AQUANAMI

POWERBOARD SERVICE MANUAL

Version 1.0

2011

jetSurf

jetKayak

jetNami

This SERVICE MANUAL utilizes the following symbols:


The Safety Alert Symbol means ATTENTION! A potential personal injury hazard.

Indicates a potentially danger! Failure to follow WARNING instructions could result in serious injury or death.

CAUTION: Indicates special precaution, if not followed, could severely damage the machine.

NOTE: Provides key information to make information clearer.

If you have any questions or concerns about this service manual, please contact us or visit our web site at www.aquanami.com.

SAFETY NOTICE

This manual has been prepared as a guide to service and repair Aquanami Powerboards. This edition was primarily published to be used by watercraft mechanical technicians who are already familiar with service procedures relating to watercraft. Mechanical technicians should attend training courses given by Aquanami.

Please note that the instructions will apply only if proper hand tools and special service tools are used. The content depicts parts and/or procedures applicable to the particular product at time of writing. The sole purpose of the illustrations throughout the manual, is to assist identification of the general configuration of the parts. They are not to be interpreted as technical drawings or exact replicas of the parts.

WARNING

For your safety, understand and follow all the safety precautions and instructions contained in this SERVICE MANUAL. Failure to do so can result in SEVERE INJURY OR DEATH.

WARNING

Engine should be turned off and cold for all maintenance and repair procedures

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use. Always use common shop safety practice.

AQUANAMI disclaims liability for all damages and/or injuries resulting from the improper use of the contents. We strongly recommend that any services be carried out and/or verified by a highly skilled professional mechanic. It is understood that certain modifications may render use of the watercraft illegal under existing federal, provincial and state regulations.

TABLE OF CONTENTS

INTRODUCTION

This service manual covers :

- Jetsurf
- Jetkayak
- Jetkayak GT
- Jetnami
- Jetnami GT

The information and component/system descriptions contained in this manual are correct at time of writing. Aquanami maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured. Aquanami reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring obligation. This Manual uses technical terms which may be different from the ones of Parts Catalog. When ordering parts always refer to the specific model, the hull identification number and the engine identification number. The Hull Identification Number (H.I.N.) is located at the rear of watercraft. It is composed of 12 digits:

HULL IDENTIFICATION NUMBERS

The Hull Identification Number (H.I.N.) is located at the rear of watercraft. It is composed of 12 digits:

ENGINE IDENTIFICATION NUMBER

(E.I.N.) is stamped on a label attached to the engine unit.

ILLUSTRATIONS AND PROCEDURES

The illustrations and pictures show the typical construction of the different assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts shown, however, they represent parts which have the same or a similar function.

CAUTION: These watercraft are designed with parts dimensioned mostly in the metric system. However some components may be from the imperial system. When replacing fasteners, make sure to use right metric or English system. As many of the procedures in this manual are interrelated, we suggest, that before undertaking any task, you read and thoroughly understand the entire section or subsection in which the procedure is contained. A number of procedures throughout the book require the use of special tools. Before undertaking any procedure, be sure that you have on hand all the tools required, or approved equivalents.

MAINTENANCE CHART

Routine maintenance is necessary for all mechanical products. A periodic inspection contributes to the product's good performance, life span and operation safety. Regular watercraft service should be performed by an authorized Aquanami dealer and/or the operator following the maintenance chart.

The schedule should be adjusted according to operating conditions and use. The chart gives an equivalence between number of hours and months/year. Perform the maintenance operation to whatever time comes first.

IMPORTANT: Schedule for watercraft rental operations or higher number of hour use, will require greater frequency of inspection and maintenance.

An annual inspection of the watercraft is always a good recommendation that should be followed.

Product Maintenance Chart

ITEM	10 hrs	50 hrs or 6 months	100 hrs or 12 months	200 hrs or 24 months
GENERAL				
Lubrication/corrosion protection	L	L	L	L
ENGINE				
Engine oil	R	R	R	R
Exhaust system and fasteners	I		I	
Engine support and rubber mount	I		I	
Engine breathing oil retainer	C	C	C	C
Carburetor	C	C	C	C
Water-air separator bottle	C	C	C	C
Airbox	I		I	
COOLING SYSTEM				
Hose and fasteners	I		I	
Coolant	I		R	R
Exhaust flushing	I	I	I	I
FUEL SYSTEM				
Throttle cable	IL	IL	IL	IL
Fuel lines, connections, pressure relief valves	I		I	
Fuel filter		R	R	R
ELECTRICAL				
Spark plug	I		I	R
Battery and fasteners	I		I	
Circuit breaker	I		I	
Electric connectors and fasteners	I		I	
STEERING SYSTEM				
Steering cable and connections	I		I	
Steering set	I		I	

PROPULSION SYSTEM				
Jet set (including impeller)	I	I	I	I
Mechanic seal set (drive shaft)	I		I	I
Automatic vacuum siphon pump	IC	IC	IC	IC
Sacrificial anode (if so equipped)				I
Ride plate and water intake grate	I		I	
Ride plate seal	I	I	I	I
Hull				
Snorkel air intake	I		I	
Engine compartment seals	I	I	I	
Hull	I		I	
A: ADJUST				
C: CLEAN				
I: INSPECT				
L: LUBRICATE				
R: REPLACE				

PRE-SEASON CHECKS

WARNING

- The pre-SESON check is very important prior to operating the watercraft. Always check the proper operation of critical controls, safety features and mechanical components, before starting as listed hereinafter. If not done as specified here, severe injury or death might occur.
- Bring all safety equipment required by local laws. Some of the following items may not have been previously covered in this Manual, however they will be described in the MAINTENANCE or SPECIAL PROCEDURES sections. Please refer to these sections to have more detailed information.

WARNING

- Engine should be off and the safety Lanyard should always be removed from its post prior to do any of the following check.
- Start your craft only after all items have been checked and operate properly.

PRE-SEASON CHECK LIST

ITEM	TO DO
Start and Stop buttons	Check operation.
Safety Lanyard	Check operation.
Throttle	Check operation.
Steering system	Check operation.
Jetsurf Armpole	Check operation.
Exhaust pipe cooling	Check by-pass outlet. Water mist/drops should come out exhaust by-pass outlet.
Bilge plugs	Ensure plugs are secured.
Exhaust flush cap	Ensure the cap is installed.
Battery	Inspect cables and retaining fasteners. Ensure good condition and fully charged.
Fuel tank	Check/refill.
Engine compartment	Check if any water exists. Check if any signs of water leak. Check fuel line connections for tightness. Verify for any fuel leak/odor as well as oil and coolant leaks. Check any loosen parts.
Engine oil level	Check/refill.
Engine coolant	Check/refill.
Carburetor	Periodically drain water or contaminated fuel from the carburetor bowl by loosening the carburetor drain screw. Use a cup to collect the drained liquids. Ensure the drain screw closed after cleaning.
Water-air separator bottle	Periodically drain water or contaminated fuel from the Water-air separator bottle by pulling off the hose from the middle nipple and drain. Use a cup to collect the drained liquids. Ensure the hose pluged back to the nipple after cleaning.
Clean engine breathing oil retainer	Pulling off the hose from the middle nipple of the Engine Breathing Oil Retailer to drain oil/water residue. Use a cup to collect the drained liquids. Ensure the hose is pluged back to the nipple after cleaning.
Jet pump water intake	Inspect/clean.
Jet pump water intake seal	Inspect any damage or leak.
Hull	Inspect.
Dry storage compartment covers	Ensure they are closed and properly sealed.

STORAGE PROCEDURES

WARNING

Allow engine to cool before performing any maintenance.

General Care

Take the watercraft out of the water every day to prevent marine organism growth. Should any water be present in the bilge, open the drain plugs and tilt the watercraft rearward in order to allow water to flow out. Wipe off any remaining fluid in the engine compartment (engine, battery, etc.) with clean dry rags (this is particularly important in salt water operation).

Additional Care for Foul Water or Salt Water

When the watercraft is operated in salt water, additional care should be taken to protect the watercraft and its components. Rinse off watercraft's bilge area with fresh water.

CAUTION: Failure to perform proper care such as: watercraft rinsing, exhaust cooling system flushing or anticorrosion treatment, when watercraft is used in salt water, will result in damage to the watercraft and its components. Never leave the watercraft stowed in direct sunlight.

	STORAGE OPERATION CHECK LIST	
1	Flush exhaust cooling system.	
2	Remove, clean, recharge and store the battery. Charge the battery every three to five months during storage to prevent the battery drain dead	
3	Drain engine coolant	
4	Drain engine oil	
5	Drain carburetor float bowl	
6	Drain water-air separator bottle	
7	Drain the engine breathing oil retainer bottle	
8	Add fuel stabilizer and check fuel system and hoses	
9	Clean the bilge	
10	Wash the hull	
11	Spray a corrosion inhibitor (salt water resistant) over all metallic components in engine compartment and in throttle cable	
12	Lubricate throttle cable	
13	Lubricate steering cables	
14	Lubricate the engine	
15	Lubricate drive shaft coupling and rubber damper	
16	Lubricate drive shaft and jet pump seals	
17	Lubricate jet pump and ride plates	
18	Lubricate heat exchanger	
19	Verify jet pump for water contamination	

Flushing Exhaust Cooling System

Flushing the exhaust cooling system with fresh water is essential to neutralize corroding effects of salt or other chemical products present in water.

Flushing should be performed when the watercraft is not expected to be used further the same day or when the watercraft is stowed for any extended time.

Proceed as follows:

1. Clean ride plate up and bottom, and heat exchange by using spray water
2. Clean jet pump by spraying water in its inlet and outlet.
3. Connect a garden hose to exhaust flushing connector, do not open the water tap and do not start engine yet.
4. To flush the exhaust cooling system, start the engine then immediately open water tap.
5. Run the engine about 30 seconds at a fast idle between 3000 - 4000 RPM.
6. Disconnect the garden hose first, and keep engine running another 10 seconds.
7. Stop the engine.
8. Install the exhaust flush connector cap to close the connector.

CAUTION:

- Never flush a hot engine.
- Always start the engine before opening the water tap.
- Open water tap immediately after engine is started to prevent overheating.
- Never run engine without supplying water to the exhaust cooling system when watercraft is out of water.
- Never run engine longer than 1 minute. Drive line seal has no cooling when watercraft is out of water.
- Close the water tap, then stop the engine.
- Always close the water tap before stopping the engine.
- Ensure to install the connector cap back after flushing

The user should not start water flow into flush water connector until the engine is started; adding that running water into the flush system without the engine first running will result in engine damage that will not be covered under warranty.

Anticorrosion Treatment

To prevent corrosion, spray a corrosion inhibitor (salt water resistant) over metallic components in engine compartment. Apply dielectric grease (salt water resistant) on battery posts and cable connectors.

⚠ WARNING

Certain components in the engine compartment may be very hot. Direct contact may result in skin burn. Do not touch any electrical parts or jet pump area when engine is running.

REMOVAL, CLEAN AND STORAGE OF BATTERY

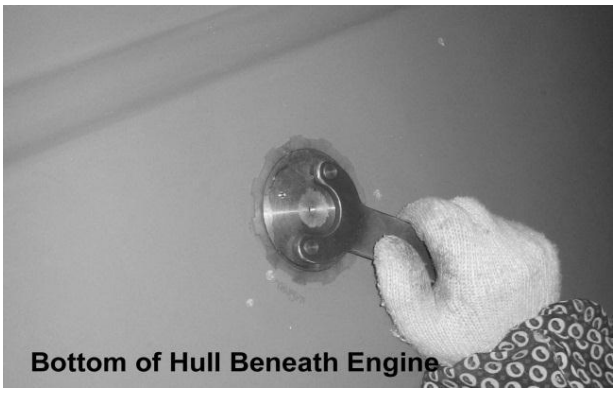
The battery should be removed, cleaned and fully charged for storage when the powerboard is not expected to be used for long time. The battery will be slowly drained dead if remain in the watercraft over long period of time. To keep the battery live it is recommended to charge the battery from time to time.

DRAIN ENGINE COOLANT

Use a flat head screw, loose the hose clamp at the heat exchange fitting to drain the engine coolant.

DRAIN ENGINE OIL

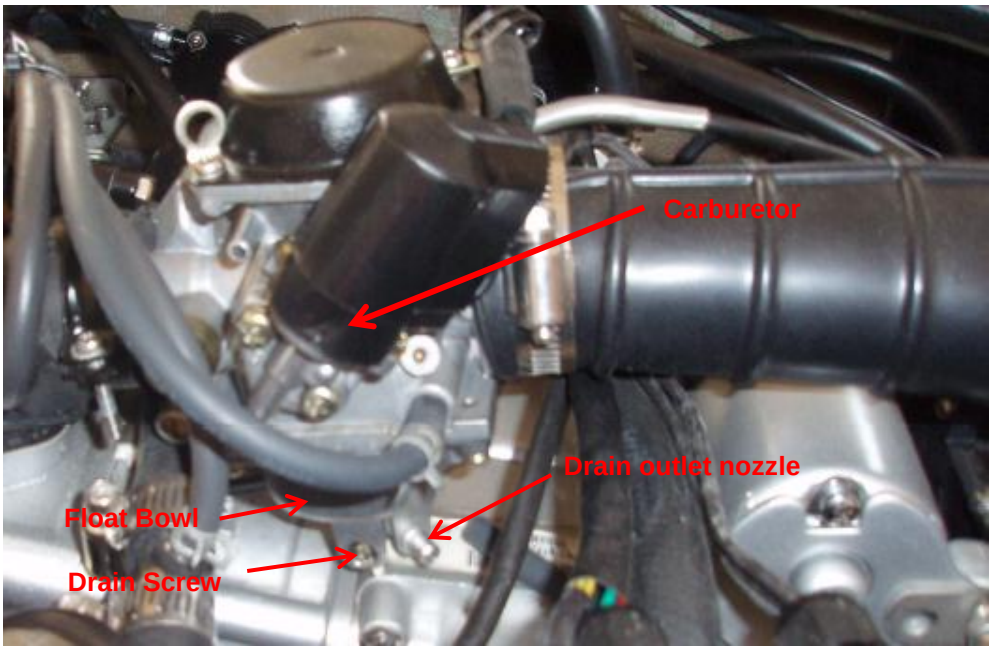
Oil drain plug is located at the bottom of hull beneath engine. Make sure that engine is off and warm, but NOT HOT. Place your watercraft on a trailer or a lifting equipment so that you can access to the bottom of hull. Level your watercraft. Use the special wrench tool (supplied) to open the access window to engine oil drain plug at bottom of hull. Keep the “O” ring for later use. Then use a 17mm socket wrench to open oil drain plug. There is a washer, a spring, oil filter screen and a magnet came out with the oil drain plug. Drain dirty oil completely. Clean oil filter and magnet. Refer to Liquids section for detail. Open the oil drain plug, oil will be drained out slowly here. Ensure use proper oil pan to collect the used oil to protect environment.



CAUTION: Make sure the drain plug is properly secured after oil change and the access window is properly sealed with “O” ring and properly secured. No water leak!

DRAIN CARBURETOR FLOAT BOWL

Located at the bottom of the carburetor in engine compartment. Use a Philip screw driver to drain water or contaminated fuel in carburetor bowl. Ensure to close the drain screw after cleaning.



DRAIN WATER-AIR SEPARATOR BOTTLE

Located inside engine compartment. Retain water or contaminated fuel. Check the bottle periodically and drain water or contaminated fuel to keep engine run with clean fuel.

To drain the water or contaminated fuel in the water-air separator bottle, simply pull off the hose from the middle nipple of the bottle, and let the contaminated fuel drain out from the bottom nozzle through the hose to a cup.

DRAIN ENGINE BREATHING OIL RETAINER

Located in engine compartment. Retain oil mist and oil from engine breathing path. Check the bottle periodically and clean any oil residue to keep engine breathing freely and engine compartment clean.

To drain the oil/water in the retainer bottle, simply pull off the hose from the middle nipple of the bottle, and let the water/oil drain out from the bottom nozzle through the hose to a cup. Refer to LIQUIDS for more details.

ADD FUEL STABILIZER AND CHECK HOSES

Check fuel hoses for leaks. Replace damaged hoses or clamps if necessary.
Fuel stabilizer should be added in fuel tank to prevent fuel deterioration and fuel system gumming.

CAUTION: Fuel stabilizer should be added prior to engine lubrication to ensure fuel system components protection against varnish deposits. Fill up fuel tank completely. Ensure there is no water inside fuel tank.

CAUTION: Should any water be trapped inside fuel tank, damage will occur to carburetor. Use qualified fuel retraction device to retract contaminated fuel out of fuel tank and fuel system.

WARNING

Follow these safe boating fueling instructions carefully:

- Turn off engine.
- Do not insert the spout too far in filler neck.
- Pour fuel slowly so that air can escape from the tank and prevent fuel flow back. Be careful not to spill fuel.
- Fully tighten fuel tank cap.

WARNING

- Always stop the engine before refueling.
- Fuel is flammable and explosive under certain conditions.
- Always work in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity.
- Fuel tank may be pressurized, turn cap slowly when opening.
- When fueling, keep watercraft level.
- Do not overfill or top off the fuel tank and leave watercraft in the sun. As temperature increases, fuel expands and might overflow.
- Always wipe off any fuel spillage from the watercraft. Periodically verify fuel system.

CLEAN AND LUBRICATE BILGE AND HULL

Clean the bilge with hot water and mild detergent or with bilge cleaner. Rinse thoroughly. Lift front end of watercraft to completely drain bilge. Wash the body with soap and water solution (only use mild detergent). Rinse thoroughly with fresh water. Remove marine organisms from the hull. Apply a nonabrasive wax.

CAUTION: Never clean fiberglass and plastic parts with strong detergent, degreasing agent, paint thinner, acetone, etc. **If the watercraft is to be stored outside, cover it with an opaque tarpaulin to prevent sun rays and grime from affecting the plastic components, rubber components, watercraft finish as well as preventing dust accumulation.**

CAUTION: The watercraft must never be left in water for storage**. Never leave the watercraft stored in direct sunlight.**

Wipe off any residual water in the engine compartment. Spray a corrosion inhibitor (salt water resistant) over metallic components in engine compartment. Apply dielectric grease (salt water resistant) on battery posts and cable connectors.

The **engine compartment cover should be partially left opened during storage** . This will avoid engine compartment condensation and possible corrosion.

LUBE ENGINE AND CARBURETOR

Engine must be lubricated to prevent corrosion on internal parts. Fogging of the engine is recommended at the end of the season and before any extended storage period to provide additional corrosion protection. This will lubricate the engine intake valve, the cylinder and the exhaust valve.

It is recommended to lubricate the throttle body to prevent corrosion on external and internal parts especially if the craft is used in salt water.

To fog the engine and lubricate the internal carburetor, proceed as follows:

- Remove the air intake duck hose from throttle body. .
- Spray liberally lubricant into the intake ports.
- Crank engine several times while keeping throttle fully depressed (drown engine mode) to distribute lubricant in cylinder, on intake valve and exhaust valve.
- Pressing slightly the throttle lever and spray lubricant through the throttle body bore to lubricate valve mechanism.
- Spray generously the external parts of throttle body.
- Install air intake duct hose.

LUBRICATE THROTLE CABLE AND STEERING CABLE

Water can get inside steering cables and throttle cable. The crystallization of salt water between cable and cable housing will cause cable sticky and severely damage the performance of the cables. Adequate lubrications are essential to keep the throttle and steering cable operates properly. Use cable lubricant and cable lubrication device to lube the cables.

LUBRICATE DRIVE SHAFT, COUPLING, JET PUMP AND RIDE PLATES

Spray a coat of water resistant inhibitor lubricant liberally on:

- Drive shaft
- Coupling and damper
- Seals
- Inside and outside of jet pump
- Heat exchanger

To prevent corrosion.

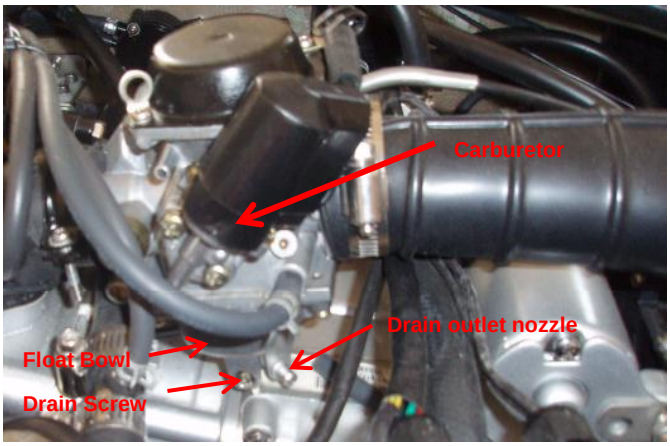
VERIFY JET PUMP FOR WATER CONTAMINATION

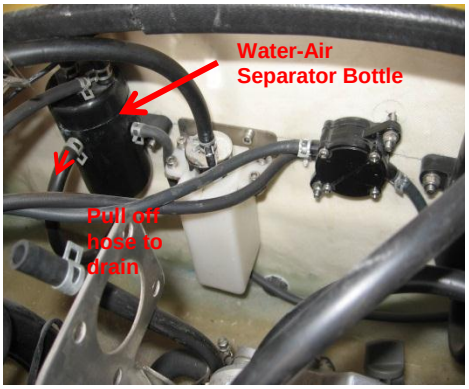
Verify jet pump grease for water contamination. Check for the presence of water in cone and bearing; if so, replace oil seal.

SPECIAL PROCEDURES

Water In Carburetor

Once water gets into carburetor bowl, engine will not work properly. It may loose power and suddenly stop when you depress throttle lever, or you may not be able to start the engine. When it happens, drain carburetor and water-air separator bottle. Use a screw driver to loose the carburetor drain screw to drain the water or contaminated fuel in the carburetor bowl. Pull off the hose from the middle nipple of the water-air separator bottle, and let the contaminated fuel drain out from the bottom nozzle of the bottle through the hose to a cup. After cleaning, ensure to tight the carburetor drain screw and reconnect the hose back to the middle nipple of the water-air separator bottle.





Engine Overheating

CAUTION: If the information meter shows engine overheating, stop engine as soon as possible.

- Check engine coolant. Refer to *LIQUIDS*.
- Check jet pump and drive shaft to see any weeds, shells or debris, and clean them. See the following cleaning procedure.
- If engine still overheats, flush exhaust cooling system when back to shore. If engine still overheats, refer to an authorized Aquanami dealer for servicing.

Jet Pump Water Intake and Impeller Cleaning

Weeds, shells or debris can get caught on the intake grate, drive shaft and/or impeller. A clogged water intake may cause troubles such as:

- Cavitations: Engine speed is high but watercraft moves slowly due to reduced jet thrust, jet pump components may be damaged.
- Overheating: Since the jet pump operation controls the flow of water to cool the exhaust system, a clogged intake will cause the engine to overheat and damage engine internal components.

A weed clogged area can be cleaned as follows:

Stop engine and remove the Lanyard from its post to prevent accidental engine starting before cleaning the jet pump area. Manually remove the weeds, shells or debris from drive shaft and jet. Start engine and make sure watercraft operates properly. If system is still blocked, move the watercraft out of the water and remove blockage manually.

CAUTION: Inspect water intake grate and impeller for damage. Refer to an authorized Aquanami dealer for repair as necessary.

WARNING

Always remove the Lanyard from its post to prevent accidental engine starting before cleaning the jet pump area.

Capsized Watercraft

If watercraft turns over, it will remain capsized. When watercraft is capsized, do not attempt to restart the engine.

Operator should always wear approved personal flotation devices. To return the watercraft upright, ensure the engine is off and the Lanyard is NOT on its post.

- In shallow water, lift one side of the watercraft to upright.
- In deep water, lean your body on one side and grab the other side of watercraft, then use your body weight to rotate the watercraft in any direction.
- The bilge pump should automatically start to drain water in bilge. If the water sensor failed to start the bilge pump, push the bilge pump switch to drain the water in the bilge.

CAUTION:

- If watercraft has been capsized for LESS THAN 3 minutes, wait until the bilge pump stop working. Then start the engine.
- If the watercraft has been capsized for MORE THAN 3 minutes, check bilge first. If bilge has less than 3 inches of water, wait until the bilge pump stop working or manually turn on the bilge pump if the water sensor failed to turn on the bilge pump. Then start the engine.
- If the watercraft has been capsized for MORE THAN 3 minutes, and the bilge has more than 3 inches of water, wait until the bilge pump stop working or manually turn on the bilge pump if the water sensor failed to turn on the bilge pump. Drain the carburetor bowl first by loosing carburetor drain screw, and drain the water-air separator bottle. Then start the engine.
- If failed to drain the water from the bilge, do not attempt to crank engine to avoid water ingestion that would damage the engine. Bring the watercraft to the shore and drain the water in bilge as soon as possible.
- If the engine does not crank, do not attempt to start engine anymore. Otherwise engine could be damaged. See an authorized Aquanami dealer as soon as possible.

Submerged Watercraft

To limit damages to the engine, drain bilge as soon as possible. If it was submerged in salt water, spray bilge and all components with fresh water using a garden hose to stop the salt corroding effect.

CAUTION: Never try to crank or start the engine. Water trapped in intake manifold would flow towards the engine and may cause severe damage to the engine. Bring the watercraft to be serviced by an authorized Aquanami dealer as soon as possible.

CAUTION: The longer the delay before you have the engine serviced, the greater the damage to the engine will be.

Water-Flooded Engine

CAUTION: Never try to crank or start the engine. Water trapped in intake manifold would flow towards the engine and may cause severe damage to the engine. Bring the watercraft to be serviced by an authorized Aquanami dealer as soon as possible.

CAUTION: The longer the delay before you have the engine serviced, the greater the damage to the engine will be. Failure to have the engine properly serviced may cause severe engine damage.

Fuel-Flooded Engine

When the engine does not start after several attempts, the engine may be fuel-flooded. Proceed as follows. Open engine cover, leave it open for 30 minutes. If engine still does not start, remove the spark plug, let fuel inside cylinder ventilate for 30 minutes, clean spark plug or using a new spark plug, try to start engine.

If the engine continues to flood, see an authorized Aquanami dealer.

CAUTION: Never run engine for more than 30 seconds without supplying water to the exhaust cooling system when watercraft is out of water.

POWER PLANT SPECIFICATION

ITEM	UNIT	DATA
Engine		
Type		4 stroke
Max power	kW (hp)	7 (9.5)
Number of cylinders		1
Displacement	cm_3 (cu in)	149.6 (9.2)
Bore	mm (in)	57.4
Stroke	mm (in)	57.8
Compression ratio		10.5:1
Start		Electric start
Ignition	type	CDI
Spark plug		NGK DPR7EA-9
Spark plug gap	mm (in)	0.6-0.7(0.024-0.028)
Valve clearance (Cold)		
Intake	mm (in)	0.03 (0.0012)
Exhaust	mm (in)	0.05 (0.0020)
Cooling system		
Engine cooling	type	Closed loop water cooling. Refer to Liquids section for Coolant
Exhaust cooling	type	Inject water cool. Direct flow from propulsion unit
Lubrication system		
Lubrication	type	Oil sump. Refer to liquids section

POWER PLANT SPECIFICATION *(Continued)*

ITEM	UNIT	DATA
Fuel system		
Fuel tank capacity	L (US gal)	7 (1.8)
Play time at full throttle	hours	2
Propulsion system		
Jet pump		Aluminum/composite, axial flow, single stage
Transmission		Direct drive, forward/reverse (if equipped)
Impeller		Aluminum alloy or stainless steel

TROUBLE SHOOTING

The following is provided to help in diagnosing the probable source of troubles. It is a guideline and should not be assumed to show all causes for all problems.

ENGINE WILL NOT START

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Engine does not turn over	Lanyard is not in place	Put Lanyard on post
	Defect Lanyard such as weak magnet	Replace
	Discharged or disconnected battery	Charge battery and tighten terminal
	Defect electric connectors of start motor cables	Tighten or replace
	Defect kill switch (magnet switch inside safety Lanyard post)	Replace
	Defect stop switch or faulty stop button	Replace
	Defect start switch	Replace
	Defect relay switch (inside control box)	Replace
	Faulty start motor	Replace
	Circuit fuse is open	Find out the cause triggering the faulty circuit fuse first. Check wiring, terminals and connectors. Make sure no short circuit before replace circuit fuse. Circuit fuse is inside control box
	Faulty engine temperature sensor or exhaust temperature sensor	Replace
	Seized jet pump	Replace
	Seized engine	Repair or replace
Engine turns slowly, but does not start	Weaken or discharged battery	Charge battery or replace battery if battery is bad
	Bad battery cable connection	Tighten
	Worn start motor	Replace
	Partial seizure in jet pump	Replace defect parts
	Partial engine seizure	Replace defect parts

ENGINE WILL NOT START - CONTINUE

Engine turns regularly, but does not start	Low battery voltage	Recharge or replace battery
	Empty fuel	Refill fuel
	Disconnected or faulty fuel pump	Reconnect or replace fuel pump
	Watered/contaminated carburetor	Drain carburetor, and drain water-air separator bottle
	Stale or water contaminated fuel in fuel system and fuel tank	Drain contaminated fuel completely using fuel retraction devices. Clean fuel system and fix the water contamination root cause. Refill fuel
	Fouled or defective spark plug	Replace
	Spark plug cap not connected or loose	Tighten and seal the spark plug cap or replace
	Air leak from spark plug	Tighten
	Air leak from air box to carburetor, and from carburetor to engine	Tighten
	Defect carburetor	Replace
	Defect engine temperature sensors	Replace
	Defect exhaust temperature sensors	Replace
	Fuel flooded engine	Wait for 30 minutes and try it again. In severe case, open spark plug for 30 minutes or more to dry fuel in engine cylinder. Then close spark plug. Do not depress throttle when starting engine
	Water flooded engine	Refer to special procedure to clean and service engine
	Defect stop switch	Replace
	Defect electric control box	Replace
	Insufficient engine compression due to: cylinder air leak, incorrect valve clearance, valves leak, piston and piston rings worn out, spark plug leak	Adjust or replace defective part(s)
	Bad electric connectors	Clean and dry or replace the connectors

ENGINE WILL NOT START - CONTINUE

No spark	Spark plug faulty, fouled or worn out	Check spark plug condition
	Spark plug cap not connected or loose	Tighten and seal the spark plug cap or replace
	Defect stop switch	Replace
	Defect electric control box	Replace
	Defect electric generator	Replace

ENGINE HARD TO START

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Hard to start	Defect fuel pump	Replace
	Idle adjustment	Readjust idle
	Intake valve and exhaust valve clearance are off the ranges	Adjust valve clearance. Refer to the valve clearance specs
	Throttle cable adjustment	Adjust throttle cable
	Water in carburetor, fuel pump, fuel lines, water-air separator bottle and fuel tank or contaminated fuel	Drain carburetor bowl. Drain contaminated fuel completely using fuel retraction devices. Clean fuel system and fix the water contamination root cause. Refill fuel
	Insufficient engine compression due to: cylinder air leak, incorrect valve clearance, valves leak, piston and piston rings worn out, spark plug leak	Replace defect parts
	Air leak from air box to carburetor, and from carburetor to engine	Tighten
	Defect carburetor	Replace
Weak spark	Spark plug faulty, fouled or worn out	Replace
	Poor engine ground	Clean and tighten
	Bad ignition coil (Inside electronic control box) and bad connector	Replace
	Defect CDI in control box	Replace
	Defect generator	Replace

ENGINE MISFIRES, RUN IREGULARLY OR STALLS

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Engine misfires, runs irregularly or stalls	Empty, stale or contaminated fuel	Drain contaminated fuel completely using fuel retraction devices. Clean fuel system and refill fuel
	Faulty control box	Replace
	Watered carburetor and watered water-air separator bottle	Drain carburetor bowl and drain water-air separator bottle
	Fouled or weak spark plug	Replace
	Electric wire loose connection or bad connectors	Tighten or replace
	Incorrect ignition timing	Reset
	Too much oil supplier to engine	Bring oil to right oil level
	Poor engine ground	Clean and tighten
	Bad ignition coil and bad connector	Replace
Lean fuel mixture Dry spark plug (except when water fouled)	Dirty carburetor	Clean
	Bad carburetor adjustments of air/fuel mixture, float level in float bowl	Readjust
	Defect carburetor	Replace
	Air leak from air box to carburetor, from carburetor to engine	Tighten
	Defect fuel pump	Replace
	Dirty fuel filter and clogged fuel lines	Clean or replace
	Stale or water fouled fuel	Drain contaminated fuel completely using fuel retraction devices. Clean fuel system and refill fuel
	Blocked engine breathing hoses and oil retainer bottle	Clean the bottle and replace the hoses
Rich fuel mixture Fouled spark plug	Flame arrester dirty or restricted, blocked air intake path	Clean or replace
	Misadjusted idle air/fuel mixture and float bowl height	Readjust
	Defect carburetor	Replace

ENGINE CAN NOT REACH TOP SPEED, AND DOES NOT HAVE POWER

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Jet pump related issues	Weeds and debris trapped inside jet	Remove and clean
	Damaged impeller	Replace
	Jet pump related problem	Disassemble jet pump and replace defect parts
	Air leak between ride plate and intake pipe, damaged water intake seal	Tighten
Contaminated fuel or water presence in fuel system	Water or contaminated fuel in carburetor bowl, fuel pump, water-air separator bottle and fuel tank	Drain carburetor bowl. Drain contaminated fuel completely using fuel retraction devices. Clean fuel system and fix the water contamination root cause. Refill fuel
Air box or airway blockage	Air box is blocked by alien objects such as cloth or tower	Remove or clean
Exhaust blockage	Loose exhaust pipe/muffler damage	Tighten exhaust pipe to the engine and replace muffler
	Exhaust gases in bilge (leak)	Find the exhaust leak and fix. Tighten the exhaust pipe to the engine
Carburetor	Throttle does not open fully	Adjust throttle cable
	Defect carburetor	Replace
Engine	Weak spark plug	Replace
	Blocked engine breathing hose and shut off valve	Clean and remove blockage
	Engine oil level too high	Drain oil and check
	Low compression due to engine cylinder air leak, incorrect valve clearance, valves leak, piston and piston rings worn out, spark plug leak	Replace defect parts. Adjust valve clearances. Tighten spark plug
	Overheated and damaged engine	Refer to ENGINE OVER HEAT SECTION
Fuel	Poor fuel quality	Replace fuel with quality fuel
Others	Battery voltage is too low	Recharge if battery is good or replace battery
	Person and cargo weight is too heavy	

ENGINE STOPS RUNNING

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Engine dies during operation	Engine running out of fuel	Refill fuel
	High engine temperature	Refer to ENGINE OVER HEAT SECTION
	Disconnection of wiring or bad connectors	Reconnect
	Water in carburetor or fuel system	Drain carburetor bowl and water-air separator bottle. Drain fuel system and clean if needed.
	Foul spark plug	Replace
	High exhaust pipe temperature	Check the cooling hose from jet to the exhaust. Remove clogged hoses or replace damaged hoses.

ENGINE OVER HEAT

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Engine smoke	Internal engine damage	Damaged cylinder, piston, or cooling system. Damaged cylinder head.
	Coolant too low; air trapped in cooling system; coolant leak; damaged cooling system	fill coolant according to Liquid section. Replace damaged cooling system parts
Engine overheat	Coolant low; trapped air in cooling system; clogged exhaust cooling hoses and fittings; coolant leak; damaged cooling system; garden flushing connector is not closed; clogged jet.	Fill coolant; flushing exhaust cooling system; clean jet; close garden flushing connector; replace damaged parts
	Frequent stop at full throttle running	Play easy and avoid sudden stop after full throttle run
	Bad ignition timing	Reset
	Low oil level	Add oil to right oil level
	Loose exhaust pipe to engine; Blocked exhaust; Leak exhaust system	Tighten and replace defect parts
	Blocked air intake and vent	Check and replace defect parts

THROTTLE CABLE NOT RETURN BACK FULLY

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Stick throttle lever and throttle cable not return back fully	Salt or contamination or corrosion in throttle cable and assembly	Clean, lube or replace
	Bended or damaged throttle cable	Replace

STICKY STEERING OR LOOSE STEERING

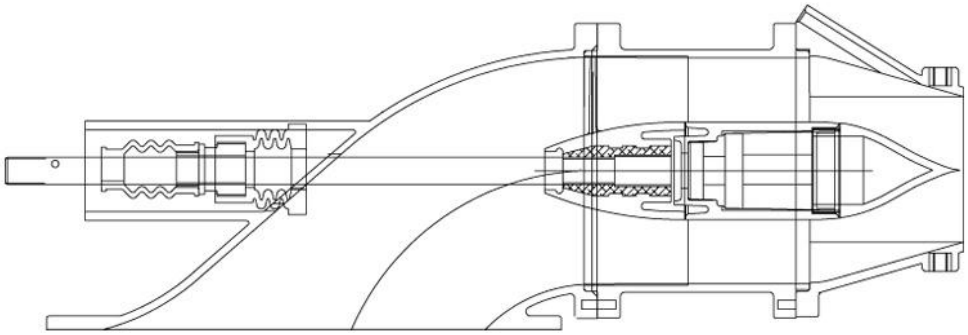
OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Sticky steering	Salt or contamination or corrosion in steering cable	Clean, lube or replace
	Salt or damaged steering assembly at handle	Clean, lube or replace
	Steering cable adjustment is too tight	Adjust
	Salt or damaged steering assembly at nozzle	Clean, lube or replace
Loose steering	Steering cable adjustment is too loose	Adjust

ABNORMAL VIBRATION AND WATER IN BILGE

OTHER OBSERVATION	POSSIBLE CAUSES	REMEDY
Abnormal vibration	Misalignment at the coupler between engine output shaft and jet drive shaft	Readjust engine position by loosening the engine mounting bolts.
Water in bilge	Engine compartment cover not properly closed	Install cover properly
	Bad seal	Replace
	Automatic siphon pump head is blocked	Clean
	Fouled bilge pump	Replace bilge pump
	Worn bad drive shaft mechanic seal	Replace
	Hull leak	Repair
	Loose drain plug	Tighten or replace
	Bad air intake valve	Check and repair

PROPULTION SYSTEM

Jet Assembly And Weed Cutter:



Jet Pump

Jet Pump Parts

Stator and Impeller

Intake and weed cutter

Propulsion System Part List:

(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	jet pump unit w/mechanic seal and boom
2	impeller with anti-loosening nut and screw
3	stator set w/ stator shaft/bearings/cone, seals
4	nozzle
5	steering nozzle
6	water intake w/weed cutter
7	drive shaft
8	coupling
9	coupling damper
10	mechanical seal set
11	jet pump mount brackets& hardware
12	ride plate
13	ride plate rubber seal
14	siphon pump w/ check valve
15	jet cone with seal

Jet Impeller Removal Procedure:

1. Remove the Allen head screws from the heat exchanger and the ride plate. Remove Phillips head screws. Remove ride plate. Remove outer screws from composite housing, Undo heat exchanger hoses and drain cooling system.
2. Cut off black plastic tie from around nose seal in engine compartment.
3. Unclip the two small hoses from the rear of jet unit, one on port side, one on top
4. Lower jet unit and slide to rear.

Place jet assembly on bench, disassemble intake pipe, nozzle and cone.

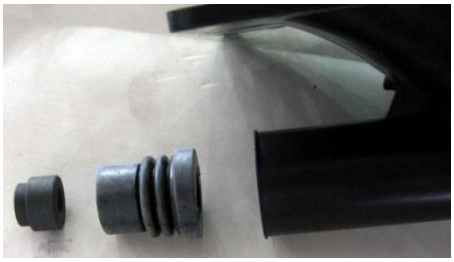
Now you must remove the Spline locking nut from inside impeller before the impellor can be unscrewed.

1. Using a Phillips Screw driver extract locking screw from inside impeller.
2. Using a 6mm metric bolt (at least 60mm long) screw into the Spline locking nut, and lever out the locking nut.
3. Hold the end of shaft and rotate Impellor. Note: It is left hand thread.

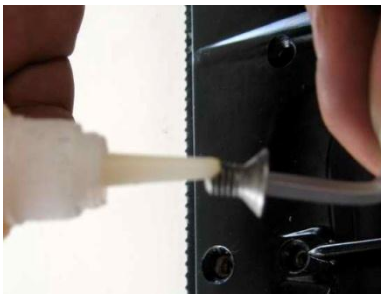
Jet Impeller Install Procedure:

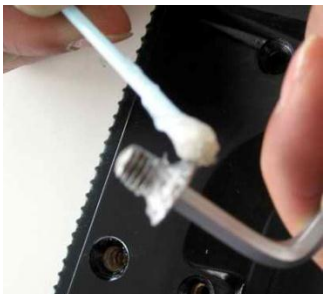
Follow the reverse steps to install the impeller and stator. Make sure use appropriate jet pump bearing grease for bearings, and fill inside impeller rubber boot. And use marine grade rubberized silicon to seal cone during installation, and joints between intake duct, stator and nozzle.

Insert non-moving part of mechanical seal into intake duct, and insert moving part of mechanical seal into drive shaft.

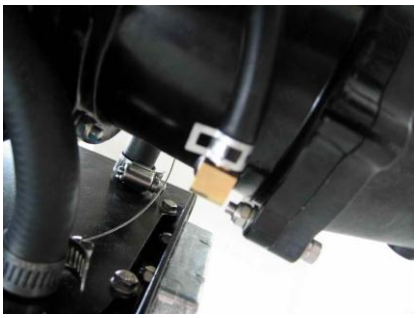


Install ride plate and heat exchange plate. Make sure the rubber seal between jet intake duct and ride plate is in perfect condition and perfect fit. Any leak can cause jet power loss. Use medium strength thread locker for screw thread. Apply marine grade anti-seizure lubricant between the screw heads and ride plates.





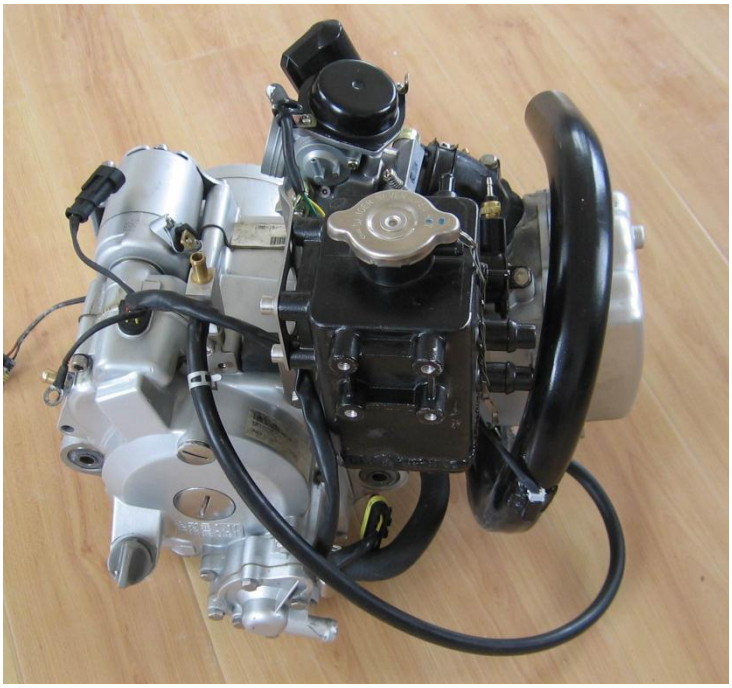
Tight all hoses, electric conduit, and rubber seal boot inside engine compartment. Make sure jet is aligned with the engine.



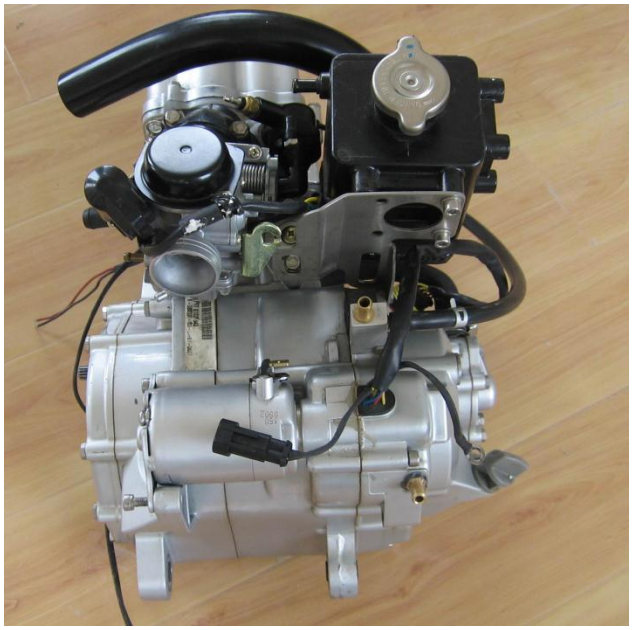
Install the steering arm and install the pin.

ENGINE

Engine Assembly:



Engine, top view



Engine, right view

Engine, left view

Engine Part List:

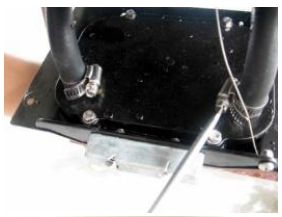
(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	engine unit
2	cylinder head assembly
3	camshaft set
4	rock arm assembly
5	cylinder
6	crank shaft and link assembly
7	piston
8	piston rings
9	generator
10	start motor
11	water pump
12	oil pump
13	thermo valve
14	carburetor
15	carburetor fitting elbow and hardware
16	air box and duct
17	bushings, 4 pieces
18	gasket kit
19	spark plug
20	chain
21	start clutch gears
22	breathing shut off valve
23	high voltage spark plug cap

Engine Removal Procedure:

Disconnect the rubber connector between the exhaust pipe and muffler. Move the rubber connector to the engine side

Disconnect hoses to the engine, exhaust pipe and jet as shown here. Remove the jet assembly and ride plates



Remove the jet assembly and ride plates

Engine Removal Procedure (continued):

Remove air box

Cut the plastic ties to disconnect electric connectors to the engine

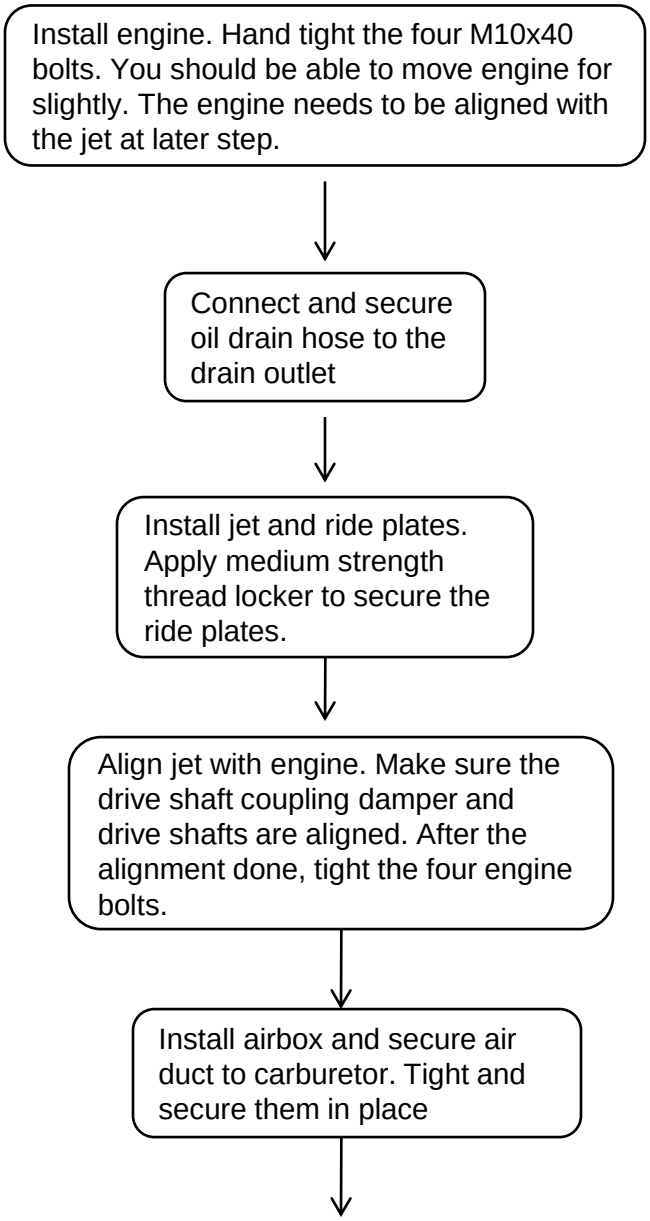
Disconnect the throttle cable

Take off the four M10x40 engine bolts. You need ratchet wrench to take off the left front bolt.

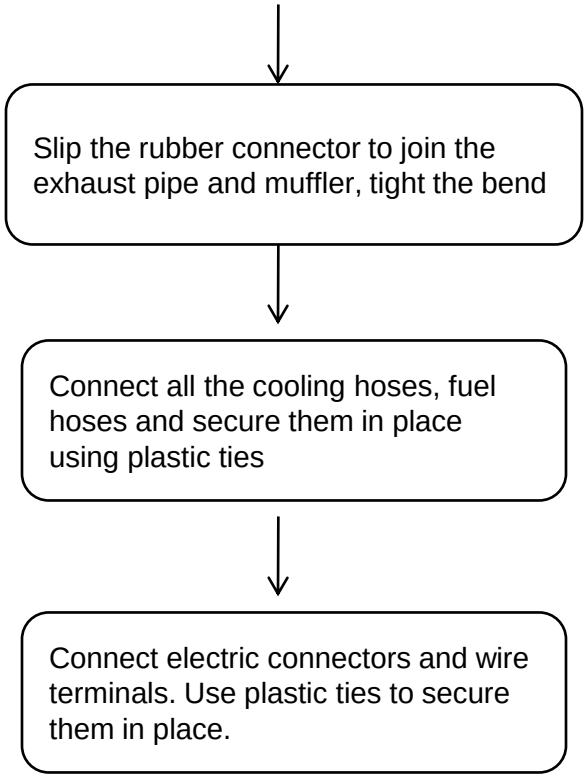
Lift the engine out by grapping exhaust pipe and start motor

Engine Install Procedure:

The engine installation is a reverse process of the engine removal. The main steps are outlined here:

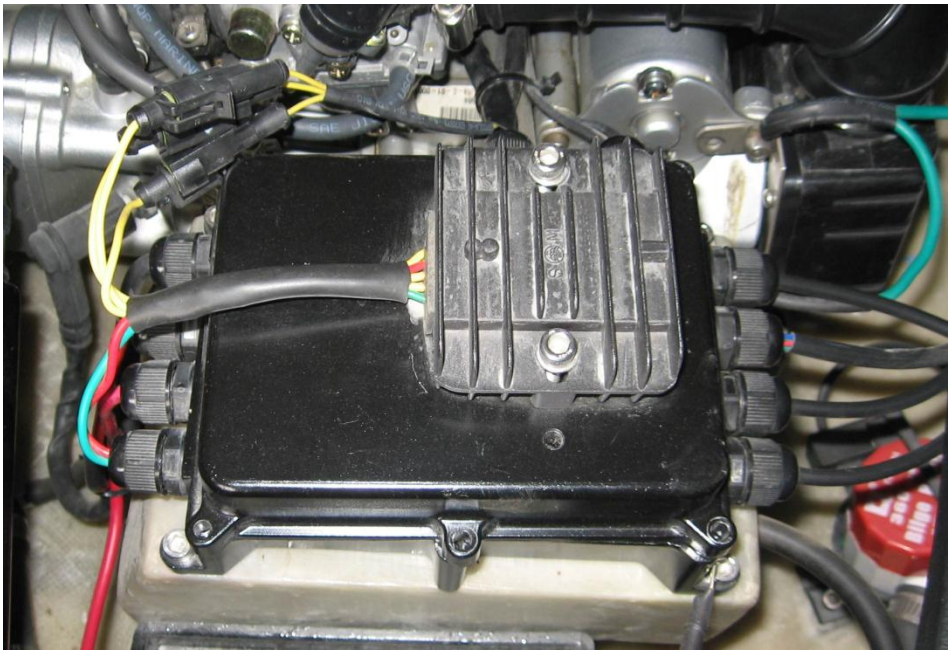


Engine Installation Procedure (continue):

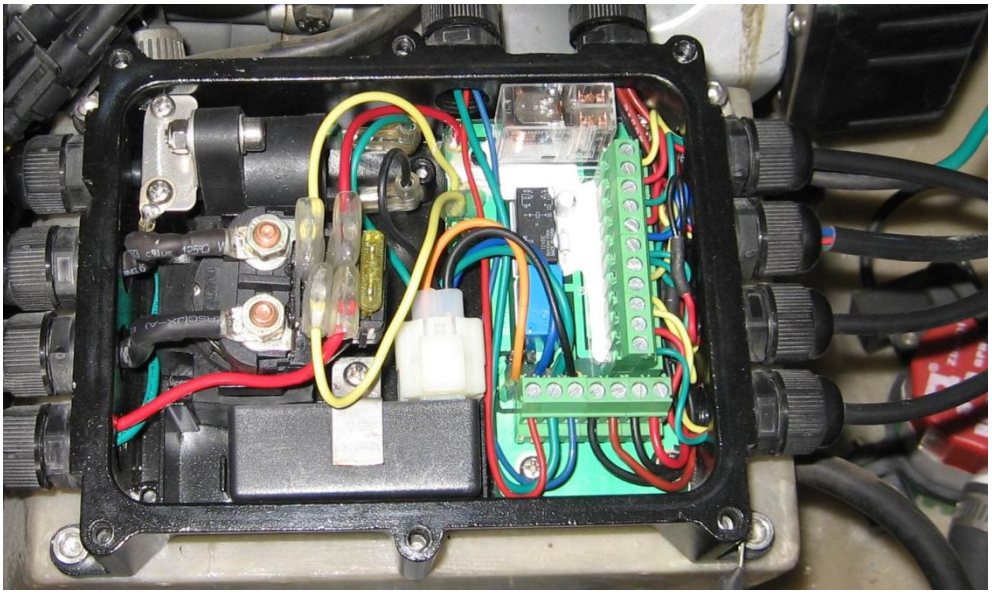


ELECTRIC SYSTEM

Control Box:



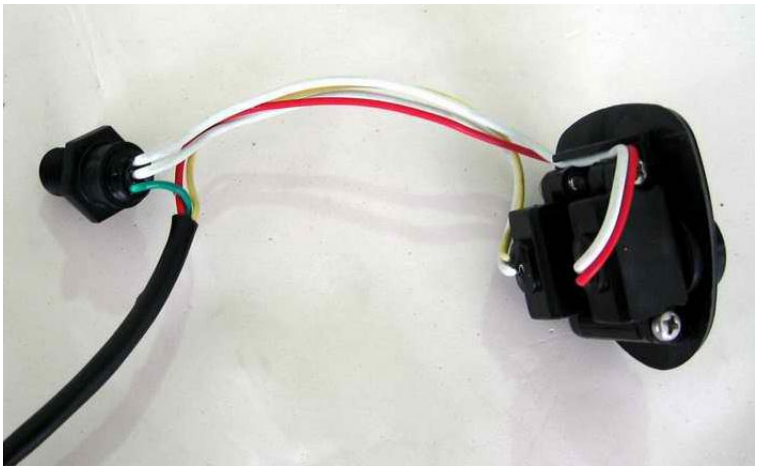
Control box



Control box and wiring

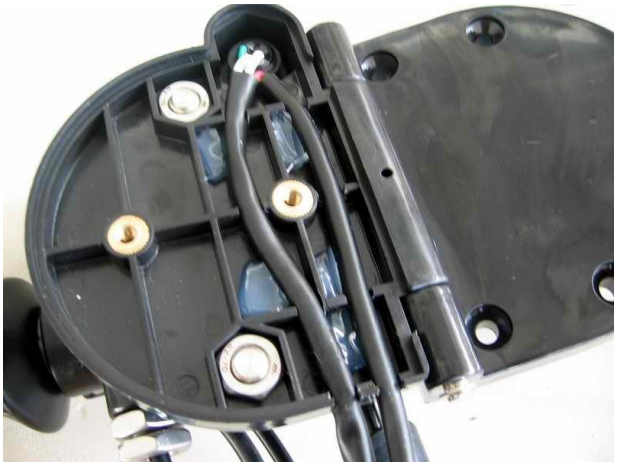
Jetsurf Electric Switches (Continue):

Jetsurf handle switches and wiring

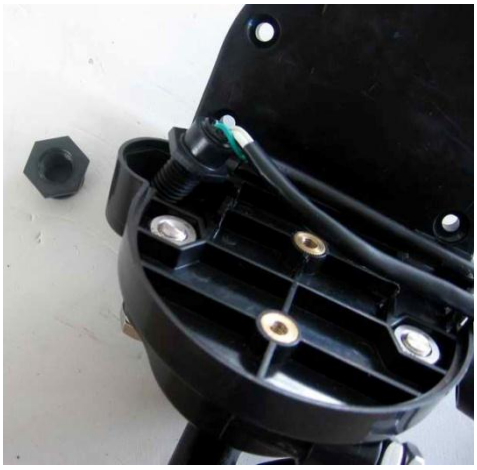


Kill switch, start switch and stop switch

Jetkayak Electric Switches:



Jetkayak center control wiring



Jetkayak center control kill switch wiring

Jetkayak joystick control switches

Jetnami Electric Switches:

Jetnami kill switch

Jetnami electric wiring

Jetnami handle switches

Electric Part List:

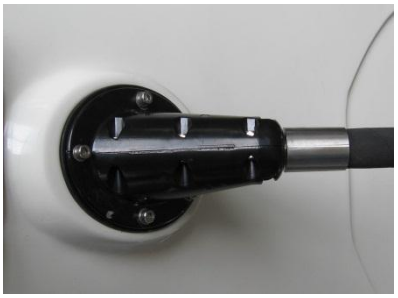
(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	battery
2	information meter
3	electric control box
4	Lanyard
5	bilge pump
6	water sensor
7	bilge pump manual switch
8	start switch and stop switch
9	kill switch

Jetsurf Switch Assembly Removal Procedure:

Stop switch, start switch and kill switch can be replaced simply by cutting off faulty one and be replaced with new one. The wire connection must be soldered and sealed with heat shrink tube, and covered with marine grade seal to be water proof. However the switches and wires from the handle to the electric control box can be completely replaced for better water proof as follows:

Disconnect Armpole from Hull.



Open handle and remove face cover, and kill switch

Trace the three wires from handle to control box, Disconnect the 3 wires from the control box.

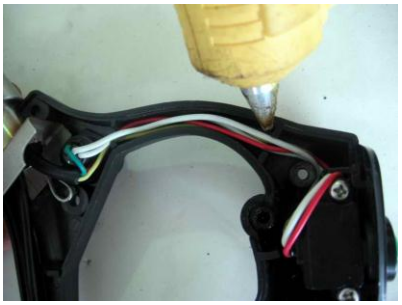
Disconnect the throttle cable from carburetor.

Pull out electric wire from the Armpole hose

Jetsurf Switch Assembly Install Procedure:

Follow the reverse steps to install the electric switch provided. Pay attention to the followings:

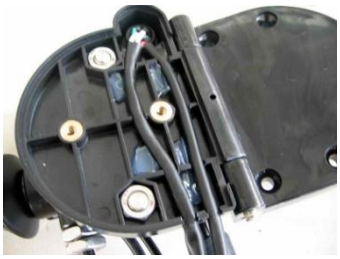
- For Kill switch installation, insert the kill switch inside out fully first, screw the kill switch outer cap all the way down and tight. Then tight the nut inside.
- There is a pin at the end of Armpole hose, split electric wire and throttle cable left and right.
- Use heat glue to secure the electric wire inside handle
- Apply marine grease at the pulley, throttle cable and trigger.
- Adjust and tight throttle cable.



Jetkayak Switch Assembly Removal Procedure:

Stop switch, start switch and kill switch can be replaced simply by cutting off faulty one and be replaced with new one. The wire connection must be soldered and sealed with heat shrink tube, and covered with marine grade seal to be water proof. However the switches and wires from the steering handle to the electric control box can be completely replaced for better water proof as follows:

Open joy stick base cover and remove kill switch.



↓

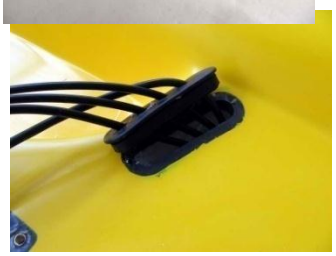
Open joy stick handle.

↓

Remove face cover with switches

↓

Open the rubber seal and trace the wires from handle to control box, Disconnect the wires from the control box.



↓

Disconnect the throttle cable from carburetor.

↓

Pull out the electric wires. Apply soap or Vaseline on electric wire and the rubber seal for easy pulling.

Jetkayak Switch Assembly Install Procedure:

Follow the reverse steps to install the electric switch assembly. Pay attention to the followings:

- Pay attention to wire path.
- Use heat glue to secure the electric wire inside handle.
- Apply marine grease at the trigger and cable.
- Apply soap or Vaseline on electric wire and the rubber seal for easy pulling.
- Adjust and tight throttle cable.

Jetnami Switch Assembly Removal Procedure:

Stop switch, start switch and kill switch can be replaced simply by cutting off faulty one and be replaced with new one. The wire connection must be soldered and sealed with heat shrink tube, and covered with marine grade seal to be water proof. However the switches and wires from the steering handle to the electric control box can be completely replaced for better water proof as follows:

Open joy stick handle

↓

Remove face cover with switches

↓

Remove kill switch

↓

Push out the round rubber seal of electric wires. Apply soap or Vaseline on the seal for easy pushing/pulling

↓

Trace the wires from handle to control box, Disconnect the wires from the control box

↓

Disconnect the throttle cable from carburetor

↓

Pull out electric wires

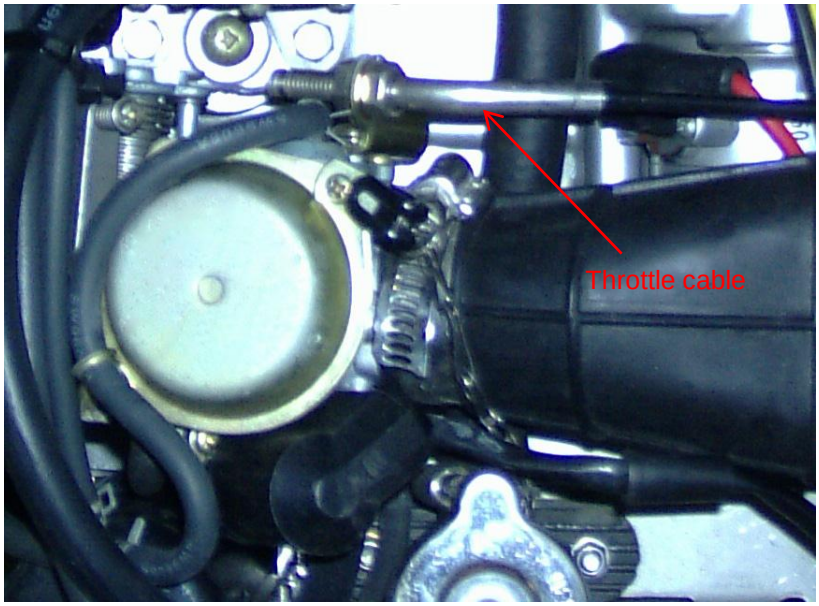
Jetnami Switch Assembly Install Procedure:

Follow the reverse steps to install the electric switch assembly. Pay attention to the followings:

- Use heat glue to secure the electric wire inside handle
- Apply marine grease at the trigger and cable.
- Apply soap or Vaseline on electric wire and the rubber seal for easy pulling.
- Adjust and tight throttle cable

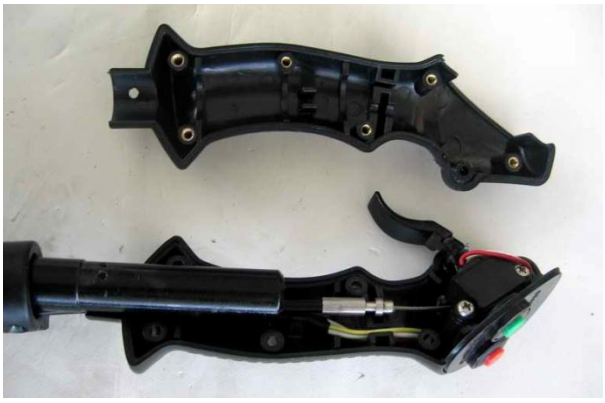
SPEED/THROTTLE CONTROL

Throttle Cable And Trigger:



Throttle cable to carburetor

Throttle cable in Jetsurf handle



Throttle cable in joystick handle

Jetsurf Throttle Cable Removal Procedure:

Disconnect Armpole from Hull.

↓

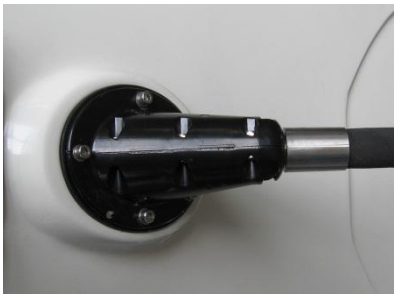
Open handle and disconnect throttle cable from trigger

↓

Disconnect the throttle cable from carburetor.

↓

Pull out throttle cable



Jetsurf Throttle Install Procedure:

Follow the reverse steps to install the Jetsurf throttle cable. Pay attention to the followings:

- There is a pin at the end of Armpole hose, split electric wire and throttle cable left and right.
- Apply marine grease at the pulley, throttle cable and trigger.
- Adjust and tight throttle cable.

Jetkayak and Jetnami Throttle Cable Removal Procedure:

Disconnect the throttle cable from carburetor.

↓

Open joy stick handle, and disconnect throttle cable from trigger.

↓

Open the rubber seal. Apply soap or Vaseline on the cable and the rubber seal for easy pulling.

↓

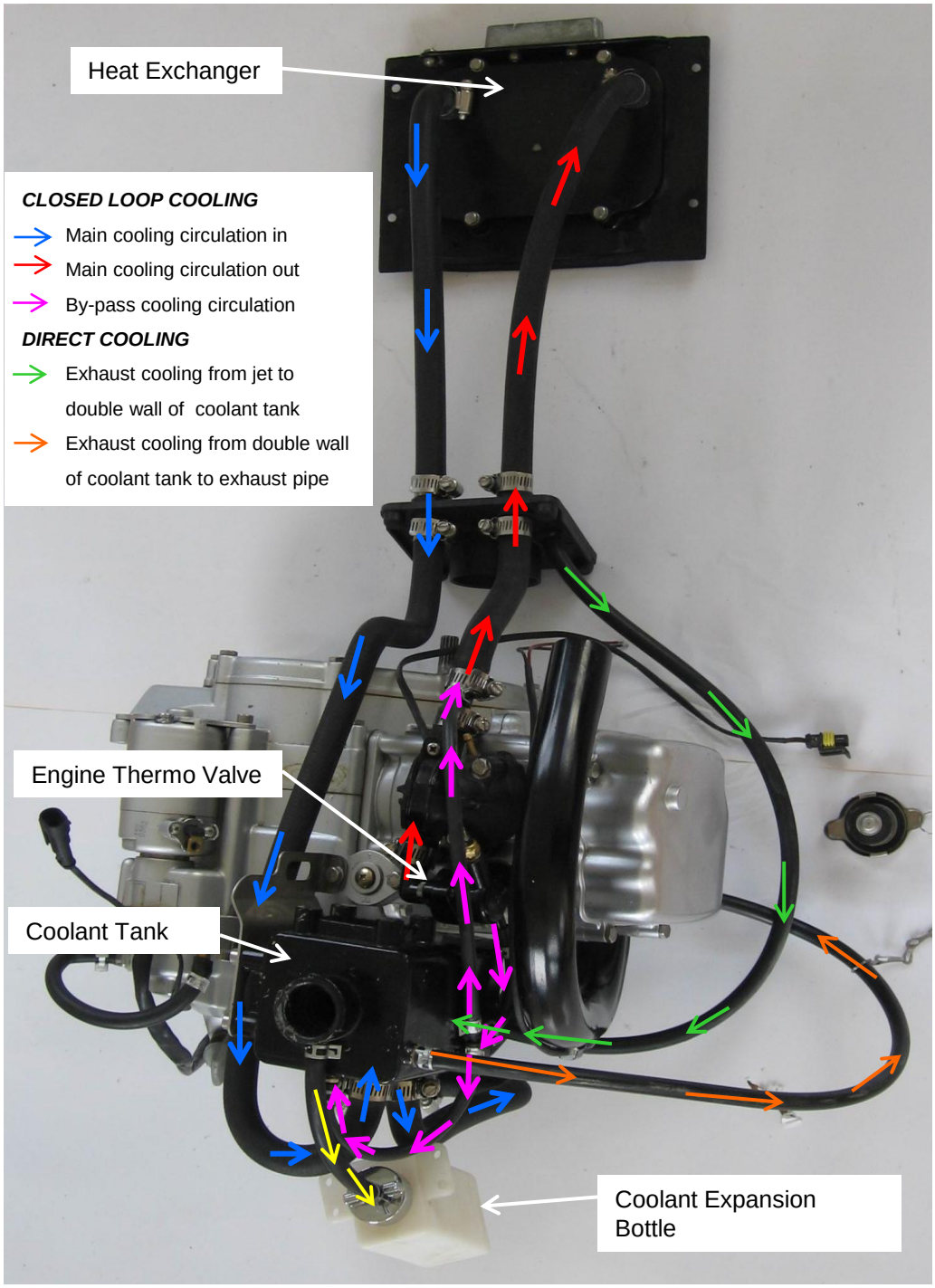
Pull out cable from inside engine compartment.

Jetkayak and Jetnami Throttle Cable Install Procedure:

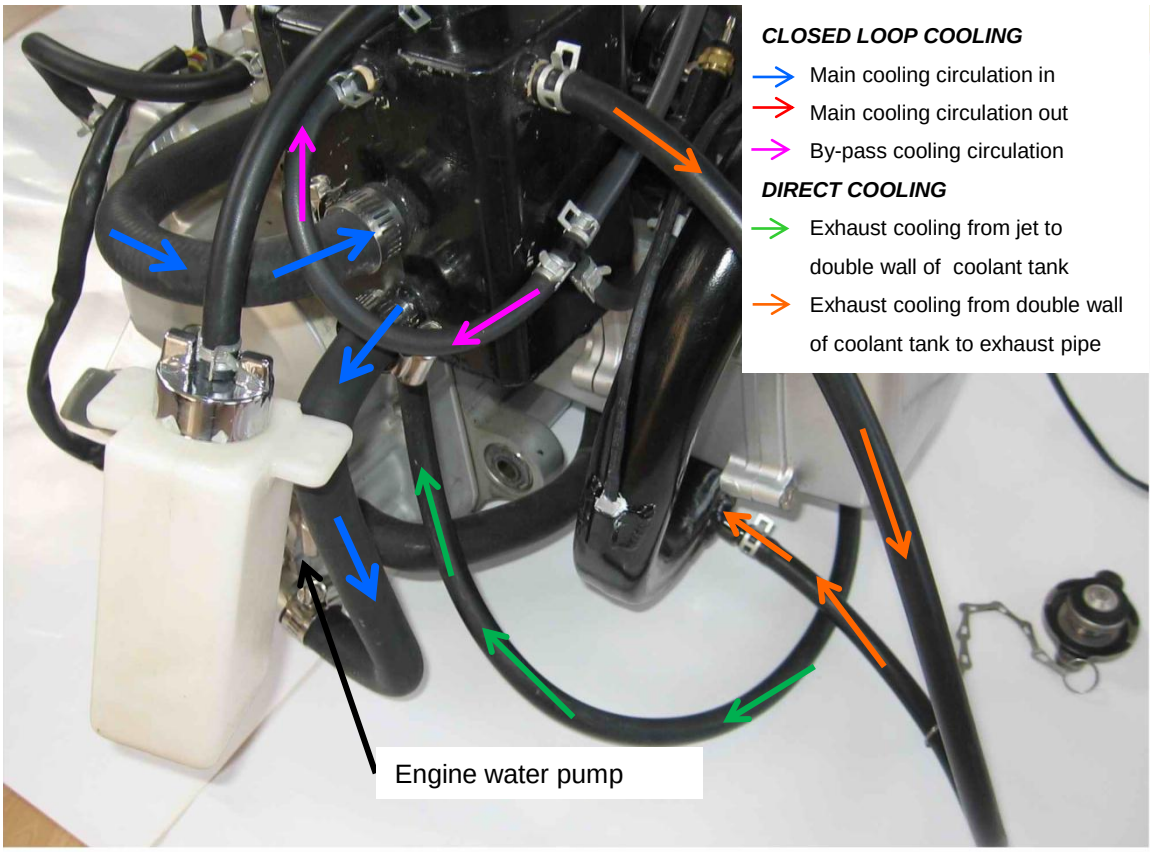
Follow the reverse steps to install Jetkayak and Jetnami throttle cable. Pay attention to the followings:

- Apply marine grade cable lube to throttle cable and trigger.
- Adjust and tight throttle cable.

COOLING SYSTEM



Cooling System and Flow



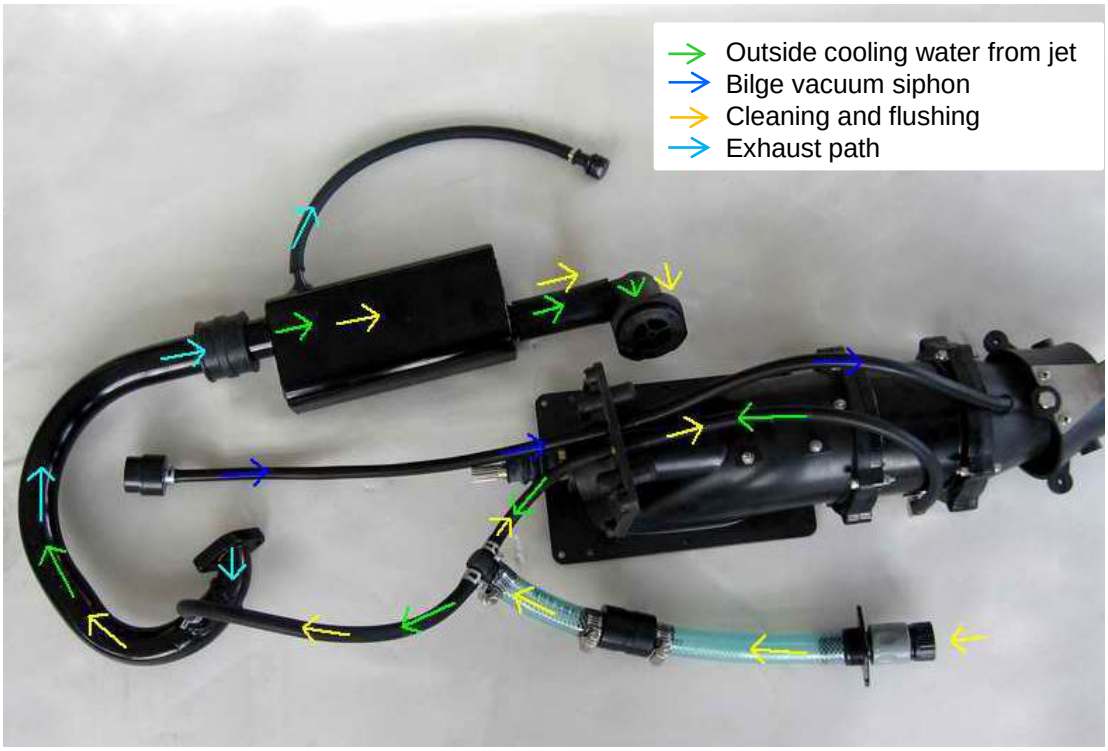
Cooling System and Flow

Cooling System Part List:

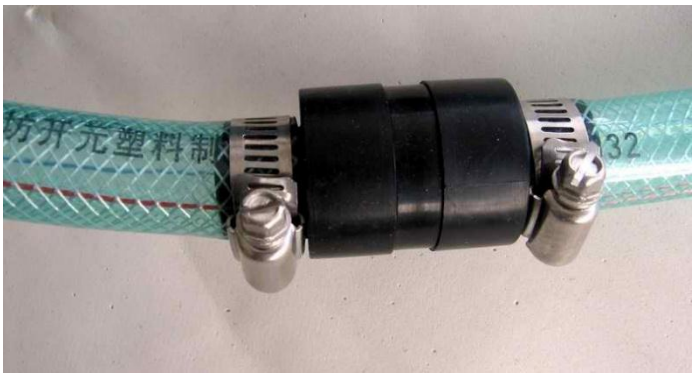
(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	quick garden hose flushing connector
2	heat exchanger
3	cooling pressure valve cap
4	coolant tank
5	coolant expansion bottle
6	cooling hoses

EXHAUST SYSTEM



Exhaust system cooling and flow



Flushing hose check valve

Flushing quick connector

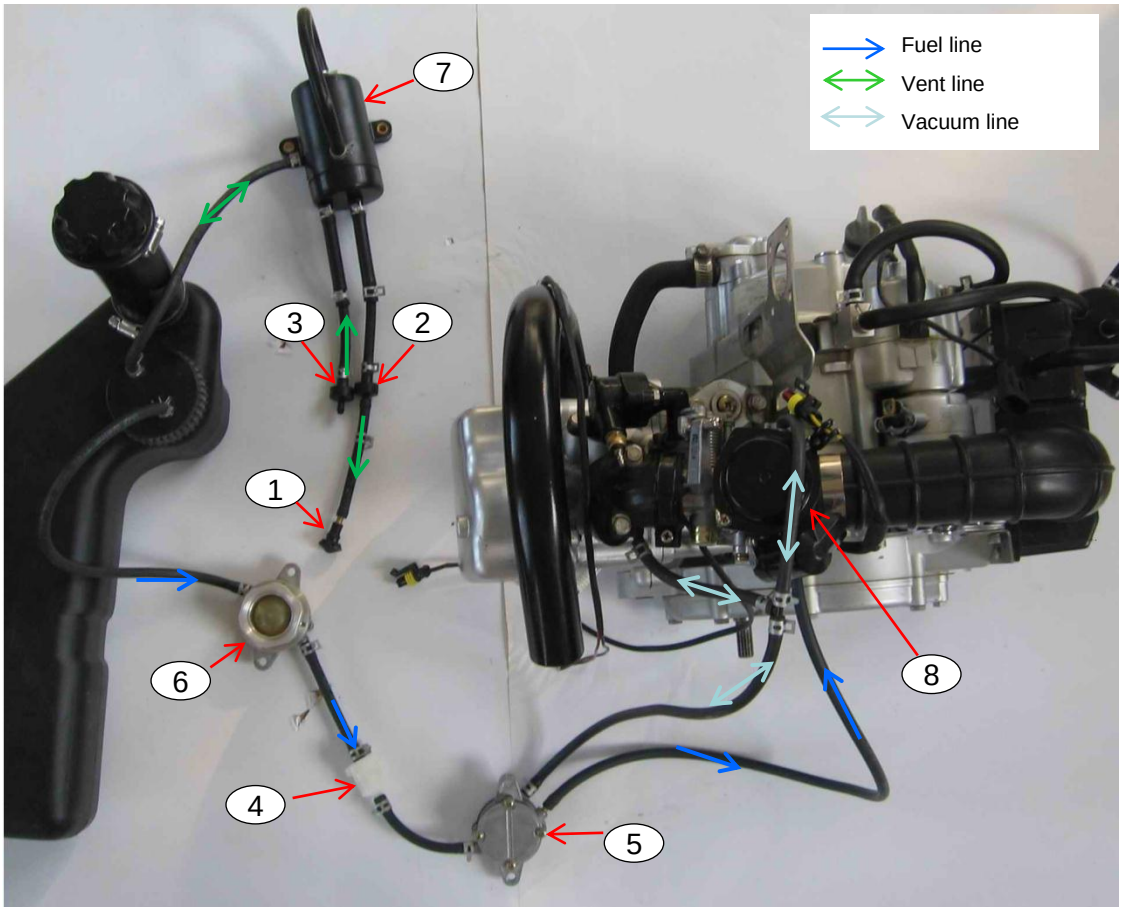
Bilge siphon pump head

Exhaust System Part List:

(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	exhaust pipe-double walled aluminum
2	exhaust waterbox
3	exhaust hoses and fittings
4	engine exhaust seal

FUEL SYSTEM



Fuel system and flow

1. Air vent
2. Check valve A with pressure
3. Check valve B without pressure
4. Fuel filter
5. Fuel pump
6. Primer bulb
7. Water-air separator bottle
8. Carburetor

Fuel System Part List:

(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	carburetor
2	fuel pump
3	primer bulb
4	fuel filter
5	fuel hose set
6	fuel tank
7	fuel tank check valve A with pressure
8	fuel tank check valve B without pressure
9	fuel sensor and cap assembly

STEEING SYSTEM

Steering Assembly At Jet Nozzle:

Rear steering arm and steering nozzle

Steering rotary assembly

Steering rotary parts

Steering rotary at joystick

Steering System Part List:

(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)

1	Armpole and handle set
2	Jetkayak steering assembly
3	Jetkayak GT steering assembly
4	Jetnami steering assembly
5	Jetnami GT steering assembly
6	Jetkayak handle, switches and throttle cable
7	Jetkayak GT handle, switches and throttle cable
8	Jetnami handle, switches and throttle cable
9	Jetnami GT Handle, switches and throttle cable
10	Jetsurf handle left half, right half and face cover
11	Joystick handle left half, right half and face cover, clamp tie
12	trigger
13	Jetsurf throttle cable
14	Jetkayak and Jetnami throttle cable
15	Jetkayak GT and Jetnami GT throttle cable

Assemble Steering Pulley Procedure:

Insert brass sleeve into steering pulley house

Insert brass sleeve into steering pulley cover

Insert seal into outside of the steering pulley house

Slip rubber boot, two nuts onto each cable end, then guide two cables into steering pulley house.
If one pulley already installed before this one, you must check which cable go to top, and which cable go to bottom, so that you will steer boat left and right correctly

- Connect cables to wheel
- put wheel into steering pulley house
- insert shaft into wheel, then insert pin onto shaft
- Close the house cover

If this is the first pulley to install, adjust the inside nut to middle position and tight second nut to prevent bolt loose.

If one pulley already installed before this one, then use you hand to adjust the inside nut to put cable in slightly tension with no lash, then tight second nut. Make sure the tension in the cable is not high.

Secure the rubber boot

BILGE PUMP, WATER CENSOR

Bilge and water sensor

Bilge installed in engine compartment

Bilge manual switch and connector

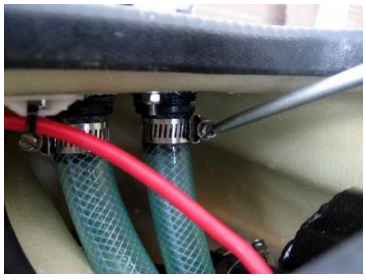
Bilge Pump, Water Censor And Manual Switch Removal Procedure:

For FX, start here. For other models, skip to 3rd step. Loose clamps, and slip the rubber connector to the engine side. Push the muffler aside to have better access to the bilge pump

Unplug ignition circuit from spark plug to have better access to bilge pump

Unscrew the bilge mount bolts.

Remove water hoses and disconnect wire connectors



Use wrench to uninstall the bilge pump manual switch

Take out bilge pump assembly

Bilge Pump Assembly Install Procedure:

Follow the reverse steps of bilge assembly removal procedure to install the bilge pump, water censor and manual switch. Use medium strength thread locker to prevent bold loosening. Use WD-40 on the connectors and wire terminal to repel moistures.

HULL

Hull Part List:

(Please use Parts Catalog to order your parts. Parts Catalog provides part numbers indicating model, model year and other information)