

Maintenance and Tune-Up

Precautions

Precautions for Maintenance

ZAJ6110200001

The "Periodic Maintenance Schedule Chart" 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.

General Description

Recommended Oil and Lubricants

ZAJ6110201001

Refer to "Fuel and Oil Recommendations" in Section 0A (Page 0A-4).

Scheduled Maintenance

Periodic Maintenance Schedule Chart

ZAJ6110205001

NOTE

I = Inspect and clean, adjust, lubricate or replace, if necessary

T = Tighten

R = Replace

Item to be serviced	Interval			
	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 and 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 and bonding wires	—	I	I	I
Battery	—	I	I	I
Engine oil filter	R	—	—	R
Low pressure fuel filter	—	I	I	I
	Replace every 400 hours or 2 years.			
Ignition timing	—	—	—	I
Idle speed	I	—	—	I
Tappet clearance	—	—	—	I
Water pump	—	—	—	I
Water pump impeller	—	—	—	R
Propeller nut and pin	I	—	I	I
Bolt and Nuts	T	—	T	T

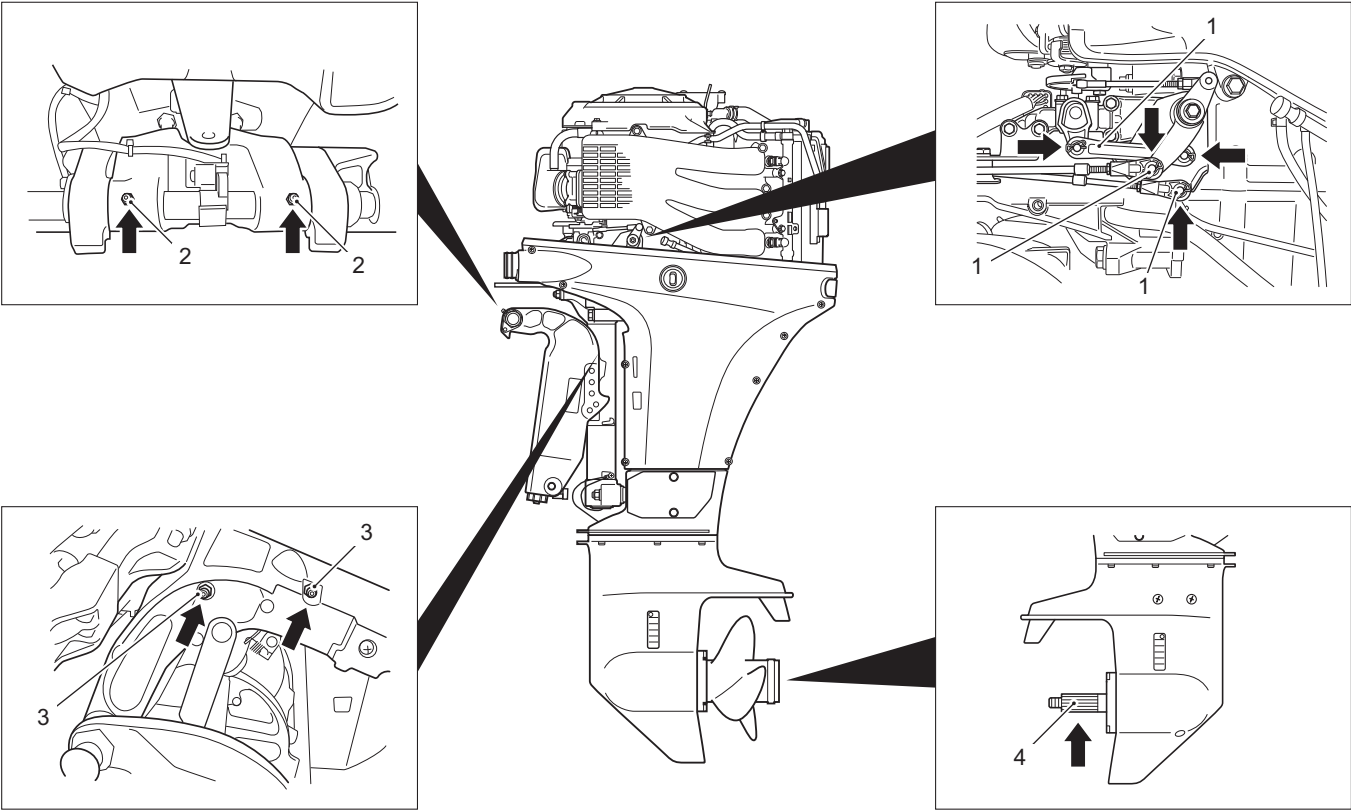
Lubrication Point

Proper lubrication is important for the safe, smooth operation and long life of each working part of the outboard motor. Apply Suzuki Water Resistant Grease to the following point.

Lubricate

Every 50 hours (3 months)

 : Grease 99000-25161 (SUZUKI Water Resistant Grease (250 g))



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1. Throttle and shift linkage	3. Grease nipple, swivel bracket
2. Grease nipple, swivel bracket	4. Propeller shaft

Service Instructions

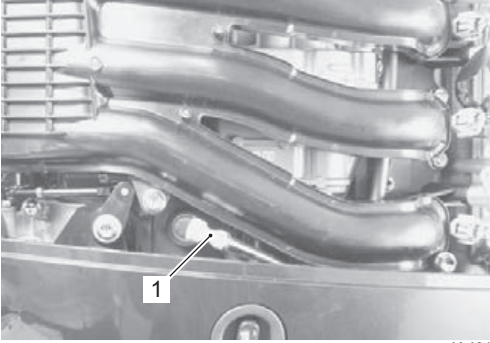
Engine Oil Level Check

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Inspect oil level

Before every use

- 1) Place outboard motor upright on a level surface.
- 2) Remove motor cover.
- 3) Remove oil level dipstick (1) and wipe it clean.

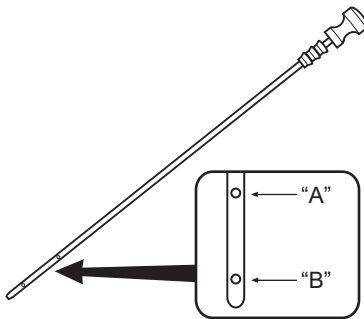


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- 4) Reinsert dipstick fully into dipstick tube, then remove it to check oil level.
- 5) Oil level should be between full level Max. mark (hole) and low level Min. mark (hole). If level is low, add recommended oil to full level Max. mark.

Recommended Engine Oil

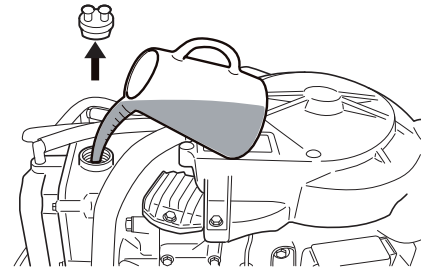
- 4 stroke motor oil
- **NMMA FC-W classification:**
SG, SH, SJ, SL, SM.
or **API classification:**
SG, SH, SJ, SL, SM.
- **Viscosity rating:**
NMMA FC-W 10W-40 or SAE 10W-40



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"A": Max. mark (hole)

"B": Min. mark (hole)



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Engine Oil Change and Engine Oil Filter Replacement

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Change engine oil

Initially after 20 hours (1 month) and every 100 hours (6 months)

Replace Engine oil filter

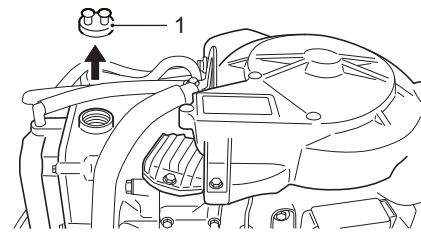
Initially after 20 hours (1 month) and every 200 hours (12 months)

NOTE

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

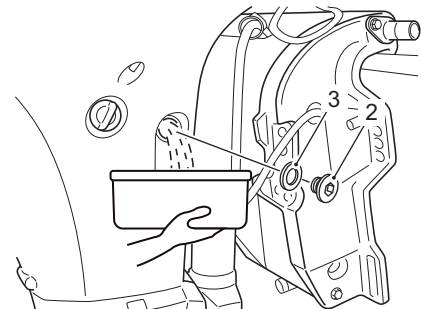
Engine Oil Change

- 1) Place outboard motor upright on a level surface.
- 2) Remove oil filler cap (1).



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- 3) Place a container under engine oil drain plug.
- 4) Remove engine oil drain plug (2) and gasket (3) to drain engine oil.



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0B-4 Maintenance and Tune-Up:

- 5) Install new gasket and oil drain plug.
Tighten engine oil drain plug to specified torque.

CAUTION

To avoid water entry into oil pan or oil leakage into the environment do not reuse gasket once removed. Always use a new gasket.

Tightening torque

Engine oil drain plug (a): 13 N·m (1.3 kgf-m, 9.5 lbf-ft)



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- 6) Pour the recommended engine oil into oil filler opening, then install oil filler cap.

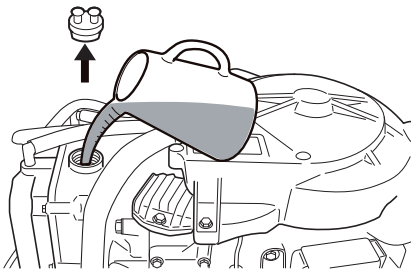
Recommended Engine Oil

- 4 stroke motor oil
- NMMA FC-W classification: SG, SH, SJ, SL, SM. or API classification: SG, SH, SJ, SL, SM.
- Viscosity rating: NMMA FC-W 10W-40 or SAE 10W-40

Engine oil amounts

Oil change only: 2.7 L (2.9/2.4 US/Imp.qt)

Oil filter change: 2.9 L (3.0/2.6 US/Imp.qt)



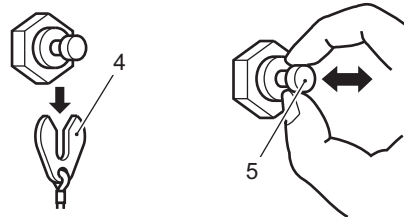
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- 7) To reset oil change reminder system's operation time to zero (cancellation).

NOTE

Refer to "Oil Change Reminder System Description" in Section 1A (Page 1A-14).

- Turn ignition key to "ON" position.
- Pull out emergency stop switch plate (4).
- Pull up emergency stop switch knob (5) three times in ten seconds. A short beep will be heard if cancellation is successfully finished.
- Turn ignition key to "OFF" position, then set emergency stop switch plate (4) in original position.




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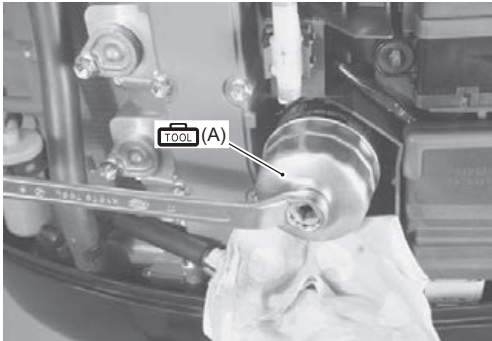
- 8) Start engine and allow it to run for several minutes at idle speed.
Check oil drain plug for oil leakage.
Turn off engine and wait for approx. two minutes, then recheck engine oil level.

Engine Oil Filter Replacement

- 1) Drain engine oil in the same manner of engine oil change procedure.
- 2) Remove STBD and PORT side covers. Refer to “Lower Side Cover Removal and Installation” in Section 2A (Page 2A-3).
- 3) Place a shop cloth under the oil filter before removal to absorb any oil released.
- 4) Using an oil filter wrench to loosen the oil filter, then remove the filter and O-ring.

Special tool

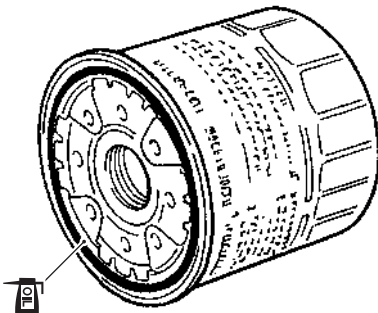
 (A): 09915-47341 (Oil filter wrench)



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NOTE

Before fitting a new oil filter, be sure to oil the O-ring.



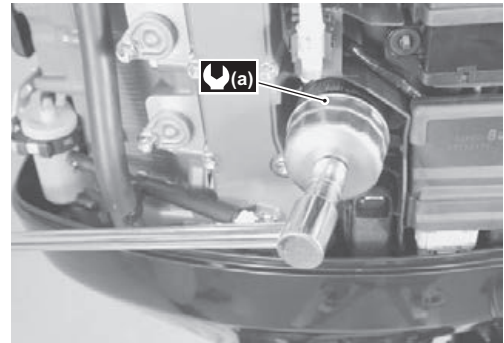
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- 5) Screw the new filter on by hand until filter O-ring contacts the mounting surface.

- 6) Tighten the filter 3/4 turn from the point of contact with mounting surface using an oil filter wrench.

Tightening torque

Engine oil filter (a): 14 N·m (1.4 kgf-m, 10.0 lbf-ft)



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- 7) Install PORT and STBD side covers. Refer to “Lower Side Cover Removal and Installation” in Section 2A (Page 2A-3).
- 8) Pour the recommended engine oil into the oil filler opening, then install oil filler cap. Check the oil level in the same manner of engine oil change procedure.

Recommended Engine Oil

- 4 stroke motor oil
- NMMA FC-W classification: SG, SH, SJ, SL, SM. or API classification: SG, SH, SJ, SL, SM.
- Viscosity rating: NMMA FC-W 10W-40 or SAE 10W-40

Engine oil amounts

Oil change only: 2.7 L (2.9/2.4 US/Imp.qt)

Oil filter change: 2.9 L (3.0/2.6 US/Imp.qt)

- 9) Reset oil change reminder system's operation time to zero (cancellation). Refer to “Engine Oil Change” (Page 0B-3).
- 10) 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.

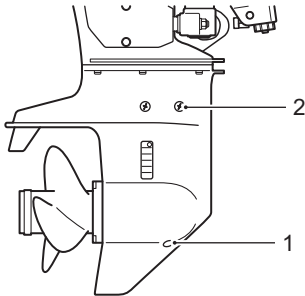
Gear Oil Change

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Change gear oil

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 (1) first, then remove gear oil level plug (2) and drain gear oil.



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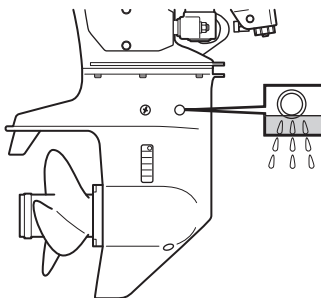
- 4) Fill with recommended gear oil through oil drain hole until oil just starts to flow out from oil level hole.

Recommended Gear Oil

- Suzuki Outboard Motor Gear Oil or API classification GL5, Viscosity rating SAE # 90 Hypoid gear oil.

Gear oil amount

610 ml (20.6/21.5 US/Imp. oz)



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- 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.

Spark Plug Removal and Installation

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Inspect spark plug

Every 100 hours (6 months)

Replace spark plug

Every 200 hours (12 months)

Standard spark plug

NGK DCPR6E

CAUTION

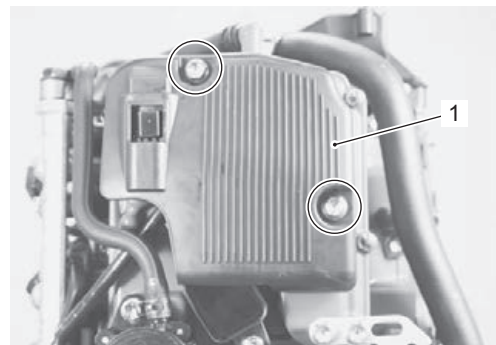
Only resistor (R) type spark plugs must be used with this engine. Using a non-resistor spark plug will cause ignition and fuel injection system malfunctions.

Removal

⚠ WARNING

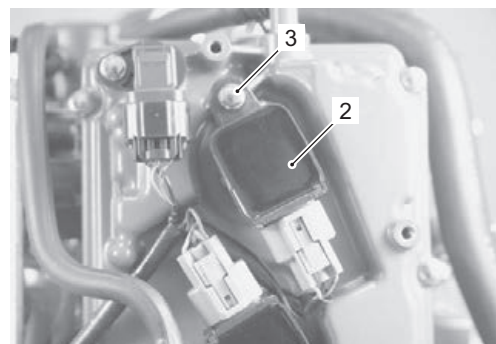
The hot engine can burn you. Wait until the engine is cool enough to touch.

- 1) Remove the two bolts and fuel hose guard (1).



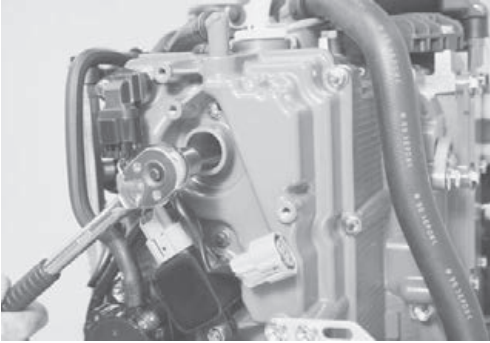
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- 2) Disconnect wiring harness connector from ignition coil (2), then remove the bolt (3) securing the ignition coil.



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3) Remove the ignition coil and spark plug.



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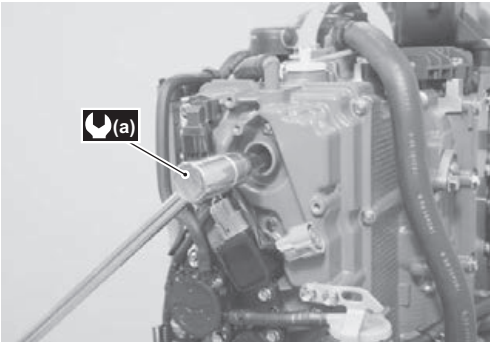
Installation

Installation is reverse order of removal.
Pay attention to the following:

- Tighten the spark plug to specified torque.

Tightening torque

Spark plug (a): 17 N·m (1.7 kgf-m, 12 lbf-ft)



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Spark Plug Inspection and Cleaning

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CAUTION

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

Inspect spark plug

Every 100 hours (6 months)

Replace spark plug

Every 200 hours (12 months)

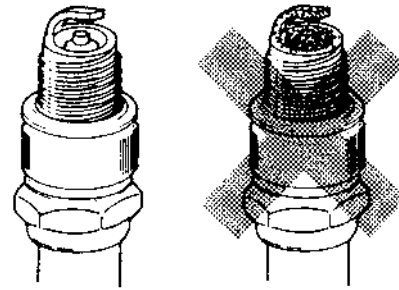
Standard spark plug

NGK DCPR6E

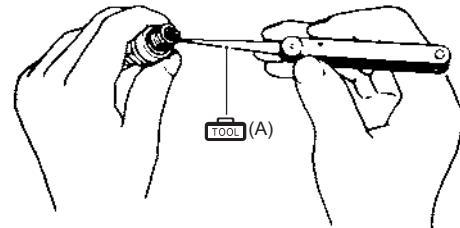
Carbon Deposits

Inspect for carbon deposits on spark plug base.

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



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Spark Plug Gap

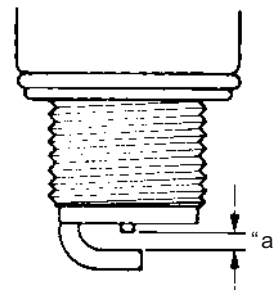
Measure spark plug gap with a thickness gauge. Adjust to within specified range if gap is out of specification.

Special tool

 : 09900-20803 (Thickness gauge)

Spark plug gap "a" (Standard)

0.8 – 0.9 mm (0.031 – 0.035 in.)



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Condition of Electrodes

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.

Tappet Clearance Inspection and Adjustment

ZAJ6110206006

Inspect tappet clearance

Every 200 hours (12 months)

Inspection

The tappet clearance specification is different for intake and exhaust valves.

Too small a tappet clearance may reduce engine power, too large a tappet clearance increases valve noise and hastens valve and seat wear.

When the tappets are set to the specified clearance, the engine will run without excessive noise from the valve mechanism and will deliver full power. In this engine, the tappet clearance is increased or decreased by replacing the shim disc, made of a special wear resistant material, fitted to the top of the tappet. Using the proper tools provides for easy removal and installation of the shim disc.

Tappet clearance adjustment should be checked and adjusted:

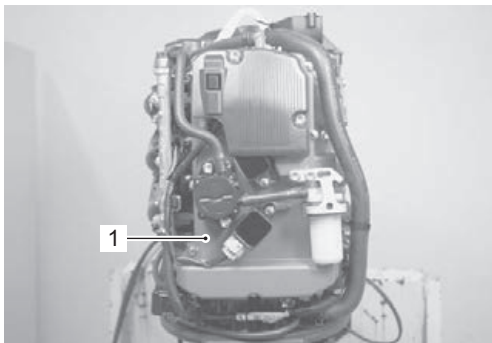
- During scheduled periodic inspection.
- When valve mechanism is serviced.
- When camshafts are disturbed by removing them for inspection.

1) Remove following parts:

- Engine lower side cover.
Refer to "Lower Side Cover Removal and Installation" in Section 2A (Page 2A-3).
- Ring gear cover.
Refer to "Ring Gear Cover Removal and Installation" in Section 1D (Page 1D-2).
- Ignition coils and spark plugs.
Refer to "Spark Plug Removal and Installation" (Page 0B-6) and "Spark Plug Inspection and Cleaning" (Page 0B-7).

2) Remove the cylinder head cover (1).

Refer to "Cylinder Head Cover Removal and Installation" in Section 1D (Page 1D-2).



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CAUTION

Rotate crankshaft clockwise to prevent water pump impeller damage.

- 3) Rotate crankshaft clockwise to bring cam nose vertical to shim surface.
- 4) Measure tappet clearances by inserting thickness gauge between cam and shim surface.

NOTE

- **Rotate crankshaft and measure clearance for each tappet respectively by bringing cam nose vertical to shim surface.**
- **All tappet clearances can be measured during two crankshaft rotations.**

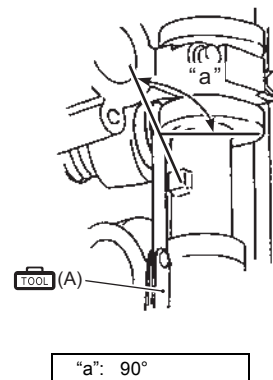
Special tool

TOOL (A): 09900-20803 (Thickness gauge)

Tappet clearance (cold engine condition)

IN.: 0.18 – 0.22 mm (0.007 – 0.009 in.)

EX.: 0.28 – 0.32 mm (0.011 – 0.013 in.)



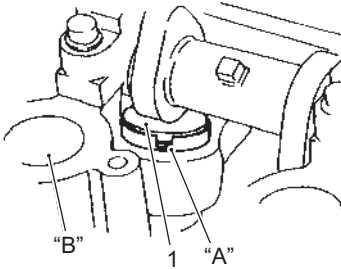
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- 5) If out of specification, adjust tappet clearance by changing shim.

Adjustment

Tappet clearances are adjusted by replacing tappet shim.

- 1) With cam nose vertical to valve, turn tappet cut-away towards center of cylinder head as shown in figure.




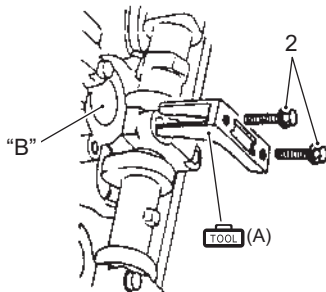
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1. Shim
"A": Cut section of the tappet
"B": Spark plug hole

- 2) Rotate crankshaft to open (lift up) valve and then remove camshaft housing bolts where shim is to be replaced.
- 3) Install special tool with camshaft housing bolts as shown in figure.

Special tool

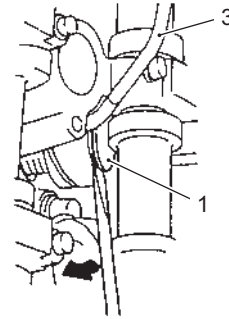
 (A): 09916-68810 (Tappet holder)



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2. Camshaft housing bolt
"B": Spark plug hole

- 4) Rotate top of cam 90 degree clockwise and remove shim from cut- away at tappet.
(Two tappets can be adjusted at the same time)



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1. Shim
3. Magnet

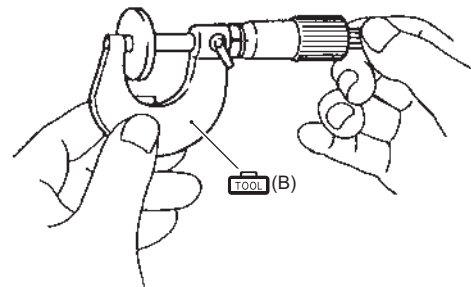
CAUTION

- Do not put your finger between camshaft and tappet while the tappet is being held with the tappet holder.
- Use a magnet to remove and install shim.
- When installing shim, identification mark on the shim should face down (towards tappet).

- 5) After removing shim, measure thickness of original shim and determine correct thickness of shim for proper tappet clearance as calculated by following formula.

Special tool

 (B): 09900-20205 (Micrometer (0 – 25 mm))



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Tappet clearance specifications

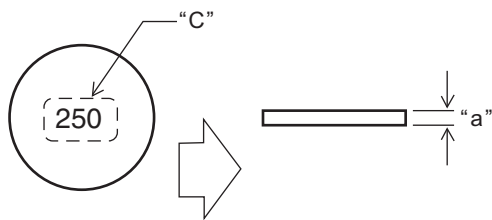
IN. side: $A = B + (C - 0.20 \text{ mm})$

EX. side: $A = B + (C - 0.30 \text{ mm})$

A: Correct thickness of shim for proper tappet clearance (mm)

B: Thickness of original shim (mm)

C: Original tappet clearance (mm)



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"C": I.D No.
"a": 2.50 mm

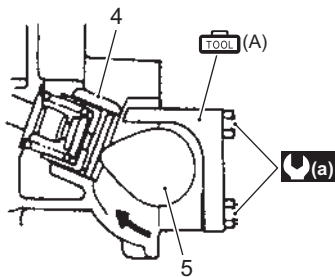
Shim size chart

I.D. No.	Thickness (mm)	I.D. No.	Thickness (mm)
218	2.180	260	2.600
220	2.200	262	2.620
222	2.220	264	2.640
224	2.240	266	2.660
226	2.260	268	2.680
228	2.280	270	2.700
230	2.300	272	2.720
232	2.320	274	2.740
234	2.340	276	2.760
236	2.360	278	2.780
238	2.380	280	2.800
240	2.400	282	2.820
242	2.420	284	2.840
244	2.440	286	2.860
246	2.460	288	2.880
248	2.480	290	2.900
250	2.500	292	2.920
252	2.520	294	2.940
254	2.540	296	2.960
256	2.560	298	2.980
258	2.580	300	3.000

- 6) Install shim with the identification number facing down (towards tappet).
- 7) Rotate crankshaft to open (lift up) valve.
- 8) Remove tappet holder (A) and tighten camshaft housing bolts (a) to specified torque.

Tightening torque

Camshaft housing bolt (a): 11 N·m (1.1 kgf-m, 8.0 lbf-ft)



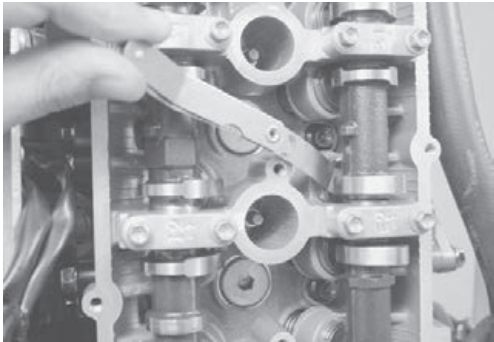
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4. Tappet
5. Camshaft

- 9) Recheck tappet clearance.

NOTE

After completing tappet clearance adjustment and securing camshaft housing bolts, inspect tappet clearance again.



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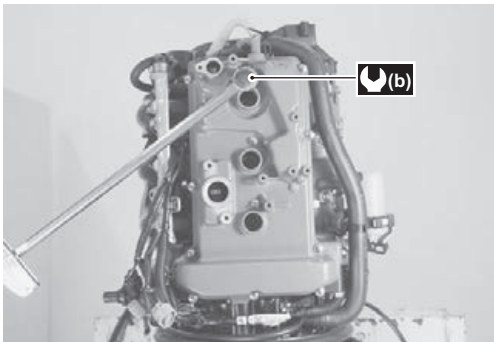
- 10) After checking and adjusting all valves, reinstall parts removed earlier.
Installation is reverse order of removal.
 - a) Cylinder Head Cover Installation.
 - Install the cylinder head cover.
Refer to "Cylinder Head Cover Removal and Installation" in Section 1D (Page 1D-2).

NOTE

Examine cylinder head cover gasket for damage. Always replace gasket if sealing performance is suspect.

Tightening torque

Cylinder head cover bolts (b): 11 N·m (1.1 kgf-m, 8.0 lbf-ft)



IAJ611020023-01

- b) Final assembly check
 - All parts removed have been returned to their original positions.
 - Check hose and wire routing.
Refer to "Wiring Harness Routing Diagram" in Section 4A (Page 4A-4).
 - Check oil leakage.

Tappet shim selection chart (IN. side)

TAPPET SHIM SELECTION CHART [IN. side]

Shim I.D. No.	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300
	Present shim size (mm)																																									
Tappet clearance (mm)	2.18	2.20	2.22	2.24	2.26	2.28	2.30	2.32	2.34	2.36	2.38	2.40	2.42	2.44	2.46	2.48	2.50	2.52	2.54	2.56	2.58	2.60	2.62	2.64	2.66	2.68	2.70	2.72	2.74	2.76	2.78	2.80	2.82	2.84	2.86	2.88	2.90	2.92	2.94	2.96	2.98	3.00
0.00 – 0.04																																										
0.05 – 0.09																																										
0.10 – 0.14																																										
0.15 – 0.17																																										
0.18 – 0.22																																										
0.23 – 0.27																																										
0.28 – 0.32																																										
0.33 – 0.37																																										
0.38 – 0.42																																										
0.43 – 0.47																																										
0.48 – 0.52																																										
0.53 – 0.57																																										
0.58 – 0.62																																										
0.63 – 0.67																																										
0.68 – 0.72																																										
0.73 – 0.77																																										
0.78 – 0.82																																										
0.83 – 0.87																																										
0.88 – 0.92																																										

SPECIFIED CLEARANCE / NO ADJUSTMENT REQUIRED

224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300						
228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300								
234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300											
238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300													
244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																
248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																		
254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																					
258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																							
264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																										
268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300																												
274	276	278	280	282	284	286	288	290	292	294	296	298	300																															
278	280	282	284	286	288	290	292	294	296	298	300																																	
284	286	288	290	292	294	296	298	300																																				
288	290	292	294	296	298	300																																						

1. Measure tappet clearance “Engine cold” .
2. Measure present shim size.
3. Match clearance in vertical column with present shim size in horizontal column

[EXAMPLE]

Tappet clearance is — 0.35 mm
Present shim size — 2.40 mm
Shim size to be used — 2.56 mm

TAPPET SHIM SELECTION CHART [EX. side]

Tappet shim selection chart (EX. side)

Shim I.D. No.																				
	Present shim size (mm)																			
Tappet clearance (mm)																				
0.00 – 0.04	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
0.05 – 0.09	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
0.10 – 0.14	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
0.15 – 0.17	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
0.18 – 0.22	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
0.23 – 0.27	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256
SPECIFIED CLEARANCE / NO ADJUSTMENT REQUIRED																				
0.33 – 0.37	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262
0.38 – 0.42	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266
0.43 – 0.47	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272
0.48 – 0.52	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276
0.53 – 0.57	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282
0.58 – 0.62	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286
0.63 – 0.67	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292
0.68 – 0.72	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296
0.73 – 0.77	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300	
0.78 – 0.82	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300			
0.83 – 0.87	274	276	278	280	282	284	286	288	290	292	294	296	298	300						
0.88 – 0.92	278	280	282	284	286	288	290	292	294	296	298	300								

1. Measure tappet clearance “Engine cold”.

2. Measure present shim size.

3. Match clearance in vertical column with present shim size in horizontal column

[EXAMPLE]

Tappet clearance is — 0.35 mm

Present shim size — 2.40 mm

Shim size to be used — 2.46 mm

Idle Speed and Idle Air Control (IAC) Duty Inspection

ZAJ6110206007

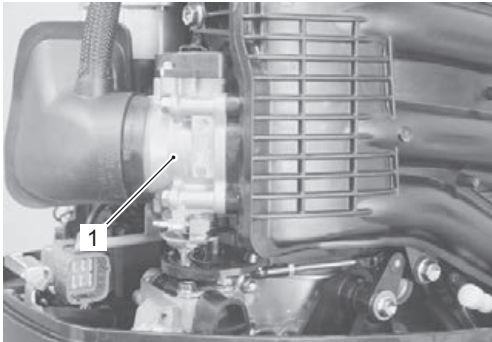
Inspect idle speed and IAC Duty

Initially after 20 hours (1 month) and every 200 hours (12 months)

NOTE

Before checking idle speed / IAC duty, make sure of the following.

- Engine must be warmed up.
- Check idle speed after engine speed has stabilized.
- Check throttle link mechanism and throttle valve for smooth operation.
- Lead wire and hoses of electronic fuel injection and engine control systems are connected securely.
- Ignition timing is within specification.
- Tappet clearance is checked according to maintenance schedule.
- No abnormal air drawn in from air intake system. After all items are confirmed, check idle speed and IAC duty.



IAJ611020025-01

1. Throttle body

Check idle speed and IAC duty as follows. To perform idle speed and IAC duty inspection, use personal computer and SDS tool.

- 1) Connect SDS tool to engine.
Refer to SDS operation manual for the step 1 procedure.
- 2) Start engine and allow to warm up.
- 3) Check engine speed and IAC duty by using "Service data / Engine data" mode on SDS.
- 4) If IAC duty and / or idle speed is out of specification, inspect idle speed control system referring to "Idle air control system check".

Idle speed in neutral gear (IAC duty)

750 – 850 r/min (Duty: Approx. 0 – 30%)

- 5) Shift into forward, Check in-gear idle speed.
If not, check idle air control system.

NOTE

- Trolling speed (in-gear idle speed) is same as idle speed.
- Idling / trolling speed of 750 – 850 r/min. is controlled by IAC system.

Idle speed in gear (IAC duty)

750 – 850 r/min (Duty: Approx. 0 – 30%)

Ignition Timing Inspection

ZAJ6110206008

Inspect ignition timing

Every 200 hours (12 months)

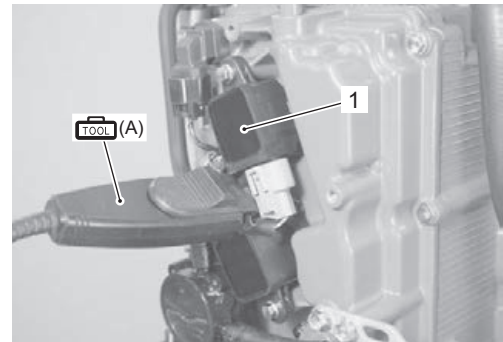
NOTE

Before checking the 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 (1) primary wire.

Special tool

 (A): 09930–76420 (Timing light)



IAJ611020026-01

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

Ignition timing

Approx. BTDC 5° at 1 000 r/min



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Breather Line and Fuel Line Inspection

ZAJ6110206009

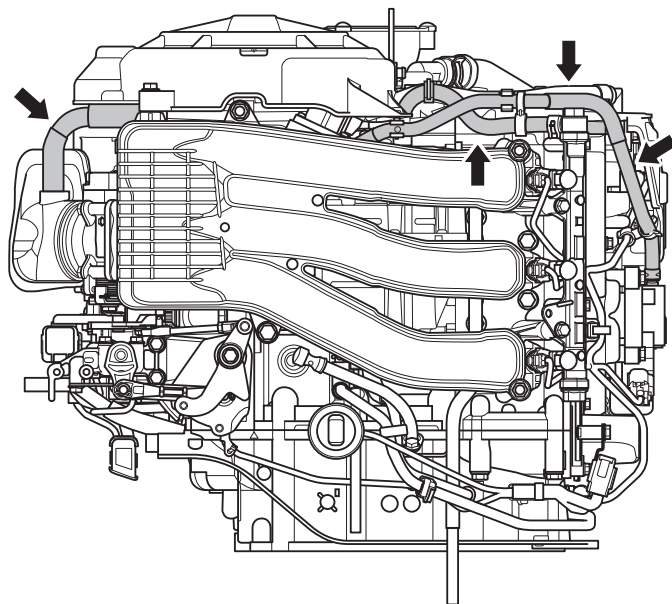
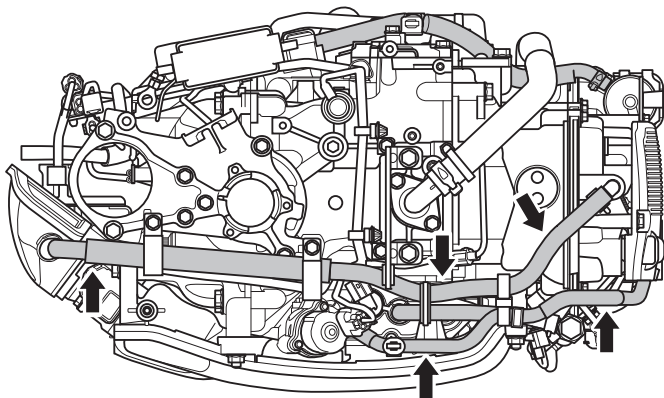
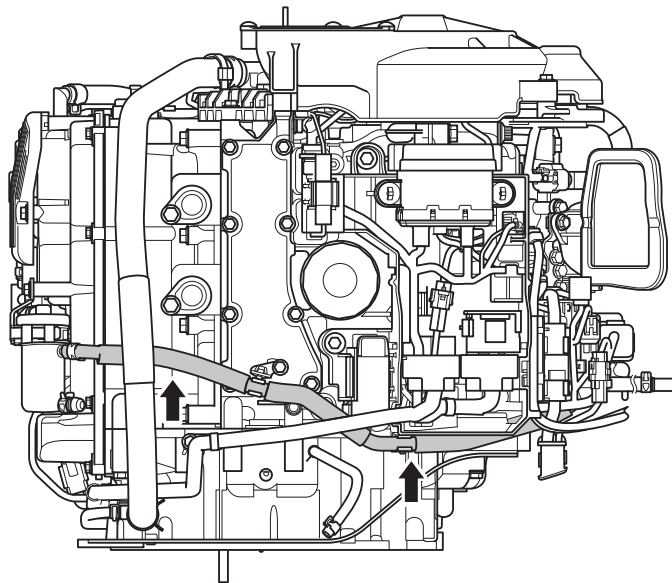
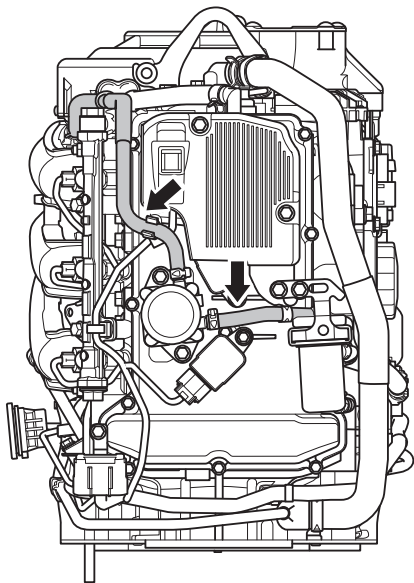
Inspect breather line and fuel line

Initially after 20 hours (1 month) and every 50 hours (3 months)

Replace breather line and fuel line

Every 2 years

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



← Fuel line check point

IAJ611020028-01

Low Pressure Fuel Filter Inspection

ZAJ6110206010

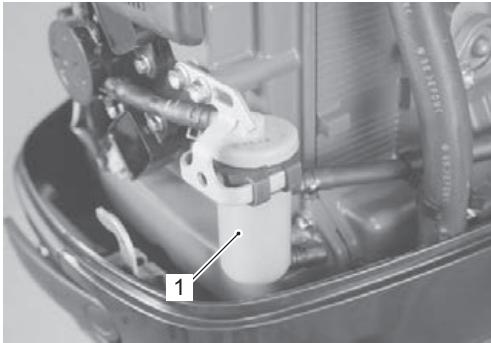
Inspect low pressure fuel filter

Every 50 hours (3 months)

Replace low pressure fuel filter

Every 400 hours or 2 years

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



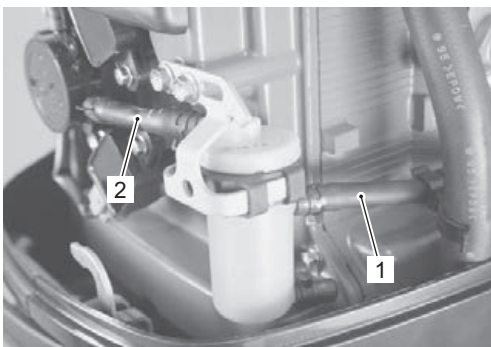
IAJ611020030-01

1. Low pressure fuel filter

⚠ WARNING

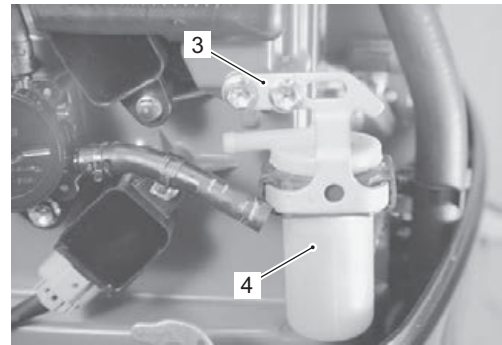
- Stop the motor before cleaning the fuel filter.
- Do not smoke and keep open flames and sparks away while working near any part of the fuel system.

- 1) Turn the engine off.
- 2) Disconnect the inlet hose (1) and outlet hose (2) from fuel filter.



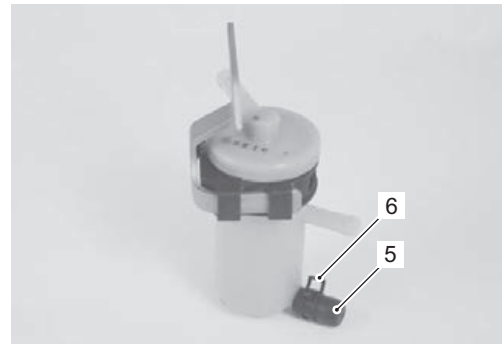
IAJ611020032-01

- 3) Remove the two bolts securing filter bracket (3), then remove the filter bracket and low pressure fuel filter (4).



IAJ611020033-01

- 4) Remove the cap (5), then drain and clean fuel filter.
- 5) Install the cap, then secure it with clamp (6).



IAJ611020034-01

- 6) Install the fuel filter and filter bracket properly.
- 7) Connect the fuel inlet and outlet hose to fuel filter, then secure the fuel hoses to the fuel filter with the hose clamp.
- 8) Restart the engine and check that there are no leaks around the fuel filter.

Water Pump and Water Pump Impeller Inspection

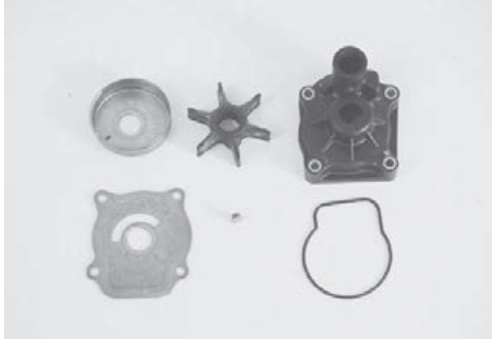
ZAJ6110206012

Inspect water pump

Every 200 hours (12 months)

Replace water pump impeller

Every 200 hours (12 months)



IAJ611020035-01

- 1) Remove the lower unit and water pump case.
Refer to "Water Pump Removal and Installation" in Section 3A (Page 3A-6).
- 2) Inspect water pump case, inner sleeve and under panel. Replace if wear, cracks, distortion or corrosion is found.
- 3) Inspect water pump impeller.
Replace if vanes are cut, torn or worn.
SUZUKI recommends that replacing the water pump impeller every 200 hours (12 months).
- 4) Assemble the water pump related items.
Refer to "Water Pump Removal and Installation" in Section 3A (Page 3A-6).
- 5) Install the lower unit assembly.
Refer to "Lower Unit Removal and Installation" in Section 3A (Page 3A-5).

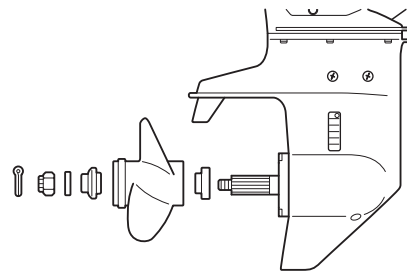
Propeller / Propeller Nut and Cotter Pin Inspection

ZAJ6110206013

Inspect propeller / propeller nut and cotter pin

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

- 1) Inspect propeller for bent, chipped or broken blades.
Replace propeller if damage noticeably affects operation.
- 2) Remove the propeller.
Refer to "Propeller Removal and Installation" in Section 3A (Page 3A-4).
- 3) Inspect propeller splines. Replace propeller if splines are worn, damaged or twisted.
- 4) Inspect propeller bush for slippage.
Replace if necessary.



IAJ611020029-01



I9J011020056-01

- 5) Install the propeller and related parts.
Refer to "Propeller Removal and Installation" in Section 3A (Page 3A-4).
- 6) Make sure that propeller nut is torqued to specification and cotter pin is installed securely.

Tightening torque

Propeller nut: 55 N·m (5.5 kgf-m, 40.0 lbf-ft)

Anodes Inspection

ZAJ6110206014

Inspect anodes

Every 50 hours (3 months)

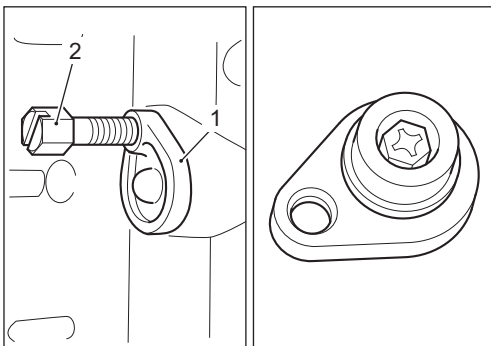
If 2/3 of zinc anode has corroded away, replace anode. The anode should be periodically cleaned with a wire brush to ensure maximum effectiveness.

CAUTION

Never paint the anode.

NOTE


The anode cover (1) may be separated from the power unit body by inserting and turning a 10 mm bolt (2) to function as a screw jack.

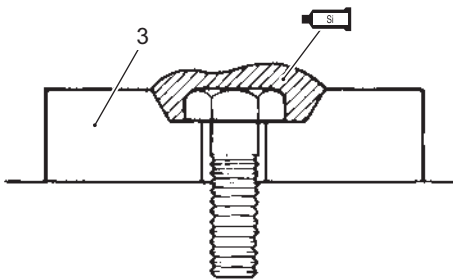


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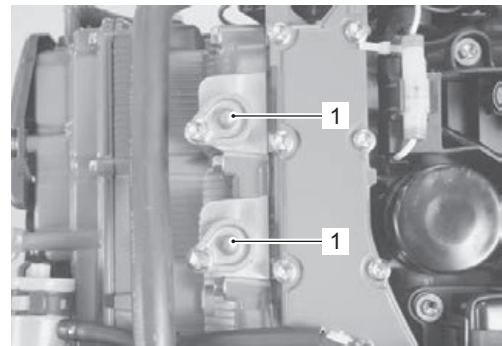
NOTE

The anode (3) securing bolt should be covered with suzuki silicone seal.

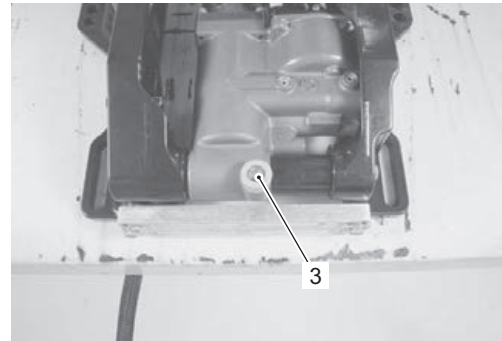
 : Sealant 99000-31120 (SUZUKI Silicone Seal (50 g))



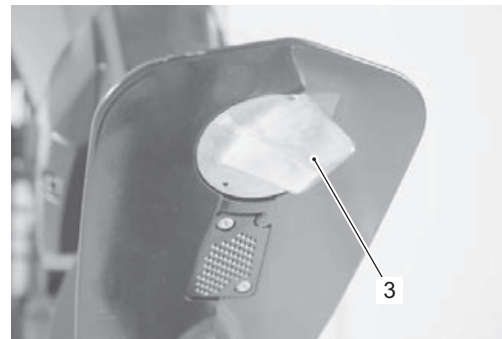
I9J011020023-01



IAJ611020037-03



IAJ611020038-01



IAJ611020039-01

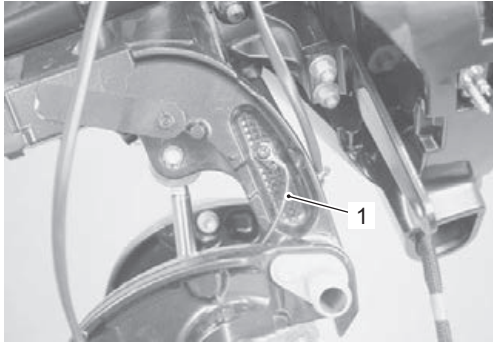
Bonding Wires Inspection

ZAJ6110206015

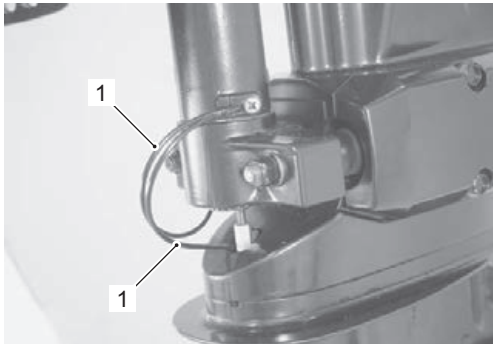
Inspect bonding wires

Every 50 hours (3 months)

- 1) If breakage or other damage is found on bonding wire (1), replace the wire.
- 2) If rust, corrosion or other damage is found on terminal, clean with cleaning solvent or replace wire.



IAJ611020040-01



IAJ611020041-01

Battery Inspection

ZAJ6110206016

Inspect battery

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 80 AH (290 kC) or larger

Refer to "Battery Requirement" in Section 0A (Page 0A-5).

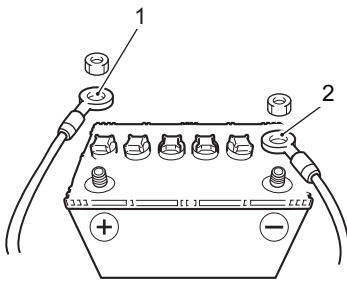
Connecting Battery

CAUTION

- If the battery leads are loose, incorrectly connected or reversed, the electrical system could be damaged.
- Wing nuts must not be used and hexagon nuts must be used to secure battery cable to the battery terminals to avoid loss of electrical power.

How to connect

- 1) Connect positive (+) terminal first.
- 2) Connect negative (–) terminal second.
- 3) Upon completion of connection, lightly apply grease to battery terminals.

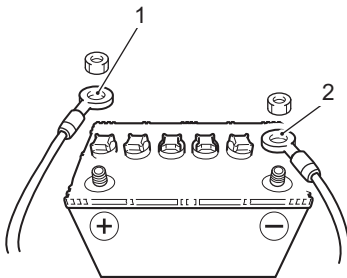


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- | |
|---------------|
| 1. Red lead |
| 2. Black lead |

How to disconnect

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



IAJ311020004-01

- | |
|---------------|
| 1. Red lead |
| 2. Black lead |

Battery Solution Level Check

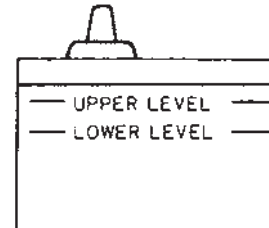
CAUTION

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 level should be between UPPER level and LOWER level.

If level is low, add distilled water only.



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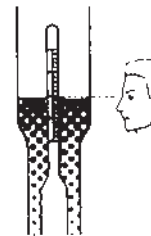
Battery Solution Specific Gravity Check

Measure the specific gravity of battery solution using a hydrometer.

Battery solution specific gravity (temperature)
1.28 (20 °C)

Special tool

Tool : 09900–28403 (Hydrometer)



I9J011020032-01

Bolts and Nuts Inspection

ZAJ6110206017

Inspect bolts and nuts

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.
Refer to "Tightening Torque Specifications" in Section 0A (Page 0A-13).

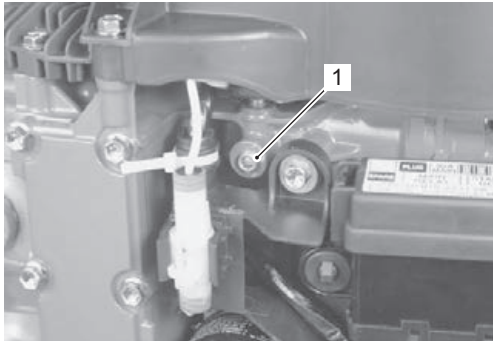
- Cylinder head cover bolts
- Intake manifold bolts and nuts
- Exhaust manifold cover bolts
- Flywheel bolt
- ECM ground bolt
- Power unit mounting bolts
- Clamp bracket shaft nut
- Gearcase bolts
- Propeller nut

Oil Pressure Check

ZAJ6110206018

Check the engine oil pressure periodically.


- 1) Check the engine oil level.
- 2) Remove the plug (1) for oil pressure service port.

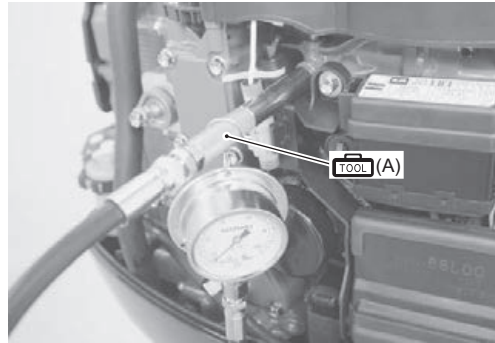


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- 3) Install the oil pressure gauge in place of service port.

Special tool

 (A): 09915-77311 (Oil pressure gauge)



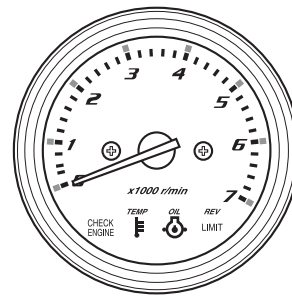
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- 4) Start engine and warm up.

Engine warm up (engine speed)

Summer: 5 min. (2 000 r/min.)

Winter: 10 min. (2 000 r/min.)



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- 5) After warming up, shift into forward gear and increase engine speed to 3 000 r/min, then compare pressure indicated on gauge to specifications.

NOTE

The figure shown below is a guideline only, not an absolute service limit.

Oil pressure

200 – 400 kPa (2.0 – 4.0 kg/cm², 28 – 57 psi.)

- 6) If oil pressure is lower or higher than specification, the following causes may be considered.

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
- 7) After testing, reinstall the plug for oil pressure service port.

Cylinder Compression Pressure Check

ZAJ6110206019


The compression pressure reading of cylinder is good indicator of its internal condition.


The decision to overhaul the power unit is often based on the results of a compression test.

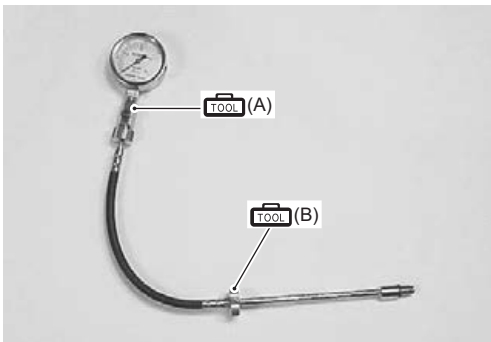
Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

- 1) Start engine and allow to warm up, then shut engine off.
- 2) Disconnect all fuel injector connectors at fuel injector.
- 3) Disconnect all ignition coil connectors.
- 4) Remove the bolts securing the ignition coil, then remove all ignition coils and spark plugs.
- 5) Install compression gauge attachment into spark plug hole, then connect compression gauge attachment to compression gauge.

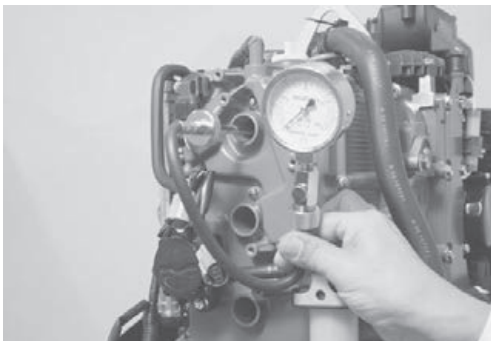
Special tool

 (A): 09915-64512 (Compression gauge)

 (B): 09915-69910 (Compression gauge attachment)

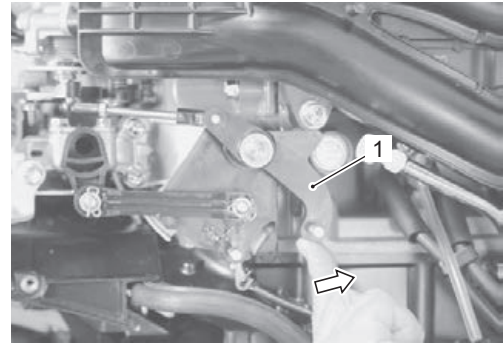


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IAJ611020044-01

- 6) Disconnect remote control throttle cable from throttle lever.
- 7) Move and hold throttle lever (1) in full-open position.



IAJ611020045-01

- 8) While cranking engine with starter motor, note maximum compression pressure reading on gauge for each cylinder.

NOTE

Figures shown are guidelines only, not absolute service limits.

Cylinder compression pressure

Standard: 1 200 – 1 800 kPa (12 – 18 kgf/cm², 171 – 256 psi.)

Cylinder compression pressure max. difference between cylinders

100 kPa (1.0 kgf/cm², 14 psi.)

Low compression pressure can indicate one or more of following:

- Excessively worn cylinder wall
- Worn piston or piston rings
- Stuck piston rings
- Poor seating of valves
- Ruptured or otherwise damaged cylinder head gasket

- 9) Reinstall parts removed earlier (spark plugs, ignition coils, etc.).

