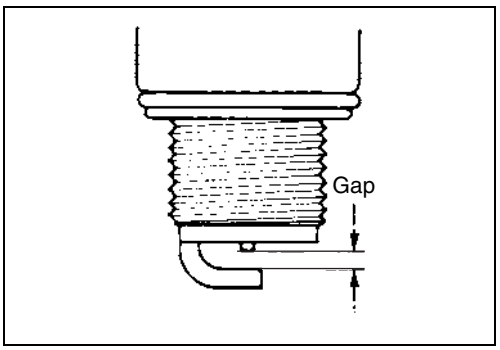


CONDITION OF ELECTRODE

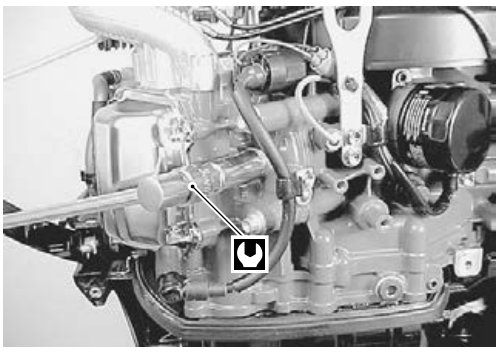
Inspect electrode for a worn or burnt condition.
If it is extremely worn or burnt, replace spark plug.
Also, be sure to replace spark plug if it has a broken insulator, damaged thread, etc.

CAUTION

Confirm the thread size and reach when replacing the plug. If the reach is too short, carbon will be deposited on the threaded portion of the plug hole resulting in possible engine damage.



Spark plug: 28 N·m (2.8 kg-m, 20.0 lb-ft)



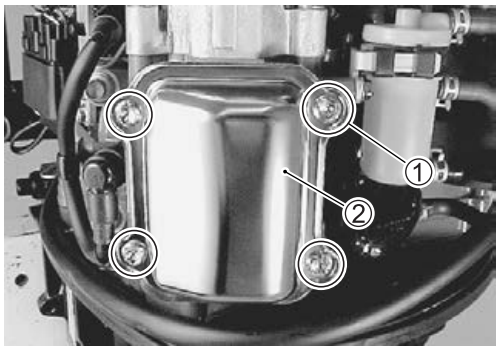
VALVE CLEARANCE

Inspect initially after 20 hours (1 month) and every 200 hours (12 months).

CHECKING AND ADJUSTING VALVE CLEARANCE

Checking

1. Remove following parts:
   - Engine side lower cover (See page 8-2.)
   - Recoil starter (Manual start model)
   - Flywheel cover (Electric start model)
   - Spark plugs
2. Remove the eight (8) bolts ① securing PORT/STBD cylinder head covers to the cylinder head and remove cylinder head covers ②.



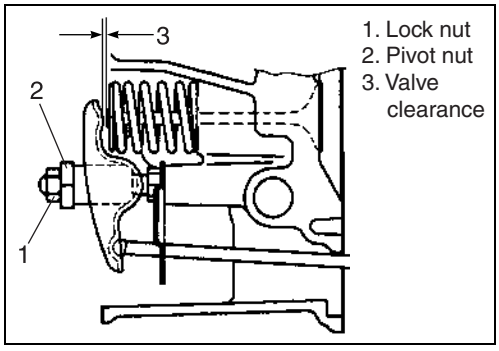
3. Rotate crankshaft clockwise to bring each piston to Top Dead Center (TDC) on compression stroke.

CAUTION

Rotate crankshaft clockwise to prevent water pump impeller damage.

NOTE:
- *Piston must be at its TDC on compression stroke to check or adjust valve clearance.*
- *Valve clearance specification is for COLD engine condition.*

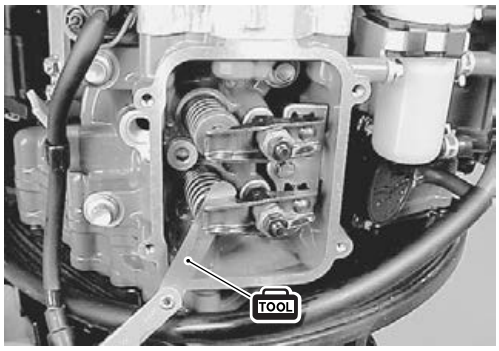
4. Measure valve clearance by inserting thickness gauge between valve stem end and rocker arm.



TOOL 09900-20803: Thickness gauge

Valve clearance (cold engine condition):
IN. 0.03 – 0.07 mm (0.001 – 0.003 in)
EX. 0.03 – 0.07 mm (0.001 – 0.003 in)

If out of specification, adjust valve clearance.



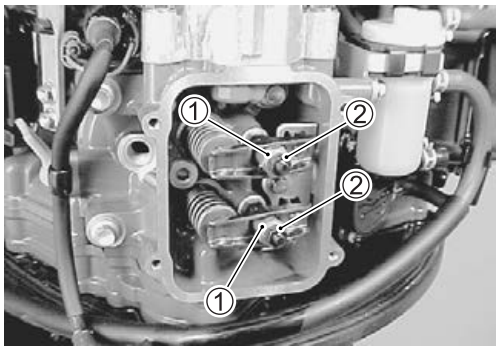
Adjustment

5. Loosen valve adjusting lock nut ② while holding pivot nut ①.
6. Turn pivot nut ① to bring valve clearance to within the specification.

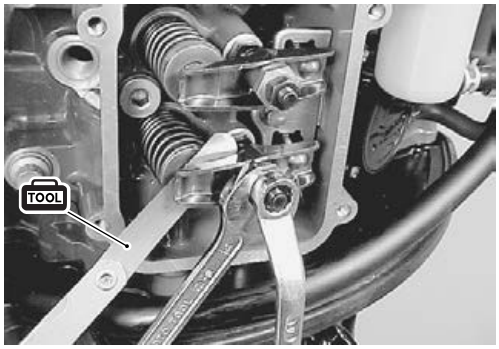
09900-20803: Thickness gauge

7. Tighten lock nut ② to specified torque while holding pivot nut ①.

Valve adjusting lock nut: 11 N·m (1.1 kg-m, 8.0 lb-ft)



8. Recheck valve clearance.

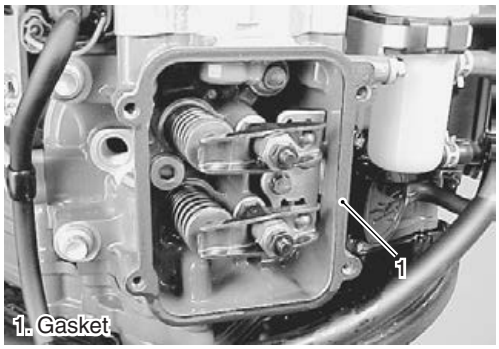


Reassembly

After checking and adjusting all valves, reinstall parts removed earlier. Installation is reverse order of removal.

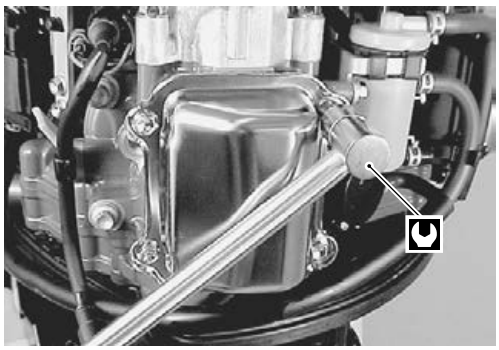
- Install the cylinder head cover. (See page 7-12.)

NOTE:
Do not reuse cylinder head cover gasket once removed. Always use new gasket.

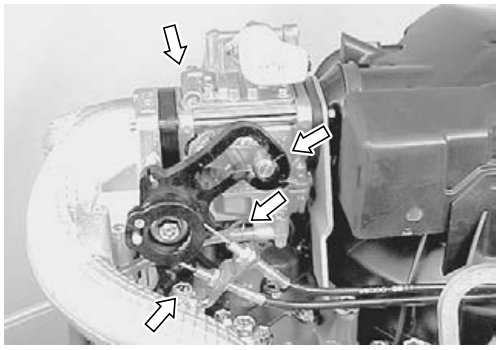


- Tighten cylinder head cover bolts to specification.

Cylinder head cover bolt: 10 N·m (1.0 kg-m, 7.2 lb-ft)



CARBURETOR



EXTERNAL CHECK

Inspect initially after 20 hours (1 month) and every 100 hours (6 months).

Inspect the carburetor body, lever, rod, connector, fuel inlet, throttle cable and silencer.
If crack or other damage is found, replace.

IDLE SPEED

Inspect initially after 20 hours (1 month) and every 200 hours (12 months).

CHECKING

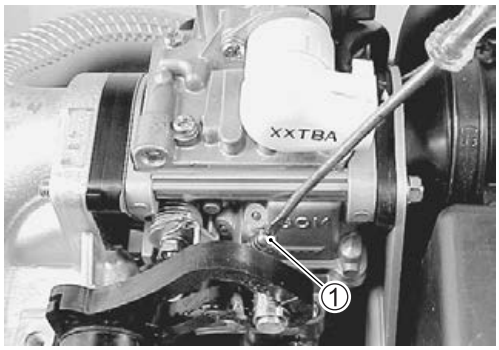
NOTE:
- *Before checking the idle speed, the engine should be allowed to warm up.*
- *Check and/or adjust the idle speed after the engine speed has stabilized.*

1. Check link mechanism and carburetor throttle valve for smooth operation.
2. Start the outboard motor.
3. Attach the engine tachometer to the spark plug high tension cord.

TOOL 09900-26006: Engine tachometer

4. Check the engine idle speed.

   Idle speed (in neutral gear): 950 – 1 050 r/min



ADJUSTMENT

If the engine idle speed is out of specification, adjust it as follows:

NOTE:
This carburetor is covered pilot screw type.
The pilot screw turns open is preset at factory and the screw is covered by plate.
Do not try to remove the cover and adjust pilot screw.

1. Turn the idle adjusting screw ① to specified idle speed.
   1-1. Turning inward (clockwise): Engine speed becomes higher
   1-2. Turning outward (counterclockwise): Engine speed becomes lower

IGNITION TIMING

Inspect every 200 hours (12 months).

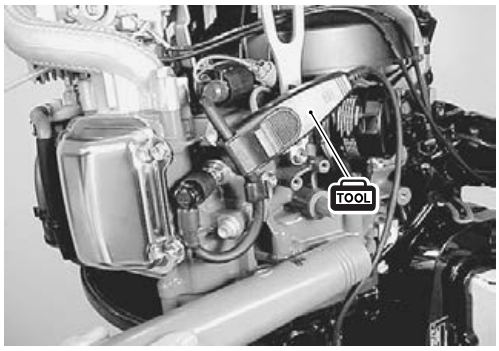
NOTE:
- *Before checking ignition timing, the engine should be allowed to warm up.*
- *Before checking ignition timing, make sure idle speed is adjusted within specification.*

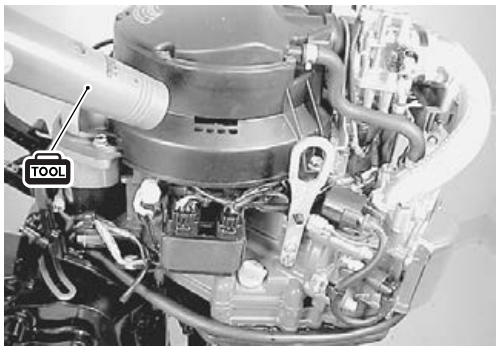
1. Start the engine and allow to warm up.
2. Attach the timing light cord to the No.1 ignition coil H-T cord.

TOOL 09930-76420: Timing light
09900-26006: Engine tachometer

3. Check the ignition timing while operating the engine in neutral gear at 1 000 r/min.

   Ignition timing: Approx. BTDC 2° at 1 000 r/min.

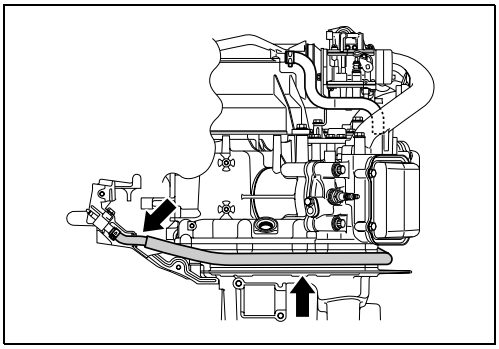


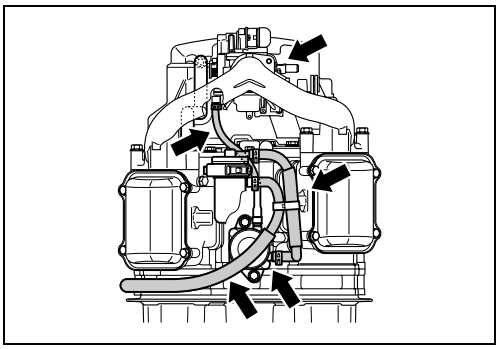


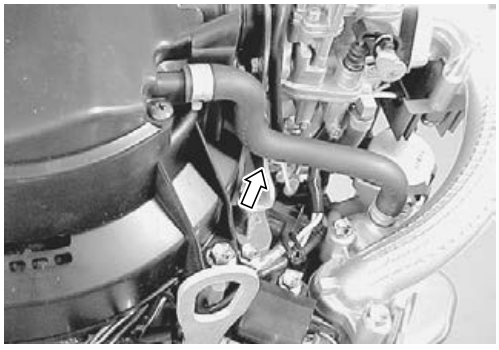
BREATHER HOSE AND FUEL LINE

- **Inspect initially after 20 hours (1 month) and every 50 hours (3 months).**
- **Replace every 2 years.**

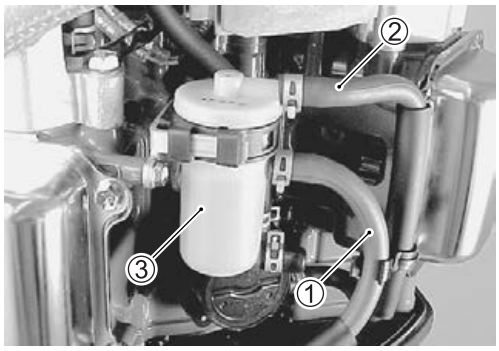
If leakage, cracks, swelling or other damage is found, replace the breather hose and/or fuel line.





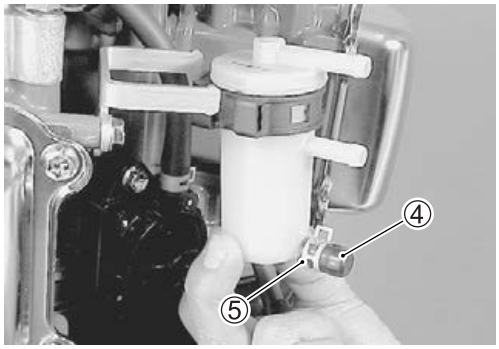


FUEL FILTER



- **Inspect before every use.**
- **Inspect every 50 hours (3 months).**
- **Replace every 400 hours or 2 years.**

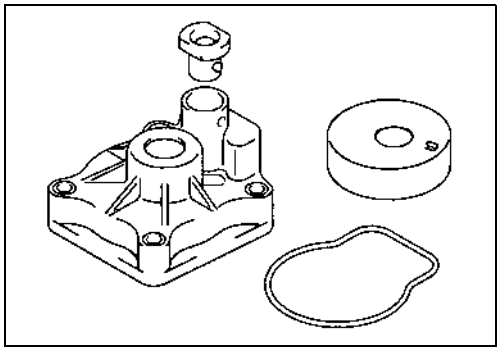
- If leakage, cracks, or other damage is found, replace the fuel filter.



- If water or sediment is found in fuel filter, clean the fuel filter as follows:

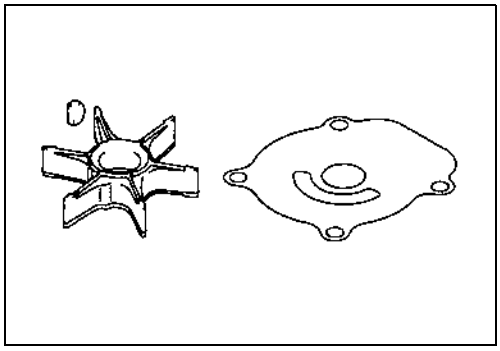
1. Disconnect the inlet hose ① and outlet hose ② from fuel filter.
2. Remove the fuel filter ③ from filter bracket.
3. Remove the cap ④, then drain and clean fuel filter.
4. Install the cap ④, then secure it with clamp ⑤.
5. Install the fuel filter to filter bracket properly.
6. Connect the fuel inlet and outlet hose to fuel filter, then secure the fuel hoses to the filter with the hose clamp.
7. Start the engine and check that there are no leaks around the fuel filter.

WATER PUMP/WATER PUMP IMPELLER



WATER PUMP
Inspect every 200 hours (12 months).

Inspect water pump case, inner sleeve and under panel.
Replace if wear, cracks, distortion or corrosion is found.



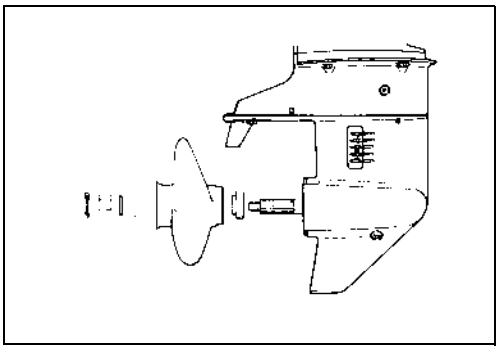
WATER PUMP IMPELLER
Replace every 200 hours (12 months).

SUZUKI recommends that replacing the water pump impeller every 200 hours (12 months).

Inspect water pump impeller.
Replace if vanes are cut, torn or worn.

PROPELLER/NUT/COTTER PIN

Inspect initially after 20 hours (1 month) and every 100 hours (6 months).



- Inspect propeller for bent, chipped or broken blades. Replace propeller if damage noticeably affects operation.
- Inspect propeller splines. Replace propeller if splines are worn, damaged or twisted.
- Inspect propeller bush for slippage. Replace if necessary.
- Make sure that propeller nut is torqued to specification and cotter pin is installed securely.

BONDING WIRES

Inspect every 50 hours (3 months).

- If breakage or other damage is found on bonding wire, replace the wire.
- If rust, corrosion or other damage is found on terminal, clean with cleaning solvent or replace wire.

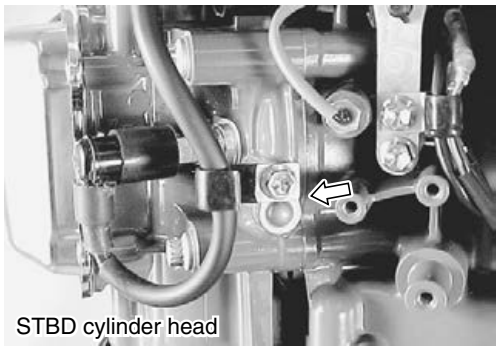
ANODES

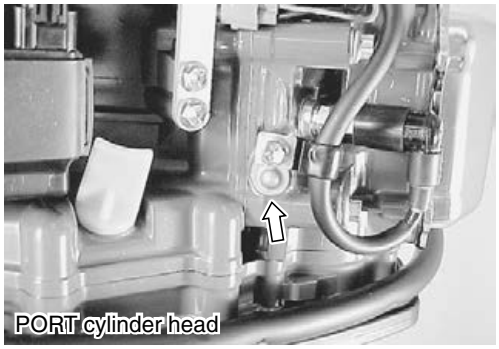
Inspect every 50 hours (3 months).

ANODES

If 2/3 of zinc anode has corroded away, replace anode.

The anode should be periodically cleaned with a wire brush to ensure maximum effectiveness.


STBD cylinder head


PORT cylinder head

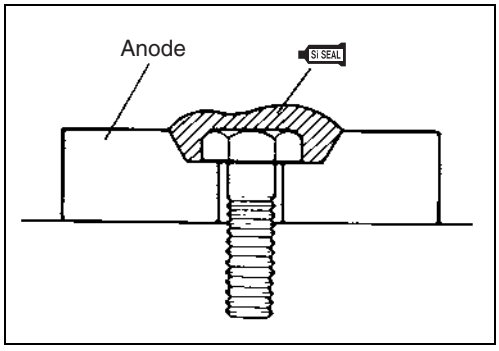
CAUTION

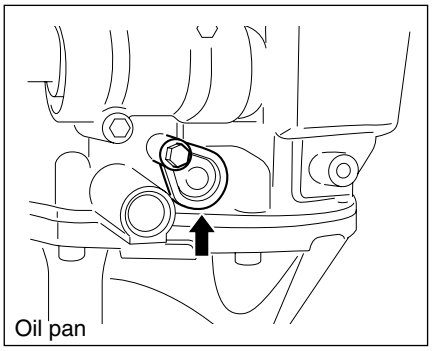
Never paint the anode.

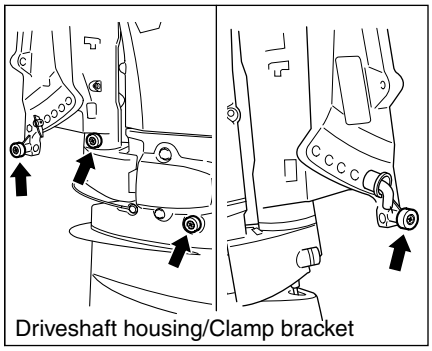
NOTE:

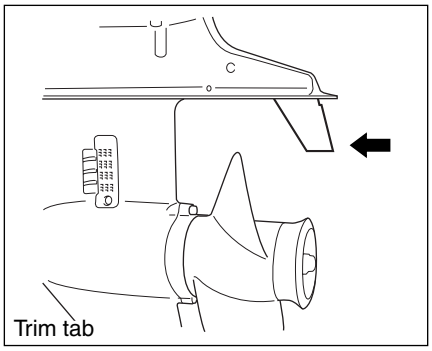
The anode securing bolt should be covered with SUZUKI SILICONE SEAL.

SI SEAL 99000-31120: SUZUKI SILICONE SEAL




Oil pan


Driveshaft housing/Clamp bracket


Trim tab

BATTERY

Inspect every 50 hours (3 months).

⚠ WARNING

- **Never expose battery to open flame or electric spark as batteries generate gas, which is flammable and explosive.**
- **Battery acid is poisonous and corrosive. Avoid contact with eyes, skin, clothing, and painted surfaces. If battery acid comes in contact with any of these, flush immediately with large amounts of water. If acid contacts the eyes or skin, get immediate medical attention.**
- **Batteries should always be kept out of reach of children.**
- **When checking or servicing the battery, disconnect the negative (black) cable. Be careful not to cause a short circuit by allowing metal objects to contact the battery posts and the motor at the same time.**
- **Wear approved eye protection.**

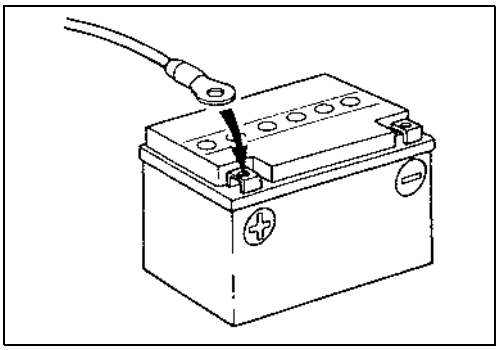
Recommended battery: 12 V 40 AH (144 kC) or larger

CONNECTING BATTERY

Upon completion of connection, lightly apply grease to battery terminals.

How to connect:

1. Connect positive (+) terminal first.
2. Connect negative (–) terminal second.

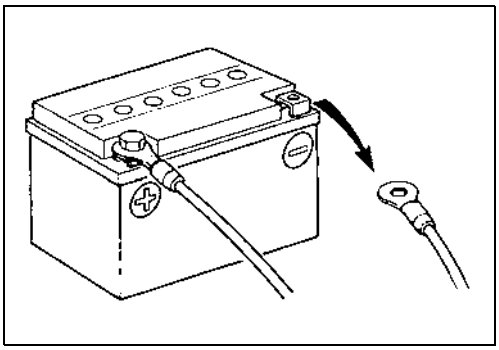


How to disconnect:

1. Disconnect negative (–) terminal first.
2. Disconnect positive (+) terminal second.

CAUTION

If the battery leads are loose, incorrectly connected or reversed, the electrical system could be damaged.



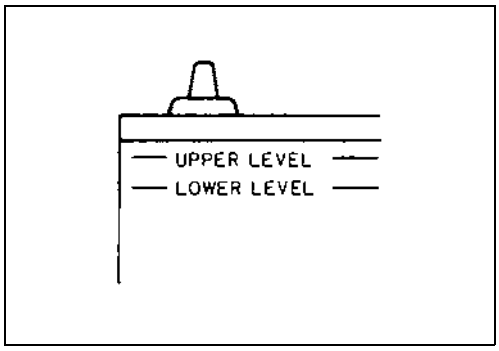
BATTERY SOLUTION LEVEL CHECK

Battery solution level should be between UPPER level and LOWER level.

If level is low, add distilled water only.

CAUTION

Once the battery has been initially serviced, NEVER add diluted sulfuric acid or battery damage will occur. Follow the battery manufacture's instructions for specific maintenance procedures.

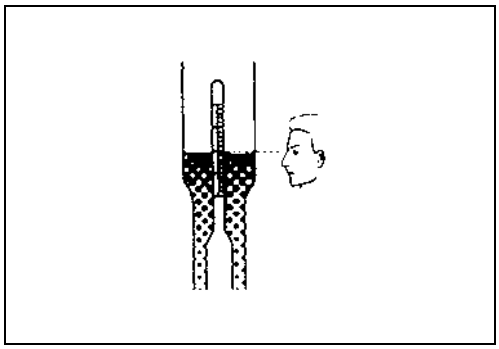


BATTERY SOLUTION GRAVITY CHECK

Measure the gravity of battery solution using a hydrometer.

Battery solution gravity: 1.28 at 20 °C

09900-28403: Hydrometer



BOLTS AND NUTS

Inspect initially after 20 hours (1 month) and every 100 hours (6 months).

Check that all bolts and nuts listed below are tightened to their specified torque.

ITEM	THREAD DIAMETER	TIGHTENING TORQUE		
		N·m	kg-m	lb-ft
Cylinder head cover bolt	6 mm	10	1.0	7.2
Cylinder head bolt	10 mm	55	5.5	39.8
Flywheel bolt	16 mm	196	19.6	142
Power unit mount bolt	8 mm	23	2.3	16.5
	10 mm	50	5.0	36.0
Clamp bracket shaft nut	7/8-14UNF	43	4.3	31
Gear case bolt	8 mm	23	2.3	16.6
Propeller nut	14 mm	24.5	2.5	18.0

OIL PRESSURE

Oil pressure (at normal operating temp.):
200 – 300 kPa (2.0 – 3.0 kg/cm², 28 – 43 psi)
at 3 000 r/min.

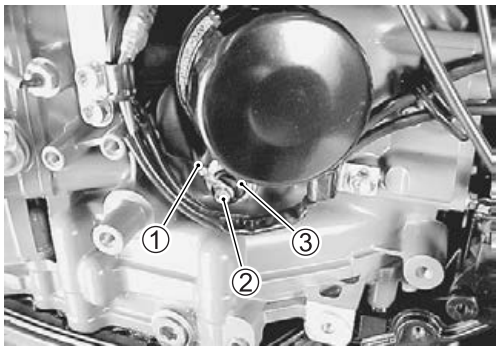
NOTE:
The figure shown above is a guideline only, not an absolute service limit.

If oil pressure is lower or higher than specification, the following causes may be considered.
(See page 7-58 for oil passage locations.)

Low oil pressure
- Clogged oil filter
- Leakage from oil passages
- Defective oil pump
- Defective oil pressure regulator
- Damaged O-ring
- Combination of above items

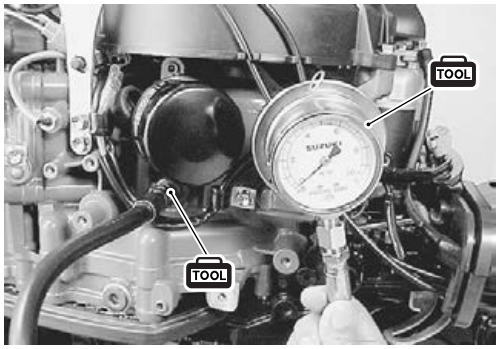
High oil pressure
- Using an engine oil of too high viscosity
- Clogged oil passage
- Clogged oil pressure regulator
- Combination of above items

TEST PROCEDURE
1. Check the engine oil level.
2. Remove STBD side cover. (See page 8-2.)
3. Loosen screw ② and disconnect blue lead wire ① from oil pressure switch ③.
   Remove the oil pressure switch.



4. Install oil pressure gauge adapter into oil pressure switch hole in place of oil pressure switch.

TOOL **09915-77311: Oil pressure gauge**
09915-78211: Oil pressure gauge adapter



5. Install STBD side cover.
6. Attach engine tachometer to No.1 ignition coil H-T cord.
7. Start engine and allow to warm up as follows:

   Summer : 5 min. at 2 000 r/min.
   Winter : 10 min. at 2 000 r/min.

8. After warming up, shift into forward gear and increase engine speed to 3 000 r/min., then compare pressure indicated on gauge to specifications.
9. After testing, reinstall oil pressure switch.
   (See page 3-19.)

CYLINDER COMPRESSION

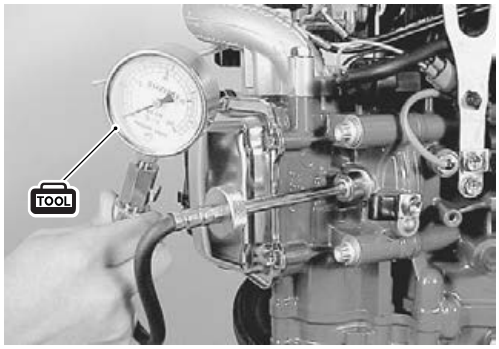
Cylinder compression:
Standard: DF25: 500 – 700 kPa (5 – 7 kg/cm², 71 – 100 psi)
DF25E/R: 1 000 – 1 300 kPa (10 – 13 kg/cm², 142 – 185 psi)
Max. difference between cylinders: 100 kPa (1.0 kg/cm², 14 psi)

NOTE:
Figures shown are guidelines only, not absolute service limits.

Low compression pressure can indicate one or more of the following:
- Excessively worn cylinder wall
- Worn piston or piston rings
- Stuck piston rings
- Poor seating of valves
- Ruptured or otherwise damaged cylinder head gasket

TEST PROCEDURE
1. Start engine and allow to warm up, then shut engine off.
2. Remove all spark plugs.
3. Install compression gauge into spark plug hole.

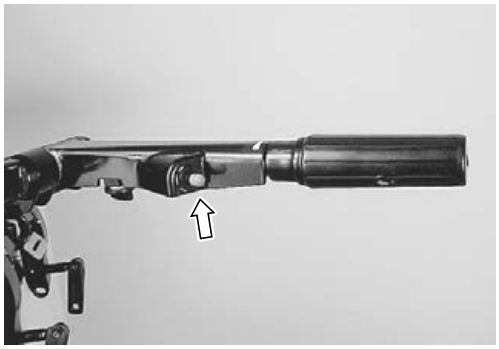
TOOL 09915-64512: Compression gauge



4. Disconnect the safety lanyard from the emergency stop switch.

⚠ WARNING

Disconnect the safety lanyard from the emergency stop switch prior to cranking the engine.
This will prevent any residual fuel discharged from the cylinders from being ignited by a spark discharged from the spark plug cap.



5. Disconnect remote control throttle cable from throttle lever. (R model)
6. 6-1. Move and hold the throttle lever in full – open position. (R model).
   6-2. Move and hold the throttle control grip in full – open position. (Tiller handle model)
7. While cranking engine with starter motor or recoil starter, note maximum compression pressure reading on gauge for each cylinder.
8. Reinstall parts removed earlier (spark plugs, etc.).