

Owner's Manual

Outboard Motor Series

● **9.8F**

● **8F**

● **6F**



BQ15001

To the owner

Thank you for choosing our outboard motor. This Owner’s Manual contains information needed for proper operation, maintenance and care. A thorough understanding of these simple instructions will help you obtain maximum enjoyment from your new motor. If you have any question about the operation or maintenance of your outboard motor, please consult our dealer.

In this Owner’s Manual particularly important information is distinguished in the following ways.

The safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

JGBQ15001

⚠ WARNING

Failure to follow instruction could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the outboard motor.

GJBQ15001

CAUTION

A caution indicates special precautions that must be taken to avoid damage to the outboard motor.

NOTE:

A NOTE provides key information to make procedures easier or clear.

We continually seek advancements in product information available at the time of

Printing, there may be minor discrepancies between your machine and this manual. If there is any question concerning this manual, please consult our dealer.

To ensure long product life, we recommend that you use the product and perform the specified periodic inspections and maintenance by correctly following the instructions in the owner’s manual. Any damage resulting from neglect of these instructions is not covered by warranty.

Some countries have laws or regulations restricting users from taking the product out of the country where it was purchased, and it may be impossible to register the product in the destination country. Additionally, the warranty may not apply in certain regions. When planning to take the product to another country, consult the dealer where the product was purchased for further information.

If the product was purchased used, please consult your closest dealer for customer re-registration, and to be eligible for the specified services.

NOTE:

The 9. 8F/8F/6F and the standard accessories are used as a base for the explanations and illustrations in this manual.

Therefore some items may not apply to every model.

Table of contents

General information-----1

Identification numbers record-----	1
Outboard motor serial number-----	1
Important labels-----	1
Warning labels-----	1

Safety information-----2

Safety information-----2

Rotating parts-----	2
Hot parts-----	2
Electric shock-----	2
Engine shut-off cord-----	2
Gasoline-----	2
Gasoline exposure and spills-----	2
Carbon monoxide-----	2
Modifications-----	2

Boating safety

Alcohol and drugs-----	3
Personal flotation devices-----	3
People in the water-----	3
Passengers-----	3
Overloading-----	3
Avoid collisions-----	3
Weather-----	4
Passenger training-----	4
Boating safety publications-----	4
Laws and regulations-----	4

Basic requirements-----5

Fueling instructions-----5

Gasoline-----	5
Engine oil-----	5
Installation requirements-----	5
Boat horsepower rating-----	5
Mounting motor-----	6
Start-in-gear protection-----	6

Basic components-----7

Main components-----7

Fuel tank-----	7
Fuel joint-----	8
Fuel gauge-----	8
Fuel tank cap-----	8
Air vent screw-----	8
Tiller handle-----	8
Gear shift lever-----	8
Throttle indicator-----	9
Engine shut-off switch-----	9
Engine stop button-----	10
Choke knob-----	10
Manual starter handle-----	10
Steering friction adjuster-----	11
Trim rod (tilt-pin) -----	11
Tilt lock mechanism-----	11
Tilt support bar-----	11
Top cowling lock lever(s) (turn type)---	12

Operation-----13

Installation-----13

Mounting the outboard motor-----	13
Clamping the outboard motor-----	14
Breaking in engine-----	15
Gasoline and engine oil mixing chart(25:1)-----	15
Procedure for pre-mixed models-----	15

Pre-operation checks-----6

Fuel-----	16
Oil-----	16
Controls-----	16
Engine-----	16

Filling fuel and oil mixing (50:1)-16

Feeding fuel (portable tank) -----	17
Operating engine -----	17
Starting engine-----	18

Warming up engine -----20

Table of contents

Chock start models-----	20
Shifting-----	21
Stopping boat-----	22
Stopping engine-----	22
Procedure-----	22
Trimming outboard motor-----	22

Adjusting trim angle for manual tilt models-----	23
Adjusting boat trim-----	23

Tilting up and down-----24

Procedure for tilting up (manual tilt Models) -----	25
Procedure for tilting down (manual tilt Models) -----	25

Cruising in shallow water-----26

Cruising in shallow water (manual tilt models)-----	26
Procedure-----	26

Cruising in other conditions---27

Cruising in salt water-----	27
Cruising in muddy or turbid water---	27
Cruising in acidic water-----	27

Maintenance-----28

Specifications-----28

Transporting and storing outboard motor -----29

Clamp screw mounting models-----	29
Storing outboard motor-----	29
Procedure-----	30
Lubrication-----	31
Cleaning the outboard motor-----	31
Checking painted surface of motor-----	31

Periodic maintenance-----31

Replacement parts-----	31
Maintenance chart-----	32
Greasing-----	32

Cleaning and adjusting spark plug-----	34
Checking fuel system-----	34
Inspecting fuel filter-----	35
Inspecting idling speed-----	36
Checking wiring and connectors-----	36
Exhaust leakage-----	36
Water leakage-----	37
Checking propeller-----	37
Removing propeller-----	37
Installing propeller-----	38
Changing gear oil-----	38
Cleaning fuel tank-----	39
Inspecting and replacing anode(s) -----	40
Checking top cowling-----	40
Coating the boat bottom-----	41

Trouble recovery-----42

Trouble shooting-----	42
Temporary action in emergency-----	45
Impact damage-----	45
Starter will not operate-----	45
Emergency starting engine-----	46
Treatment of submerged motor-----	47
Procedure-----	47

General information

BQ15003

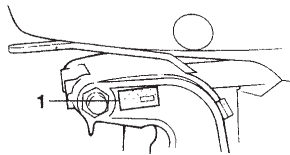
Identification numbers record

BQ15004

Outboard motor serial number

The outboard motor serial number is stamped on the label attached to the port side of the clamp bracket.

Record your outboard motor serial number in the spaces provided to assist you in ordering spare parts from our dealer or for reference in case your outboard motor is stolen.



ZZ01001

1. Outboard motor serial number location



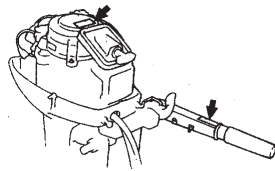
ZZ01002

BQ15005

Important labels

BQ15006

Warning labels



ZZ01003

BQ15007

Label

JGBQ15002

⚠ WARNING

- Be sure shift control is in neutral before starting engine.
- Do not touch or remove electrical parts when starting or during operation.
- Keep hands, hair, and clothes away from flywheel and other rotating parts while engine is running.

BQ15008

Label

JGBQ15003

⚠ WARNING

- This engine is equipped with a neutral starting device.
- The engine will not start unless the shift control is in neutral position.

Safety information

BQ15009

Safety information

Observe these precautions at all times.

BQ15010

Rotating parts

Hands, feet, hair, jewelry, clothing, PFD straps, etc. can become entangled with internal rotating parts of the engine resulting in serious injury or death.

Keep the top cowling in place whenever possible. Do not remove or replace the cowling with the engine running.

Only operate the engine with the cowling removed according to the specific instructions in the manual. Keep hands, feet, hair, jewelry, clothing, PFD straps, etc. away from any exposed moving parts.

BQ15011

Hot parts

During and after operation, engine parts are hot enough to cause burns. Avoid touching any parts under the top cowling until the engine has cooled.

BQ15012

Electric shock

Do not touch any electrical parts while starting or operating the engine. They can cause shock or electrocution.

BQ15013

Engine shut-off cord

Attach the engine shut-off cord so that the engine stops if the operator falls overboard or leaves the helm. This prevents the boat from running away under power and leaving people stranded, or running over people or objects.

Always attach the engine shut-off cord to a secure place on your clothing or your arm or leg while operating. Do not remove it to leave the helm while the boat is moving. Do not attach the cord to clothing that could tear loose, or route the cord where it could tear loose, or route the cord where it could become

entangled, preventing it from functioning.

Do not route the cord where it is likely to be accidentally pulled out. If the cord is pulled during operation, the engine will shut off and you will lose most steering control. The boat could slow rapidly, throwing people and objects forward.

BQ15014

Gasoline

Gasoline and its vapors are highly flammable and explosive. Always, refuel according to the procedure on page 17 to reduce the risk of fire and explosion.

BQ15015

Gasoline exposure and spills

Take care not to spill gasoline. If gasoline spills, wipe it up immediately with dry rags. Dispose of rags properly.

If any gasoline spills onto your skin, immediately wash with soap and water. Change clothing if gasoline spills on it.

If you swallow gasoline, inhale a lot of gasoline in your eyes, get immediate medical attention. Never siphon fuel by mouth.

BQ15016

Carbon monoxide

This product emits exhaust gases which contain carbon monoxide, a colorless, odorless gas which many cause brain damage or death when inhaled. Symptoms include nausea, dizziness, and drowsiness. Keep cockpit and cabin areas well ventilated. Avoid blocking exhaust outlets.

BQ15017

Modifications

Do not attempt to modify this outboard motor. Modifications to your outboard motor may reduce safety and reliability, and render the outboard unsafe or illegal to use.

Safety information

BQ15018

Boating safety

This section includes a few of the many important safety precautions that you should follow when boating.

BQ15019

Alcohol and drugs

Never operate after drinking alcohol or taking drugs. Intoxication is one of the most common factors contributing to boating fatalities.

BQ15020

Personal flotation devices

Have an approved personal flotation device (PFD) on board for every occupant. We recommend that you must wear a PFD whenever boating. At a minimum, children and non-swimmers should always wear PFDs when there are potentially hazardous boating conditions.

BQ15021

People in the water

Always watch carefully for people in the water, such as swimmers, skiers, or divers, whenever the engine is running. When someone is in the water near the boat, shift into neutral and shut off the motor.

Stay away from swimming areas. Swimmers can be hard to see.

The propeller can keep moving even when the motor is in neutral. Shut off the engine when a person is in water near you.

Passengers

Consult your boat manufacturer's instructions for details about appropriate passenger locations in your boat and be sure all passengers are positioned properly before accelerating and when operating above an idle speed. Standing or sitting or sitting in non-designated locations may result in being thrown either overboard or within the boat due to waves, wakes, or sudden changes in speed

or direction. Even when people are positioned properly, alert your passengers if you must make any unusual maneuver. Always avoid jumping waves or wakes.

BQ15023

Overloading

Do not overload the boat. Consult the boat capacity plate or boat manufacturer for maximum weight and number of passengers. Be sure that weight is properly distributed according to the boat manufacturers instructions. Overloading or incorrect weight distribution can compromise the boats handling and lead to an accident, capsizing or swamping.

Avoid collisions

Scan constantly for people ,objects, and other boats. Be alert for conditions that limit your visibility or block your vision of others.

Operate defensively at safe speeds and keep a safe distance away from people, objects, and other boats.

Do not follow directly behind other boats or water skiers.

Avoid sharp turns or other maneuvers that understand where you are going.

Avoid areas with submerged objects or shallow water.

Ride within your limits and avoid aggressive maneuvers to reduce the risk of loss of control, ejection, and collision.

Take early action to avoid collisions. Remember, **boats do not have brakes**, and stopping the engine or reducing throttle can reduce the ability to steer. If you are not sure that you can stop in time before hitting an obstacle, apply throttle and turn in another direction.

Safety information

BQ15025

Weather

Stay informed about the weather. Check weather forecasts before boating. Avoid boating in hazardous weather.

BQ15026

Passenger training

Make sure at least one other passenger is trained to operate the boat in the event of an emergency.

BQ15027

Boating safety publications

Be informed about boating safety.

Additional publications and information can be obtained from many boating organizations.

BQ15028

Laws and regulations

Know the marine laws and regulations where you will be boating and obey them. Several sets of rules prevail according to geographic location, but all are basically the same as the International Rules of the Road.

Basic requirements

BQ15029

Fueling instructions

JGBO15004

⚠WARNING

GASOLINE AND ITS VAPORS ARE HIGHLY FLAMMABLE AND EXPLOSIVE!

● Do not smoke when refueling, and keep away from sparks, flames, or other sources of ignition.

● **Stop engine before refueling**

● **Refuel in a well-ventilated area. Refuel portable fuel tanks off the boat.**

● **Take care not to spill gasoline. If gasoline spills, wipe it up immediately with dry rags.**

● **Do not overfill the fuel tank.**

● **Tighten the filler cap securely after refueling.**

● **If you should swallow some gasoline, inhale a lot of gasoline vapor, or get gasoline in your eyes, get immediate medical attention.**

● **If any gasoline spills onto your skin, immediately wash with soap and water. Change clothing if gasoline spills on it.**

● **Touch the fuel nozzle to the filler opening or funnel to help prevent electrostatic sparks.**

GJBQ15002

CAUTION:

Use only new clean gasoline which have been stored in clean containers and is not contaminated with water or foreign matter.

BQ15030

Gasoline

Recommended gasoline:
Regular unleaded gasoline

If knocking or pinging occurs, use a different brand of gasoline or premium unleaded fuel. If unleaded gasoline is not available, then premium gasoline can be used.

BQ15031

Engine oil

Recommended engine oil:
LUBE2-stroke outboard motor oil

If the recommended engine oil is not available, another 2-stroke engine oil with an NMMA-certified TC-W3 rating may be used.

BQ15032

Installation requirements

BQ15033

Boat horsepower rating

Before installing the outboard motor(s), confirm that the total horsepower of your motor(s) does not exceed the boat's maximum horsepower rating. See the boat's capacity plate or contact the manufacturer.

⚠WARNING

Overpowering a boat can cause severe instability.

BQ15034

Mounting motor

Your dealer or other person experienced in proper rigging should mount the motor using correct equipment and complete rigging instructions. For further information, see page 13.

JGBQ15006

⚠WARNING

● **Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control, or fire hazards.**

● **Because the motor is very heavy, special equipment and training is required to mount it safely.**

Basic requirements

BQ15035

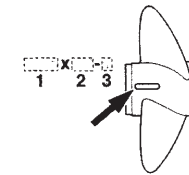
Propeller selection

Next to selecting an outboard, choosing the right propeller is one of the most important purchasing decisions a boater can make.

The type, size, and design of your propeller have a direct impact on acceleration, top speed, fuel economy, and even engine life. We design and manufacture propellers for every outboard motor and every application. Your outboard motor came with our propeller chosen to perform well over a range of applications, but there may be uses where a different propeller would be more appropriate.

Your dealer can help you select the right propeller for your boating needs. Select a propeller that will allow the engine to reach the middle or upper half of the operating range at full throttle with the maximum boatload. Generally, choose a large pitch propeller for a smaller operating load and a smaller pitch propeller for a heavy load. If you carry loads that vary widely, choose the propeller that lets the engine run in the proper range for your maximum load but remember that you may need to reduce your throttle setting to stay within the recommended engine speed range when carrying lighter loads.

For instructions on propeller removal and installation, see page 37.



ZZ03001

1. Propeller diameter in inches
2. Propeller pitch in inches
3. Type of propeller(propeller mark)

BQ15036

Start-in-gear protection

Our outboard motors are equipped with start-in-gear protection device(s). This feature permits the engine to be started only when it is in neutral. Always select neutral before starting the engine.

Basic components

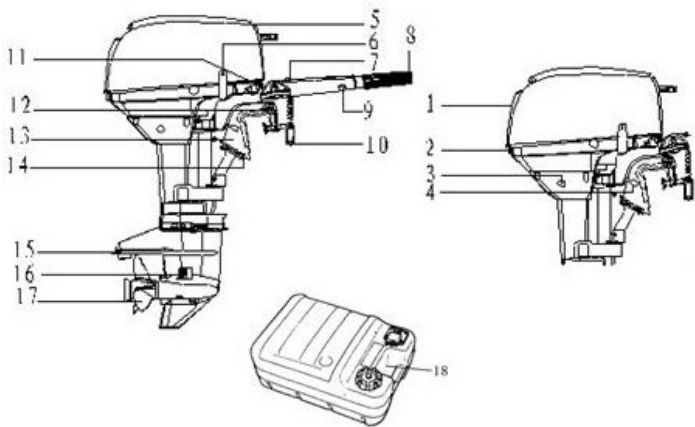
BQ15037

Main components

NOTE:

*May not be exactly as shown; also may not be included as standard equipment on all models.

9.8F 8F 6F



1. Top cowling
2. Top cowling lock lever
3. Cooling water pilot hole
4. Tilt lock lever
5. Manual starter handle
6. Gear shift lever
7. Engine stop button/Engine shut-off switch
8. Tiller handle
9. Throttle friction adjuster
10. Clamp screw
11. Choke knob
12. Rope attachment
13. Clamp bracket
14. Trim rod
15. Anti-cavitation plate

16. Cooling water inlet
17. Propeller*
18. fuel tank

BQ15038

Fuel tank

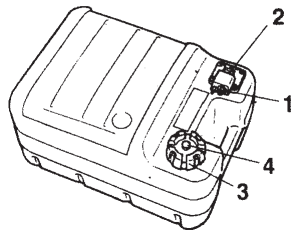
If your model was equipped with a portable fuel tank, its function is as follows.

JGBO15007

⚠ WARNING

The fuel tank supplied with this engine is its dedicated fuel reservoir and must not be used as a fuel storage container. Commercial users should conform to relevant licensing or approval authority regulations.

Basic components



1. Fuel joint
2. Fuel gauge
3. Fuel tank cap
4. Air vent screw

BQ15039

Fuel joint

This joint is used to connect the fuel line.

BQ15040

Fuel gauge

This gauge is located on either the fuel tank cap or on the fuel joint base, it shows the approximate amount of fuel remaining in the tank.

BQ15041

Fuel tank cap

This cap seals the fuel tank. When removed, the tank can be filled with fuel. To remove the cap, turn it counterclockwise.

BQ15042

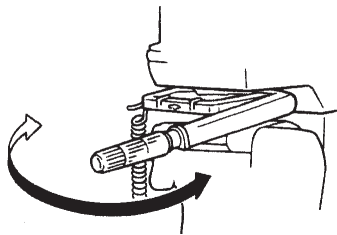
Air vent screw

This screw is on the fuel tank cap to loosen the screw, turn it counterclockwise.

BQ15043

Tiller handle

To change direction, move tiller handle to the left or right as necessary.

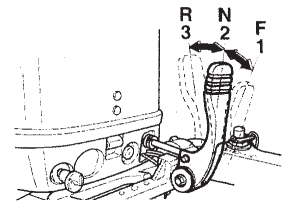


ZZ04003

BQ15044

Gear shift lever

Pulling the gear shift lever towards you, puts the engine in forward gear so that the boat moves ahead. Pushing the lever away from you, puts the engine in reverse gear so that the boat moves astern.



ZZ04004

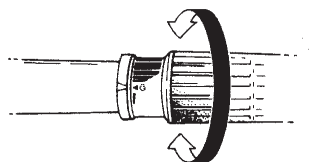
1. Forward "F"
2. Neutral "N"
3. Reverse "R"

BQ15045

Throttle grip

The throttle grip is on the tiller handle, Turn the grip on the tiller handle, Turn the grip counterclockwise to increase speed and clockwise to decrease speed.

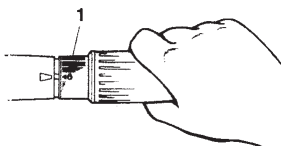
Basic components



BQ15046

Throttle indicator

The fuel consumption curve on the throttle indicator shows the relative amount of fuel consumed for each throttle position. Choose the setting that offers the best performance and fuel economy for the desired operation.



1. Throttle indicator

BQ15047

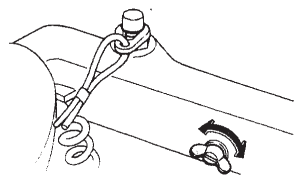
Throttle friction adjuster

A friction device provides adjustable resistance to movement of the throttle grip or the remote control lever, and can be set according to operator preference. To increase resistance, turn the adjuster clockwise. To decrease resistance, turn the adjuster counterclockwise.

JGBO15008

⚠ WARNING

Do not over-tighten the friction adjuster. If there is too much resistance, it could be difficult to move the remote control lever or throttle grip, which could result in an accident.



When constant speed is desired, tighten the adjuster to maintain the desired throttle setting.

BQ15048

Engine shut-off switch

The clip must be attached to the engine shut-off switch for the engine to run. The cord should be attached to a secure place on the operator's clothing, or arm or leg should the operator fall overboard or leave the helm, the cord will pull out the clip, stopping ignition to the engine. This will prevent the boat from running away under power.

JGBQ15009

⚠ WARNING

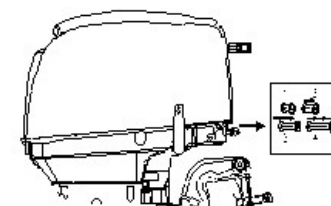
- **Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg while operating.**
- **Do not attach the cord to clothing that could tear loose. Do not route the cord where it should become entangled, preventing it from functioning**

Basic components

BQ15050

Choke knob

To supply the engine with the rich fuel mixture required to start, pull out the knob. The choke knob has the 4 operating positions shown in the following illustration.



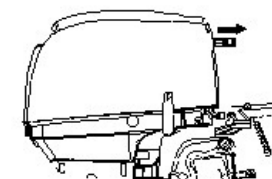
ZZ04010

1. Use to start a hot engine
2. Use to warm up a cold engine or restart a warm engine
3. Use to warm up a cold engine or restart a warm engine
4. Use to start a cold engine

BQ15051

Manual starter handle

To start the engine, first gently pull the handle out until resistance is felt. From that position, then pull the handle straight out quickly to crank the engine.

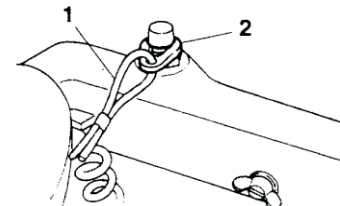


ZZ04010

- **Avoid accidentally pulling the cord during normal operation. Loss of engine power means the loss of the most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.**

NOTE:

The engine can't be started with the clip removed.



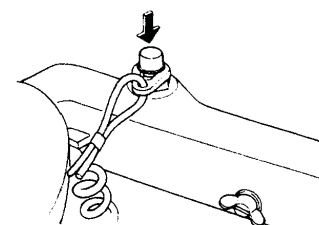
ZZ04008

1. Cord
2. Clip

BQ15049

Engine stop button

To open the ignition circuit and stop the engine, push this button.



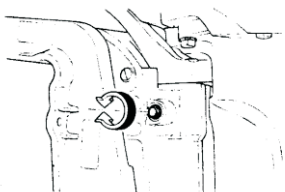
ZZ04009

Basic components

BQ15052

Steering friction adjuster

A friction device provides adjustable resistance to the steering mechanism, and can be set according to operator preference. And adjusting screw or bolt is located on the swivel bracket



ZZ04012

To increase resistance, turn the adjuster clockwise.

To decrease resistance, turn the adjuster counterclockwise.

JGBQ5010

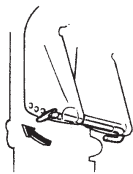
⚠ WARNING

Do not over-tighten the friction adjuster. If there is too much resistance, it could be difficult to steer, which could result in an accident.

BQ15053

Trim rod (tilt pin)

The position of the trim rod determines the minimum trim angle of the outboard motor in relation to the transom.

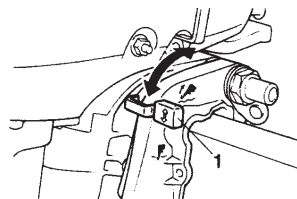


ZZ04013

BQ15054

Tilt lock mechanism

The tilt lock mechanism is used to prevent the outboard motor from lifting out of the water when is reverse gear.



ZZ04014

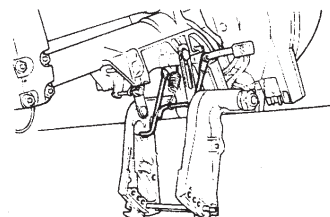
1. Tilt lock lever

To tilt the outboard motor up, set the tilt lock lever to the “up” position. To tilt the outboard motor down, set the tilt lock lever to the “down” position.

BQ15055

Tilt support bar

The tilt support bar keep the outboard motor in the tilted up position.



ZZ04015

GJBQ15003

Caution

Do not use the tilt support bar when trailer ing the boat. The outboard motor could shake loose from the tilt support and fall.

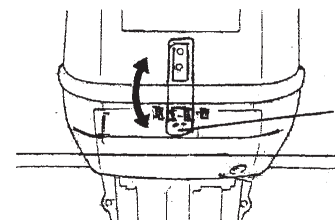
Basic components

If the motor can't be trailed in the normal running position, use an additional support device to secure it in the tilt position.

BQ15056

Top cowling lock lever(s) (turn type)

To remove the engine top cowling, turn the lock lever(s) and lift off the cowling. When installing the cowling, check to be sure it fits properly in the rubber seal. Then lock the cowling again by returning the lever(s) to the lock position.



ZZ04016

1. Top cowling lock lever(s)

BQ15057

Installation

The information presented in this section is intended as reference only. It is not possible to provide complete instructions for every possible boat and motor combination. Proper mounting depends in part on experience and the specific boat and motor combination.

JGBQ15011

⚠ WARNING

- **Overpowering a boat could cause severe instability. Do not install an outboard motor with more horsepower than the maximum rating on the capacity plate of the boat. If the boat does not have a capacity plate, consult the boat manufacturer.**
- **Improper mounting of the outboard motor could result in hazardous conditions, such as poor handling, loss of control, or fire hazards. For permanently mounted models, your dealer or other person experienced in proper rigging should mount the motor.**

BQ15058

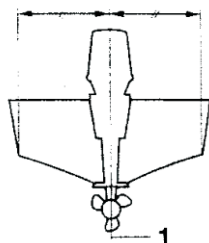
Mounting the outboard motor

JGBQ15012

⚠ WARNING

Your dealer or other person experienced in proper outboard motor mounting should show you how to mount your outboard motor.

The outboard motor should be mounted so that the boat is well balanced. Otherwise, the boat could be hard to steer. For single engine boats, mount the outboard motor on the centerline (keel line) of the boat.



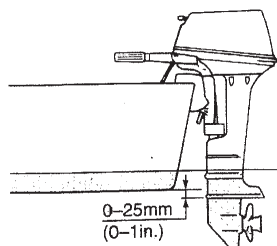
ZZ05001

1.Center line(keel line)

BQ15059

Mounting height

To run your boat at optimum efficiency, the water resistance(drag) of the boat and outboard motor must be made as little as possible. The mounting height of the outboard motor greatly affects the water resistance, If the mounting height is too high, cavitation tends to occur, thus reducing the propulsion; and if the propeller tips cut the air, the engine speed will rise abnormally and cause the engine to overheat. If the mounting height is too low, the water resistance will increase and thereby reduce engine efficiency. Mount the outboard motor so that the anti-cavitation plate is between the bottom of the boat and a level 25 mm (1in) below it.



ZZ05002

GJBQ15004

Caution

- **During water testing, check the buoyancy of the boat, at rest, with its maximum load. Check that the static water level on the exhaust housing is low enough to prevent water entry into the power head when water rises due to waves when the outboard is not running.**
- **Incorrect engine height or obstructions to the smooth flow of water (such as the design or condition of the boat, or accessories such as transom ladders or depth finder transducers) can create airborne water spray while the boat is cruising. If the motor is operated continuously in the presence of airborne water spray, enough water could enter the engine through the intake opening on the cowling to cause severe engine damage. Eliminate the cause of the airborne water spray.**

NOTE:

- The optimum mounting height of the outboard motor is affected by the boat and motor combination and the desired use. Test runs at different heights can help determine the optimum mounting height. Consult our dealer or boat manufacturer for further information on determining the proper mounting height.
- For instructions on setting the trim angle of the outboard motor, see page 22.

BQ15060

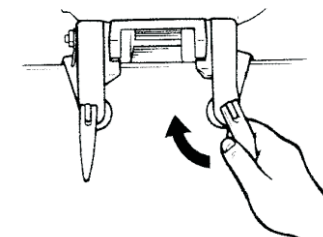
Clamping the outboard motor

1. Place the outboard motor on the transom so that it's positioned as close to the center as possible. Tighten the transom clamp screws evenly and securely. Occasionally check the clamp screws for tightness during operation of the outboard motor because they could become loose due to engine vibration.

JGBQ15013

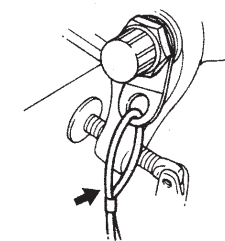
⚠ WARNING

Loose clamp screws could allow the outboard motor to fall off or move on the transom. This could cause loss of control and serious injury. Make sure the transom screws are tightened securely. Occasionally check the screws for tightness during operation.



ZZ05003

2. If the engine restraint cable attachment is equipped on your engine, an engine restraint cable or chain should be used. Attach one end to the engine restraint cable attachment and the other to a secure mounting point on the boat. Otherwise the engine could be completely lost if it accidentally falls off the transom.



ZZ05004

- Secure the clamp bracket to the transom using the bolts provided with the outboard(if packed).For details, consult our dealer.

JGBO15014

⚠ WARNING

Avoid using bolts, nuts or washers other than those contained in the engine packaging. If used, they must be of at least the same quality of material and strength and must be tightened securely. After tightening, test run the engine and check their tightness.

BQ15061

Breaking in engine

Your new engine requires a period of break in to allow mating surfaces of moving parts to wear the evenly. Correct break-in will help ensure proper performance and longer engine life.



GJBQ15005

Caution

Failure to follow the break-in procedure could result in reduced engine life or even severe engine damage.

BQ15062

Gasoline and engine oil mixing chart (25:1)

	1 L	12 L	14 L	24 L
	(0.26 US gal. 0.22 Imp gal)	(3.2 US gal. 2.6 Imp gal)	(3.7 US gal. 3.1 Imp gal)	(6.3 US gal. 5.3 Imp gal)
	0.04 L (0.04 US qt. 0.04 Imp qt)	0.48 L (0.51 US qt. 0.42 Imp qt)	0.56 L (0.59 US qt. 0.49 Imp qt)	0.96 L (1.01 US qt. 0.84 Imp qt)

ZZ05005

- Gasoline
- Engine oil

GJBQ15006

Caution

Be sure you mix gasoline and oil completely, otherwise the engine may be damaged.

BQ15063

Procedure for pre-mixed models

Run the engine under load (in gear with a propeller installed) for 10 hours as follows.

- First 10 minutes:
Run the engine at the lowest possible speed. A fast idle in neutral is best.
- Next 50 minutes:
Do not exceed half throttle (approximately 3000r/min).Vary engine speed occasionally. If you have an easy-planning boat, accelerate at full throttle onto plane, then immediately reduce the throttle to 3000r/min or less.
- Next two hours:
Accelerate at full throttle onto plane, then reduce engine speed to three-quarter throttle(approximately 4000r/min).Vary engine speed occasionally. Run at full throttle for one minute, then allow about 10 minutes of operation at three-quarter throttle or less to let the engine cool.
- Remaining seven hours:
Run the engine at any speed. However, avoid operating at full throttle for more than 5 minutes at a time.
- After the first 10 hours:
Operate the engine normally. Use the standard premix ratio of gasoline and oil. For details on mixing fuel and oil, see page 16.

BQ15064

Pre-operation checks

JGBQ15015

⚠ WARNING

If any item in the pre-operation check is not working properly, have it inspected and repaired before operating the outboard motor. Otherwise an accident could occur.

GJBQ15007

Caution

Do not start the engine out of water. Overheating and serious engine damage can occur.

BQ15065

Fuel

- Check to be sure you have plenty of fuel for your trip.
- Make sure there are no fuel leaks or gasoline fumes.
- Check the fuel line connections to be sure they are tight(if equipped with fuel tank or boat tank).
- Be sure that fuel tank is positioned on a secure, flat surface, and that the fuel line is not twisted or flattened, or likely to contact sharp objects(if equipped with fuel tank or boat tank).

BQ15066

Oil

- Check to be sure you have plenty of oil for your trip.

BQ15067

Controls

- Check throttle, shift, and steering for proper operation before starting the engine.
- The control should work smoothly, without binding or unusual free play.
- Look for loose or damaged connections.
- Check operation of the starter and stop switches when the outboard motor is in the water.

BQ15068

Engine

- Check the engine and engine mounting.
- Look for loose or damaged fasteners.
- Check the propeller for damage.

BQ15069

Filling fuel and engine oil

BQ15070

Filling fuel for portable tank

JGBQ15016

⚠ WARNING

Gasoline ad its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames, or other sources of ignition.



- Remove the fuel tank cap.
- Fill the fuel tank carefully.
- Close the cap securely after refueling. Wipe up any spilled fuel

Fuel tank capacity(if equipped Hidea fuel tank):
12.0L(3.17US gal) (2.64Imp.gal)

BQ15071

Gasoline and oil mixing(50:1)

	Gasoline to engine oil ratio
Break-in period	25:1
After break-in	50:1

	1 L	12 L	14 L	24 L
	(0.26 US gal. 0.22 Imp gal)	(3.2 US gal. 2.6 Imp gal)	(3.7 US gal. 3.1 Imp gal)	(6.3 US gal. 5.3 Imp gal)
	0.04 L (0.04 US qt. 0.04 Imp qt)	0.48 L (0.51 US qt. 0.42 Imp qt)	0.56 L (0.59 US qt. 0.49 Imp qt)	0.96 L (1.01 US qt. 0.84 Imp qt)

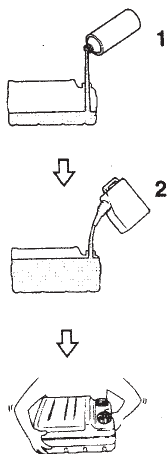
ZZ05006

- Gasoline
- Engine oil

Operation

If equipped within a portable fuel tank

1. Pour oil into the portable fuel tank, and then add gasoline.



ZZ05007

- 1) Engine oil
- 2) Gasoline

2. Replace the fuel tank cap and close tightly.
3. Shake the fuel tank to mix the fuel thoroughly.
4. Make sure that the oil and gasoline are mixed.

If equipped with a built-in fuel tank

1. Pour oil into a clean fuel can, and then add gasoline.
2. Replace the fuel can cap and close tightly.
3. Shake the fuel can to mix the fuel thoroughly.
4. Make sure that the oil and gasoline are mixed.
5. Pour the gasoline and oil mixture into the built-in fuel tank.

GJBQ15008

Caution

- Avoid using any oil other than the specified type.
- Use a thoroughly blended fuel-oil mixture.
- If the mixture is not thoroughly mixed, or if the mixing ratio is incorrect, the following problems could occur.
- Low oil ratio; lack of oil could cause Major engine trouble, such as piston seizure.
- High oil ratio; too much oil could cause fouled spark plugs, smoky exhaust, and heavy carbon deposits.

NOTE:

If using a permanently installed tank, pour the oil gradually as the gasoline is being added to the tank.

BQ15072

Operating engine

BQ15073

Feeding fuel(portable tank)

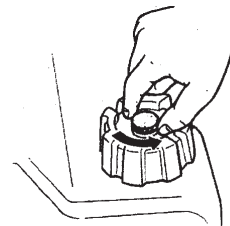
JGBQ15017

⚠ WARNING

- Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.
- When the air vent screw is loosened, Gasoline vapor will be released. Gasoline is highly flammable, and keep away from open flames and sparks while loosening the air vent screw.
- This product emits exhaust gases which contain carbon monoxide, a colorless, odorless gas which could cause brain damage or death when inhaled. Symptoms include nausea, dizziness, and drowsiness. Keep cockpit and cabin areas well ventilated. Avoid blocking exhaust outlets.

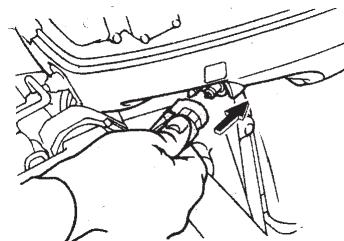
Operation

1. If there is an air vent screw on the fuel tank cap, loosen it 2 or 3 turns.

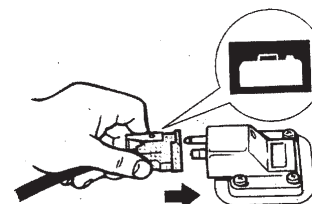


ZZ05008

2. If there is fuel joint on the motor, firmly connect the fuel line on the joint, then firmly connect the other end of the fuel line to the joint on the fuel tank.



ZZ05009



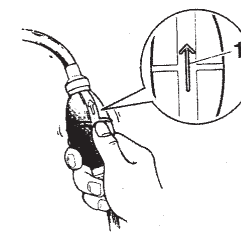
ZZ05010

3. If a steering friction adjuster is provided on your outboard motor, securely attach the fuel line to the fuel line clamp.

NOTE:

During engine operation place the tank horizontally, otherwise fuel cannot be drawn from the fuel tank.

4. Squeeze the primer pump, with the arrow pointing up, until you feel it become firm.



ZZ05011

1. Arrow

BQ15074

Starting engine

JGBQ15018

⚠ WARNING

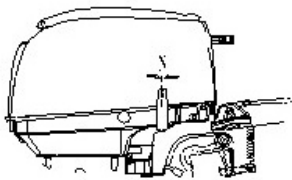
Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.

BQ15075

Manual start models

1. Place the gear shift lever in neutral.

Operation



ZZ05012

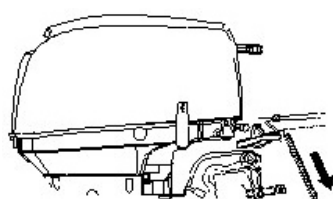
NOTE: The start-in-gear protection device prevents the engine from starting except when in neutral.

2. Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg. Then install the clip on the other end of the cord into the engine shut-off switch.

JGBQ15019

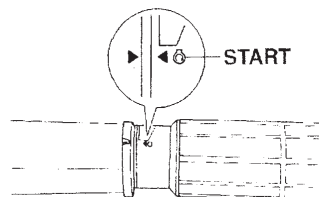
WARNING

- Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg while operating.
- Do not attach the cord to clothing that could tear loose. Do not route the cord where it could become entangled, preventing it from functioning.
- Avoid accidentally pulling the cord during normal operation. Loss of engine power means the loss of most steering control. Also, without engine power, the boat could slow rapidly. This could cause people and objects in the boat to be thrown forward.



ZZ05013

3. Place the throttle grip in the "START" (start) position.



ZZ05014

4. Pull out / turn the choke knob fully. Place the choke knob back in to the second or third position to warm up the engine after starting. When the engine has fully warmed up, replace the choke knob back in to its home position.



ZZ05015

NOTE: It is not necessary to use the choke when starting a warm engine.

Operation

- If the choke knob is left in the pulled out position while the engine is running, the engine will run poorly or stall.

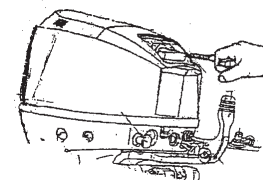
BQ15076

Warming up engine

BQ15077

Choke start models

1. After starting the engine, allow it to idle for 3 minutes to warm up. Failure to do so will shorten engine life. Gradually return the choke knob to its home position as the engine warms up.
2. Check for a steady flow of water from the cooling water pilot hole.



ZZ05016

6. After the engine starts, slowly return the manual starter handle to its original position before releasing it.
7. Slowly return the throttle grip to the fully closed position.

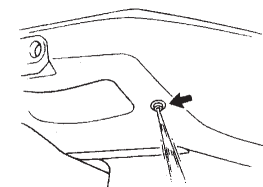
NOTE:

- When the engine is cold, it needs to be warmed up. For further information, see page 20.
- If the engine does not start on the first try, repeat the procedure. If the engine fails to start after 4 or 5 tries, open the throttle a small amount (between 1/8 and 1/4) and try again. Also if the engine is warm and fails to start, open the throttle a same amount and try to start the engine again. If the engine still fails to start, see page 42.

GJBQ15009

CAUTION:

A continuous flow of water from the cooling water pilot hole shows that the water pump is pumping water through the cooling passages. If water is not flowing out of the hole at all times while the engine is running, overheating and serious damage could occur. Stop the engine and check whether the cooling water inlet on the lower case or the cooling water pilot hole is blocked. Consult our dealer if the problem can not be located and corrected.



ZZ05017

Operation

BQ15078

Shifting

JGBJ15020

⚠ WARNING

Before shifting, make sure there are no swimmers or obstacles in the water near you.

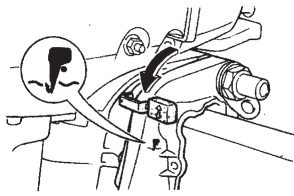
GJBQ15010

CAUTION:

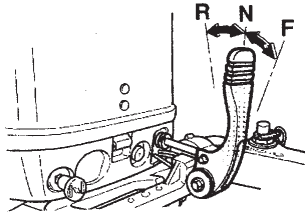
Warm up the engine before shifting into gear. Until the engine is warm, the idle speed may be higher than normal. High idle speed can prevent you from shifting back to neutral. If this occurs, stop the engine, shift to neutral, then restart the engine and allow it to warm up.

To shift out of neutral

Move the gear shift lever firmly and crisply forward (for forward gear) or backward (for reverse gear). Be sure to check that the tilt lock lever is in the lock / down position (if equipped) before operating in reverse.



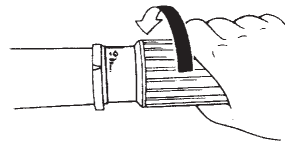
ZZ05018



ZZ05019

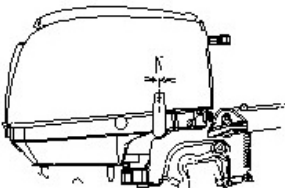
To shift from in gear (forward / reverse) to neutral

1. Close the throttle so that the engine slows to idle speed.



ZZ05020

2. After the engine is at idle speed in gear move the gear shift lever firmly and crisply into the neutral position.



ZZ05021

Operation

BQ15079

Stopping boat

JGBQ15021

⚠ WARNING

- Do not use the reverse function to slow down or stop the boat as it could cause you to lose control, be ejected, or impact the steering wheel or other parts of the boat. This could increase the risk of serious injury. It could also damage the shift mechanism.
- Do not shift into reverse while traveling at planning speeds. Loss of control, boat swamping, or damage to the boat could occur.

The boat is not equipped with a separate braking system. Water resistance stops it after the throttle lever is moved back to idle. The stopping distance varies depending on gross weight, water surface conditions, and wind direction.

BQ15080

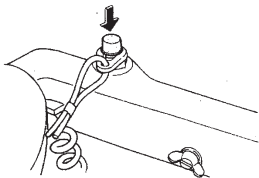
Stopping engine

Before stopping the engine, first let it cool off for a few minutes at idle or low speed. Stopping the engine immediately after operating at high speed is not recommended.

BQ15081

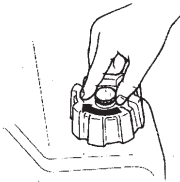
Procedure

1. Push and hold the engine stop button until the engine comes to a complete stop.



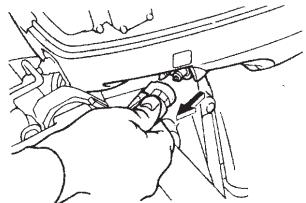
ZZ05021

2. After stopping the engine, tighten the air vent screw on the fuel tank cap and see the fuel cock lever or knob to closed position, if equipped.



ZZ05023

3. Disconnect the fuel line if you are using an external fuel tank.



ZZ05024

NOTE:

If the outboard motor is equipped with an engine shut-off cord, the engine can also be stopped by pulling the cord and removing the clip from the engine shut-off switch.

BQ15082

Trimming outboard motor

The trim angle of the outboard motor helps determine the position of the bow of the boat in the water. Correct trim angle will help improve performance and fuel economy while reducing strain on the engine. Correct trim angle depends upon the combination of boat, engine, and propeller. Correct trim i

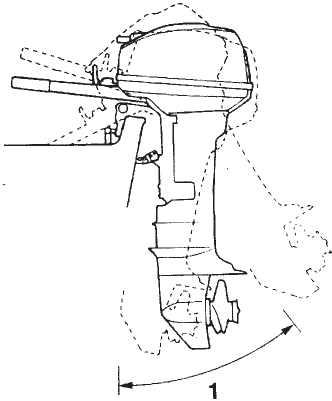
Operation

also affected by variables such as the load in the boat, sea conditions, and running speed.

JGBQ15022

⚠ WARNING

Excessive trim for the operating conditions (either trim up or trim down) can cause boat instability and can make steering the boat more difficult. This increases the possibility of an accident. If the boat begins to feel unstable or is hard to steer, slow down and/or readjust the trim angle.



ZZ05025

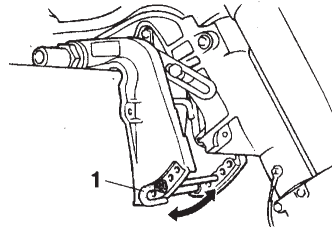
1. Trim operating angle

BQ15083

Adjusting trim angle for manual tilt Models

There are 4 or 5 holes provided in the clamp bracket to adjust the outboard motor trim angle.

1. Stop the engine.
2. Tilt the outboard motor up, and then remove the trim rod from the clamp bracket.



ZZ05026

Trim rod

3. Reposition the rod in the desired hole. To raise the bow ("trim-out"), move the rod away from the transom. To lower the bow ("trim-in"), move the rod toward the transom. Make test runs with the trim set to different angles to find the position that works best for your boat and operating conditions.

JGBQ15023

⚠ WARNING

- Stop the engine before adjusting the trim angle.
- Use care to avoid being pinched when removing or installing the rod.
- Use caution when trying a trim position for the first time. Increase speed gradually and watch for any signs of instability or control problems. **Improper trim angle can cause loss of control.**

NOTE:

The outboard motor trim angle can be changed approximately 4 degrees by shifting the trim rod one hole.

BQ15084

Adjusting boat trim

When the boat is on plane, a bow-up attitude results in less drag, greater stability and efficiency. This is generally when the keel line of the boat is up about 3 or 5 degrees.

Operation

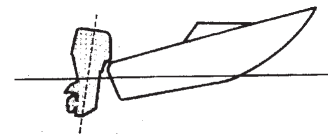
With the bow up, the boat may have a greater tendency to steer to one side or the other. Compensate for this as you steer. The trim tab can also be adjusted to help offset this effect. When the bow of the boat is down, it is easier to accelerate from a standing start onto plane.



ZZ05027

Bow Up

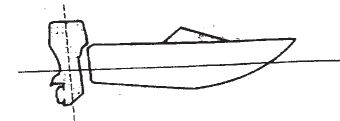
Too much trim-out puts the bow of the boat too high in the water. Performance and economy are decreased because the hull of the boat is pushing the water and there is more air drag. Excessive trim-out can also cause the propeller to ventilate, which reduces performance further, and the boat may "porpoise" (hop in the water), which could throw the operator and passengers overboard.



ZZ05028

Bow Down

Too much trim-in causes the boat to "plow" through the water, decreasing fuel economy and making it hard to increase speed. Operating with excessive trim-in at higher speeds also makes the boat unstable. Resistance at the bow is greatly increased, heightening the danger of "bow steering" and making operation difficult and dangerous.



ZZ05029

NOTE:

Depending on the type of boat, the outboard motor trim angle may have little effect on the trim of the boat when operating.

BQ15085

Tilting up and down

If the engine will be stopped for some time or if the boat is moored in shallows, the outboard motor should be tilted up to protect the propeller and lower casing from damage by collision with obstructions, and also reduce salt corrosion.

JGBO15024

⚠ WARNING

Be sure all people are clear of the outboard motor when tilting up and down. Body parts can be crushed between the motor and the clamp bracket when the motor is trimmed or tilted.

JGBO15025

⚠ WARNING

Leaking fuel is a fire hazard. If there is a fuel joint on the outboard motor, disconnect the fuel line or close the fuel cock if the engine will be tilted for more than a few minutes. Otherwise fuel may leak.

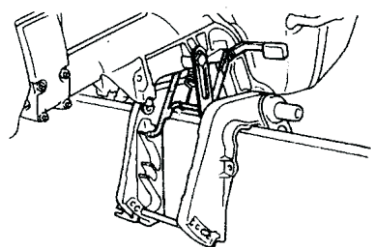
Operation

GJBQ15011

CAUTION:

- Before tilting the outboard motor, stop the engine by following the procedure on page 22. Never tilt the outboard motor while the engine is running. Severe damage from overheating can result.
- Do not tilt up the engine by pushing the tiller handle (if equipped) because this could break the handle.

bracket. Or the tilt support bar will turn to the lock position automatically.

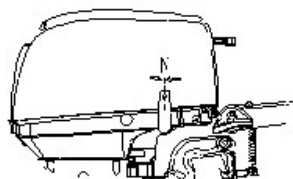


ZZ05032

BQ15086

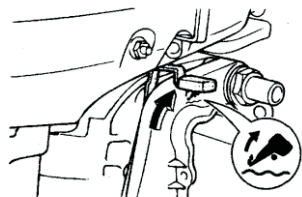
Procedure for tilting up (manual tilt models)

1. Place the gear shift lever in neutral.



ZZ05030

2. Place the tilt lock lever (if equipped) in the release / up position.



ZZ05031

3. Pull up the shallow water lever (if equipped).
4. Hold the rear of top cowling with one hand and tilt the engine up fully.
5. Push the tilt support knob into the clamp

GJBQ15012

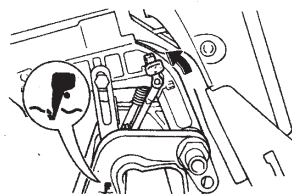
CAUTION:

Do not use the tilt support lever or knob when trailering the boat. The outboard motor could shake loose from the tilt support and fall. If the motor cannot be trailered in the normal running position, use an additional support device to secure it in the tilt position. For more detailed information, see page 29.

BQ15087

Procedure for tilting down (manual tilt models)

1. Place the tilt lock lever in the release/down position or return the shallow water lever to its original position.



ZZ05033

2. Slightly tilt the engine up until the tilt support bar is automatically released.

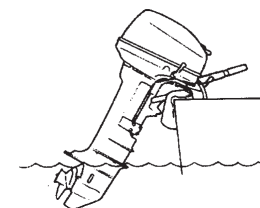
Operation

3. Slowly tilt the engine down.

BQ15088

Cruising in shallow water

The outboard motor can be tilted up partially to allow operation in shallow water.



ZZ05034

BQ15089

Cruising in shallow water (manual tilt models)

JGBQ15026

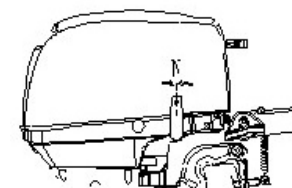
WARNING

- Place the gear shift in neutral before using the shallow water cruising system
- Run the boat at the lowest possible speed when using the shallow water cruising system. The tilt lock mechanism does not work while the shallow water cruising system is being used. Hitting an underwater obstacle could cause the outboard motor to lift out of the water, resulting in loss of control.
- Do not rotate the outboard motor by 180 degree and operate the boat in reverse. Place the gear shift in reverse to operate the boat in reverse.
- Use extra care when operation in reverse. Too much reverse thrust can cause the outboard motor to lift out of the water, increasing the chance of accident and personal injury.
- Return the outboard motor to its normal position as soon as the boat is back in deeper water.

BQ15090

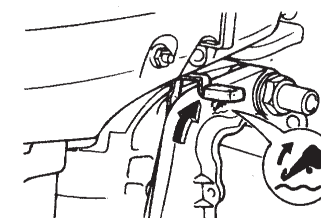
Procedure

1. Place the gear shift lever in neutral.



ZZ05035

2. Place the tilt lock lever in the release/up position.



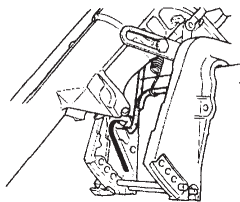
ZZ05036

3. Slightly tilt the outboard motor up. The tilt support bar will lock automatically, supporting the outboard motor in a partially raised position.

GJBQ15013

CAUTION:

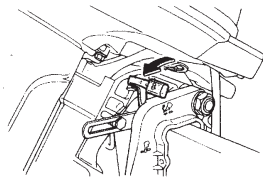
Do not tilt the outboard motor up so that the cooling water inlet on the lower unit is above the surface of the water when setting up for and cruising in shallow water. Otherwise severe damage from overheating can result.



ZZ05037

NOTE: _____
This outboard motor has 2 positions for shallow water cruising.

4. To return the outboard motor to the normal running position, place the gear shift lever in neutral, then place the tilt lock lever in the lock/down position.



ZZ05038

5. Slightly tilt the outboard motor up until the tilt support bar automatically returns to the free position.

6. Slowly lower the outboard motor to the normal position.

BQ15091

Cruising in other conditions

Cruising in salt water

After operating in salt water, flush the cooling water passages with fresh water to prevent them from becoming clogged. Also rinse the outside of the outboard motor with

fresh water and, if possible, rinse the power head under the cowling.

Cruising in muddy or turbid water

Hidea strongly recommends that you use the optional chromium-plated water pump kit (available for V4 and large engines) if you use the outboard motor in water with a lot of sediment in it, such as muddy or other turbid (cloudy) water.

Cruising in acidic water

Water in some areas can be acidic. After operating in such water, flush the cooling passages with fresh water to prevent corrosion. Also rinse the outside of the outboard motor with fresh water.

BQ15092

Specifications

NOTE: _____
“(AL)”sated in the specification data Below represents the numerical value for The aluminum propeller installed. Likewise,”(SUS)”represents the value for Stainless steel propeller install and “(PL)”for the plastic propeller installed.

BQ15093

Dimension:

Overall length:
793mm (31.2in)
Overall width:
320mm (12.6in)
Overall height
996mm (39.2in)
Transom height
435 mm (17.1in)
Weight (AL)
26kg(57.3lb)

Performance

Full throttle operating range:
9.8F 5000~6000r/min
8F 4500~5500r/min
6F 4500~5500r/min
Maximum output:
9.8F 7.8KW@5500r/min
8F 5.9KW@5500r/min
6F 4.4KW@5500r/min
Idling speed(in neutral):
950±50r/min

Engine:

Type:
2-stroke L
Displacement:
169.0 CM³
Bore x stroke:
50.0 x 43.0 mm (1.96*1.69in)

Spark plug :NGK
Ignition system:
CDI

Spark plug gap:
0.9-1.0mm(0.035-0.039in)
Control system:
Tiller
Starting system:
Manual
Starting carburetion system:
Choke valve
Alternator output
80w

Drive unit

Gear positions:
Forwarder-neutral-reverse
Gear ration:
2.08(26/13)
Trim and tilt system
Manual tilt
Propeller mark:
J

Fuel and oil:

Recommended fuel:
Regular unleaded gasonline
Fuel tank capacity:
12.0L(3.17Usgal)(2.64Imp.gal)
Recommended engine oil:
LUBE 2-stroke outboard motor oil
Fuel: oil ratio:
Regular gasoline:
50:1
Lubrication:
Pre-mixed fuel and oil
Recommended gear oil:
Hypoid gear oil SAE#90
Gear oil quantity
320.0 mL

Tightening torque for engine:

Spark plug
25.0Nm(18.4ft-lb)(2.55kgf-m)
Propeller nut:
17.0Nm(12.5ft-lb)(1.73kgf-m)

BQ15094

Transporting and storing outboard motor

JGBQ15027

⚠ WARNING

- Leaking fuel is a fire hazard. When transporting and storing the outboard motor, close the air vent screw and fuel cock to prevent fuel from leaking
- USE CARE when transporting fuel tank, whether in a boat or car.
- DO NOT fill fuel container to maximum Capacity, Gasoline will expand considerably as it warms up and can build up pressure in the fuel container. This can cause fuel leakage and a potential fire hazard.

JGBO15028

⚠ WARNING

Never get under the lower unit while it is tilted, even if a motor support bar is used. Severe injury could occur if the outboard Motor accidentally falls.

GJBQ15014

CAUTION:

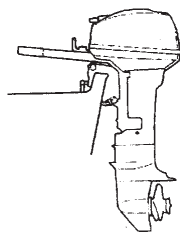
Do not use the tilt support lever or knob when trailing the boat. The outboard motor could shake loose from the tilt support and fall. If the motor can not be trailed in the normal running position, use an additional support device to secure it in the tilt position.

The outboard motor should be trailed and stored in the normal running position. If there is insufficient road clearance in this position, then trail the outboard motor in the tilt position using a motor support device such as a transom saver bar. Consult our dealer for further details.

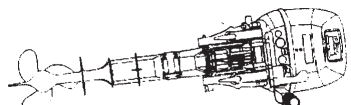
BQ15095

Clamp screw mounting models

When transporting or storing the outboard motor while removed from a boat, keep the outboard motor in the attitude shown.



ZZ06001



ZZ06002

NOTE:

Place a towel or something similar under the outboard motor to protect it from damage.

BQ15096

Storing outboard motor

When storing your Hidea outboard motor for prolonged periods of time (2 months or longer), several important procedures must be performed to prevent excessive damage.

It is advisable to have your outboard motor serviced by an authorized dealer prior to storage. However, you, the owner, with a minimum of tools, can perform the following procedures.

GJBQ15015

CAUTION:

- Do not place the outboard motor on its side before the cooling water has drained from it completely, otherwise water may enter the cylinder through the exhaust port and cause engine trouble.
- Store the outboard motor in a dry well ventilated place, not in direct sunlight.

BQ15097

Procedure

BQ15098

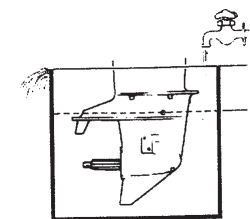
Flushing in a test tank

GJBQ15016

CAUTION:

Do not run the engine without supplying it with cooling water. Either the engine water pump will be damaged or the engine will be damaged from overheating. Before starting the engine, be sure to supply water to the cooling water passages.

1. Wash the outboard motor body using fresh water. For further information, see page 31.
2. Disconnect the fuel line from the motor or shut off the fuel cock, if equipped.
3. Remove the engine top cowl and silencer cover. Remove the propeller.
4. Install the outboard motor on the test tank. Fill the tank with fresh water to above the level of the anti-cavitation plate.



ZZ06003

1. Water surface
2. Lowest water level

GJBQ15017

CAUTION

If the fresh water level is below the level of the anti-cavitation plate, or if the water supply is insufficient, engine seizure may occur.

5. Cooling system flushing is essential to prevent the cooling system from clogging up with salt, sand, or dirt. In addition, fogging/lubricating of the engine is mandatory to prevent excessive engine damage due to rust. Perform the flushing and fogging at the same time.

JGBQ15029

⚠ WARNING

- Do not touch or remove electrical parts when starting or during operation
- Keep hands, hair, and clothes away from the flywheel and other rotating parts while the engine is running

6. Run the engine at a fast idle for a few minutes in neutral position.

7. Just prior to turning off the engine quickly spray "Fogging Oil" alternately into each carburetor or the fogging hole of the silencer cover, if equipped. When properly done, the engine will smoke excessively and almost stall.

8. Remove the outboard motor from the test tank.
9. Install the silencer cover/cap of fogging hole and top cowling
10. If the: “fogging oil” is not available, run the engine at a fast idle until the fuel System becomes empty and the engine stops.
11. Drain the cooling water completely out of the motor. Clean the body thoroughly
12. If the fogging oil is not available, remove the spark plug(s). Pour a teaspoonful of clean engine oil into each cylinder. Crank several times manually. Replace the spark plug(s).

13. Drain the fuel from the fuel tank .

NOTE

Store the fuel tank in a dry, well-ventilated place, not in direct sunlight.

BQ15099

Lubrication

1. Install the spark plug(s) and torque to proper specification .For information on spark plug installation, see page34.
2. Change the gear oil. For instructions, see page 38. Inspect the oil for the presence of water that indicates a leaky seal. Seal replacement should be performed by an authorized dealer prior to use.
3. Grease all grease fitting, for further details, see page33.

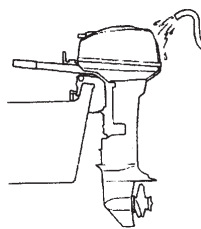
NOTE:

For a long –term storage, fogging the engine with oil is recommended. Contact our dealer for information about fogging oil and procedures for your engine.

BQ15100

Cleaning the outboard motor

After use, wash the exterior of the outboard motor with fresh water. Flush the cooling system with fresh water.



ZZ06004

NOTE

For cooling system slushing instructions, see page 29.

BQ15101

Checking painted surface of motor

Check the motor for scratches, nicks, or flaking paint. Areas with damaged paint are more likely to corrode. If necessary clean and paint the areas. A touch-up paint is available from our dealer.

BQ15102

Periodic maintenance

JGBQ15030

⚠ WARNING

Be sure to turn off the engine when you Perform maintenance unless otherwise specified. If you are not familiar with machine servicing, this work should be done by our dealer or other qualified mechanics.

BQ15103

Replacement parts

If replacement parts are necessary, use only genuine parts or parts of equivalent design and quality. Any part of inferior quality may malfunction, and the resulting loss of control could endanger the operator and passengers. Genuine parts and

accessories are available from our dealer.

BQ15104

Maintenance chart

Frequency of maintenance operations may be adjusted according to the operating conditions, but the following table gives general guidelines. Refer to the sections in this chapter for explanations of each owner-specific action.

NOTE

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

The “●”symbol indicates the check-ups which you may carry out yourself

The “○”symbol indicates work to be carried out by our dealer.

Item	Actions	Initial		Every	
		10 hours (1 month)	50 hours (3months)	100 hours (6months)	200 hours (1 year)
Anode(s)(external)	Inspection/replacement		●/○	●/○	
Anode(s)(external)	Inspection/replacement				○
Cooling water passages	Cleaning		●	●	
Cowing clamp	Inspection				●
Fuel filter(can be dis-assembled)	Inspection/cleaning	●	●	●	
Fuel system	Inspection	●	●	●	
Fuel tank (Hidea port Able tank)	Inspection/cleaning				●
Gear Oil	Change	●		●	
Greasing points	Greasing			●	
Idling speed(carburetor models)	Inspection	●/○		●/○	
Propeller and cotter pin	Inspection/replacement		●	●	
Shift link/shift cable	Inspection/adjustment				○
Thermostat	Inspection/replacement				○
Throttle link/throttle cable/throttle pick-up timing	Inspection/adjustment				○
Water pump	Inspection/replacement				○
Spark plug(s)	Cleaning/adjustment /replacement	●	●	●	

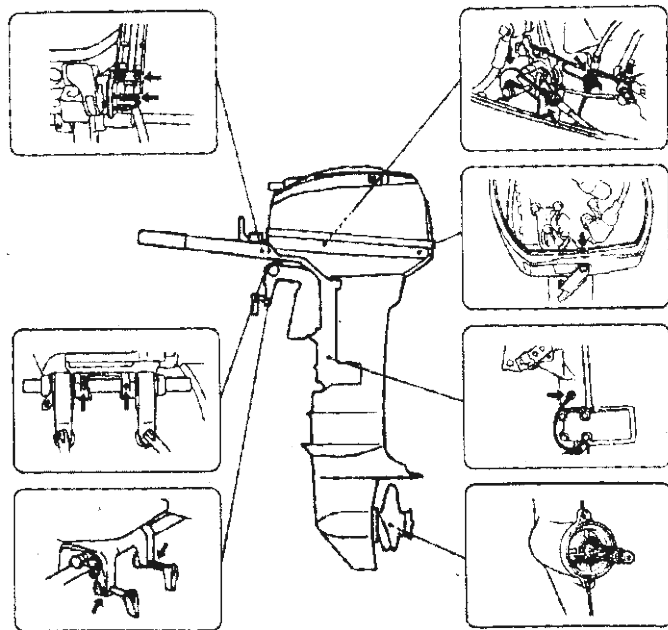
Maintenance

BQ15105

Greasing

Grease A (water resistant grease)

Grease D (corrosion resistant grease: for propeller shaft)



ZZ06005

Maintenance

BQ15106

Cleaning and adjusting spark plug

⚠ WARNING

When removing or installing a spark plug, be careful not to damage the insulator. A damaged insulator could allow external sparks, which could lead to explosion or fire.

JGBQ15032

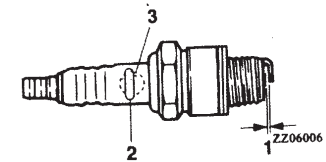
⚠ WARNING

The engine will still be very hot when it has just been turned off. Take extremely care so that neither you nor anyone else gets burnt. To avoid burns, work on the engine when it has cooled down.

The spark plug is an important engine component and is easy to inspect. The condition of spark plug can indicate something about the condition of the engine. For example, if the center electrode porcelain is very white, this could indicate an intake air leak or carburetion problem in that cylinder. Do not attempt to diagnose any problems yourself. Instead, take the outboard motor to our dealer. You should periodically remove and inspect the spark plug because heat and deposits will cause the spark plug to slowly break down and erode, if electrode erosion becomes excessive, or if carbon and other deposits are excessive, you should change the spark plug with another of the correct type.

Standard spark plug:
NGK

Before fitting the spark plug, measure the electrode gap with a wire thickness gauge: adjust the gap to specification in necessary.



ZZ06006

1. Spark plug gap
2. Spark plug part number
3. Spark plug I.D. mark [TORCH]

Spark plug gap:
0.9-1.0mm[0.035-0.039 in]

When fitting the plug, always clean the gasket surface use a new gasket. Wipe off any dirt from the threads and screw in the spark plug to the correct torque.

Spark plug torque:
25.0 Nm[18.4ft-lb] [2.55kgf-m]

NOTE:

If a torque-wrench is not available when you are fitting spark plug, a good estimate of the correct torque is 1/4 to 1/2 a turn past finger-tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque-wrench.

BQ15017

Checking fuel system

JGBQ15033

⚠ WARNING

Gasoline and its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames, or other sources of ignition.

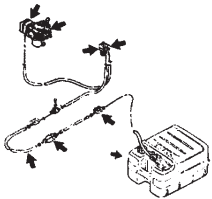
JGBO15034

⚠ WARNING

Leaking fuel can result in fire or explosion.

- Check for fuel leakage regularly.
- If any fuel leakage is found, the fuel system must be repaired by qualified mechanic. Improper repairs can make the outboard unsafe to operate.

Check the fuel lines for leaks, crack, or malfunction. If a problem is found, our dealer or other qualified mechanic should repair it immediately.



ZZ06007

Checkpoints

- Fuel system parts leakage
- Fuel line joint leakage
- Fuel line cracks or other damage
- Fuel connector leakage

BQ15108

Inspection fuel filter

JGBQ15035

⚠ WARNING

Gasoline is highly flammable, and its vapors are flammable and explosive.

- If you have any question about properly doing the procedure, consult our dealer.
- Do not perform this procedure on a hot or running engine. Allow the engine to cool.

● There will be fuel in the fuel filter. Keep away from sparks, cigarettes, flames or other sources of ignition.

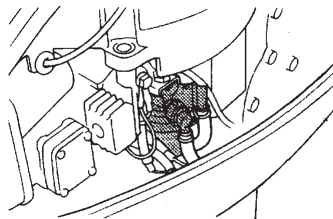
● This procedure will allow some fuel to spill. Catch fuel in a rag, Wipe up any spilled fuel immediately.

● The fuel filter must be reassemble carefully with the O-ring, filter cup and hoses in place. Improper assemblage replacement could result in a fuel leak, which could result in a fire or explosive hazard.

BQ15109

Cleaning fuel filter

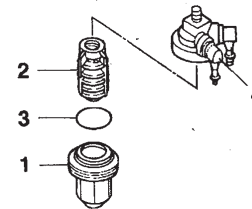
1. Remove the nut holding the fuel filter assembly if equipped.



ZZ06008

2. Unscrew the filter cup, catching any spilled fuel in a rag.

3. Remove the filter element, and wash it in solvent. Allow it to dry. Inspect the filter element and O-ring to make sure they are in good condition. Replace them if necessary. If any water found in the fuel, the portable fuel tank or other fuel tanks should be checked and cleaned.



ZZ06009

1. Filter cup
2. Filter element
3. O-ring
4. Filter housing
5. Reinstall the filter element in the cup. Make sure the O-ring is in position in the cup. Firmly screw the cup onto the Filter housing.
6. Attach the filter assembly to the bracket. So that the fuel hoses are attached to the filter assembly.
7. Run the engine and check the filter and lines for leaks.

BQ15110

Inspection idling speed

JGBQ15036

⚠ WARNING

- Do not touch or remove electrical parts when starting or during operation.
- Keep hands, hairs, and cloths away from the flywheel and other rotating parts while the engine is running.

GJBQ15018

CAUTION

This procedure must be performed while the outboard motor is in the water. A flushing attachment or test tank can be used.

A diagnostic tachometer should be used for this procedure. Result may vary depending on whether testing is conducted with the flushing attachment, In a test tank or with the outboard motor in the water.

1. Start the engine and allow it to warm up fully in neutral until it is running smoothly.

NOTE:-

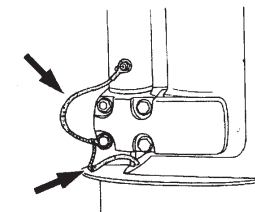
Correct idling speed inspection is only possible if the engine is fully warmed up. If not warmed up fully, the idle speed will measure higher than normal. If you have difficulty verifying the idle speed or the idle speed requires adjustment. Consult our dealer or other qualified mechanic.

2. Verify whether the idle speed is set to Specification For idle speed specification, see page 28.

BQ15111

Checking wiring and connector

- check that each grounding wire is properly secured.
- Check that each connector is engaged securely.



ZZ06010

BQ15112

Exhaust leakage

Start the engine and check that no exhaust leaks from the joints between the exhaust cover, cylinder head, and body cylinder.

Maintenance

BQ15113

Water leakage

Start the engine and check that no water leaks from the joints between the exhaust cover, cylinder head, and body cylinder.

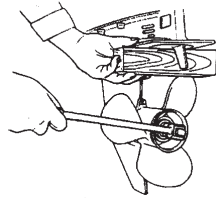
BQ15114

⚠ WARNING

You could be seriously injured the engine accidentally starts when you are near the propeller.

• Before inspecting removing, or installing the propeller, remove the spark plug caps from the spark plugs. Also, place the shift control in neutral, turn the main switch to "OFF"(off) and remove the key, and remove the cord from the engine shut off switch. Turn off the battery cut-off switch if your boat has one.

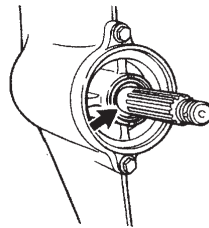
• Do not use your hand to hold the propeller when loosening or tightening the propeller nut. Put a wood block between the anti-cavitation plate and the propeller to prevent the propeller from turning.



ZZ06012

Checkpoints

- Check each of the propeller blades for water, erosion from cavitation or ventilation or other damage.
- Check the propeller shaft for damage.
- Check the splines for wear or damage
- Check for fish line tangled around propeller shaft



ZZ06013

- Check the propeller shaft oil seal for damage

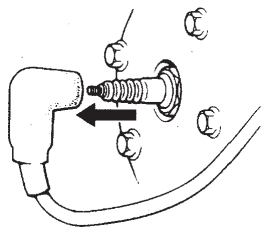
BQ15115

Removing propeller

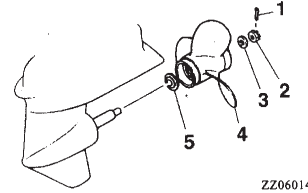
BQ15116

Spline models

1. Straighten the cotter pin and pull it out using a pair of pliers.
2. Remove the propeller nut, washer, and spacer (if equipped).



ZZ06011



ZZ06014

1. Cotter pin
2. Propeller nut
3. Washer
4. Propeller
5. Thrust washer

3. Remove the propeller and thrust washer.

BQ15117

Instline propeller

BQ15118

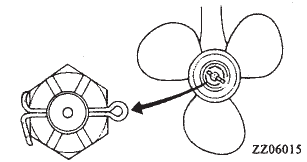
Spline models

GJBQ15019

CAUTION:

- Be sure to install the thrust washer Before installing the propeller, Otherwise the lower case and propeller Boss could be damaged.
- Be sure to use a new cotter pin and Bend the ends over securely, Otherwise the propeller could come off During operation and be lost.

1. Apply marine grease or a corrosion resistant grease to the propeller shaft.
2. Install the spacer [if equipped], thrust washer, and propeller on the propeller shaft.
3. Install the spacer if equipped] and the washer Tighten the propeller nut to the specified torque.
4. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends.



ZZ06015

NOTE:

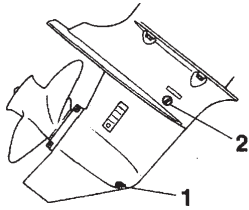
If the propeller nut does not align with the propeller shaft hole after tightening to the specified torque, tighten the nut further to align it with the hole.

BQ15119

⚠ WARNING

- Be sure the outboard motor is securely fastened to the transom or a stable stand, you could be severely injured if the outboard motor on you.
- Never get under the lower unit while it is tilted, even when the tilt support lever or knob is locked, Severe injury could occur if the outboard motor accidentally falls.

1. Tilt the outboard motor so that the gear oil drain screen is at the lowest point possible.
2. Place a suitable container under the gear case.
3. Remove the gear 1 drain screw and gasket.



ZZ06016

1. Gear oil drain screw
2. Oil level plug

NOTE: _____

- If a magnetic gear oil drain screw is equipped remove all metal particles from the screw before installing it.
- Always use new gaskets. Do not reuse the removed gaskets.

4. Remove the oil level plug and gasket to allow the oil to drain completely.

BQ15020

CAUTION: _____

Inspect the used oil after it has been drained. If the oil is milky, water is getting into the gear case which can cause gear damage. Consult our dealer for repair or the lower unit seals.

NOTE: _____

For disposal of used oil, consult our dealer.

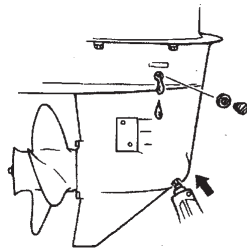
5. With the outboard motor in a vertical position, and using a flexible or pressurized filling device, inject the gear oil drain screw hole.

Recommended gear oil:

Hypoid gear oilSAE#90

Gear oil quantity:

250.0cm3(8.45USoz) (8.82imp. oz)



ZZ06017

6. Put a new gasket on the oil level plug
When the oil begins to flow out of the oil level plug hole, insert and tighten the oil level plug.
7. Put a new gasket on the gear oil drain screw. Insert and tighten the gear oil drain screw.

BQ15120

Cleaning fuel tank

JGBQ15039

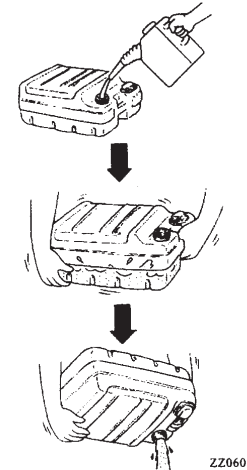
⚠WARNING

Gasoline is highly flammable, and its vapors are flammable and explosive.

- If you have any question about properly doing this procedure, consult our dealer.
- Keep away from sparks, cigarettes, flames. Or other sources of ignition when cleaning the fuel tank.
- Remove the fuel tank from the boat before cleaning it. Work only outdoors in an area with good ventilation.
- Wipe up any spilled fuel tank carefully,
- Reassemble assembly can result in a fuel leak. Which could result in a fire or explosion hazard
- Dispose of old gasoline according to local regulations.

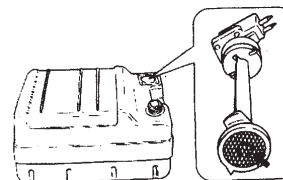
1. Empty the fuel tank into an approved container.

2. Pour a small amount of suitable solvent into the tank, Install the cap and shake the tank. Drain the solvent completely.



ZZ06018

3. Remove the screws holding the fuel joint assembly. Pull the assembly out of the tank.



ZZ06019

4. Clean the filter [located the on end of the suction pipe] in a suitable cleaning solvent. Allow the filter to dry.

5. Replace the gasket with a new one.
Reinstall the fuel joint assembly and tighten the screws firmly.

BQ15121

Inspecting and replacing anode(s)

Our outboard motors are protected from corrosion by sacrificial anodes. Inspect the external anodes periodically. Remove scales from the surfaces of the anodes. Consult our dealer for replacement of external anodes.

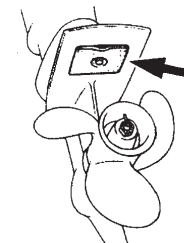
GJBQ15021

CAUTION: _____

Do not paint anodes, as this would render them ineffective.

NOTE: _____

Inspect ground leads attached to external anodes on equipped models. Consult our dealer for inspection and replacement of internal anodes attached the power unit.



BQ15122

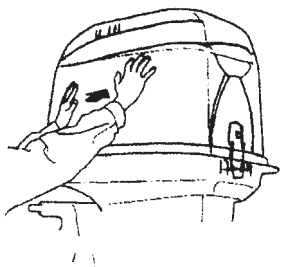
Checking top cowling

GJBQ15022

CAUTION: _____

Be sure cowling is closed securely and that there are no gaps. A loose or improperly fitting cover could allow water into the engine.

Check the fitting of the top cowling by Pushing it with both hands .If it is loose have it repaired by our dealer.

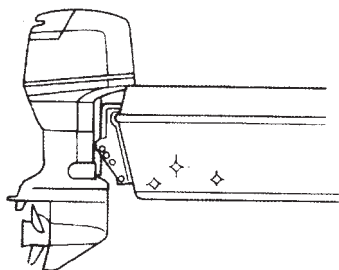


ZZ06021

Coating the boat bottom

A clean hull improves boat performance. The boat bottom should be kept as clean of marine growth as possible. If necessary , the boat bottom can be coated with an anti-fouling paint approved for your area to inhibit marine growth.

Do not use antifouling paint which includes copper or graphite, These paints can cause more rapid engine corrosion.



ZZ06022

BQ15124

Troubleshooting

A problem in the fuel, compression, or ignition systems can cause poor starting, loss of power, or other problems. This section describes basic checks and possible remedies, and covers all outboard motors. Therefore some items may not apply to your model. If your outboard motor requires repair, bring it to our dealer.

If the engine trouble-warning indicator is flashing , consult our dealer.

Starter will not operate

Q. Is battery capacity weak or low?

A. Check battery condition, Use battery recommended capacity.

Q. Are battery connections loose or corroded?

A. Tighten battery cables and clean battery terminals.

Q. Is fuse for electric start relay or electric circuit blown?

A. Check for cause of electric overload and repair, Replace fuse with one of correct amperage.

Q. Are starter components faulty?

A. Have serviced by our dealer.

Q. Is shift lever in gear?

A. Shift to neutral.

Engine will not start (starter operates) .

Q. Is fuel tank empty?

A. Fill tank with clean , fresh fuel.

Q. Is fuel contaminated or stale?

A. Fill tank with clean , fresh fuel .

Q. Is fuel filter clogged?

A. Clean or replace filter.

Q. Is starting procedure incorrect?

A. See page 18.

Q. Has fuel pump malfunctioned?

A. Have serviced by our dealer.

Q. Are spark plug[s] fouled or of incorrect type?

A. Inspect spark plug[s] . Clean or replace with recommended type.

Q. Are spark plug cap (s) fitted incorrectly?

A. Check and re-fit cap (s) .

Q. Is ignition wiring damaged or poorly connected?

A. Check wires for wear or breaks , Tighten all loose connections , Replace worn or broken wires.

Q. Are ignition parts faulty?

A. Have serviced by our dealer.

Q. Is engine shut-off cord not attached?

A. Attach cord.

Q. Are engine inner parts damaged?

A. Have serviced by our dealer.

Engine idles irregularly or stalls

Q. Are spark plug [s] fouled or of incorrect type?

A. Inspect plug[s], Clean or replace with recommended type.

Q. Is fuel system obstructed?

A. Check for pinched or kinked fuel line or other obstructions in fuel system.

Q. Is fuel contaminated or stale?

A. Fill tank with clean , fresh fuel.

Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Have ignition parts failed?
A. Have serviced by our dealer.

Q. Has warning system activated?
A. Find and correct cause of warning.

Q. Is spark plug gap incorrect?
A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?
A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Is specified engine oil not being used?
A. Check and replace oil as specified.

Q. Is thermostat faulty or clogged?
A. Have serviced by our dealer.

Q. Are carburetor adjustments incorrect?
A. Have serviced by our dealer.

Q. Is fuel pump damaged?
A. Have serviced by our dealer.

Q. Is air vent screw on fuel tank closed?
A. Open air vent screw.

Q. Is choke knob pulled out?
A. Return to home position.

Q. Is motor angle too high?
A. Return to normal operating position.

Q. Is carburetor clogged?
A. Have serviced by our dealer.

Q. Is fuel joint connection incorrect?
A. Connect correctly.

Q. Is throttle valve adjustment incorrect?
A. Have serviced by our dealer.

Q. Is battery cable disconnected?

A. connect securely.

Warning buzzer sounds or indicator lights.

Q. Is cooling system clogged?
A. Check water intake for restriction

Q. Is engine oil level low?
A. Fill oil tank with specified engine oil.

Q. Is heat range of spark plug incorrect?
A. Inspect spark plug and replace it with recommended type.

Q. Is specified engine oil not being used?
A. Check and replace oil with specified type.

Q. Is engine oil contaminated or deteriorated?
A. Replace oil with fresh, specified type.

Q. Is oil filter clogged?
A. Have serviced by our dealer.

Q. Is oil feed/injection pump malfunctioned?
A. Have serviced by our dealer.

Q. Is load on boat improperly distributed?
A. Distribute load to place boat on an even plane.

Q. Is water pump or thermostat faulty?
A. Have serviced by our dealer.

Q. Is there excess water in fuel filter cup?
A. Drain filter cup.

Engine power loss.

Q. Is propeller damaged?
A. Have propeller repaired or replaced.

Q. Is propeller pitch or diameter incorrect?
A. Install correct propeller to operate outboard at its recommended speed (r/min) range.

Q. Is trim angle incorrect?
A. Adjust trim angle to achieve most efficient operation.

Q. Is motor mounted at incorrect height on transom?
A. Have motor adjusted to proper transom height.

Q. Has warning system activated?
A. Find and correct cause of warning.

Q. Is boat bottom fouled with marine Growth?
A. Clean boat bottom.

Q. Are spark plug (s) fouled or of incorrect type?
A. Inspect spark plug (s). Clean or replace with recommended type.

Q. Are weeds or other foreign matter tangled in gear housing?
A. Remove foreign matter and clean lower unit.

Q. Is fuel system obstructed?
A. Check for pinched or kinked fuel line or other obstructions in fuel system.
Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Is fuel filter clogged?
A. Clean or replace filter.

Q. Is fuel contaminated or stale?
A. Fill tank with clean, fresh fuel.

Q. Is spark plug gap incorrect?
A. Inspect and adjust as specified.

Q. Is ignition wiring damaged or poorly connected?
A. Check wires for wear or breaks. Tighten all loose connections. Replace worn or broken wires.

Q. Have electrical parts failed?
A. Have serviced by our dealer.

Q. Is specified fuel not being used?
A. Replace fuel with specified type.

Q. Is specified engine oil not being used?
A. Check and Replace oil with specified type.

Q. Is thermostat faulty or clogged?
A. Have serviced by

Q. Is air vent screw closed?
A. Open the air vent screw.

Q. Is fuel pump damaged?
A. Have serviced by our dealer.

Q. Is fuel joint connection incorrect?
A. Connect correctly.

Q. Is heat range of spark plug incorrect?
A. inspect spark plug and replace it with recommended type.

Q. Is high pressure fuel pump drive belt broken?
A. Have serviced by our dealer.

Q. Is engine not responding properly to shift lever position?
A. Have serviced by our dealer.

Engine vibrates excessively

Q. Is propeller damaged?

A. Have propeller repaired or replaced.

Q. Is propeller shaft damaged?

A. Have serviced by our dealer.

Q. Are weeds or other foreign matter tangled on propeller?

A. Remove and clean propeller.

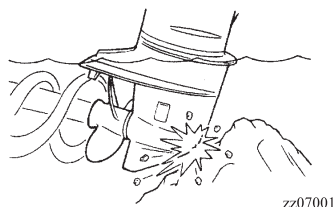
Q. Is motor mounting bolt loose?

A. Tighten bolt.

Q. Is steering pivot loose or damaged?

A. Tighten or have serviced by our dealer.

If the outboard motor hits an object in the water, follow the procedure below.



1. Stop the engine immediately.
2. Inspect the control system and all components for damage. Also inspect the boat for damage.
3. Whether damage is found or not, return to the nearest harbor slowly and carefully.
4. Have our dealer inspect the outboard motor before operating it again.

BQ15127

Starter will not operate

If the starter mechanism dose not operate(the engine cannot be cranked with the starter), the engine can be started with an emergency starter rope.

JGBQ15041

⚠ WARNING

- Use this procedure only in an emergency to return to the nearest port for repairs.
- When the emergency starter rope used to start the engine, the start-in-gear protection device dose not operate. Make sure the remote control lever is in neutral. Otherwise the boat could unexpectedly start to move, which could result in an accident.
- Attach the engine shut-off cord to a secure place on your clothing, or your arm or leg while operating the boat.
- Do not attach the cord to clothing that

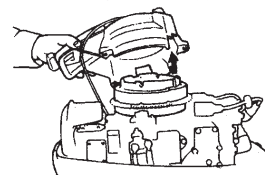
could tear loose. Do not route the cord where it could become entangled, preventing it form functioning.

- Avoid accidentally pulling the cord during normal means the loss of most steering control. Also, without engine power,the boat could slow rapidly.This could cause people and objects in the boat to be thrown forward.
- Make sure no one is standing behind you when pulling the starter rope. It could whip behind you and injure someone.
- An unguarded,rotating flywheel is very dangerous. Keep loose clothing and other objects away when staring the engine. Use the emergency starter the only as instructed. Do not touch the flywheel or other moving parts when the engine is running.Do not install the starter mechanism or top
- Do not touch ignition coil, spark plug wire, spark plug cap, or other electrical components when staring or operating the motor. You could get an electrical shock.

BQ15128

Emergency starting engine

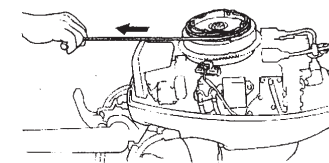
- 1.Remove the top cowling.
- 2.Remove the start-in-gear protection cable from the starter, if equipped.
- 3.Remove the starter/flywheel cover after removing the bolt (s).



4.Prepare the engine for starting, For further information, see page 18. Be sure the engine is in neutral and that the clip is

attached to the engine shut-off switch. The main switch must be "ON "(on), if equipped.

5. If equipped the chock konb, pull out it when the engine is cold. After the engine starts, gradually return the chock knob to its home position as the engine warms up.
6. Insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and the rope several turns around the flywheel clockwise.
7. Give a strong pull straight out to crank and start the engine. Repeat it necessary.



ZZ07003

BQ15125

Temporary action in emergency

BQ15126

Impact damage

JGBQ15040

⚠ WARNING

The outboard motor can be seriously damaged by a collision while operating or trailering. Damage could make the outboard motor unsafe to operate.

BQ15129

Treatment of submerged motor

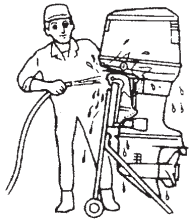
If the outboard motor is submerged , immediately take it to our dealer. Otherwise some corrosion may begin almost immediately.

If you cannot immediately take the outboard motor to our dealer follow the procedure below in order to minimize engine damage.

BQ15130

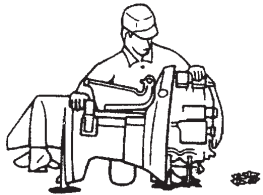
Procedure

- 1.Thoroughly wash away mud , salt , seaweed, and so on, with fresh water.



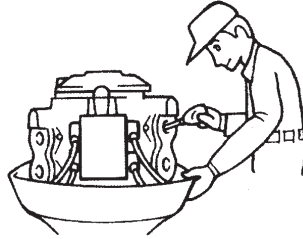
ZZ07004

3. Remove the spark plugs and face the spark pulg holes downward to allow any water, mud, or contaminants to drain.



ZZ07005

- 3.Drain the fuel from the carburetor, fuel filter, and fuel line.
- 4.Feed fogging oil engine oil through the carburetor(s) and spark plug holes while cranking with the manual starter or emergency starter rope.



ZZ07006

4. Take the outboard motor to our dealer as soon as possible.

GJBQ15023

CAUTION

Do not attempt to run the outboard motor until it has completely inspected.