



RIVA RACING

PERFORMANCE PRODUCTS & ACCESSORIES

Engine Cooling Upgrade Kit

PART# - RY10040-ECUK-NA-11

We strongly recommend the use of a service manual to familiarize yourself with the various components and procedures involved with this installation. Please note that some of the original clamps, lines and hardware removed in the disassembly process will be used in the installation process. These instructions have been written in point form and refer to illustrations. Please follow these step-by-step instructions and illustrations carefully.

APPLICATION(S): 2011 & Newer Yamaha VXR/S & FX-HO Normally Aspirated

***** ALLOW ENGINE TO COOL COMPLETELY BEFORE PERFORMING INSTALLATION *****

Required tools

Oil Extraction Pump

Part#

3801-0027 (6-Liter) / OIL03 (15 Liter)

INSTALLATION INSTRUCTIONS

Remove lanyard and disconnect battery cables. **NOTE:** Negative (black) first. Positive (red) second.

Remove seats and rear storage bin.

Remove plastic engine cover (2 screws).

Drain engine oil completely.

FX-SH: Remove deck beam (4 bolts).

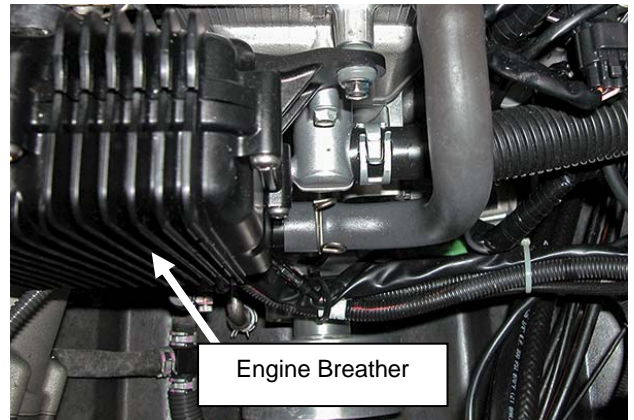


FX-SH

Remove strap securing water box in place. Loosen upper coupler clamp and remove exhaust outlet tube.



2011 & Older: Remove engine breather line(s) from engine breather box.

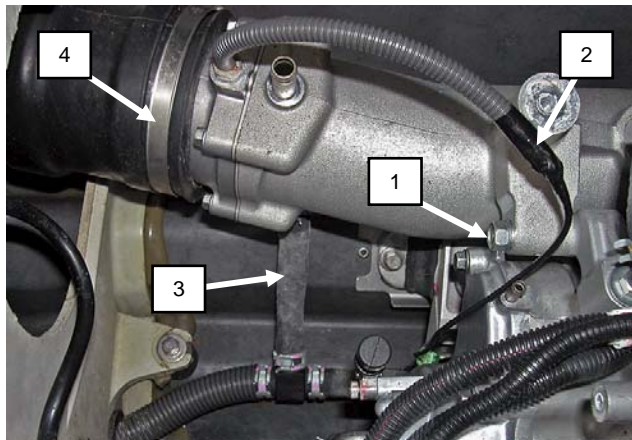


Remove engine breather box (3 bolts) and set aside.

Remove cooling lines (3) from rectifier regulator. Remove bolts (2) securing rec/reg to engine and move rec/reg aside.

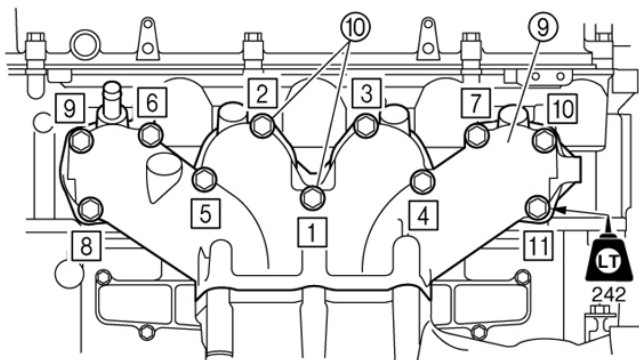


Remove bolt¹ securing end of exhaust pipe to motor. Disconnect exhaust pipe overheat sensor² connector (green connector). Disconnect cooling line³ from underside of end of exhaust pipe. Loosen clamp⁴ securing coupler to end of exhaust pipe.



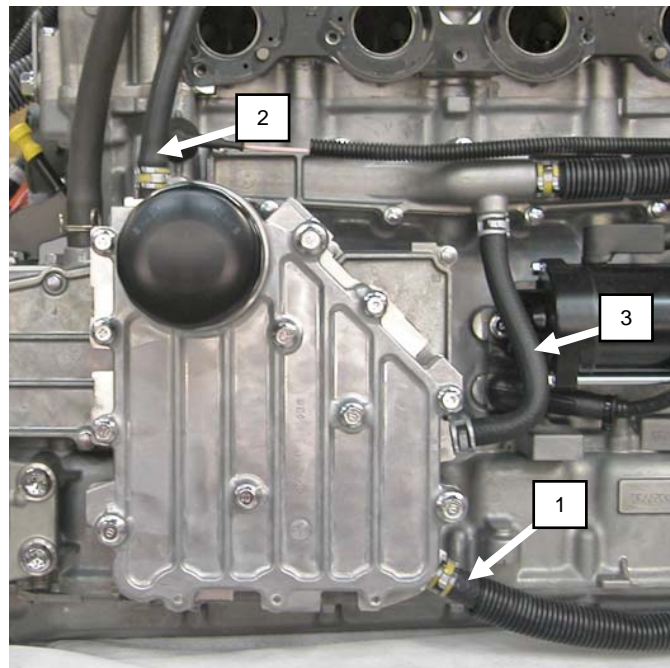
Slide water box towards rear of craft as far as it will go.

Remove bolts (11 total) securing exhaust pipe assembly to motor.



To remove exhaust pipe assembly rotate away from motor towards hull. While lifting up at front pull forward to remove tail pipe from water box inlet.

On exhaust side of engine locate oil cooler. Disconnect cooling inlet hose¹ and outlet hose².



Remove cooling line³ between oil cooler and engine inlet. Discard.

Remove oil cooler (3 bolts). **TIP:** Place absorbent rags or towels under oil cooler prior to removal.



NOTE: Take care not to damage or lose oil cooler-to-engine connector fittings.

Drain excess oil from oil cooler.

On oil cooler locate fitting for engine water supply.



Apply grease to end of supplied drill bit. Slowly drill straight into opening in fitting to increase inner diameter. Clean filings from fitting while fitting is facing down.

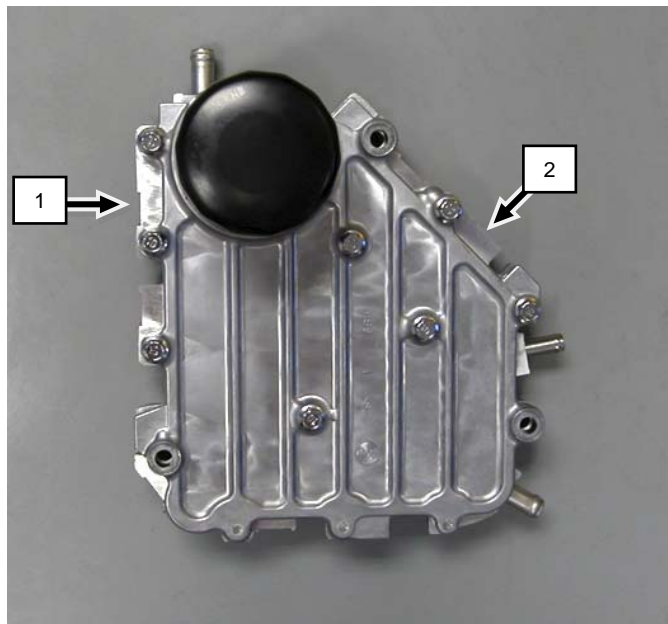
NOTE: Do not spray directly into fitting.

Apply grease to supplied tap. Screw tap into fitting to create threads. Clean filings from fitting while fitting is facing down. **NOTE: Keep tap straight. Screw at least 75% of tap into fitting. Do not spray directly into fitting.**

Install supplied set screw into fitting until flush with end of fitting.



On oil cooler locate and mark factory set screws (2) to be removed.



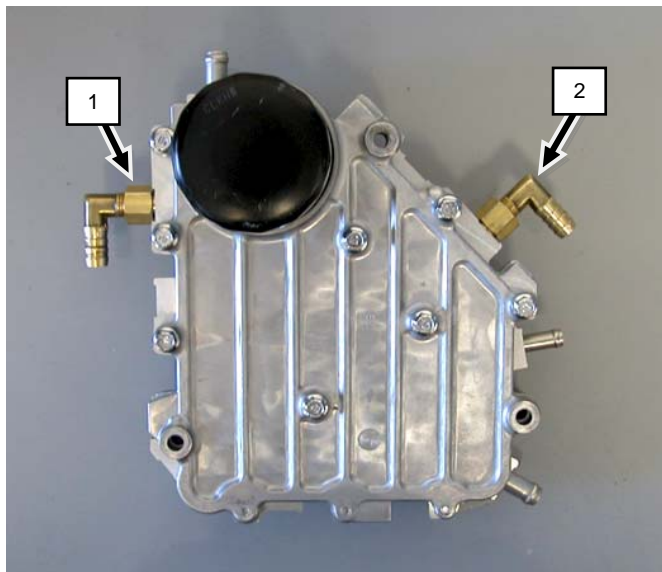
Place oil cooler in a shop vice. **NOTE: Do not over tighten vice. Pad jaws of vice to prevent damage to oil cooler body.**

Using a torch apply heat directly to center of set screws for 10~15 seconds.

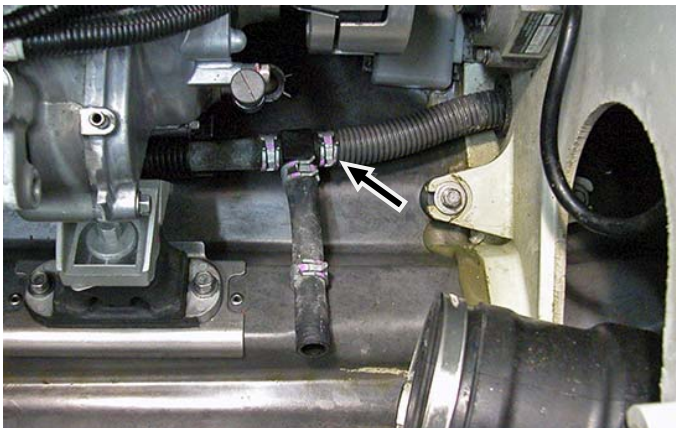


Remove set screws and discard. **CAUTION: Set screws will be extremely hot. Allow oil cooler to cool thoroughly before proceeding.**

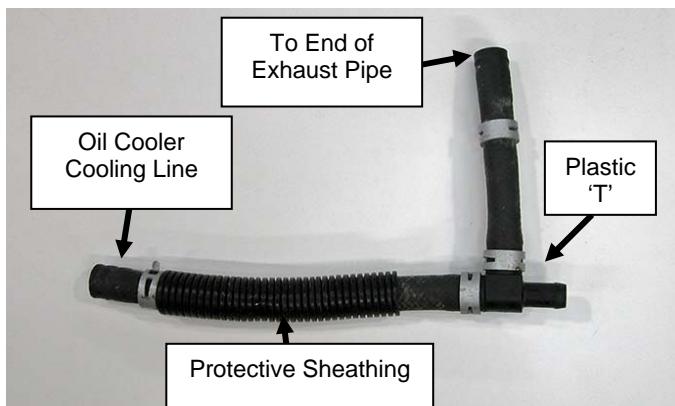
Apply pipe thread sealant to male threads on supplied brass couplers¹ and install into oil cooler. Apply pipe thread sealant to threads on supplied 1/2" barbed X 1/4" NPT 90-degree fittings² and install into brass couplers. **NOTE: Do not over tighten. Fittings must face direction illustrated below.**



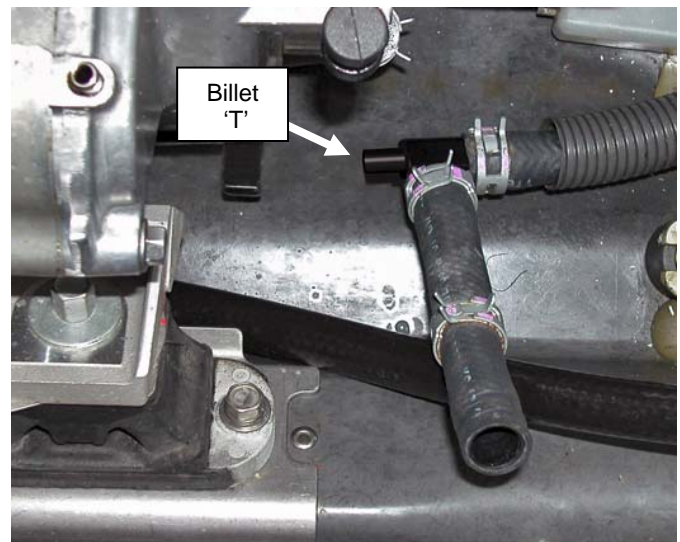
At exhaust side of engine disconnect the incoming cooling line feeding plastic 'T' fitting.



Remove 'T' fitting with lines attached (2).



Transfer shorter cooling hose (To End of Exhaust Pipe) to supplied billet 'T' fitting. Install supplied billet 'T' fitting into incoming cooling line. Secure with stock spring clamps.



Remove 'oil cooler cooling line' from plastic 'T'. Cut line into two pieces: one measuring 4-3/4 inches; the other 7 inches. Attach each piece to supplied billet 'Y' fitting and secure with supplied 1/2" hose clamps. **NOTE: Do not over tighten clamps.**



Trim protective sheathing from oil cooler cooling line down to 5 inches and slide onto 7 inch line oil cooler line.

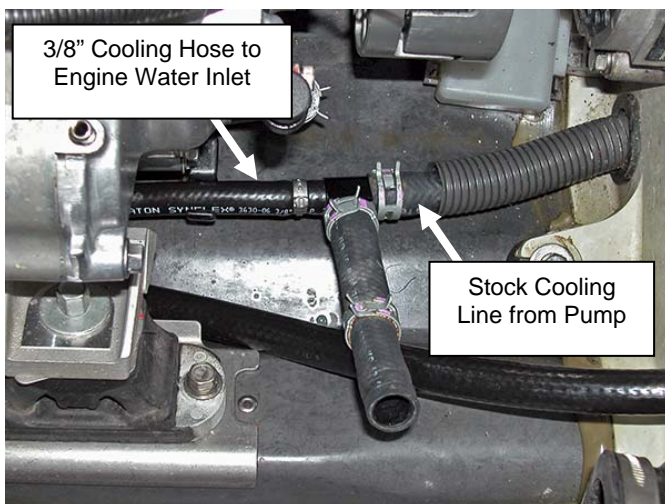
Attach cooling lines (with 'Y' fitting) to oil cooler. Secure using stock spring clamps.



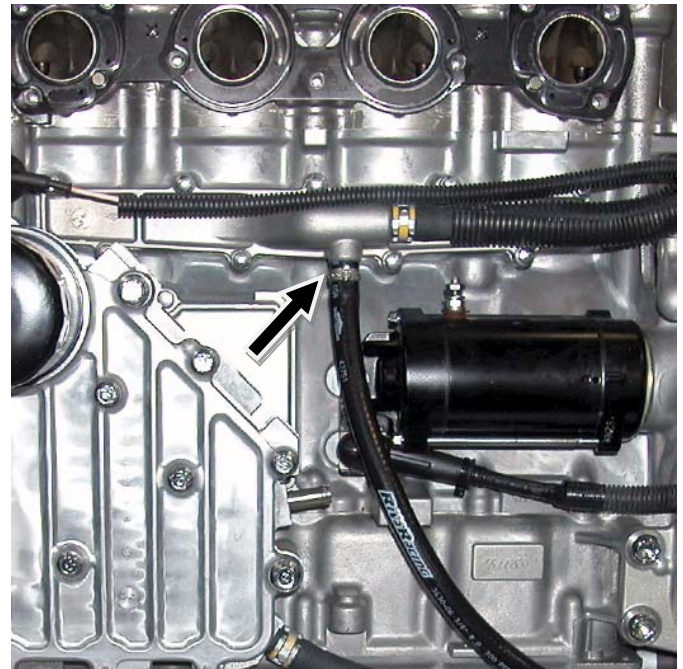
Replace oil cooler. **NOTE: Make sure oil cooler connector fittings are in place with o-rings. Apply blue Loctite to bolts. Torque to 15 ft•lb / 20 N•m.**

Reconnect oil cooler bypass cooling line (top of oil cooler). Secure using stock spring clamp.

Install supplied 3/8" cooling line onto billet 'T' fitting. Secure with supplied 1/2" hose clamp. **NOTE: Do not over tighten clamp.**



Route 3/8" line forward under engine and up towards starter motor. Attach to engine water inlet and secure using supplied 1/2" hose clamp. **NOTE: Do not over tighten clamp.**



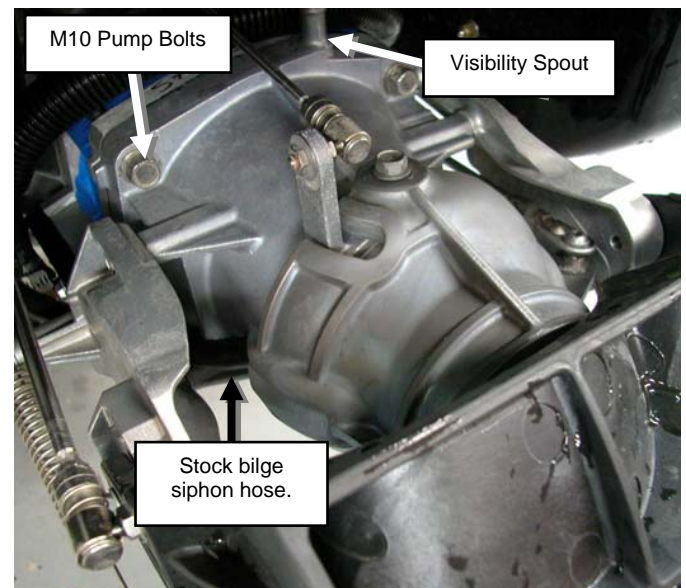
In jet pump area locate and remove the two rubber flaps around jet pump unit.

Remove speedo sensor (4 bolts) from ride plate.

Remove ride plate (4 bolts).

Disconnect steering, reverse and Q.S.T.S. cables.

Disconnect visibility spout hose from top of reduction nozzle and stock bilge siphon hose from left side of reduction nozzle.



Remove reduction nozzle assembly (4 M10 bolts).

Remove jet pump assembly. **NOTE: Take care not to damage splines at end of drive shaft.**

On left side of pump remove water strainer assembly (4 bolts).



Transfer o-rings from stock strainer and cover to supplied billet strainer and cover. **NOTE: Apply a thin layer of waterproof grease to o-rings.**

Install billet strainer into pump. **NOTE: Make sure opening for water passage is facing forward.**

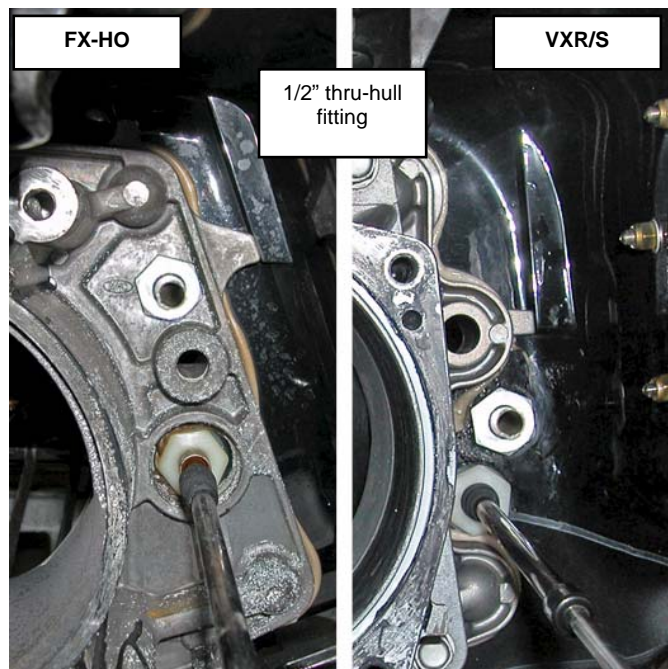


Install billet strainer cover and secure using supplied bolts and washers. **NOTE: Apply blue Loctite to bolts. Do not over tighten bolts.**

Install supplied 1/2" barbed 90-degree fitting into billet strainer cover (pointing upward). **NOTE: Apply pipe thread sealant to fitting. Do not over tighten fitting.**

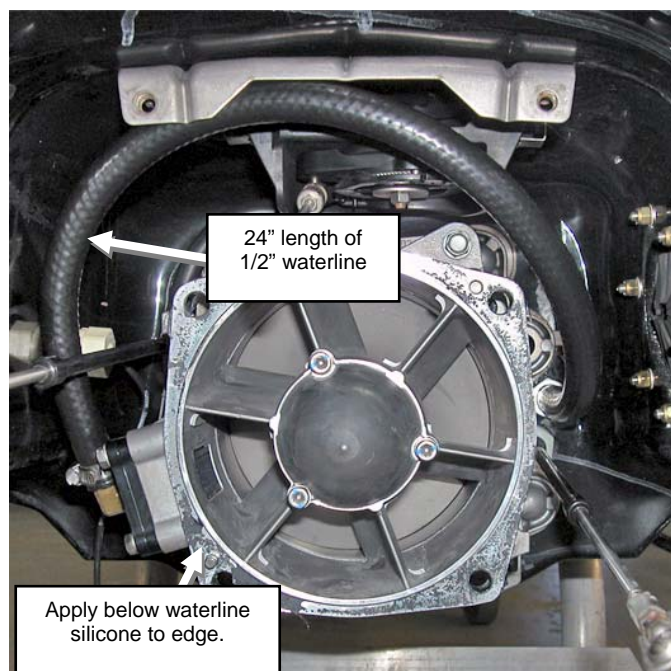


Before replacing pump drill a 5/8" hole to right of jet pump. Install supplied 1/2" thru-hull fitting from pump side. **NOTE: Apply below waterline silicone sealant to fitting (including threads). Install nut from inside and secure.**



Inspect and clean splines at end of drive shaft. Apply waterproof grease to splines. Apply below waterline silicone sealant to gasket mating surface on impeller wear ring and install pump.

Cut a 24" length from supplied 1/2" waterline. Install onto thru-hull fitting and secure using supplied hose clamp. **NOTE: Do not over tighten clamp.**



Route hose up and over pump to billet water strainer. Install onto 90-degree brass fitting and secure using supplied hose clamp. **NOTE: Do not over tighten clamp.**

Apply below waterline silicone sealant to mating surfaces on jet pump. Install nozzle onto pump and secure using stock hardware. **NOTE: Apply blue Loctite to bolts. Torque bolts to 40 N•m (30 ft•lb).**

Reconnect stock visibility spout hose and stock bilge siphon hose to reduction nozzle. Reconnect reverse, steering and Q.S.T.S. cables.

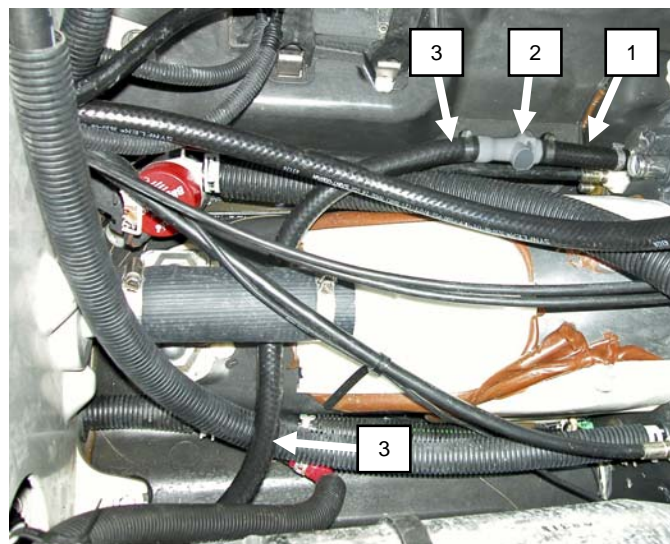
Replace ride plate and secure using stock bolts. **NOTE: Apply blue Loctite to bolts. Torque bolts to 17 N•m (12.5 lbf•ft).**

Replace speedo sensor and secure using stock bolts. **NOTE: Apply blue Loctite to bolts. NOTE: Do not over tighten bolts.**

Inside craft install a 3" long piece of supplied 1/2" cooling line onto Billet Thru-hull Fitting. Secure using supplied 3/4" hose clamp. **NOTE: Do not over tighten clamp.**

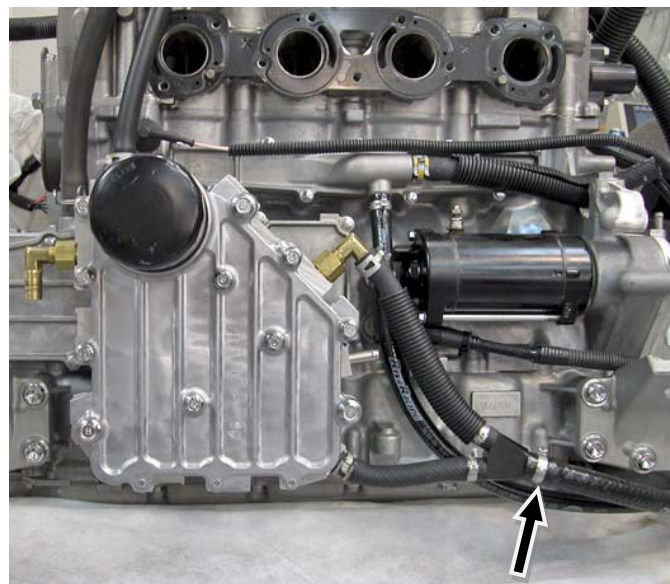
Install supplied flush kit² and secure using supplied 3/4" hose clamp. **NOTE: Male connector into 3" long piece from Billet Thru-hull Fitting.**

Install 45" length of supplied 1/2" waterline³ onto female connector side of supplied flush kit and secure using supplied 3/4" hose clamp. **NOTE: Do not over tighten clamps.**



Route 1/2" waterline³ under driveline tube, thru bulkhead at water box and forward towards oil cooler.

Attach 1/2" cooling line to open end of billet 'Y' fitting. Secure using supplied 3/4" clamp. **NOTE: Do not over tighten clamp.**



At rear of craft on upper deck install supplied 1/2" water bypass fitting. **NOTE: Apply below waterline silicone sealant to fitting (including threads). Install nut from inside and secure.**

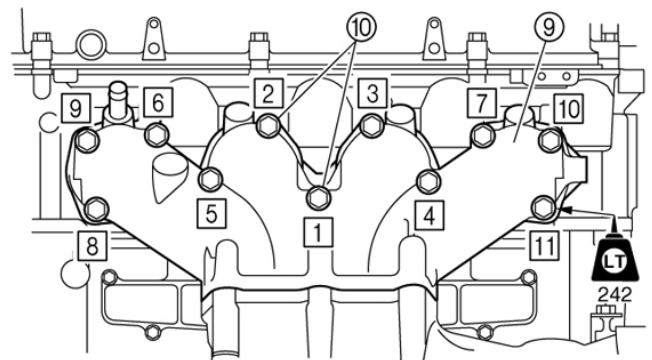


Connect remaining 1/2" cooling line to bypass. Secure using supplied 3/4" hose clamp. **NOTE: Do not over tighten clamp.**

Route 1/2" cooling line forward thru bulkhead at water box and under engine towards oil cooler. Attach open end to 90-degree fitting at front of oil cooler. Secure with supplied 3/4" hose clamp. **NOTE: Do not over tighten clamp.**



Replace exhaust assembly. **NOTE: If exhaust gasket is damaged, warped or corroded do not reuse. Apply blue Loctite to bolts. Torque bolts in sequence:**

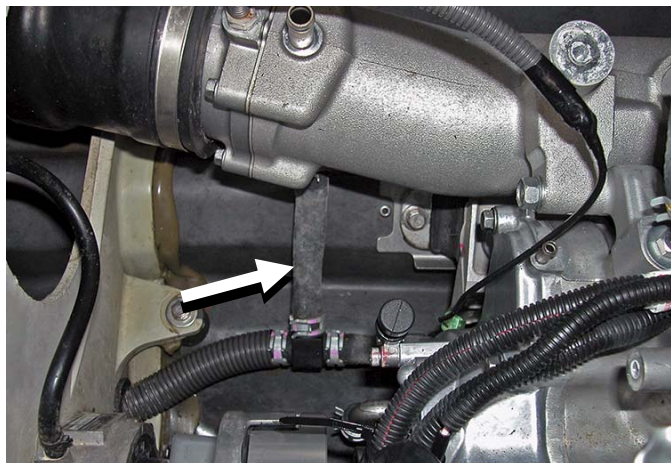


TORQUE SEQUENCE:

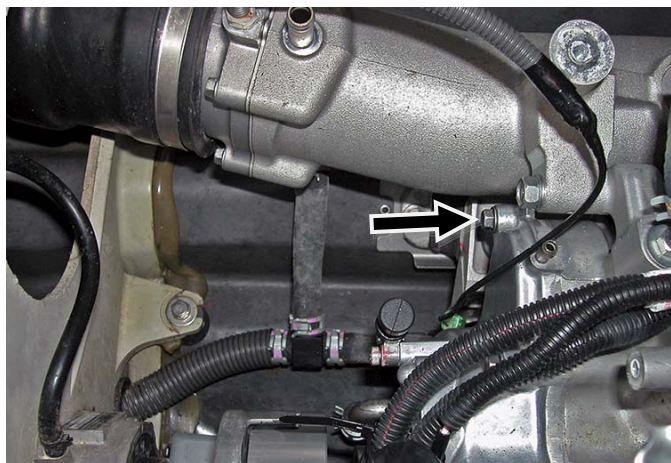
First: 14 lbf•in / 20 N•m

Second: 25 lbf•in / 35 N•m

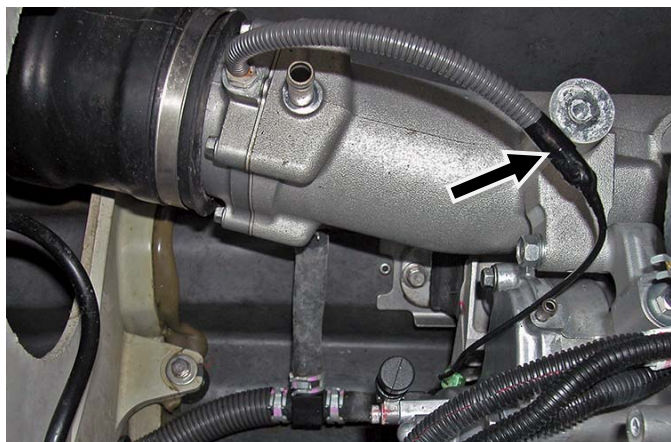
Replace cooling line at underside of exhaust tail section. Secure using stock spring clamp.



Replace bolt securing end of exhaust pipe to motor. **NOTE: Apply blue Loctite to bolt. Torque First to 16 lbf•in / 22 N•m and then 31 lbf•in / 42 N•m.**



Reconnect exhaust pipe overhear sensor connector (green).

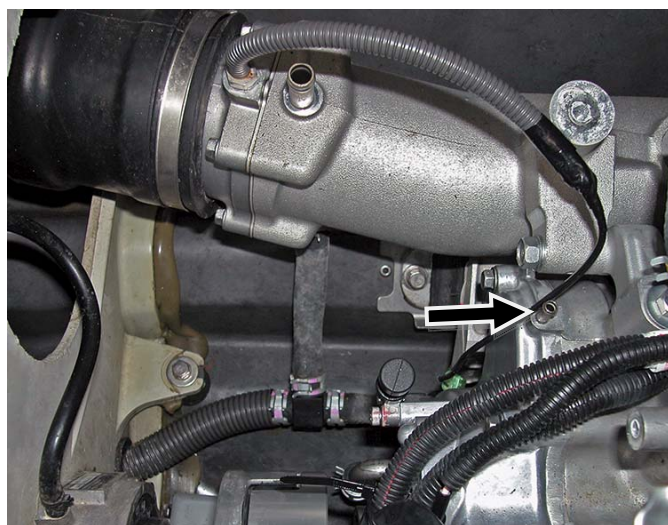


Replace rectifier regulator. **NOTE: Make sure rubber grommets and metal collars are in place. Apply blue Loctite to bolts. Torque to 19 lbf•in / 26 N•m.**

Reconnect rectifier regulator cooling lines. Secure using stock spring clamps.

Replace engine breather box. **NOTE: Make sure rubber grommets and metal collars are in place. Apply blue Loctite to bolts. Torque to 6 lbf•in / 8 N•m.**

Reconnect breather line(s) making sure small drain line at bottom is connected and secure to fitting on engine case.



Reconnect exhaust outlet tube to waterbox outlet coupler. Once aligned tighten coupler clamps (inlet and outlet). **NOTE: Do not over tighten clamps.**

Replace rubber strap securing water box in place.

FX-HO: Replace deck beam and grab handle assembly. **NOTE: Apply blue Loctite to bolts. Do not over tighten bolts.**

Refill engine oil.

Replace plastic engine cover.

Reconnect battery cables. **NOTE: Positive (red) first. Negative (black) second.**

Check bilge for tools, rags, etc. Run craft on a flush kit to check for proper operation.

IMPORTANT MAINTENANCE TIP: After flushing the craft using the stock Yamaha flush kit you must flush the oil cooler using the additional flush kit installed in the second incoming waterline. We strongly recommend the use of a salt /deposit remover such as Salt-Away® which can be purchased through RIVA Racing's parts department. When flushing with a salt/deposit remover do not flush with fresh water afterwards. Allow salt/deposit remover to remain in cooling system. This will prevent build up of salt and/or mineral deposits from water left in cooling system that could clog intercooler core.

***Remember, the water belongs to everyone.
Please ride responsibly and respect the environment!***

Technical Support

For answers to questions regarding installation or trouble shooting RIVA Performance Products contact:
RIVA Technical Support directly at (954) 247-0705 or by e-mail at tech_support@rivamotorsports.com.

Limited Warranty

RIVA Engine Cooling Upgrade Kits carry a 90-day limited warranty to the original purchaser. They are warranted to be free of defects in materials and workmanship under normal use and service. Customer modified components will be void of warranty. This warranty is limited to defects in the primary components only. Finish and/or wear marks in or on primary components are not covered under this warranty.

RIVA Racing's liability is expressly limited to the repair or replacement of the components contained within or associated with this kit. RIVA Racing agrees to repair or at RIVA's option, replace any defective unit without charge, if product is returned to RIVA Racing freight prepaid within the warranty period. Any equipment returned which, in RIVA's opinion, has been subjected to misuse, abuse, overheating or accident shall not be covered by this warranty.

RIVA Racing shall have no liability for special, incidental or consequential damages or injury to persons or property from any cause arising from the sale, installation or use of this product.

No other warranty, express or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose, applies. Various states do not allow for the limitation of incidental or consequential damages and therefore the above exclusion or limitation may not apply to you.

Warranty does not include the expenses related to freight or transportation of parts or compensation for any inconvenience or loss of use while being repaired. A copy of the original invoice and a Return Authorization Number (RA#) must accompany all warranty claims.

Warranted replacement parts will be returned freight collect.

RIVA Engine Cooling Upgrade Kit Water Map **RY10040-ECUK-NA-11 / Yamaha 1.8L NA Engines (2011+)**

