

## MODEL APPLICATION

Year	Model	Beginning Hull No.
2007	JT1500B7F	US-KAW30001□607 US-KAW39001□607
2008	JT1500B8F	US-KAW40001□708 US-KAW49001□708
2009	JT1500E9F	US-KAW10001□809 US-KAW19001□809
2009	JT1500F9F	US-KAW90001□809
2010	JT1500EAF	US-KAW70001□910 US-KAW79001□910
2010	JT1500FAF	US-KAW80001□910

□:This digit in the hull number changes from one machine to another.



KAWASAKI HEAVY INDUSTRIES, LTD.  
Consumer Products & Machinery Company

Part No.99924-1377-04

Printed in Japan



**JETSKI**<sup>®</sup>  
watercraft

**ULTRA 250X**  
**ULTRA 260X**  
**ULTRA 260LX**



# **JET SKI<sup>®</sup> Watercraft Service Manual**

# Quick Reference Guide

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# Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

**For the duration of the warranty period,** we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

To get the longest life out of your JET SKI® watercraft:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki JET SKI® watercraft parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki JET SKI® watercraft are introduced by the Service Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.

- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

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## How to Use This Manual

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In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

### WARNING

**This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.**

### CAUTION

**This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.**

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

## NOTE

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

● Indicates a procedural step or work to be done.

○ Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.

★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

In most chapters an exploded view illustration of the system components follows the Table of Contents. In these illustrations you will find the instructions indicating which parts require specified tightening torque, oil, grease or a locking agent during assembly.

This model, JT1500B/E/F, is mounted with a four-stroke engine with supercharger.

When the JET SKI® watercraft is submerged and swamped, the four-stroke engine needs special care and systematic procedure for recovery compared with the two-stroke engine. Therefore in this manual, such procedures, which are not shown in SMs for two-stroke engines, are explained thoroughly to cope with the cases.

Refer to the section, After submerging in Chapter 9, Cooling and Bilge Systems for the summary and detailed procedures.

# General Information

## Table of Contents

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## 1-2 GENERAL INFORMATION

### Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on watercraft, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

Especially note the following:

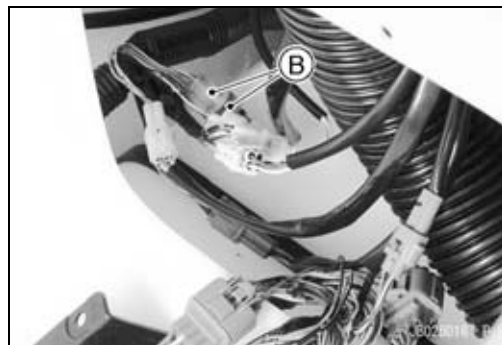
#### **Kawasaki Diagnostic System (KDS) Software**

KDS software that runs on Windows personal computer (PC) will be available as a diagnostic tool for watercraft with Kawasaki DFI system.

You need the following items to use the KDS.

Item	P/No.
KDS Software Version 3.□ (CD-ROM, Updated Version)	57001-1650
KDS3 Adapter	57001-1648 and 57001-1724 or 57001-1725
Communication Cables	57001-1649 and 57001-1688 or 57001-1745
KDS Adapter Cable	57001-1696

The connectors for the communication cable and KDS adapter cable are located in the front. Connect the communication cable to the KDS connector (4-pin) [A] and the KDS adapter cable between the ignition switch (immobilizer amplifier) lead connectors (6-pin) [B].



#### **Adjustments**

Adjustments shall be made in accordance with the Periodic Maintenance Chart or whenever troubleshooting or presence of symptoms indicate that adjustments may be required. Whenever running of the engine is required during maintenance it is best to have the watercraft in water.

#### **CAUTION**

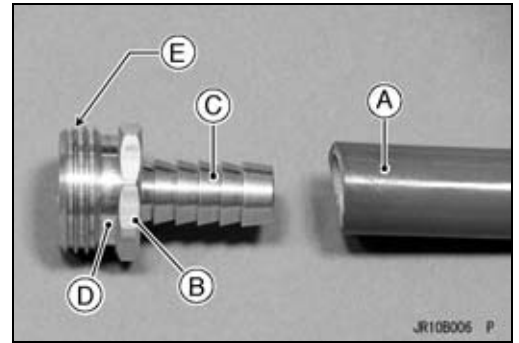
**Do not run the engine without cooling water supply for more than 15 seconds, especially in high revolutionary speed or severe engine and exhaust system damage will occur.**

#### **Auxiliary Cooling**

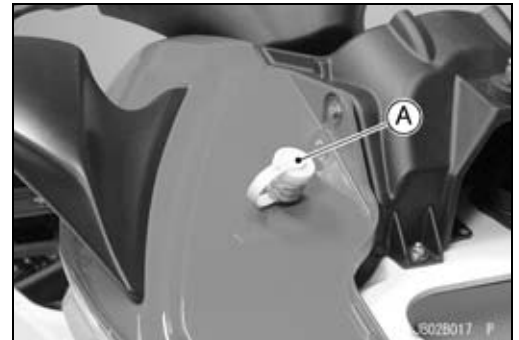
An auxiliary cooling supply may be used if the watercraft cannot be operated in water during adjustments. If possible, always operate the watercraft in water rather than use an auxiliary cooling supply.

**Before Servicing**

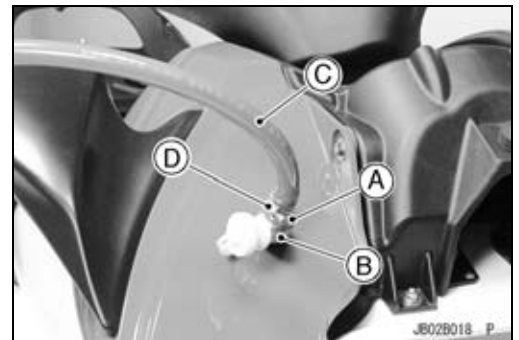
- Obtain a standard garden hose [A] and a garden hose adapter [B] as shown.
  - C: Garden Hose Fitting of Adapter
  - D: Flushing Fitting of Adapter
  - E: Thread: Rp 3/4
- Optional part (P/No. 92005-3746) is available as a garden hose adapter.



- Open the front storage compartment cover.
- Remove the flushing cap [A] on the brim of the storage compartment.



- Screw a garden hose adapter [A] onto the flushing fitting [B].
- Attach a garden hose [C] to a garden hose adapter and secure the hose clamp [D].



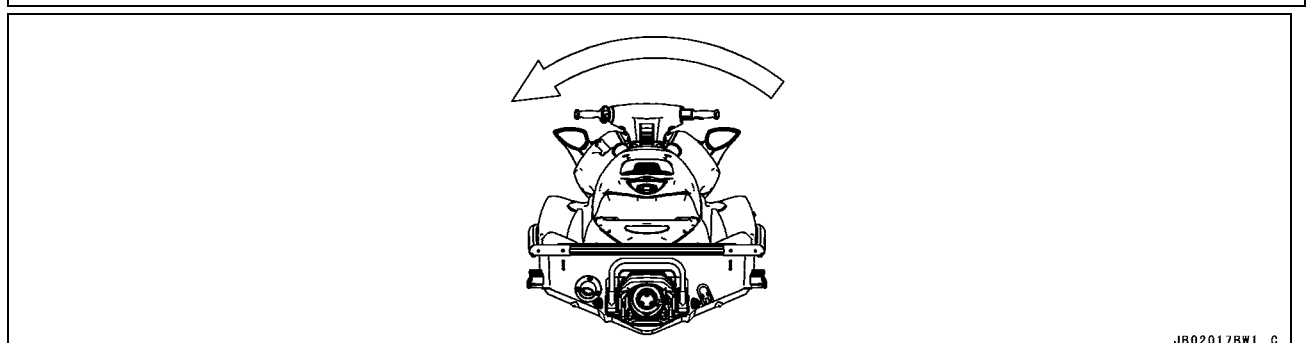
- Attach the garden hose to a faucet. Do not turn on the water until the engine is running and turn it off immediately when the engine stops. The engine requires 2.4 L/min (2.5 qts/min) at 1 800 rpm and 7.0 L/min (7.4 qts/min) at 6 000 rpm.

**CAUTION**

**Insufficient cooling supply will cause the engine and/or exhaust system to overheat and severe damage will occur. Excessive cooling supply may kill the engine and flood the cylinders, causing hydraulic lock. Hydraulic lock will cause severe damage to the engine. If the engine dies while using an auxiliary cooling supply, the water must be shut off immediately.**

**CAUTION**

**Always turn the boat on its left side. Rolling to the right side can cause water in the exhaust system to run into the engine, with possible engine damage.**



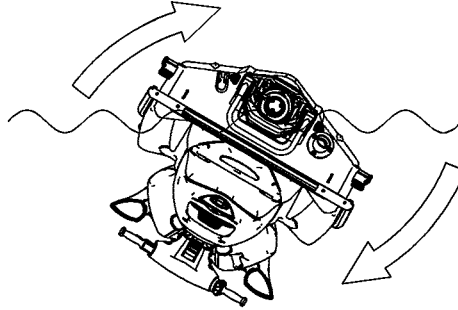


# 1-4 GENERAL INFORMATION

## Before Servicing

### CAUTION

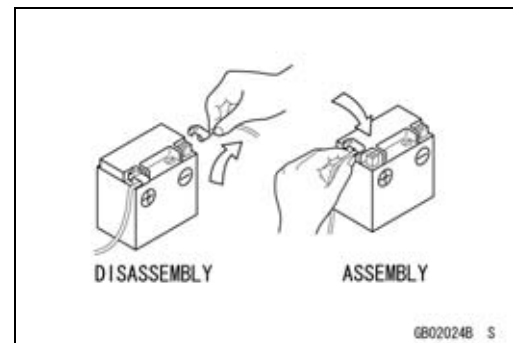
Turn the capsized boat clockwise so that the port side always faces downward. Turning counterclockwise can cause water in the exhaust system to run into the engine, with possible engine damage.



JB02018BW1 C

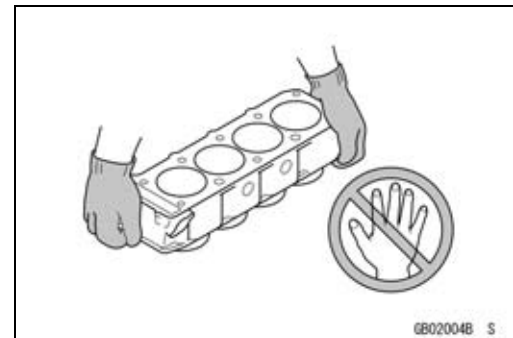
### Battery Ground

Before completing any service on the watercraft, disconnect the battery wires from the battery to prevent the engine from accidentally turning over. Disconnect the ground wire (-) first and then the positive (+). When completed with the service, first connect the positive (+) wire to the positive (+) terminal of the battery then the negative (-) wire to the negative terminal.



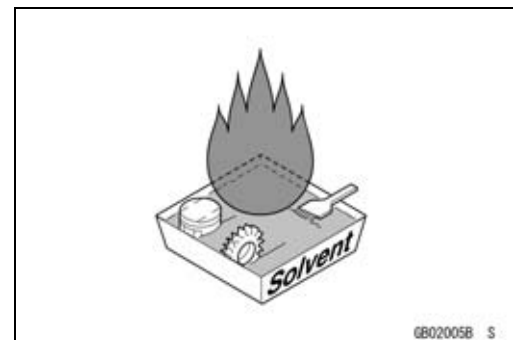
### Edges of Parts

Lift large or heavy parts wearing gloves to prevent injury from possible sharp edges on the parts.



### Solvent

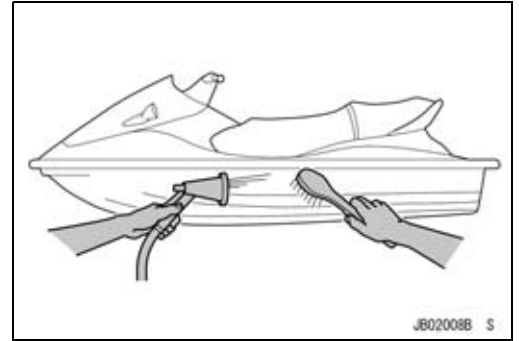
Use a high flash point solvent when cleaning parts. High flash point solvent should be used according to directions of the solvent manufacturer.



**Before Servicing**

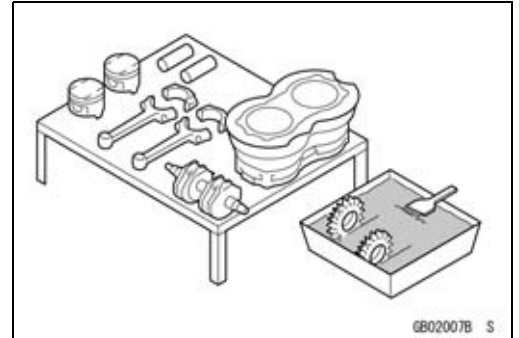
***Cleaning Watercraft before Disassembly***

Clean the watercraft thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during watercraft disassembly can cause excessive wear and decrease performance of the watercraft.



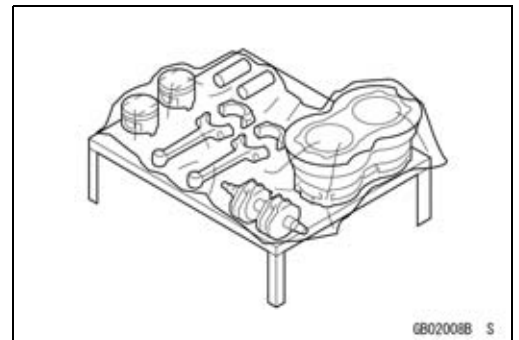
***Arrangement and Cleaning of Removed Parts***

Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



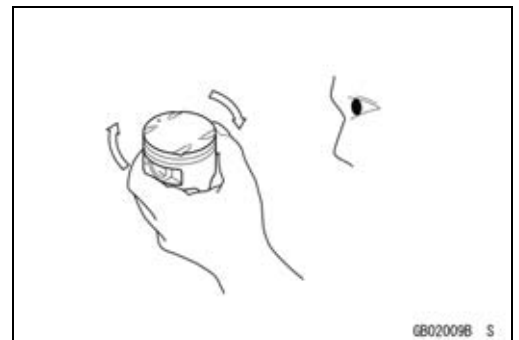
***Storage of Removed Parts***

After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



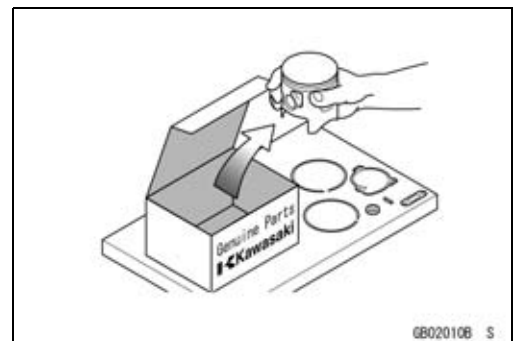
***Inspection***

Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its service limit.



***Replacement Parts***

Replacement Parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O-rings, Oil seals, Grease seals, circlips or cotter pins must be replaced with new ones whenever disassembled.

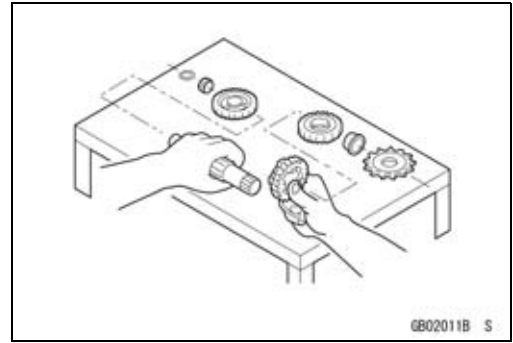


# 1-6 GENERAL INFORMATION

## Before Servicing

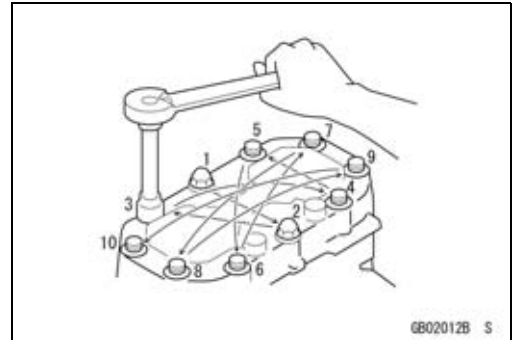
### Assembly Order

In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



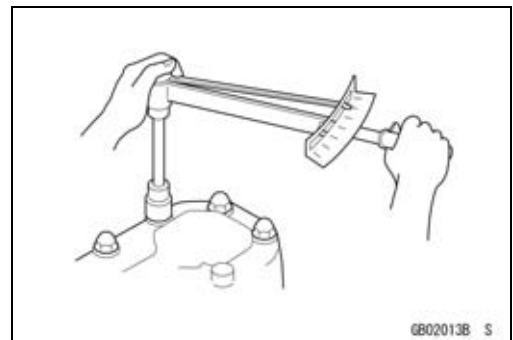
### Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.



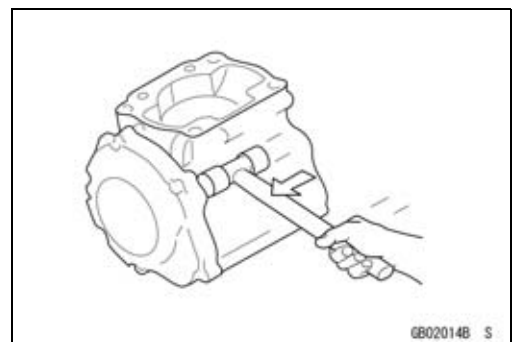
### Tightening Torque

Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.



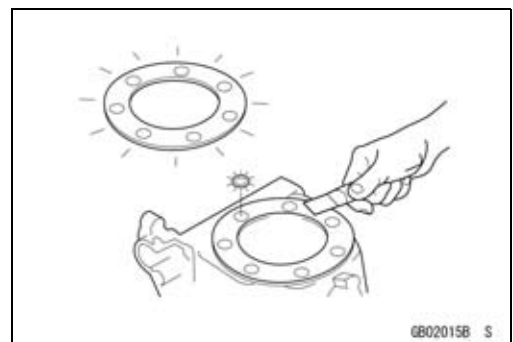
### Force

Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non-permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



### Gasket, O-ring

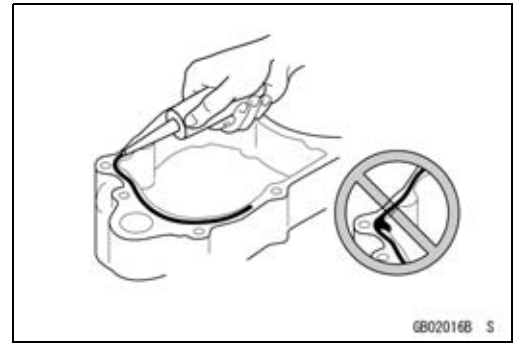
Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove old gaskets and clean the sealing surfaces thoroughly so that no gasket material or other material remains. Install new gaskets and replace used O-rings when re-assembling



**Before Servicing**

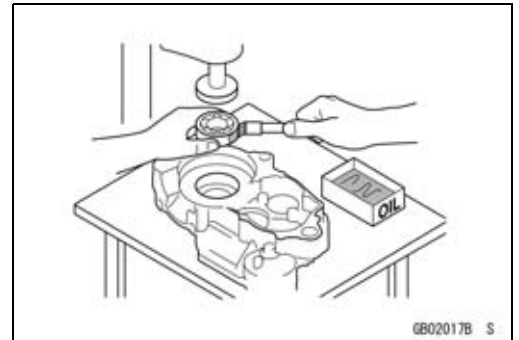
**Liquid Gasket, Locking Agent**

For applications that require Liquid Gasket or a Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



**Press**

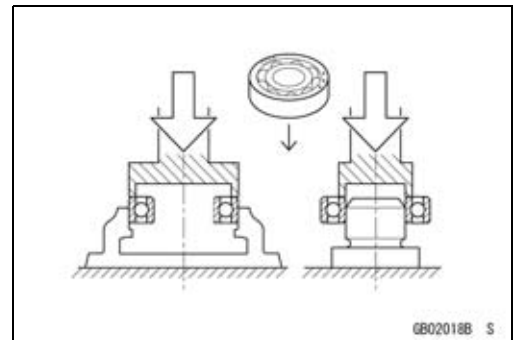
For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.



**Ball Bearing**

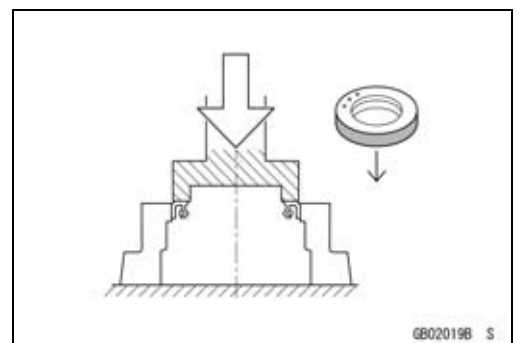
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

Pressing the incorrect race can cause pressure between the inner and outer race and result in bearing damage.

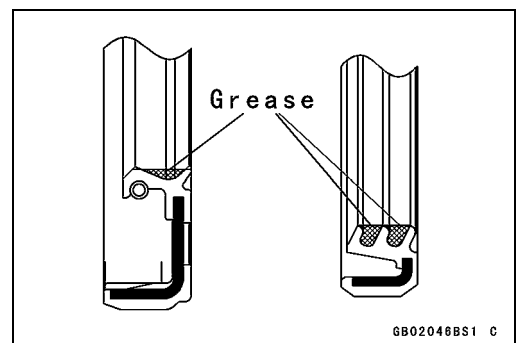


**Oil Seal, Grease Seal**

Do not remove pressed oil or grease seals unless removal is necessary. Replace with new ones whenever removed. Press new oil seals with manufacture and size marks facing out. Make sure the seal is aligned properly when installing.



Apply specified grease to the lip of seal before installing the seal.

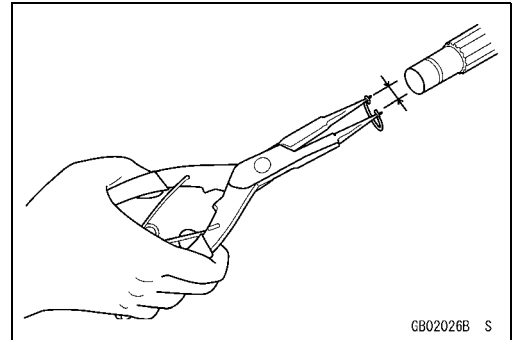


## 1-8 GENERAL INFORMATION

### Before Servicing

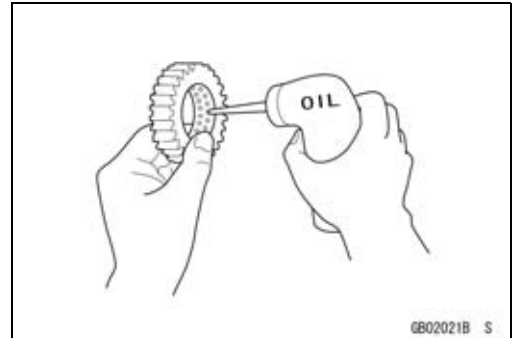
#### **Circlips, Cotter Pins**

Replace circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



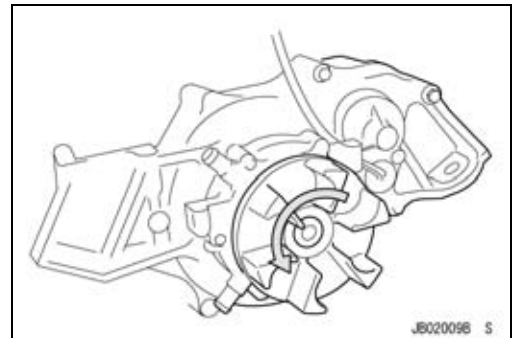
#### **Lubrication**

It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.



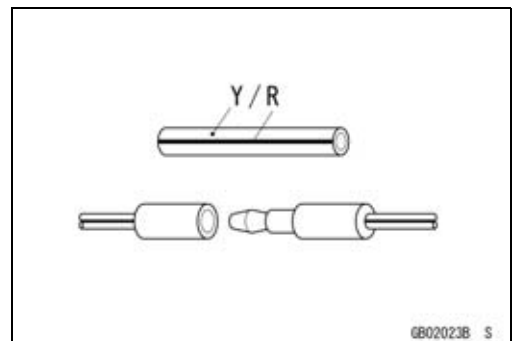
#### **Direction of Engine Rotation**

When rotating the crankshaft, by hand, the free play amount of rotating direction will affect the adjustment. Rotate the crankshaft to positive direction (counter-clockwise viewed from stern side).



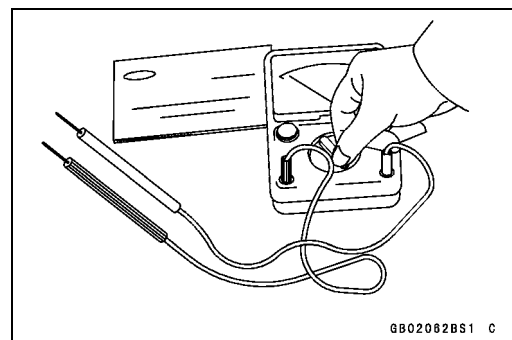
#### **Electrical Wires**

A two-color wire is identified first by the primary color and then the stripe color. Unless instructed otherwise, electrical wires must be connected to those of the same color.



#### **Instrument**

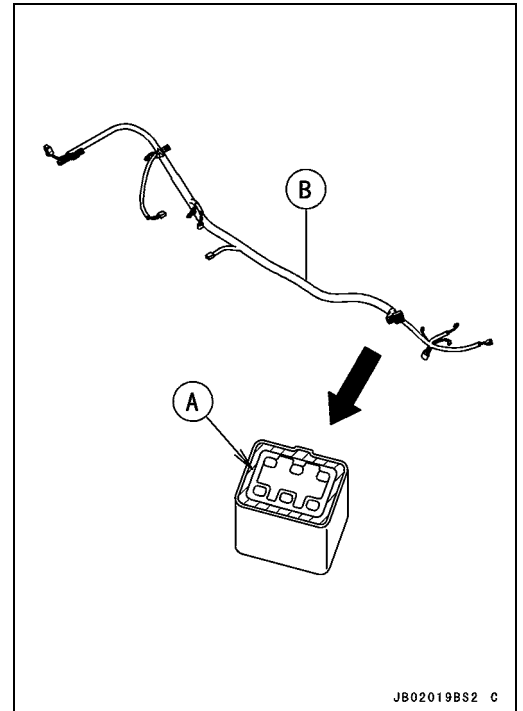
Use a meter that has enough accuracy for an accurate measurement. Read the manufacture's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



## Before Servicing

### ***Harness Connector***

Apply grease [A] on all connectors of harness [B] for water resistance. Do not apply grease on the only connector of inlet air pressure sensor.



# 1-10 GENERAL INFORMATION

## Model Identification

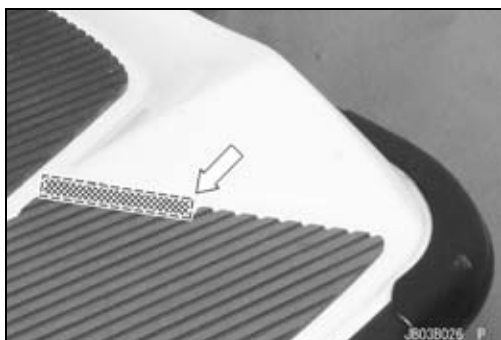
JT1500B7F Left Side View



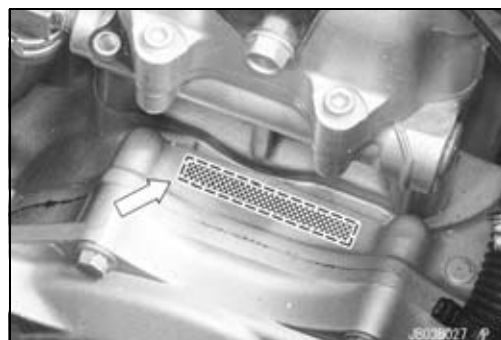
JT1500B7F Right Side View



Hull Identification Number (HIN)



Engine Number



Model Identification

JT1500B8F Left Side View



J803B034 P

JT1500B8F Right Side View



J803B035 P



# 1-12 GENERAL INFORMATION

## Model Identification

JT1500E9F Left Side View



JT1500E9F Right Side View



Model Identification

JT1500F9F Left Side View



JT1500F9F Right Side View



# 1-14 GENERAL INFORMATION

## General Specifications

Items	JT1500B7F ~ B8F	JT1500E9F ~ EAF/F9F ~ FAF
<b>Engine</b>		
Type	4-stroke, DOHC, 4-cylinder, water cooled	←
Displacement	1 498 cm <sup>3</sup> (91.4 cu in.)	←
Bore and Stroke	83 × 69.2 mm (3.27 × 2.72 in.)	←
Compression Ratio	7.8 : 1	8.4 : 1
Maximum Horsepower	184 kW (250 PS) @7 750 r/min (rpm)	191 kW (260 PS) @7 750 r/min (rpm)
Maximum Torque	237 N·m (24.2 kgf·m, 174.8 ft·lb) @6 500 r/min (rpm)	240 N·m (24.5 kgf·m, 177.0 ft·lb) @7 250 r/min (rpm)
Ignition System	Digital transistor	←
Lubrication System	Forced lubrication (semi-dry sump)	←
Carburetion System	FI (fuel injection) MIKUNI AC 60 × 1	←
Starting System	Electric starter	←
Cylinder Numbering Method	Front (bow) to rear (stern), 1-2-3-4	←
Firing Order	1-2-4-3	←
Valve Timing:		
Inlet:		
Open	15° BTDC	22.5° BTDC
Close	65° ABDC	67.5° ABDC
Duration	260°	270°
Exhaust:		
Open	73.5° BBDC	74.5° BBDC
Close	8.5° ATDC	9.5° ATDC
Duration	262°	264°
<b>Tuning Specifications</b>		
Spark plug:		
Type	NGK PMR9B	←
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)	←
Ignition Timing	0° ATDC @1 300 r/min ~ 8° BTDC @3 000 r/min (rpm)	←
Idle Speed	1 300 ±100 r/min (rpm) -in water 1 300 ±100 r/min (rpm) -out of water	← ←
Compression Pressure	819 ~ 1 268 kPa (8.3 ~ 12.9 kgf/cm <sup>2</sup> , 118 ~ 184 psi) @380 r/min (rpm)	840 ~ 1 298 kPa (8.6 ~ 13.2 kgf/cm <sup>2</sup> , 122 ~ 188 psi) @350 r/min (rpm)
<b>Drive System</b>		
Coupling	Direct drive from engine	←
Jet Pump:		
Type	Axial flow single stage	←
Thrust	6 780 N (692 kgf, 1 524 lb)	7 051 N (719 kgf, 1 585 lb)
Steering	Steerable nozzle	←

**General Specifications**

Items	JT1500B7F ~ B8F	JT1500E9F ~ EAF/F9F ~ FAF
Braking	Water drag	←
<b>Performance</b>		
†Minimum Turning Radius	4.0 m (13.1 ft)	←
†Fuel Consumption	74.5 L/h (19.7 US gal/h) @full throttle	←
†Cruising Range	105 km (65.2 mile) @full throttle 59 minutes (3 person)	←
<b>Dimensions</b>		
Overall Length	3 370 mm (132.7 in.)	←
Overall Width	1 195 mm (47.0 in.)	←
Overall Height	1 150 mm (45.3 in.)	←
Dry Weight:		
JT1500B7F	416 kg (917 lb)	---
JT1500B8F	410 kg (904 lb)	---
Curb Mass	---	482 kg (1 063 lb)
Air Draft (1)	848 mm (33.4 in.)	←
Maximum Draft (2)	370 mm (14.6 in.)	←
Fuel Tank Capacity	78 L (20.6 US gal)	←
<b>Engine Oil</b>		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	←
Viscosity	SAE 10W-40	←
Capacity	5.0 L (5.3 US qt)	←
<b>Electrical Equipment</b>		
Battery	12 V 18 Ah	←
Maximum Generator Output	16 A @14 V	←

†: This information shown here represents results under controlled conditions, and the information may not be correct under other conditions.

Specifications subject to change without notice, and may not apply to every country.

(1) Vertical distance between the floating plane in the light craft condition and the highest point of the craft structure, namely the handle top.

(2) Draft in the fully loaded craft condition.

\*The information shown here represents results under controlled conditions, and the information may not be correct under other condition.

# 1-16 GENERAL INFORMATION

## Unit Conversion Table

### Prefixes for Units

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	μ	× 0.000001

### Units of Mass

kg	×	2.205	=	lb
g	×	0.03527	=	oz

### Units of Volume

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (imp)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (imp)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (imp)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (imp)
mL	×	0.06102	=	cu in

### Units of Force

N	×	0.1020	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	2.205	=	lb

### Units of Length

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in.

### Units of Torque

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

### Units of Pressure

kPa	×	0.01020	=	kgf/cm <sup>2</sup>
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cmHg
kgf/cm <sup>2</sup>	×	98.07	=	kPa
kgf/cm <sup>2</sup>	×	14.22	=	psi
cmHg	×	1.333	=	kPa

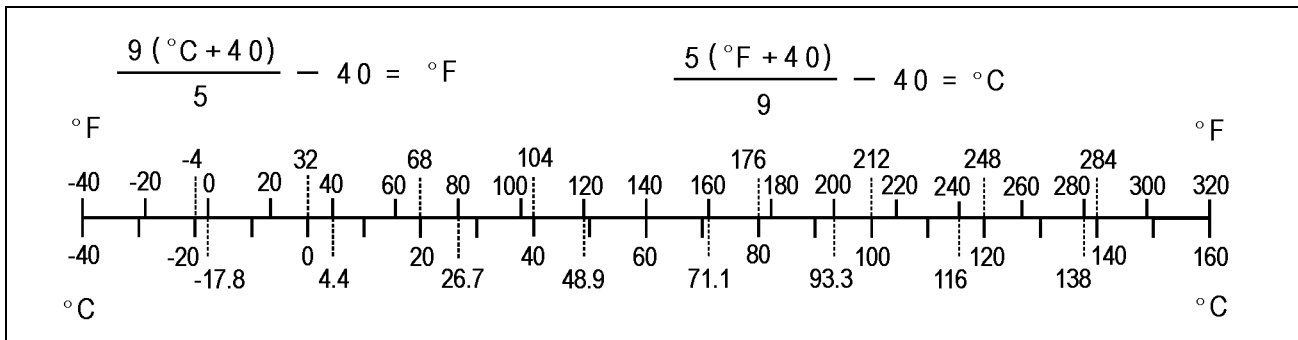
### Units of Speed

km/h	×	0.6214	=	mph
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### Units of Power

kW	×	1.360	=	PS
kW	×	1.341	=	HP
PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

### Units of Temperature



# Periodic Maintenance

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## 2-2 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the watercraft in good running condition. **The initial maintenance is vitally important and must not be neglected.**

Description	Frequency	Initial 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Reference
Inspect throttle control system (e)			●			2-12
Inspect/clean air box drain caps			●			2-12
Inspect supercharger drive belt for wear/damage and belt tension		●	●			2-13
Inspect supercharger gear oil level (refill if necessary)				● (or every year)		2-15
Inspect fuel vent check valve			●			2-16
Clean fuel pump screen (e)			●			2-16
Inspect throttle shaft spring (replace throttle body if necessary) (e)					●	2-17
Replace engine oil				● (or every year)		2-17
Replace engine oil filter					●	2-18
Check air suction valve					●	2-19
Inspect/adjust valve clearance (e)					●	2-19
Inspect/tighten engine mounting bolts				● (or every year)		2-25
Inspect/replace coupling damper					●	2-25
Flush cooling system (after each use in salt water)			●			2-26
Flush bilge line and filter			●			2-27
Inspect impeller blades for damage (remove)					●	2-28
Inspect steering cable/shift cable					●	2-28
Lubricate handlebar pivot (disassemble)			●			2-29
Inspect hull drain plugs (replace if necessary)				●		2-29
Inspect battery charging condition			●			2-30
Inspect battery terminals			●			2-30
Inspect spark plugs (replace if necessary) (e)			●			2-30
Lubricate throttle cable fitting at throttle body			●			2-31
Lubricate throttle cable and throttle fitting at throttle case			●			2-31
Lubricate steering cable/shift cable ball joints and steering nozzle/reverse bucket pivots			●			2-32

## PERIODIC MAINTENANCE 2-3

### Periodic Maintenance Chart

Description	Frequency	Initial 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Reference
Check all hoses, hose clamps, nuts, bolts, and fasteners		●	●			2-33
Replace fuel hoses		every 4 years				2-35
Apply corrosion protection coating to the supercharger rotors		Every storage or whenever the watercraft will not be in use for more than 30 days				2-36
Replace grease seal			● (or every year)			2-37

(e): Emission Related Items



## 2-4 PERIODIC MAINTENANCE

### Torque and Locking Agent

The following tables list the tightening torque for the major fasteners, and the parts requiring use of a non-permanent locking agent or silicone sealant.

Letters used in the "Remarks" column mean:

EO: Apply oil to the threads and seating surface.

L: Apply a non-permanent locking agent (Medium Strength: Loctite 242 Equivalent).

LN: Apply a non-permanent locking agent (High Strength: Loctite 271 Equivalent).

MO: Apply molybdenum disulfide grease oil solution.

R: Replacement Part

S: Tighten the fasteners following the specified sequence.

SS: Apply silicone sealant to the threads.

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
<b>Fuel System</b>				
Vehicle-down Sensor Mounting Screws	1.5	0.15	13 in-lb	
Bracket Mounting Bolts	8.8	0.90	78 in-lb	L
Inlet Manifold Mounting Bolts	25	2.5	18	
Inlet Manifold Mounting Nuts	20	2.0	14	
Delivery Pipe Mounting Bolts	7.8	0.80	69 in-lb	
Inlet Air Pressure Sensor Bracket Bolts	8.8	0.90	78 in-lb	L
Inlet Air Temperature Sensor	20	2.0	14	
Throttle Body Assy Mounting Bolts	20	2.0	14	
Inlet Manifold Drain Plug	20	2.0	14	
Throttle Body Assy Damper Bolts	20	2.0	14	
Crankshaft Sensor Screws	4.4	0.45	39 in-lb	L
Camshaft Position Sensor Bolt	9.8	1.0	87 in-lb	L
Water Temperature Sensor	15	1.5	11	see text
Oil Temperature Sensor	15	1.5	11	see text
ECU Mounting Bolts	3.0	0.3	27 in-lb	L
Relay Bolts	2.5	0.25	22 in-lb	L
Throttle Sensor Mounting Screws	2.0	0.20	18 in-lb	
ISC Actuator Mounting Bolts	4.9	0.50	43 in-lb	
Fuse Bracket Bolt	2.5	0.25	22 in-lb	L
Harness Bolts	8.8	0.90	78 in-lb	L
Charging Temperature Sensor	15	1.5	11	
Fuel Filler Tube Clamp Screws	2.9	0.30	26 in-lb	
Fuel Pump Holder Clamp Screws	2.9	0.30	26 in-lb	
Oil Separator Tank Mounting Bolts	8.8	0.90	69 in-lb	L
Air Box Bracket Bolts	8.8	0.90	69 in-lb	L
Air Box Bolts	8.8	0.90	69 in-lb	L
Rear Supercharger Bolts	45	4.6	33	
Belt Tensioner Plate Bolts	45	4.6	33	
Idler Bolt	30	3.1	22	
Intake Pipe Bolts (IN/OUT)	7.8	0.80	69 in-lb	
Gear Oil Level Gauge	19	1.9	14	
Front Supercharger Bolts	45	4.6	33	
Drain Bolt	19	1.9	14	

## PERIODIC MAINTENANCE 2-5

### Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Pulley Nut (JT1500E9F Late Model ~/F9F Late Model ~)	22	2.2	16	
Pulley Bolt (JT1500B7F ~ B8F/E9F Early Model/F9F Early Model)	19	1.9	14	
Belt Cover Bolts	4.9	0.50	43 in-lb	L
Intercooler Plate Bolts	8.8	0.90	69 in-lb	L
Intercooler Bracket Bolts	7.8	0.80	69 in-lb	
Intercooler Mounting Bolts	30	3.1	22	
Water Hose Joint	11	1.1	95 in-lb	L
Water Hose Joint	20	2.0	14	L
Intercooler Cover Bolts	10	1.0	89 in-lb	
Blow off Valve Bolts	7.8	0.80	69 in-lb	
Throttle Cable Locknuts	20	2.0	14	
Pulley Plate Bolts	15	1.5	11	L
Belt Tension Adjuster	3.0	0.31	27 in-lb	
Pulley Nose Mounting Bolts	15	1.5	11	
<b>Engine Lubrication System</b>				
Breather Plate Bolts	7.8	0.80	69 in-lb	
Oil Filler Cap	–	–	–	Hand-tighten
Oil Passage Plugs	20	2.0	14	L
Oil Separator Tank Mounting Bolts	4.9	0.50	43 in-lb	L
Breather Case Mounting Bolts	7.8	0.80	69 in-lb	
Breather Pipe Bolts	8.8	0.90	78 in-lb	
Oil Passage Joints	11	1.1	95 in-lb	L
Oil Cooler Assembly Bolts	7.8	0.80	69 in-lb	
Oil Pressure Switch	15	1.5	11	SS
Oil Passage Bolt	78	8.0	58	S
Oil Filter	18	1.8	13	EO
Oil Cooler Positioning Bolt	20	2.0	14	S
Oil Pan Bolts	7.8	0.80	69 in-lb	S
Dipstick Tube Bolts	7.8	0.80	69 in-lb	L, S
Oil Pump Sprocket Bolt	16	1.6	12	LN
Oil Pump Cover Bolts	7.8	0.80	69 in-lb	
Oil Pressure Relief Valve	15	1.5	11	LN
Oil Pipe Bolts	7.8	0.80	69 in-lb	
Oil Pump Chain Guide Bolt	7.8	0.80	69 in-lb	
Chain Guide Spring Plate Bolt	7.8	0.80	69 in-lb	
Oil Pump Body Plug	20	2.0	14	L
Oil Pump Body Bolts	7.8	0.80	69 in-lb	
Oil Screen Bolts	7.8	0.80	69 in-lb	
Water Hose Joints	20	2.0	14	SS
<b>Exhaust System</b>				
Exhaust Manifold Mounting Nuts	30	3.1	22	



## PERIODIC MAINTENANCE 2-7

### Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Engine Damper Mounting Bolts	16	1.6	12	L
<b>Engine Bottom End</b>				
Crankshaft Sensor Cover Bolts	7.8	0.80	69 in-lb	
Engine Bracket Mounting Bolts	32	3.3	24	L
Timing Rotor Bolt	20	2.0	14	L
Connecting Rod Nuts	–	–	–	MO, see text
Oil Passage Plugs	20	2.0	14	L
Stator Mounting Bolts	12	1.2	104 in-lb	L
Grommet Cover Bolts	9.8	1.0	87 in-lb	L
Magneto Cover Bolts	20	2.0	14	
Output Cover Bolts	7.8	0.80	69 in-lb	
Output Shaft (JT1500B7F ~ B8F/E9F Early Model/F9F Early Model)	245	25.0	180	MO
Output Shaft (JT1500E9F Late Model ~ /F9F Late Model ~ )	265	27.0	195	MO
Coupling (JT1500B7F ~ B8F)	110	11	81	
Coupling (JT1500E9F ~ /F9F ~ )	110	11	81	L
Crankcase Bolts (M10)	50	5.0	36	MO, S
Crankcase Bolts (M8)	29	3.0	22	MO, S
Crankcase Bolts (M8)	29	3.0	22	S
Crankcase Bolts (M6)	12	1.2	104 in-lb	S
<b>Cooling and Bilge Systems</b>				
Water Hose Joint (L Shape Type)	11	1.1	95 in-lb	L
Water Hose Joint (Straight Shape Type)	20	2.0	14	L
Cooling Hose Clamp Screws	2.5	0.25	22 in-lb	
Intercooler Bracket Bolts	7.8	0.80	69 in-lb	
Intercooler Mounting Bolts	30	3.1	22	
Intercooler Cover Bolts	10	1.0	89 in-lb	
Intercooler Plate Bolts	8.8	0.90	69 in-lb	L
<b>Drive System</b>				
Coupling (JT1500B7F ~ B8F)	39	4.0	29	
Coupling (JT1500E9F ~ /F9F ~ )	265	27	195	
Drive Shaft Holder Mounting Bolts	22	2.2	16	L
<b>Pump and Impeller</b>				
Pump Bracket Mounting Bolts (2)	19	1.9	14	LN, SS
Pump Bracket Mounting Bolts (4)	9.8	1.0	87 in-lb	L
Pump Mounting Bolts	36	3.7	27	L
Grate Mounting Bolts	9.8	1.0	87 in-lb	L
Pump Cover Mounting Bolts	7.8	0.80	69 in-lb	L
Impeller (JT1500B7F ~ B8F)	98	10	72	
Impeller (JT1500E9F ~ /F9F ~ )	147	15	108	
Pump Cap Bolts	3.9	0.4	35 in-lb	L
Pump Outlet Mounting Bolts	19	1.9	14	L

## 2-8 PERIODIC MAINTENANCE

### Torque and Locking Agent

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Steering Nozzle Pivot Bolts	19	1.9	14	L
Filter Cover Mounting Bolts	9.8	1.0	87 in-lb	L
Steering Cable Joint Bolt	9.8	1.0	87 in-lb	L
<b>Steering</b>				
Handlebar Clamp Bolts	16	1.6	12	L
Adjustable Steering Holder Nut	4.9	0.50	43 in-lb	
Steering Neck Mounting Bolts	16	1.6	12	L
Steering Shaft Locknut	49 ~ 59	5.0 ~ 6.0	36 ~ 43	
Steering Holder Mounting Nuts	20	2.0	14.5	L
Throttle Case Mounting Screws	3.9	0.40	35 in-lb	
Start/stop Switch Case Mounting Screws	3.9	0.40	35 in-lb	
Shift Cable Nut	39	4.0	29	
Steering Cable Nut	39	4.0	29	
Steering Shaft Nut	2.9	0.30	26 in-lb	see text
Steering Cable Joint Bolt	9.8	1.0	87 in-lb	L
Ball Joint	9.8	1.0	87 in-lb	L
Shift Cable End Nut	9.8	1.0	87 in-lb	
Reverse Bucket Pivot Bolts	19	1.9	14	L
Steering Cable Bracket Bolts (JT1500B7F ~ B8F)	—	—	—	L
Steering Cable Bracket Bolts (JT1500E9F ~ /F9F ~ )	9.8	1.0	87 in-lb	L
<b>Hull/Engine Hood</b>				
Stabilizer Bolts	9.8	1.0	87 in-lb	LN
Front Bumper Bolts	—	—	—	L
Exhaust Outlet Bolts	—	—	—	L
Handrail Plate Nuts	9.8	1.0	87 in-lb	L
Side Cover Nuts	—	—	—	L
Front Duct Bolts	—	—	—	L
Damper Bracket Bolts	—	—	—	L
Seat Lock Bolts	—	—	—	L
Front Storage Compartment Cover Bolts	—	—	—	L
Steering Cover Bolts	—	—	—	L
Meter Screen Bolts	—	—	—	LN
Bracket Bolts	8.8	0.90	78 in-lb	L
Reboarding Step Bolts	—	—	—	L
Hinge Shaft Nut	15.7	1.60	11.6	
<b>Electrical System</b>				
Vehicle-down Sensor Mounting Screws	1.5	0.15	13 in-lb	
Bracket Bolts	8.8	0.90	78 in-lb	L
Starter Relay Case Bolts	7.8	0.80	69 in-lb	
Water Temperature Sensor	15	1.5	11	see text
Starter Relay Mounting Nuts	3.5 ~ 4.5	0.35 ~ 0.45	30 ~ 40 in-lb	

**Torque and Locking Agent**

Fastener	Torque			Remarks
	N-m	kgf-m	ft-lb	
Starter Cable Mounting Nuts	3.5 ~ 4.5	0.35 ~ 0.45	30 ~ 40 in-lb	
Oil Temperature Sensor	15	1.5	11	see text
Camshaft Position Sensor Bolt	9.8	1.0	87 in-lb	L
Regulator/Rectifier Bolts	7.8	0.80	69 in-lb	
Relay Bolts	2.5	0.25	22 in-lb	L
ECU Mounting Bolts	3.0	0.3	27 in-lb	L
Fuse Bracket Bolt	2.5	0.25	22 in-lb	L
Charging Temperature Sensor	15	1.5	11	
Multifunction Meter Mounting Bolts (JT1500B7F ~ B8F)	3.9	0.40	35 in-lb	
Multifunction Meter Mounting Bolts (JT1500E9F ~ /F9F ~ )	9.8	1.0	87 in-lb	
Start/stop Switch Case Mounting Screw	3.9	0.40	35 in-lb	
Speed Sensor Mounting Bolts	3.9	0.40	35 in-lb	L
Starter Motor Through Bolts	6.4	0.65	56 in-lb	L, R
Starter Motor Mounting Bolts	8.8	0.90	78 in-lb	L
Starter Motor Ground Bolt	8.8	0.90	78 in-lb	
Starter Motor Terminal Nut	8.8	0.90	78 in-lb	
Stator Coil Bolts	12	1.2	104 in-lb	L
Grommet Holder Bolts	8.8	0.90	78 in-lb	L
Ignition Coil Mounting Bolts	8.8	0.90	78 in-lb	L
Timing Rotor Bolt	20	2.0	14	L
Crankshaft Sensor Screws	4.4	0.45	39 in-lb	L
Rubber Grommet Holder Screws	4.4	0.45	39 in-lb	L
Crankshaft Sensor Cover Bolts	7.8	0.80	69 in-lb	
Spark Plugs	13	1.3	113 in-lb	

The next table, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

**General Fasteners (stainless bolt and nut)**

Threads dia. (mm)	Torque		
	N-m	kgf-m	ft-lb
6	5.9 ~ 8.8	0.60 ~ 0.90	52 ~ 78 in-lb
8	16 ~ 22	1.6 ~ 2.2	12 ~ 16
10	30 ~ 41	3.1 ~ 4.2	22 ~ 30

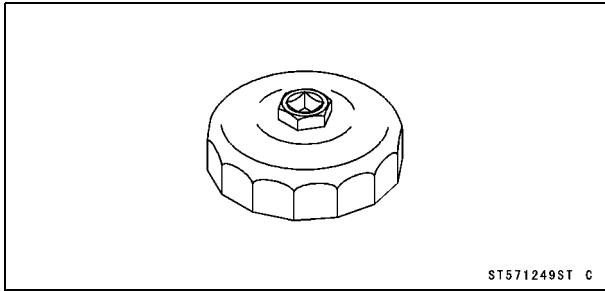
## 2-10 PERIODIC MAINTENANCE

### Specifications

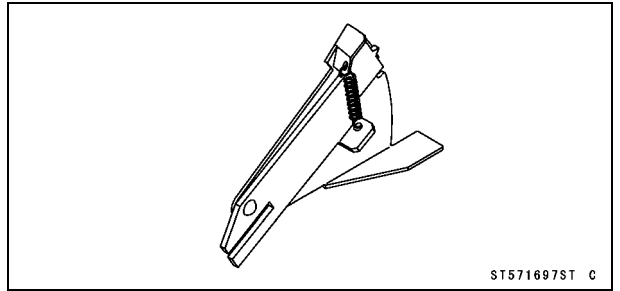
Item	Standard	Service Limit
<b>Fuel System</b> Throttle Lever Free Play	about 2 mm (0.08 in.)	— — —
<b>Engine Lubrication System</b> Engine Oil: Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	— — —
Viscosity	SAE 10W-40	— — —
Capacity	4.0 L (4.2 US qt, with or without the filter) 5.0 L (5.3 US qt, when engine is completely dry)	— — —
<b>Engine Top End</b> Valve Clearance: IN	0.15 ~ 0.24 mm (0.0059 ~ 0.0094 in.)	— — —
EX	0.32 ~ 0.41 mm (0.0126 ~ 0.0161 in.)	— — —
<b>Electrical System</b> Spark Plug Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)	— — —

**Special Tools**

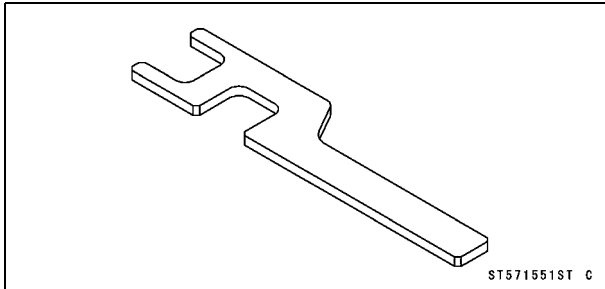
**Oil Filter Wrench:  
57001-1249**



**Belt Measuring Gauge:  
57001-1697**



**Shaft Wrench:  
57001-1551**





## 2-12 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Fuel System

##### **Throttle Control System Inspection**

- Inspect the throttle lever free play [A].
- ★ If the free play is incorrect, adjust the throttle cable.

##### **Throttle Lever Free Play**

**Standard: about 2 mm (0.08 in.)**

- Check that the throttle lever moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring.
- ★ If the throttle lever does not return properly, check the throttle cable routing, cable adjustments, and cable damage. Then lubricate the throttle cable.
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.
- ★ If the idle speed increase, check the throttle cable adjustment and the cable routing.
- Remove the seats (see Seat Removal in the Hull/Engine Hood chapter).
- Check throttle cable adjustment.
- With the throttle lever released, the upper stop [A] on the throttle pivot arm [B] should rest against the stopper [C] on the throttle body, and there should be slight slack in the throttle cable.
- When the throttle lever is fully applied (pulled), the lower stop [D] on the pivot arm should be all the way up against the stopper on the throttle body.
- ★ If necessary, adjust the throttle cable.
- Loosen and turn the locknuts [A] at the bracket until the upper stop on the pivot arm hits against the stopper on the throttle body with slight cable slack.
- Tighten the locknuts securely.

**Torque - Throttle Cable Locknuts: 20 N·m (2.0 kgf·m, 14 ft·lb)**

##### **NOTE**

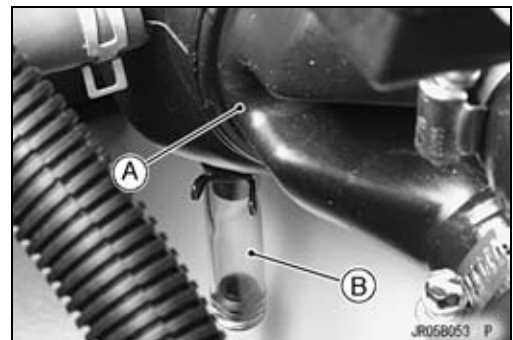
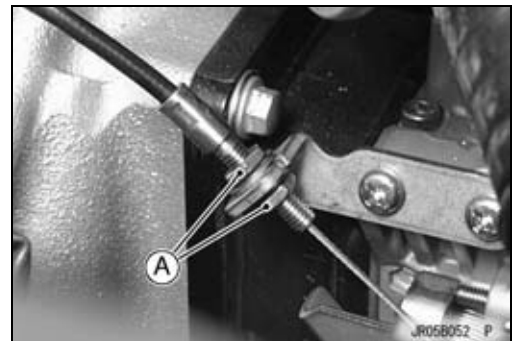
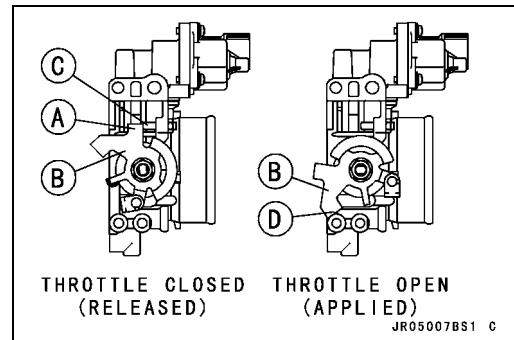
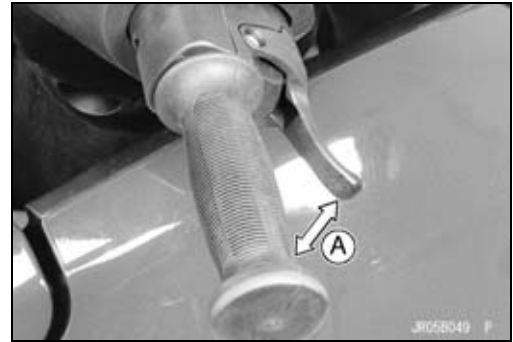
○ Make sure that the throttle pivot arm stops against the stopper on the throttle body with the throttle lever released.

##### **Air Box Drain Cap Inspection and Cleaning**

- Remove the seats (see Seat Removal in the Hull/Engine Hood chapter).
- Inspect the air box [A] for water inside with its drain cap [B].
- ★ If there is water in the cap, remove the cap and discharge the water.

##### **NOTE**

○ Be sure to have a rag or cloth underneath for possible oily water.



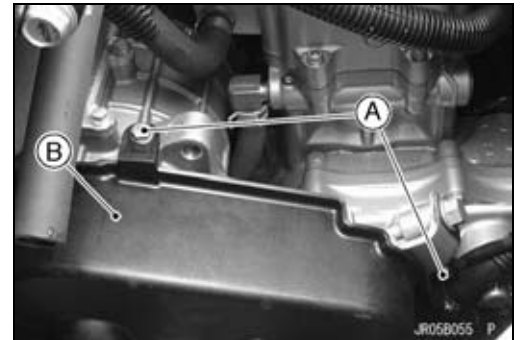
Periodic Maintenance Procedures

**Supercharger Drive Belt for Wear/Damage and Belt Tension Inspection**

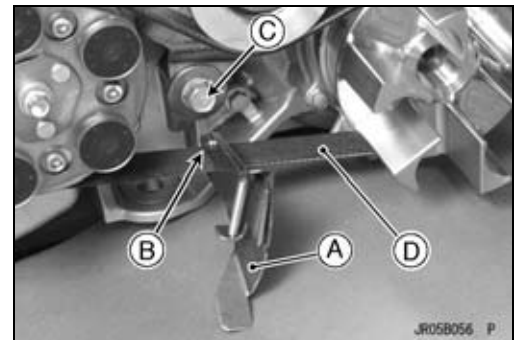
- Inspect the supercharger drive belt tension as follows.
- Disconnect the following from the oil separator tank.
  - Breather Hose (to Air Box)
  - Breather Hose (to Cylinder Head Cover)
- Place the oil separator tank [A] as shown.



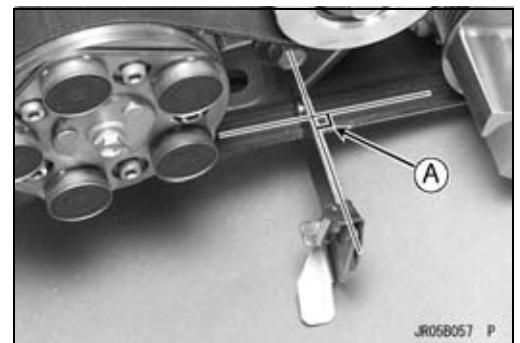
- Remove:
  - Belt Cover Bolts [A]
  - Belt Cover [B]



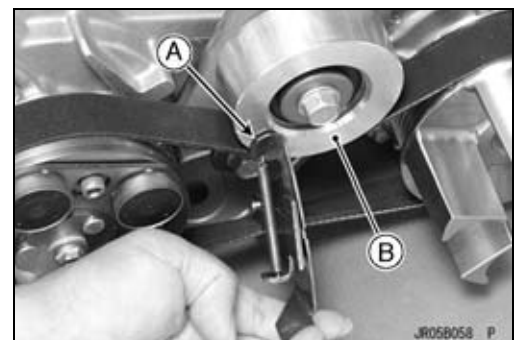
- Install the special tool [A] onto the belt [D] so that the tool's tip [B] is aligned with the tensioner plate bolt head [C].
- Special Tool - Belt Measuring Gauge [D]: 57001-1697**



- Ensure that the gauge's body is 90 degrees [A] to the belt.



- Rotate the special tool (keeping it at 90 degrees to the belt ) until it touches [A] the face of the idler [B].



## 2-14 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Check that the gauge indicator [A] is within the area [B] of recess.

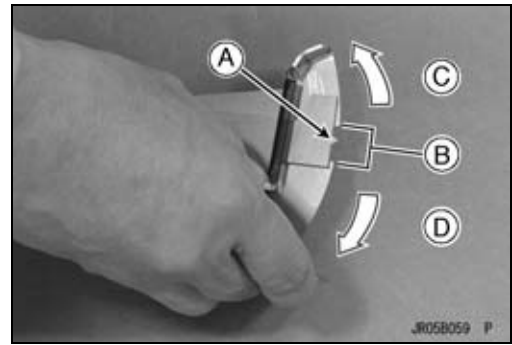
#### Belt Tension Range

Standard: 500 ~ 960 N

[C] Tension is weak.

[D] Tension is strong.

- ★ If the gauge indicator is without the area of recess, adjust the belt tension.



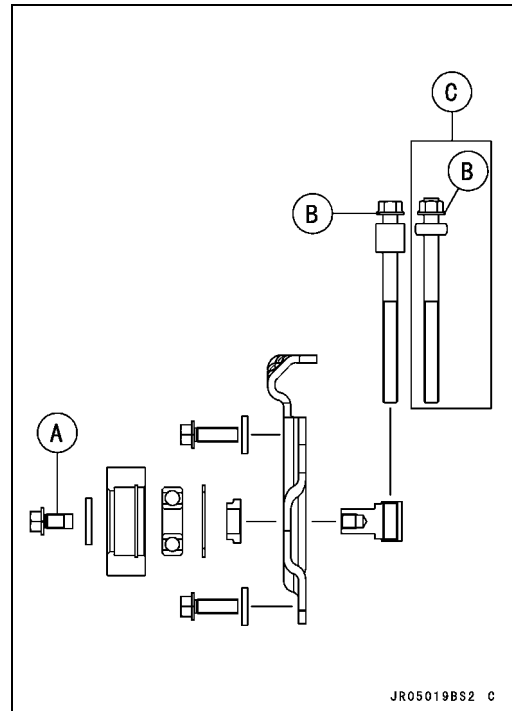
- Loosen the idler bolt [A].
- To weaken the belt tension, turn the adjuster [B] counter-clockwise.
- To strengthen the belt tension, tighten the adjuster clockwise.

**Torque - Belt Tension Adjuster: 3.0 N·m (0.31 kgf·m, 27 in·lb)**

- Tighten the idler bolt.

**Torque - Idler Bolt: 30 N·m (3.1 kgf·m, 22 ft·lb)**

JT1500B8F Model ~ [C]

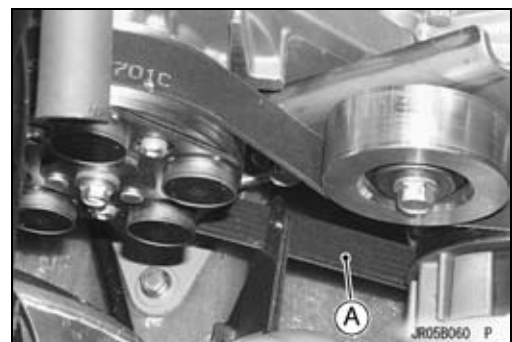


- Check the belt tension with the special tool.

**Special Tool - Belt Measuring Gauge: 57001-1697**

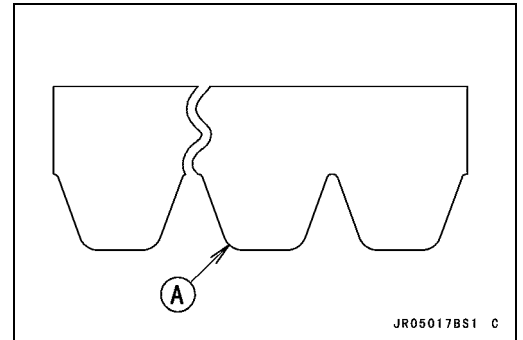
- ★ If the gauge indicator is without the area of recess, readjust the belt tension from the first procedure.
- Lastly, disconnect the primary ignition coil lead connectors and crank the engine for 5 seconds.
- Recheck the belt tension.

- Visually inspect the belt [A] for wear and damage.
- ★ If the nylon fabric facing of any portion is worn off, and the polyurethane compound is exposed, or belt is damaged, replace the belt with a new one (see Supercharger Drive Belt Replacement in the Fuel System (DFI) chapter).



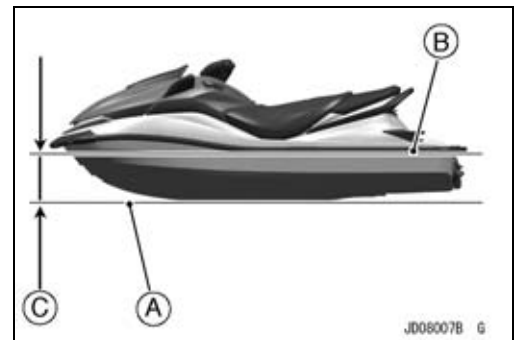
**Periodic Maintenance Procedures**

- ★ If the belt teeth [A] are wear, replace the belt with a new one (see Supercharger Drive Belt Replacement in the Fuel System (DFI) chapter).

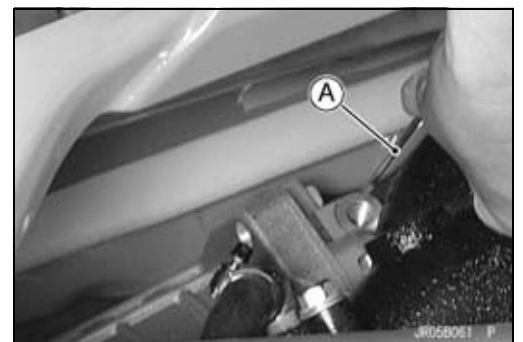


**Supercharger Gear Oil Level Inspection**

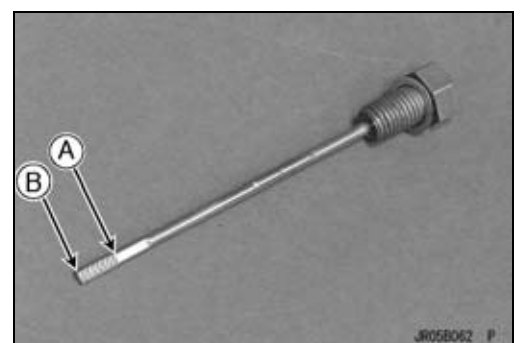
- Remove the seat (see Seat Removal in the Hull/Engine Hood chapter).
- Remove the handrail plate (see Handrail Plate Removal in the Hull/Engine Hood chapter).
- Unscrew the exhaust tube clamp.
- Remove the exhaust pipe and muffler body as a set (see Exhaust Pipe and Muffler Body Removal in the Exhaust System).
- Whenever checking the supercharger gear oil level, keep the watercraft level side to side and fore to aft as much as possible.
  - Level Ground [A]
  - Side Bumper [B]
  - Parallel [C]



- Unscrew the oil level gauge [A].



- Remove the oil level gauge, wipe it dry and insert it back to the supercharger.
- Fully, screw in the oil level gauge into the supercharger.
- Remove the oil level gauge again to check the oil level.
- The oil level must be between the High [A] and Low [B] level on the level gauge.
- ★ If the oil level is too high, remove the excess oil using a syringe or some other suitable device.
- ★ If the oil level is too low, add the oil to the low level line through the oil opening.



**Supercharger Gear Oil:**  
**Syntheso HT68 (NOK Kruber Brand)**

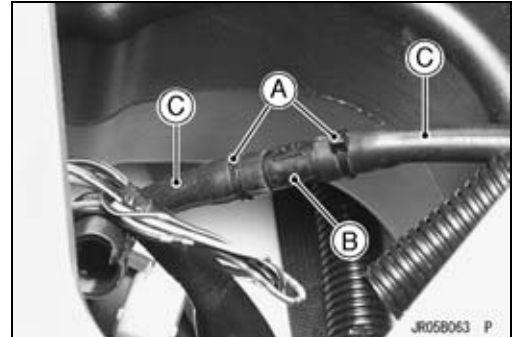
## 2-16 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

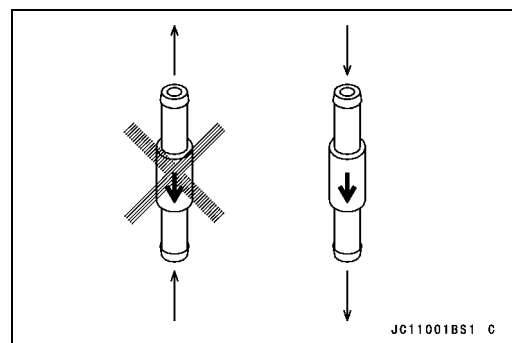
#### Fuel Vent Check Valve Inspection

The fuel vent check valve is mounted in the fuel tank vent hose to prevent fuel from spilling during riding. Air can flow into the tank to allow fuel to be drawn out by the fuel pump, but fuel cannot flow out the check valve.

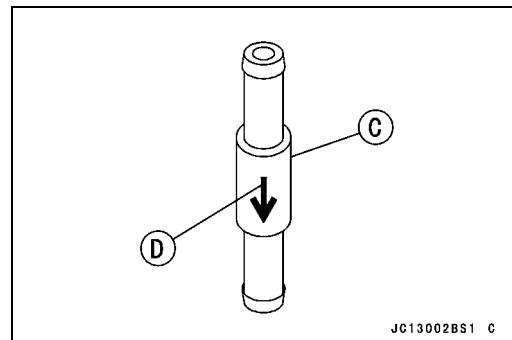
- Remove the seats (see Seat Removal in the Hull/Engine Hood chapter).
- Cut off the bands [A].
- Pull out each end of the fuel vent check valve [B] from the vent hoses [C].



- Blow through the fuel vent check valve from each end.
- ★ If the check valve will allow air to flow as shown, it is OK.
- ★ If air will flow through the check valve in both direction or in neither direction, the check valve must be replaced.



- The fuel vent check valve [C] must be mounted so that the arrow [D] on its case is pointing toward the fuel tank.

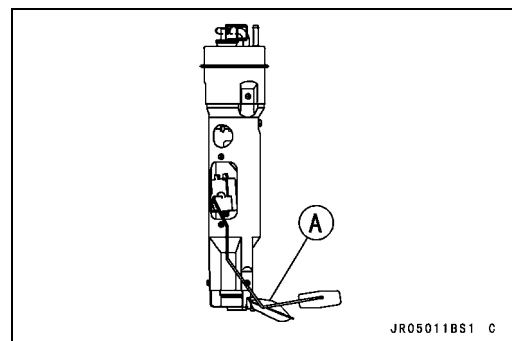


#### Fuel Pump Screen Cleaning

- Remove the fuel pump (see Fuel Pump Removal in the Fuel System chapter).
- Wash the fuel pump screen [A] in non-flammable of high flash point solvent. Use a brush to remove any contaminants trapped in the screens.

#### **⚠ WARNING**

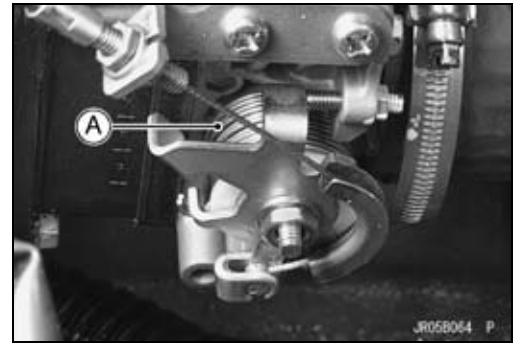
Clean the fuel pump screen in a well-ventilated area, and take ample care that there are no sparks or flame anywhere near the working area; this includes any appliance with a pilot light. Do not use gasoline or a low flash-point solvent. A fire or explosion could result.



**Periodic Maintenance Procedures**

**Throttle Shaft Spring Inspection**

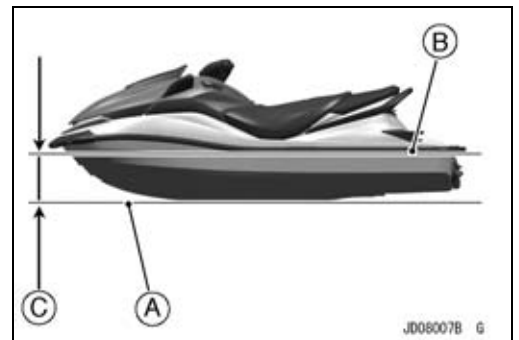
- Remove the seat (see Seat Removal in the Hull/Engine Hood chapter).
- Check the throttle shaft spring [A] by pulling the throttle lever.
- ★ If the springs are damaged or weak, replace the throttle body.



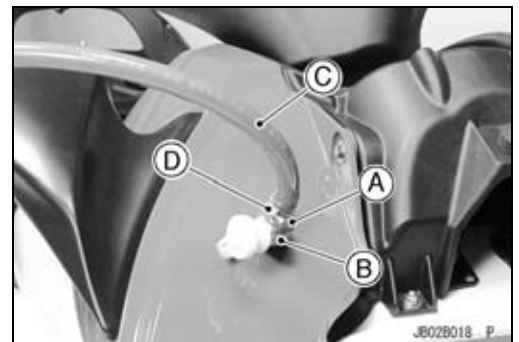
**Engine Lubrication System**

**Engine Oil Change**

- Level the watercraft port to starboard as well as fore to aft.
  - Level Ground [A]
  - Side Bumper [B]
  - Parallel [C]



- In a well-ventilated area, start the engine while cooling the cooling system.
- Open the front storage compartment cover (see Front Storage Compartment Cover Removal in the Hull/Engine Hood chapter).
- Remove the flushing cap (see Cooling System Flushing in the Periodic Maintenance chapter).
- Screw a garden hose adapter [A] onto the flushing fitting [B].
- Attach a garden hose [C] to a garden hose adapter and secure the hose clamp [D].
- Warm up the engine and stop it.



**CAUTION**

**The engine must be running before the water is turned on and the water must be turned off before the engine is stopped.**  
**Do not run the engine without cooling water flow for more than 15 seconds.**

- Remove the seat (see Seat Removal in the Hull/Engine Hood chapter).
- Remove the oil filler cap [A] and the dipstick [B].

**CAUTION**

**Be careful not to allow any dirt or foreign materials to enter the engine.**



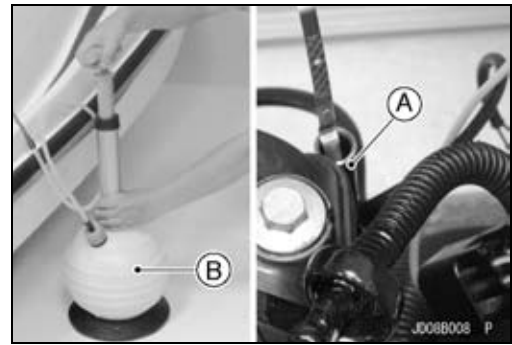
## 2-18 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Drain the oil thoroughly from the dipstick tube [A] using a commercially-available vacuum pump [B].

#### **⚠ WARNING**

**Do not discard the engine oil as the engine oil is toxic substance and will pollute the environment. Contact your local authority for approved disposal methods.**



- Pour in the specified type and amount of oil through the oil filler opening [A].

#### **Engine Oil**

**Grade:** API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2

**Viscosity:** SAE 10W-40

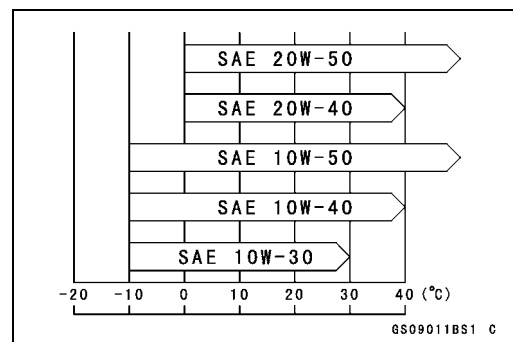
**Amount:** 4.0 L (4.2 US qt, with or without the filter)  
5.0 L (5.3 US qt, when engine is completely dry)



#### **NOTE**

○ Do not add any chemical additive to the oil. Oils fulfilling the above requirements are fully formulated and provide adequate lubrication for both the engine and the clutch.

- Depending on the atmospheric temperature of your riding area, the engine oil viscosity should be changed according to the chart shown.



- Install the filler cap.

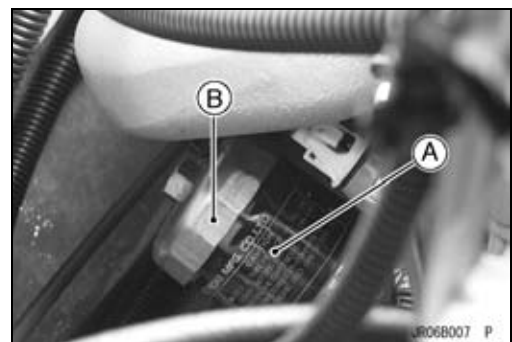
**Torque - Oil Filler Cap: 1.0 N·m (0.10 kgf·m, 8.7 in·lb)**

- Check the oil level (see Oil Level Inspection in the Engine Lubrication System chapter).

#### **Oil Filter Replacement**

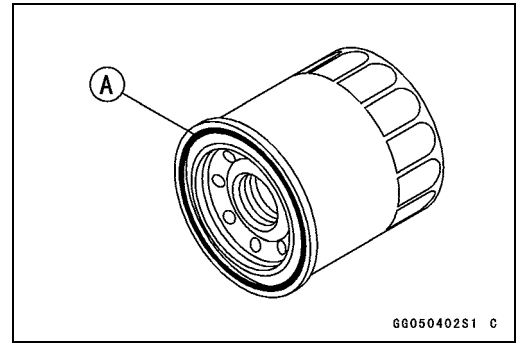
- Remove:
  - Seat (see Seat Removal in the Hull/Engine Hood chapter)
- Drain the engine oil (see Engine Oil Change).
- Disconnect the following to make service easy.
  - Air Bypass Hoses (Air Box Side)
  - Fuel Hose (Delivery Pipe Side)
  - Inlet Air Temperature Sensor Connector
- Place a rag or cloth under the oil filter to receive the remaining oil.
- Remove the oil filter [A] with the oil filter wrench [B].

**Special Tool - Oil Filter Wrench: 57001-1249**



## Periodic Maintenance Procedures

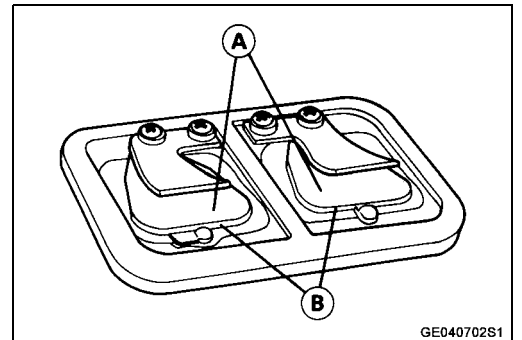
- Replace the filter with a new one.
  - Apply engine oil to the gasket [A] before installation.
  - Tighten the filter with the oil filter wrench.
- Torque - Oil Filter: 18 N·m (1.8 kgf·m, 13 ft·lb)**
- Pour in the specified type and amount of oil (see Engine Oil Change).



## Engine Top End

### Air Suction Valve Inspection (JT1500B7F Model)

- Remove the air suction valve (see Air Suction Valve Removal in the Engine Top End chapter).
- Visually inspect the reeds [A] for cracks, folds, warps, heat damage, or other damage.
- ★ If there is any doubt as to the condition of the reed, replace the air suction valve as an assembly.
- Check the reed contact areas [B] of the valve holder for grooves, scratches, any signs of separation from the holder, or heat damage.
- ★ If there is any doubt as to the condition of the reed contact areas, replace the air suction valve as an assembly.
- ★ If any carbon or other foreign particles have accumulated between the reed and the reed contact area, wash the valve assembly with a high-flash point solvent.



### CAUTION

**Do not scrape off the deposits with a scraper as this could damage the rubber, requiring replacement of the suction valve assembly.**

### Valve Clearance Inspection

#### NOTE

○ Valve clearance must be checked and adjusted when the engine is cold (at room temperature).

- Remove:
  - Seat (see Seat Removal in the Hull/Engine Hood chapter)
  - Air Box (see Air Box Removal in the Fuel (DFI) System chapter)
  - Cylinder Head Cover (see Cylinder Head Cover Removal in the Engine Top End chapter)
- Position the crankshaft at #1, #4 piston TDC as follows.

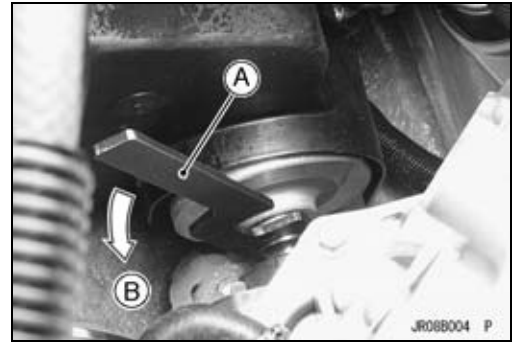


## 2-20 PERIODIC MAINTENANCE

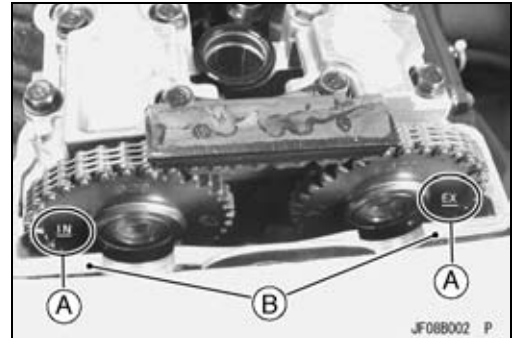
### Periodic Maintenance Procedures

- Using the shaft wrench [A], turn the crankshaft counter-clockwise [B] and set the crankshaft at #1, 4 piston TDC.

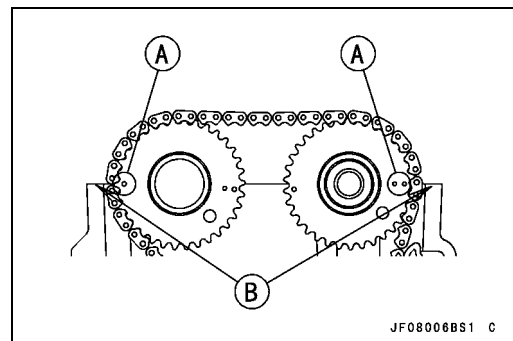
**Special Tool - Shaft Wrench: 57001-1551**



- The timing marks [A] must be aligned with the cylinder head upper surface [B] as shown (JT1500B7F ~ B8F/E9F Early Model/F9F Early Model).



- The timing marks [A] must be aligned with the cylinder head upper surface [B] as shown (JT1500E9F Late Model ~ /E9F Late Model ~ ).



- Measure the valve clearance between the cam and the valve lifter with a thickness gauge [A].

#### Valve Clearance

##### Standard:

**IN** 0.15 ~ 0.24 mm (0.0059 ~ 0.0094 in.)

**EX** 0.32 ~ 0.41 mm (0.0126 ~ 0.0161 in.)



Periodic Maintenance Procedures

○When positioning #1 piston TDC at the end of the compression stroke:

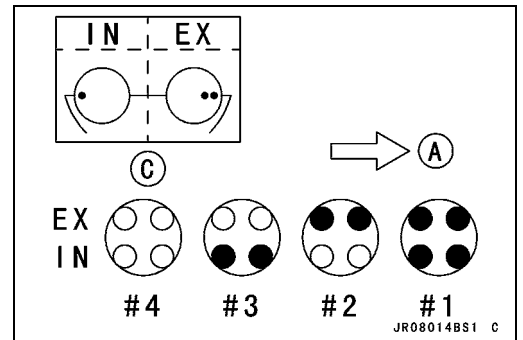
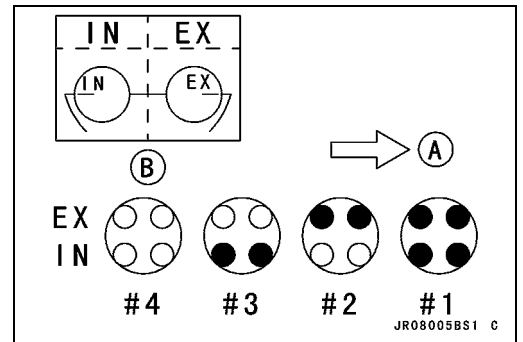
- Inlet Valve Clearance of #1 and #3 Cylinders
- Exhaust Valve Clearance of #1 and #2 Cylinders
- Measuring Valve [●]

Bow [A]

Camshaft Sprocket Position:

JT1500B7F ~ B8F/E9F Early Model/F9F Early Model [B]

JT1500E9F Late Model ~ /F9F Late Model ~ [C]



○When positioning #4 piston TDC at the end of the compression stroke:

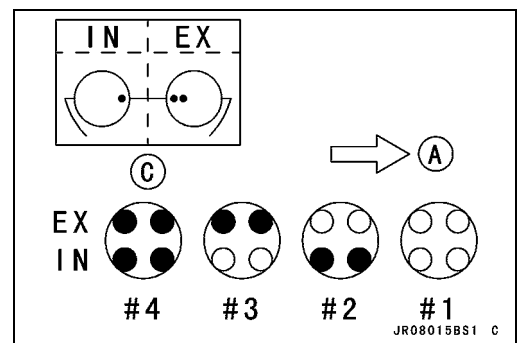
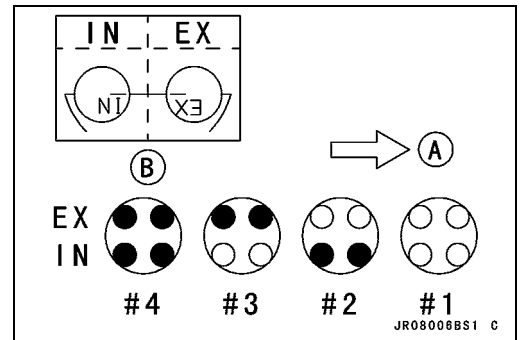
- Inlet Valve Clearance of #2 and #4 Cylinders
- Exhaust Valve Clearance of #3 and #4 Cylinders
- Measuring Valve [●]

Bow [A]

Camshaft Sprocket Position:

JT1500B7F ~ B8F/E9F Early Model/F9F Early Model [B]

JT1500E9F Late Model ~ /F9F Late Model ~ [C]



★If the valve clearance is not within the specified range, first record the clearance, and then adjust it.

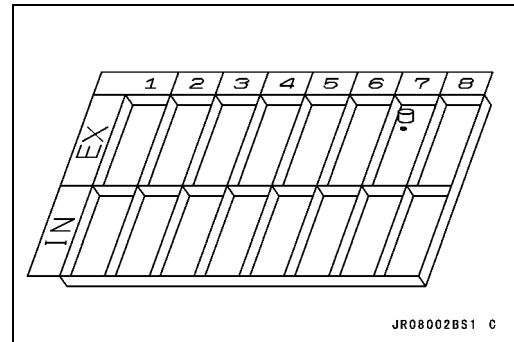
## 2-22 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- To change the valve clearance, remove the camshaft chain tensioner, camshafts and valve lifters. Replace the shim with one of a different thickness.

#### NOTE

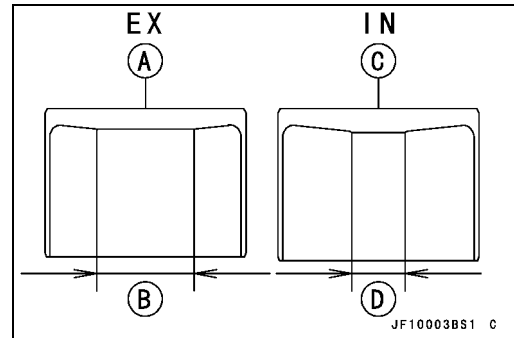
- Mark and record the valve lifter and shim locations so they can be reinstalled in their original positions.
- If there is no clearance, select a shim which is several sizes smaller and then measure the clearance.



#### NOTE

- For the EX valve lifters, JT1500B (Engine No: ~ JTT50BE005746) has larger size boss.

- EX Valve Lifters [A] : Boss diameter is larger [B]
- IN Valve Lifters [C] : Boss diameter is smaller [D]



- Besides the standard shims in the valve clearance adjustment charts, the following additional shims may be used.

#### Adjustment Shims

Part Number	Thickness
92025-1982	2.425 mm
92025-1983	2.475 mm
92025-1984	2.525 mm
92025-1985	2.575 mm
92180-1058	2.375 mm
92180-1059	2.625 mm
92180-1194	2.675 mm
92180-1195	2.725 mm
92180-1196	2.775 mm

- Clean the shim to remove any dust or oil.
- Measure the thickness of the removed shim [A].



Periodic Maintenance Procedures

INLET VALVE CLEARANCE ADJUSTMENT CHART

		Present Shim																				Example
Part No. (92025)	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	
Mark	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	00	
Thickness (mm)	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	
Valve Clearance Measurement (mm)	0.00 ~ 0.02	—	—	—	—	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80
	0.03 ~ 0.06	—	—	—	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85
	0.07 ~ 0.11	—	—	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90
	0.12 ~ 0.14	—	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95
	0.15 ~ 0.24	Specified Clearance / No Change Required																				
	0.25 ~ 0.27	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	
	0.28 ~ 0.32	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00		
	0.33 ~ 0.37	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00			
	0.38 ~ 0.42	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00				
	0.43 ~ 0.47	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00					
	0.48 ~ 0.52	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00						
	0.53 ~ 0.57	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00							
	0.58 ~ 0.62	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00								
	0.63 ~ 0.67	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00									
	0.68 ~ 0.72	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00										
	0.73 ~ 0.77	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00											
	0.78 ~ 0.82	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00												
	0.83 ~ 0.87	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00													
	0.88 ~ 0.92	2.70	2.75	2.80	2.85	2.90	2.95	3.00														
	0.93 ~ 0.97	2.75	2.80	2.85	2.90	2.95	3.00															
0.98 ~ 1.02	2.80	2.85	2.90	2.95	3.00																	
1.03 ~ 1.07	2.85	2.90	2.95	3.00																		
1.08 ~ 1.12	2.90	2.95	3.00																			
1.13 ~ 1.17	2.95	3.00																				
1.18 ~ 1.22	3.00																					

Install the shim of this thickness (mm).

1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

**Example**

Present shim is **2.60 mm**.  
 Measured clearance is **0.35 mm**.  
 Replace **2.60 mm** shim with **2.75 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

# 2-24 PERIODIC MAINTENANCE

## Periodic Maintenance Procedures

### EXHAUST VALVE CLEARANCE ADJUSTMENT CHART

		Present Shim																Example					
Part No. (92025)		1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	
Mark		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	00	
Thickness (mm)		2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	
Valve Clearance Measurement (mm)	0.00~0.04	-	-	-	-	-	-	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	
	0.05~0.09	-	-	-	-	-	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	
	0.10~0.14	-	-	-	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	
	0.15~0.19	-	-	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	
	0.20~0.24	-	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	
	0.25~0.29	-	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	
	0.30~0.31	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	
	0.32~0.41	Specified Clearance/No Change Required																					
	0.42~0.44	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00		
	0.45~0.49	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00			
	0.50~0.54	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00				
	0.55~0.59	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00					
	0.60~0.64	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00						
	0.65~0.69	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00							
	0.70~0.74	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00								
	0.75~0.79	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00									
	0.80~0.84	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00										
	0.85~0.89	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00											
	0.90~0.94	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00												
	0.95~0.99	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00													
1.00~1.04	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00															
1.05~1.09	2.70	2.75	2.80	2.85	2.90	2.95	3.00																
1.10~1.14	2.75	2.80	2.85	2.90	2.95	3.00																	
1.15~1.19	2.80	2.85	2.90	2.95	3.00																		
1.20~1.24	2.85	2.90	2.95	3.00																			
1.25~1.29	2.90	2.95	3.00																				
1.30~1.34	2.95	3.00																					
1.35~1.39	3.00																						

Install the shim of this thickness (mm).

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1. Measure the clearance (when engine is cold).
2. Check present shim size.
3. Match clearance in vertical column with present shim size in horizontal column.
4. Install the shim specified where the lines intersect.  
This shim will give the proper clearance.

#### Example

Present shim is **2.65 mm**.  
 Measured clearance is **0.42 mm**.  
 Replace **2.65 mm** shim with **2.80 mm** shim.

5. Remeasure the valve clearance and readjust if necessary.

**Periodic Maintenance Procedures**

- Apply molybdenum disulfide oil to the valve lifters and apply engine oil to the shims, and install them.
- Install the camshafts. Be sure to install the camshafts properly (see Camshaft Installation in the Engine Top End chapter).
- Remeasure any valve clearance that was adjusted.
- Readjust if necessary.

**CAUTION**

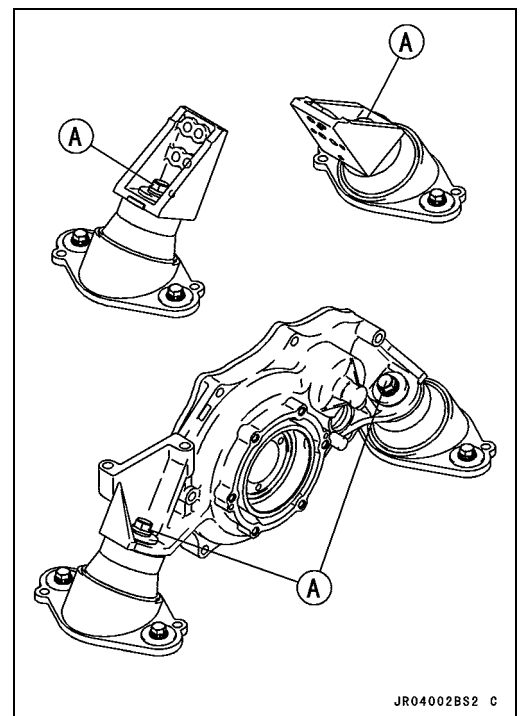
**Do not put shim stock under the shim. This may cause the shim to pop out at high rpm, causing extensive engine damage.**

**Do not grind the shim. This may cause it to fracture, causing extensive engine damage.**

**Engine Mounting Bolts Inspection and Tightness**

- Check the tightness of the engine mounting bolts [A].
- ★ If there are loose bolts, remove the bolts.
- Apply a non-permanent locking agent to the engine mounting bolts and tighten them.

**Torque - Engine Mounting Bolts: 36 N·m (3.7 kgf·m, 27 ft·lb)**

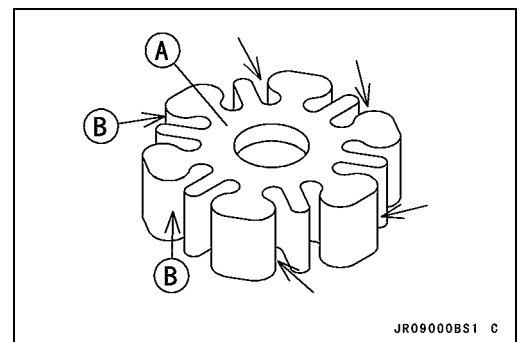


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**Engine Bottom End**

**Coupling Damper Inspection**

- Remove:
  - Seat (see Seat Removal in the Hull/Engine Hood chapter)
  - Engine (see Engine Removal in the Engine Removal/Installation chapter)
- Remove the coupling damper [A] and inspect it for wear [B] and deterioration.
- ★ If it is grooved or misshapen, replace it with a new damper.
- ★ If there is any doubt as to coupler condition, replace it.



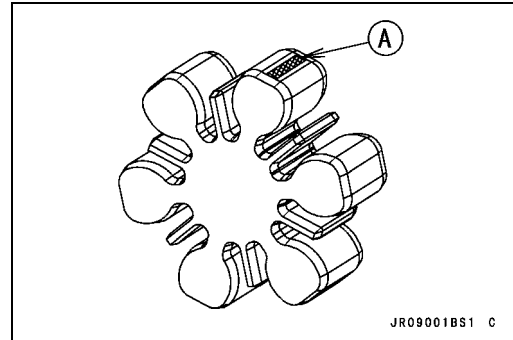
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## 2-26 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### NOTE

○The JT1500B/E/F has the damper with white mark [A].



## Cooling and Bilge Systems

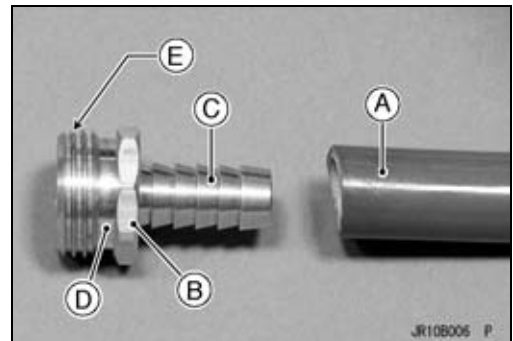
### Cooling System Flushing

To prevent sand or salt deposits from accumulating in the cooling system, it must be flushed occasionally. Flush the system according to the Periodic Maintenance Chart, after each use in salt water, or whenever there is reduced water flow from the bypass outlet on the right side of the hull.

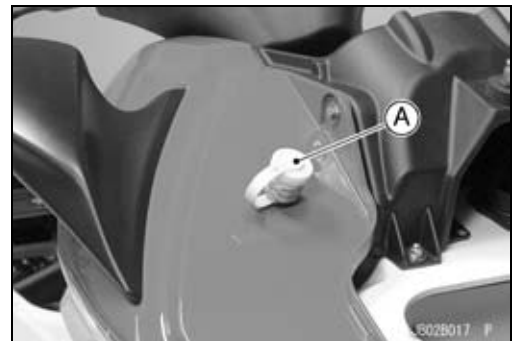
- Obtain a standard garden hose [A] and a garden hose adapter [B] as shown.
  - Garden Hose Fitting of Adapter [C]
  - Flushing Fitting of Adapter [D]
  - Thread: Rp 3/4 [E]

#### NOTE

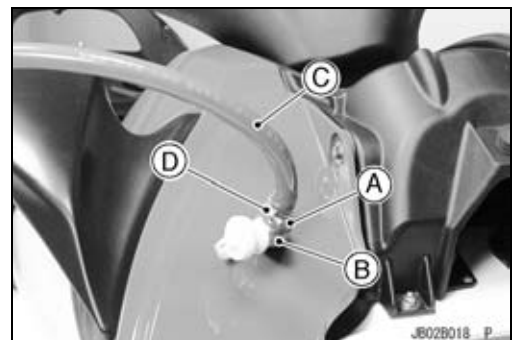
○Optional part (P/No. 92005-3746) is available as a garden hose adapter.



- Open the front storage compartment cover (see Front Storage Compartment Cover Removal).
- Remove the flushing cap [A] on the brim of the engine compartment.



- Screw a garden hose adapter [A] onto the flushing fitting [B].
- Attach a garden hose [C] to a garden hose adapter and secure the hose clamp [D].



**Periodic Maintenance Procedures**

- Start the engine and allow it to idle before turning on the water.

**CAUTION**

**The engine must be running before the water is turned on or water may flow back through the exhaust pipe into the engine, resulting in the possibility of severe internal damage.**

- Immediately turn on the water and adjust the flow so that a little trickle of water comes out of the bypass outlet [A] on the right side of the hull.
- Leave the engine idle for several minutes with the water running.
- Turn off the water. Leave the engine idling.
- Rev the engine a few times to clear the water out of the exhaust system.

**CAUTION**

**Do not run the engine without cooling water supply for more than 15 seconds, especially in high revolutionary speed or severe engine and exhaust system damage will occur.**

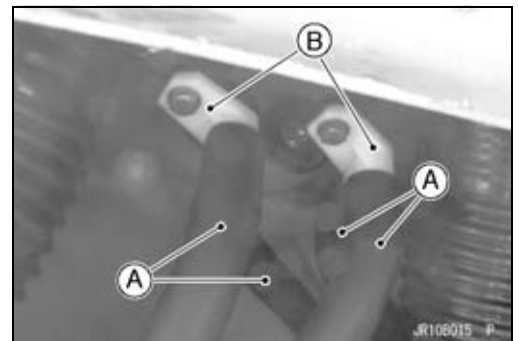
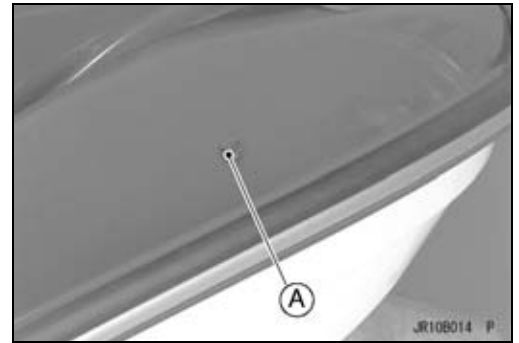
- Switch off the engine, remove the garden hose and the adapter.
- Install the flushing cap securely.

***Bilge System Flushing***

To prevent clogging, the bilge system should be flushed out according to the Periodic Maintenance Chart, or whenever you suspect it is blocked.

- Disconnect both bilge hoses [A] at the plastic breather fitting [B].

- Connect the bilge filter hoses (from the hull bottom) to the garden hoses, turn the water on, and flush it out for about a minute. During this procedure, water will flow into the engine compartment. Do not allow a large amount of water to accumulate in the engine compartment. Remove the drain screws in the stern to drain the engine compartment.
- Connect the other hoses (from the hull bulkhead) to the garden hose, turn the water on, and flush it out for several minutes.

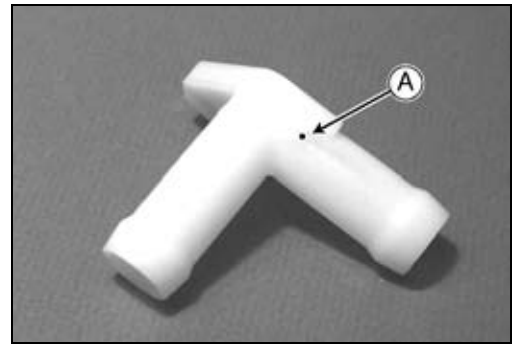




## 2-28 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

- Before reconnecting the hoses to the plastic breather fitting make sure the small hole [A], on top of the breather fitting is clear.
- Reconnect the bilge hoses.



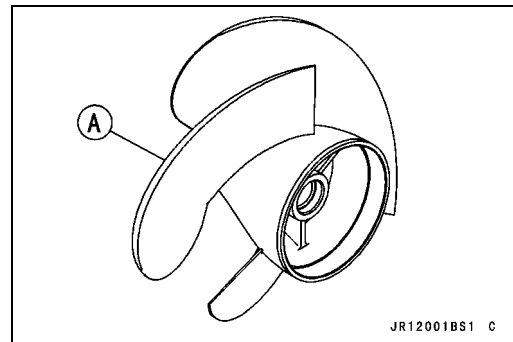
### Pump and Impeller

#### Impeller Inspection

- Examine the impeller. [A]
- ★ If there is pitting, deep scratches, nicks or other damage, replace the impeller.

#### NOTE

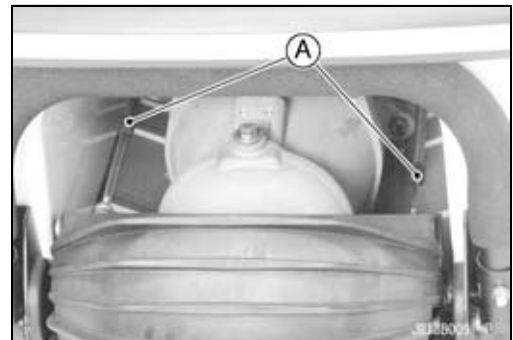
○ Minor nicks and gouges in the impeller blades can be removed with abrasive paper or careful filing. Smooth leading edges are especially important to avoid cavitation.



### Steering

#### Steering Cable/Shift Cable Inspection

- Examine the steering cable or shift cable.
- ★ If each cable or cable housing is kinked or frayed, replace the cables.
- ★ If the each seal [A] at either end of each cable is damaged in any way, replace the cables.

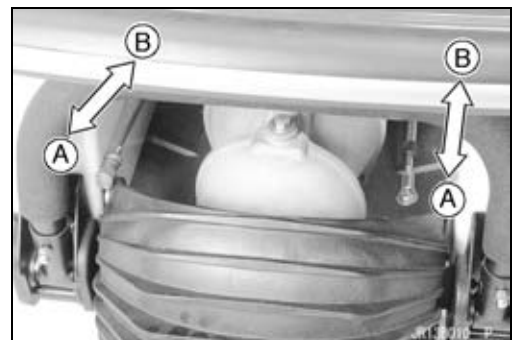


- Be certain that each cable moves freely in both directions.
- Disconnect the cable joints at each end of each cable.
- Take out the cable joint bolt or ball joint and disconnect the cable joint.

#### CAUTION

**Never lay the watercraft on the right side. Water in the exhaust system may drain back into the engine causing serious damage.**

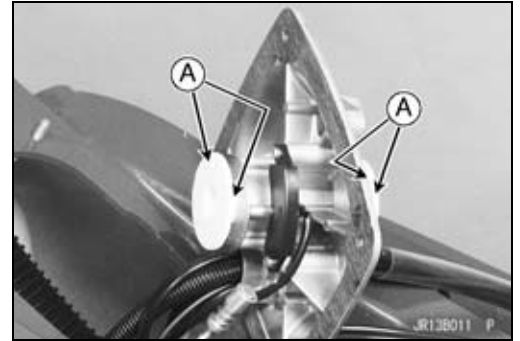
- Slide the inner cable back [A] and forth [B] in each cable housings.
- ★ If each cable does not move freely, replace it.



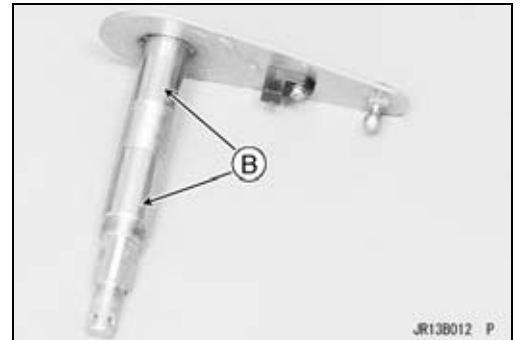
**Periodic Maintenance Procedures**

***Handlebar Pivot Lubrication***

- Check the bushings for damage and wear.
- ★ If the bushings are damaged or worn, replace them.
- Grease:
  - Bushings [A]



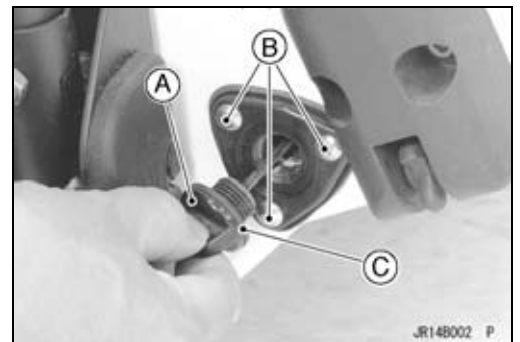
Steering Shaft [B]



**Hull/Engine Hood**

***Drain Plug Inspection***

- Check the drain plugs [A] for cracks or damage and make sure the drain plug mounting screws [B] are tightened securely.
- Check the seals [C] for damage.
- ★ If necessary, replace the drain plugs or seals.



## 2-30 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Electrical System

##### Battery Charging Condition Inspection

Battery charging condition can be checked by measuring battery terminal voltage.

- Disconnect the battery terminal cables (see Battery Removal in the Electrical System chapter).

#### CAUTION

**Be sure to disconnect the negative terminal cable first.**

- Measure the battery terminal voltage.

#### NOTE

○ Measure with a digital voltmeter [A] which can be read one decimal place voltage.

- ★ If the reading is below the specified, refreshing charge is required (see Refreshing Charge in the Electrical System chapter).

#### Battery Terminal Voltage

Standard: 12.8 V or more

- Connect the battery cables, positive first.

##### Battery Terminals Inspection

- Check the battery terminal screws [A] for tightness and make sure the terminal covers are in place.

#### WARNING

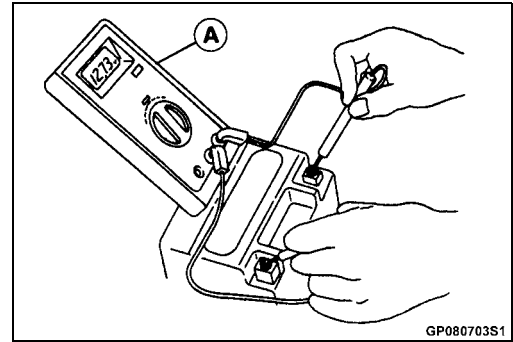
**Loose battery cables can create sparks which can cause a fire or explosion resulting in injury or death. Make sure the battery terminal screws are tightened securely and the covers are installed over the terminals.**

- Check that the battery terminals are not corroded.
- ★ If necessary, remove the battery (see Battery Removal in the Electrical System chapter) and clean the terminals and cable ends using a solution of baking soda and water.
- After attaching both cables, coat the terminals and cable ends with grease to prevent corrosion.
- Install the battery (see Battery Installation in the Electrical System chapter).

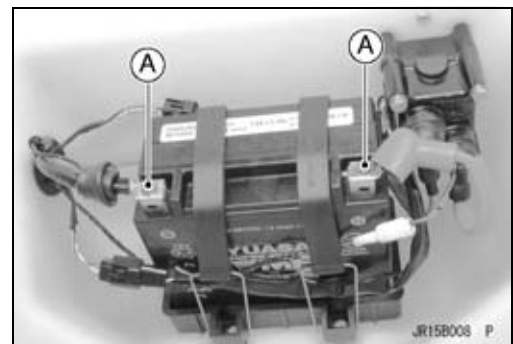
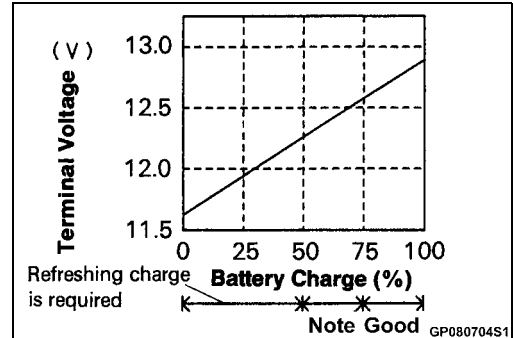
##### Spark Plug Inspection

- Remove:
  - Seat (see Seat Removal in the Hull/Engine Hood chapter)
  - Spark Plug Caps
- Remove the spark plugs using the 16 mm plug wrench [A].

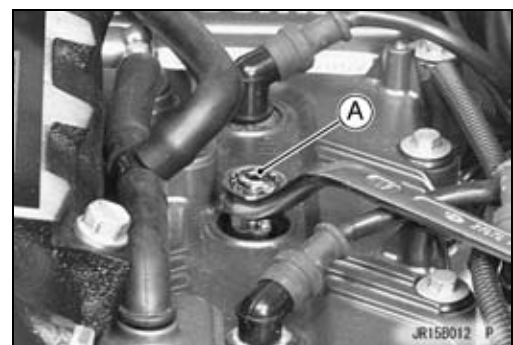
Owner's Tool - Spark Plug Wrench, 16 mm: 92110-3706



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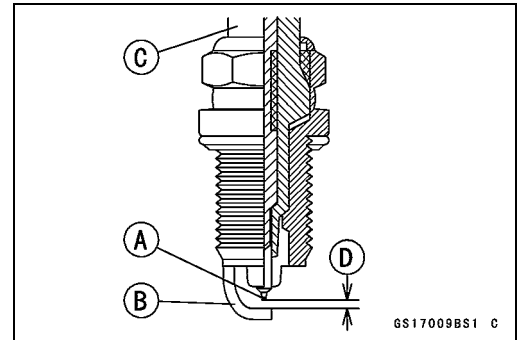


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**Periodic Maintenance Procedures**

- Visually inspect the spark plugs.
- ★ If the spark plug center electrode [A] and/or side electrode [B] are corroded or damaged, or if the insulator [C] is cracked, replace the plug.
- Measure the gaps [D] with a wire-type thickness gauge.
- ★ If the gap is incorrect, replace the spark plug.

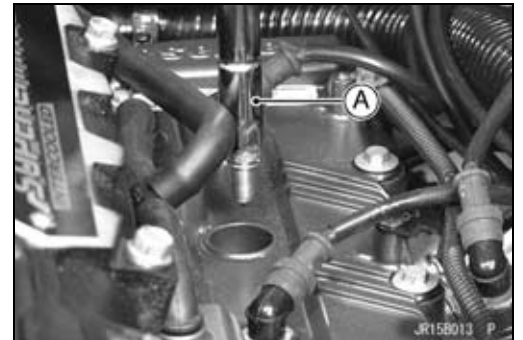
**Spark Plug Gap: 0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)**



- Insert the spark plug vertically into the plug hole with the spark plug installed in the plug wrench [A].

**Owner's Tool - Spark Plug Wrench, 16 mm: 92110-3706**

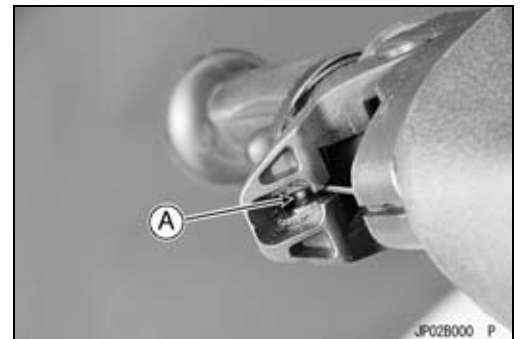
- Tighten:
  - Torque - Spark Plugs: 13 N·m (1.3 kgf·m, 113 in·lb)**
- Be sure to install the plug caps so that the plug cap leads are positioned at a right angle to the engine center line (see Cable, Wire and Hose Routing section in the Appendix chapter).



**Lubrication**

As in all marine craft, adequate lubrication and corrosion protection is an absolute necessity to provide long, reliable service. Refer to the Periodic Maintenance Chart for the frequency of the following items:

- Lubricate the following with grease.
  - Pull the throttle lever and hold it.
  - Throttle Cable End [A] at Throttle Lever**



**Throttle Cable End [A] at Throttle Body**

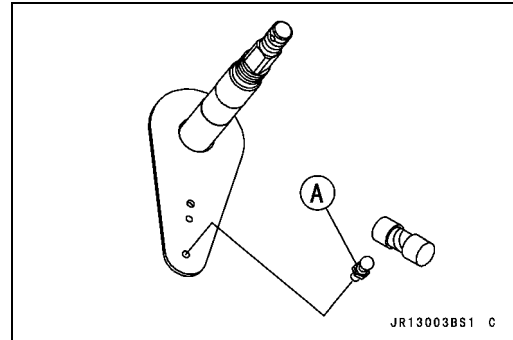


## 2-32 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

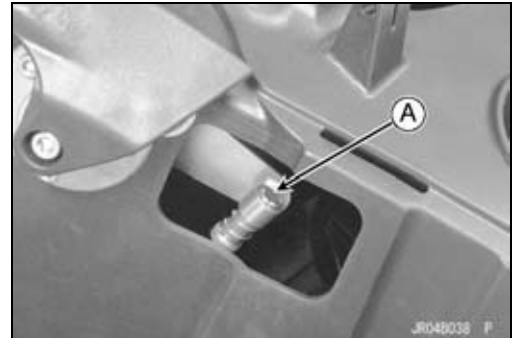
- Remove the steering cover (see Steering Cover Removal in the Hull/Engine Hood chapter).

#### Steering Cable Ball Joint [A] at Steering Shaft

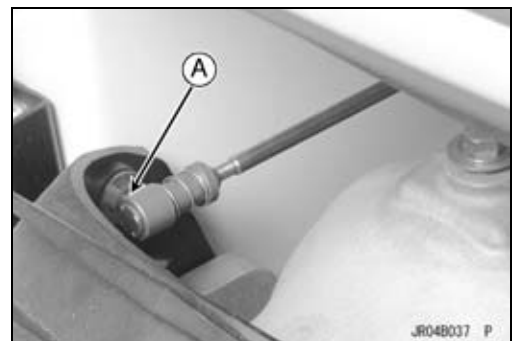


- Remove the left side cover (see Side Cover Removal in the Hull/Engine Hood chapter).

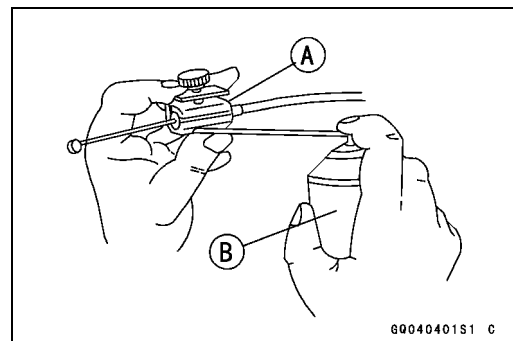
#### Shift Cable Ball Joint [A] at Reverse Lever



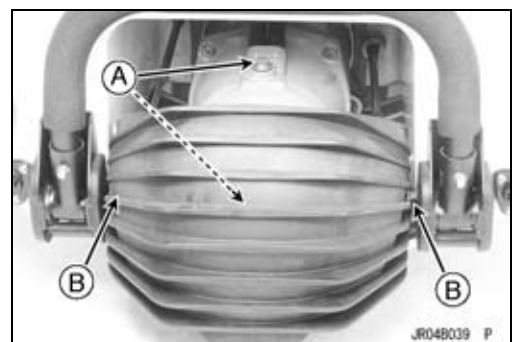
#### Shift Cable Ball Joint [A] at Reverse Bucket



- Lubricate the following with a penetrating rust inhibitor [B].  
**Throttle Cable [A]**

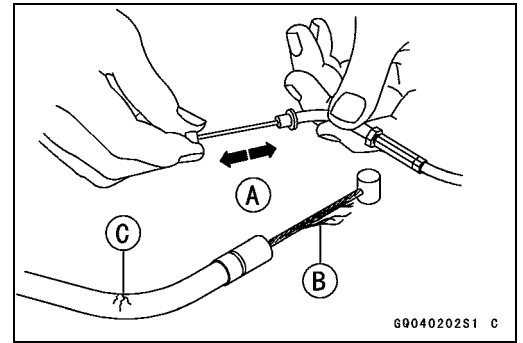


#### Steering Nozzle Pivots [A] Reverse Bucket Pivots [B]



**Periodic Maintenance Procedures**

- With the cable disconnected at both ends, the cable should move freely [A] within the cable housing.
- ★ If cable movement is not free after lubricating, if the cable is frayed [B], or if the cable housing is kinked [C], replace the cable.



**All Hoses, Hose Clamps, Nuts, Bolts and Fasteners Check**

**Nuts, Bolts, and Fasteners Tightness Inspection**

- Check the tightness of the bolts and nuts listed here. Also, check to see that each cotter pin is in place and in good condition.

**NOTE**

○ For the engine fasteners, check the tightness of them when the engine is cold (at room temperature).

- ★ If there are loose fasteners, retighten them to the specified torque following the specified tightening sequence. Refer to the appropriate chapter for torque specifications. If torque specifications are not in the appropriate chapter, see the Standard Torque Table. For each fastener, first loosen it by 1/2 turn, then tighten it.
- ★ If cotter pins are damaged, replace them with new ones.

**Nut, Bolt and Fastener to be checked**

Engine:

- Oil Filter Cartridge
- Engine Mounting Bolts (and bracket bolts)
- Engine Damper Mounting Bolts
- Cylinder Head Cover Bolts
- Cylinder Head Bolts

Drive Shaft, Pump, and Impeller:

- Drive Shaft Holder Mounting Bolts
- Pump Mounting Bolts
- Pump Cover Mounting Bolts
- Pump Grate Mounting Bolts
- Steering Nozzle Pivot Bolts
- Reverse Bucket Pivot Bolts

Steering:

- Handlebar Clamp Bolts
- Steering Neck Mounting Bolts
- Steering Holder Mounting Bolts
- Steering Shaft Locknut
- Steering Cable Nut
- Steering Cable Joint Bolt
- Shift (reverse) Cable Nut

Hull and Engine Hood:

- Stabilizer Mounting Bolts
- Rear Grip Plate Mounting Bolts

Electrical System:

- Spark Plugs
- Battery Terminal

## 2-34 PERIODIC MAINTENANCE

### Periodic Maintenance Procedures

#### Hose and Hose Connect Inspection

- Check the following hoses for leakage [A], hardening, cracking [B], checking, cuts, abrasions, breaks and bulges [C]. And make sure the hoses are not kinked or pinched.

Fuel Vent Hose  
Oil Hoses  
Cooling Hoses  
Bilge Hoses

- ★ If a hose is damaged in any way, replace it immediately and check all the others for damage.

- Make sure the above hoses are routed properly and secured with the clamps away from any moving parts and sharp edged portions.

Plastic Clamp [A]  
Hose [B]  
Hose Fitting [C]

#### NOTE

- The majority of bilge hoses have no clamps at the hose ends.

Metal Clamp [A]  
Hose [B]  
Hose Fitting [C]

#### NOTE

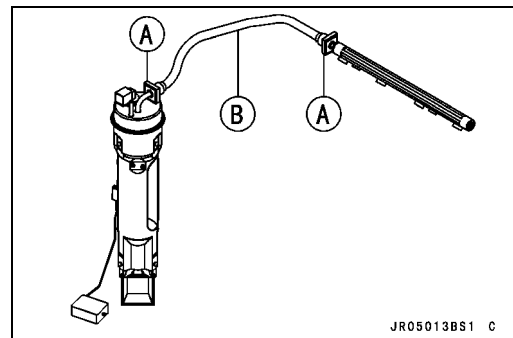
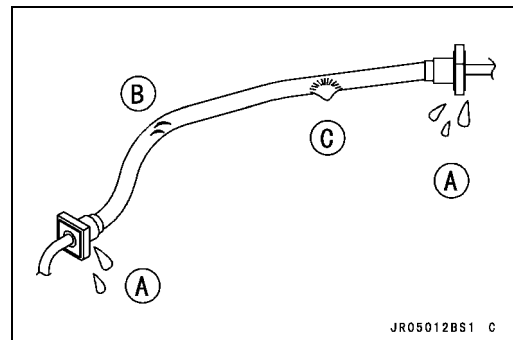
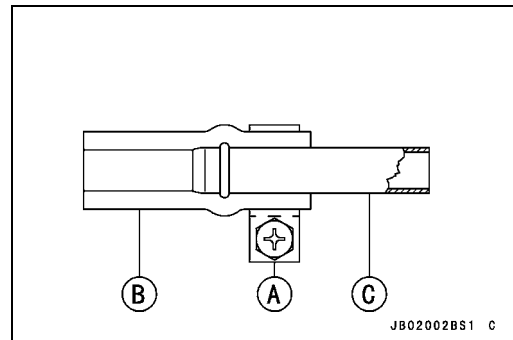
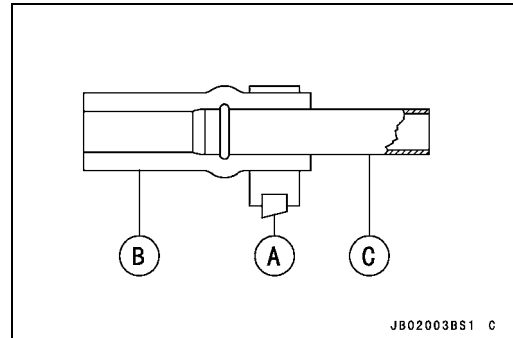
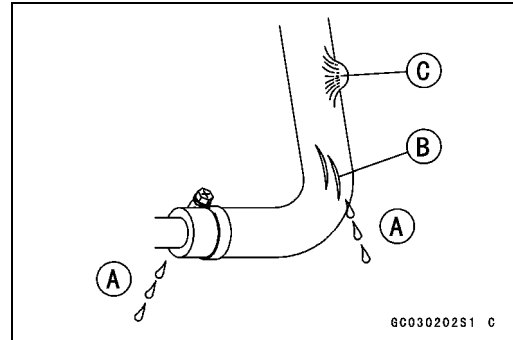
- Check the fuel and exhaust tubes for signs of wear, deterioration, damage or leakage. Replace if necessary.
- Make sure the above tubes are secured with the metal gear clamps away from any parts.

- If the watercraft is not properly handled, the high pressure inside the fuel line can cause fuel to leak [A] or the hose to burst. Remove the seat (see Seat Removal in the Hull/Engine Hood chapter) and check the fuel hose.

- ★ Replace the fuel hose if any fraying, cracks [B] or bulges [C] are noticed.

- Check that the hoses are routed according to Cable, Wire, and Hose Routing section in the Appendix chapter.

- ★ Replace the hose if it has been sharply bent or kinked.
- Hose Joints [A]  
Fuel Hose [B]

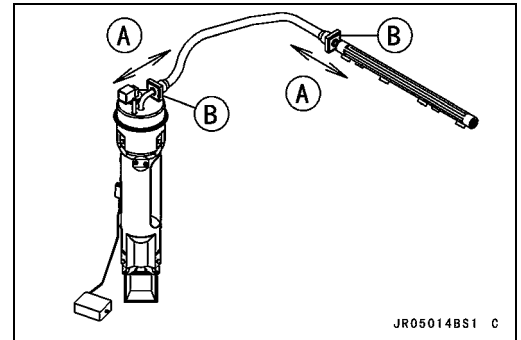


## Periodic Maintenance Procedures

- Check that the hose joints are securely connected.
- Push and pull [A] the hose joint [B] back and forth more than two times, and make sure it is locked.
- ★ If it does not lock, reinstall the hose joint.

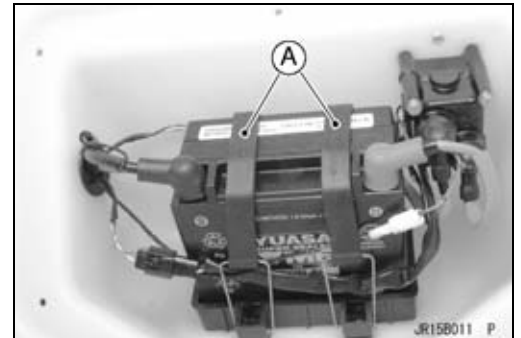
### **⚠ WARNING**

**Make sure the hose joint is installed correctly on the delivery pipe by sliding the joint, or the fuel could leak.**



### **Rubber Strap Inspection**

- Check the following rubber straps for any deterioration or damage. Pull on squeeze the straps and look for cracks.
  - Battery Straps [A]
  - Fuel Tank Straps
  - Water Box Muffler Straps
- ★ If a strap is damaged in any way, replace it.



### **Fuel Hose Replacement**

### **⚠ WARNING**

**Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.**

- Remove the fuel hose (see Fuel Hose Removal in the Fuel System chapter).
- Replace the fuel hose with new ones.
- When installing the fuel hose, route the hose according to Cable, Wire, and Hose Routing section in Appendix chapter.
- When installing the fuel hose, avoid sharp bending, kinking, flattening or twisting, and route the fuel hose with a minimum of bending so that the fuel flow will not be obstructed.
- Check that the hose joints are securely connected (see Hose and Hose Connect Inspection).
- Start the engine and check the fuel hose for leaks.

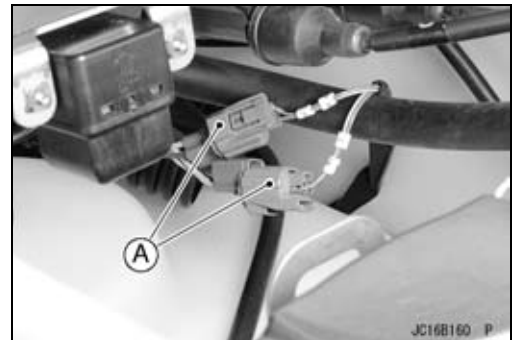
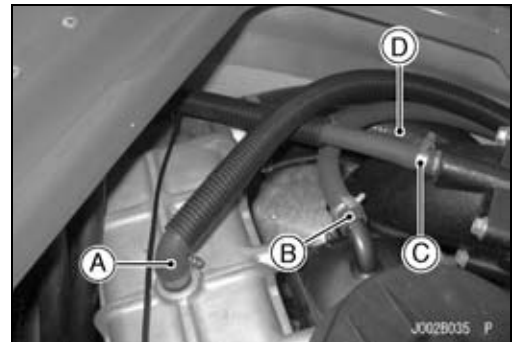


## 2-36 PERIODIC MAINTENANCE

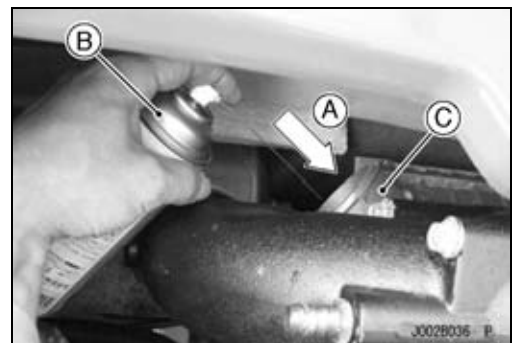
### Periodic Maintenance Procedures

#### Apply Corrosion Protection Coating to the Supercharger Rotors

- Remove seat (see Seat Removal in the Hull/Engine Hood chapter).
  - Disconnect the intercooler flushing hose [A] and oil separator tank hose [B] and move them aside.
  - Disconnect the cooling hose [C] (Exhaust Manifold ~ Intercooler) and move it aside.
  - Remove the supercharger-to-intercooler tube [D].
- 
- Disconnect both two connection on the ignition coil primary lead connectors [A].



- Spray [A] fogging oil [B] into the top of supercharger for 5 seconds while holding spray tube in parallel with the supercharger outlet [C].

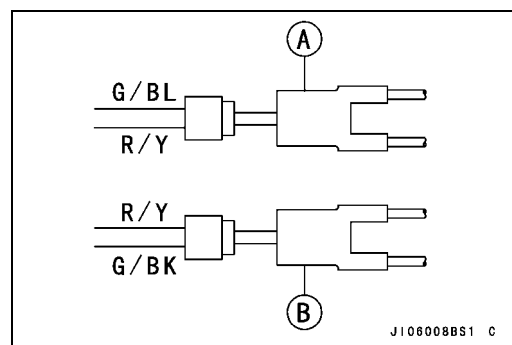


- Momentarily press the start button to “bump” engine and reposition supercharger rotors slightly.
  - Repeat fogging and “bump” steps for a total of 5 cycles. This will ensure that supercharger is adequately coated internally.
  - Install the supercharger-to-intercooler tube.
  - Connect the cooling hose (exhaust manifold ~ intercooler).
  - Connect the oil separator tank hose and intercooler flushing hose.
- 
- Reconnect the primary ignition coil lead connectors, noting the #1,#4 [A] and the #2, #3 [B] coil connectors. The #1, #4 coil connector has a red/yellow and a green/blue leads from the main harness. The #2, #3 coil connector has a red/yellow and green/black leads from the main harness.

#### NOTE

○The service codes (COIL1 and COIL2) caused by this procedure are stored in the ECU. If necessary, these service codes can be erased by using the Kawasaki Diagnostic System (KDS).

- Install the seat (see Seat Installation in the Hull/Engine Hood chapter).



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**Periodic Maintenance Procedures**

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***Replace Grease Seal***

- See pump and Impeller in the Pump Disassembly chapter.

# Fuel System (DFI)

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## 3-2 FUEL SYSTEM (DFI)

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