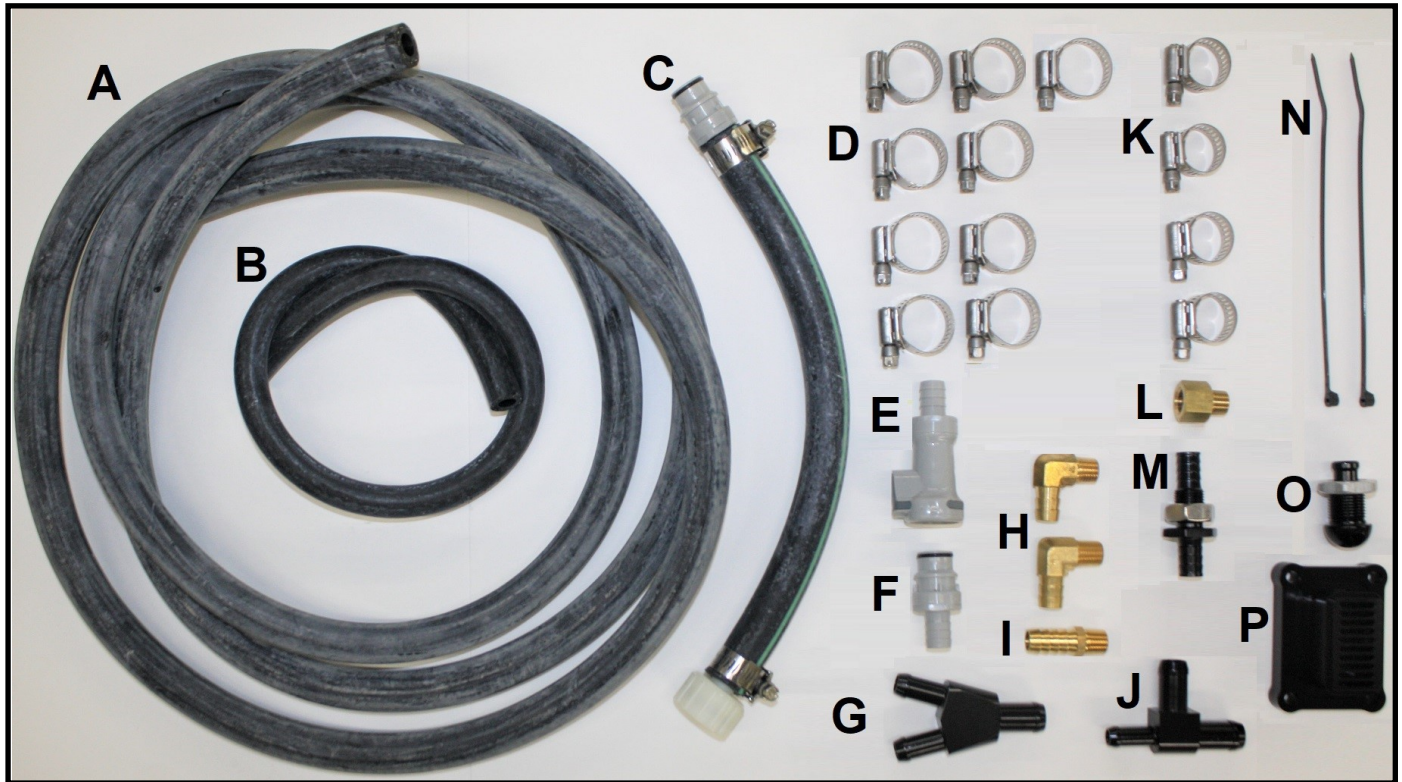




**Yamaha 2020+ 1.8L NA Engine Cooling Upgrade Kit**

RY10040-ECUK-NA-20



**Applications:** Yamaha 1.8L NA 2020+

**Approximate Installation Time:** 3.0 Hrs

**Recommended Specialty Tools:**

1/4" NPT Tap

**Part #**

N/A

**Required Materials:**

N/A

**Part #**

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 hardware removed in the disassembly process will be used in the installation process. These instructions have been written in step-by-step format and refer to illustrations. Read through instructions entirely before performing installation. Please follow these step-by-step instructions and illustrations carefully.

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

**\*\*\* NO SMOKING \*\*\* NO SMOKING \*\*\* NO SMOKING \*\*\***



**2020+ 1.8L N/A Engine Cooling Upgrade Kit**

**RY10040-ECUK-NA-20**

**COMPONENT LIST**

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>RIVA Part #</u></b>	<b><u>Qty. Req.</u></b>	<b><u>Notes</u></b>
A	Green Stripe 1/2" Black, Water Line	28439-1	10 Ft	
B	3/8" Coolant Hose	28409-1	2 Ft	
C	Flush Kit		1	
D	Hose Clamp, (3/4")	63004-0010-052	11	
E	Female Flush Fitting	HFC17812	1	
F	Male Flush Fitting	HFC22812	1	
G	"Y" Fitting, 6061 T6 (Black Ano)	QCA-RY10040-Y	1	
H	1/2" Barbed X 1/4"NPT 90DEG. BF	220LFC	2	1 in Strainer Kit
I	1/2" Barbed X 1/4"NPT Straight Brass Fitting	220FC	1	
J	"T" Fitting, 6061 T6 (Black Ano)	QCA-RY10040-T	1	
K	Hose Clamp, (1/2")	67004-0006-052	4	1 in Strainer Kit
L	Brass Adapter, BSPT	QCA-RY10040-BC	1	
M	Bulkhead Fitting, 1/2" ID Alum	RY1013-TH-1/2	1	
N	Zip Tie, 7", SS Tab, Nylon, LG	TY25MX	2	
O	11MM-1/2 Water Bypass, Black	RY804B	1	
P	Water Strainer, 1/2" Kit	RY1013-WS-82	1	

Your kit was inspected and verified before being carefully packaged by our staff. Please check package contents before beginning assembly. If you have a question about missing or damaged items please contact RIVA Technical Support directly at (954) 247-0705 or by e-mail at [tech\\_support@rivamotorsports.com](mailto:tech_support@rivamotorsports.com)



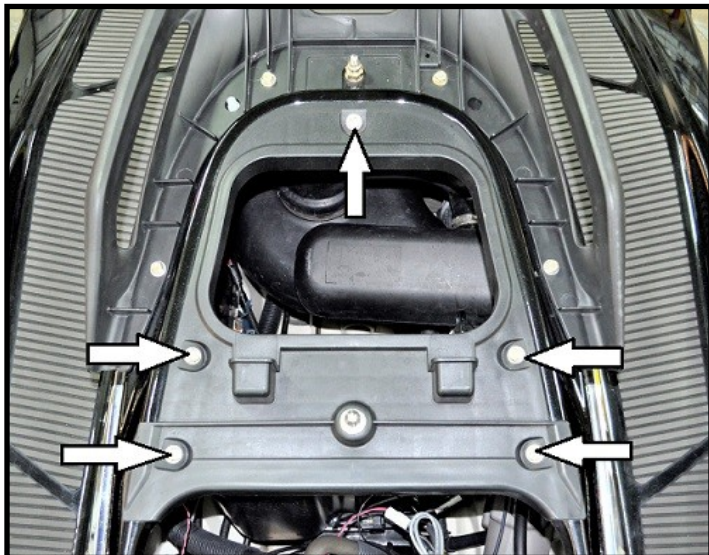
## - INSTALLATION INSTRUCTIONS -

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

Remove bolts (5) at indicated locations securing grab rail and deck beam to hull. (Figure 1 ) **Note: Do not drop deck beam nuts into hull.** Retain hardware for re-installation. Remove grab rail and deck beam.

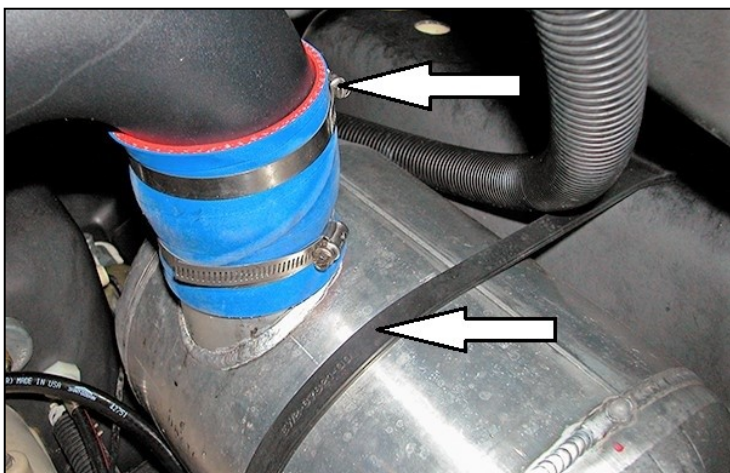
Remove plastic engine cover.

Figure 1



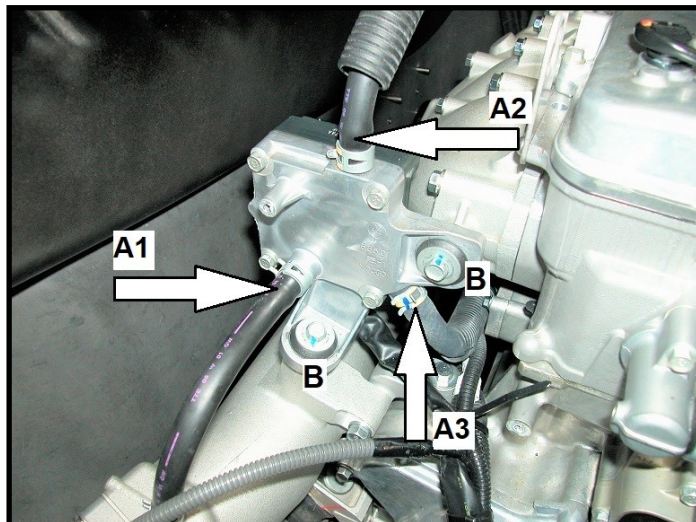
Remove strap securing waterbox in place. Loosen upper coupler clamp and remove exhaust outlet tube. (Figure 2)

Figure 2



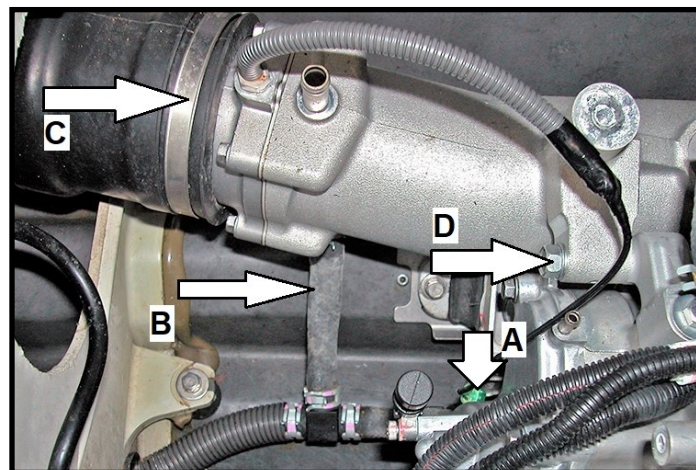
Remove cooling lines (3) (A1-3 in Figure 3) from rectifier/regulator. **Note: Discard hose from regulator to exhaust. (A1) Do not re-use.** Remove bolts (2) (B in Figure 3) securing rectifier/regulator to engine and move rectifier/regulator aside.

Figure 3



Disconnect exhaust pipe overhear sensor connector (A, figure 4) Disconnect cooling line (B, figure 4) from underside of end of exhaust pipe. Loosen clamp (C, figure 4) securing coupler to end of exhaust pipe. Remove bolt (1) (D, figure 4) securing end of exhaust pipe to motor.

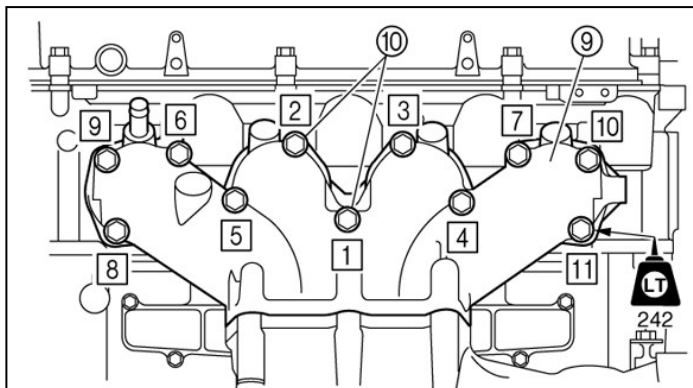
Figure 4



Slide waterbox towards rear of craft as far as it will go.

Remove bolts (11) securing exhaust pipe assembly to motor. (Figure 5)

Figure 5





## - INSTALLATION INSTRUCTIONS -

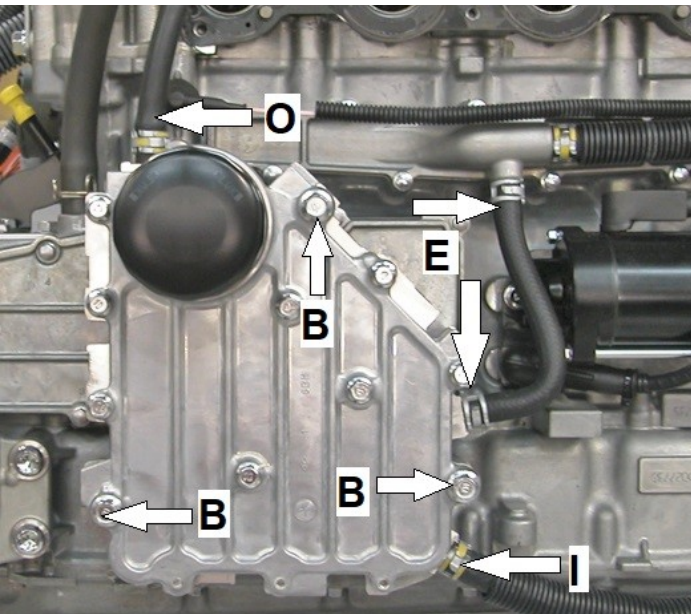
Remove exhaust pipe assembly by rotating away from motor towards hull. While lifting up at front pull forward to remove tail pipe from waterbox inlet. (Figure 6)

Figure 6



On exhaust side of engine locate oil cooler. Place absorbent rags in hull under oil cooler. Disconnect cooling inlet hose (I, figure 7) and outlet hose (O, figure 7). Remove engine cooling line (E, figure 7) from engine and oil cooler and discard. Remove (3) bolts (B, figure 7). Retain clamps for re-use.

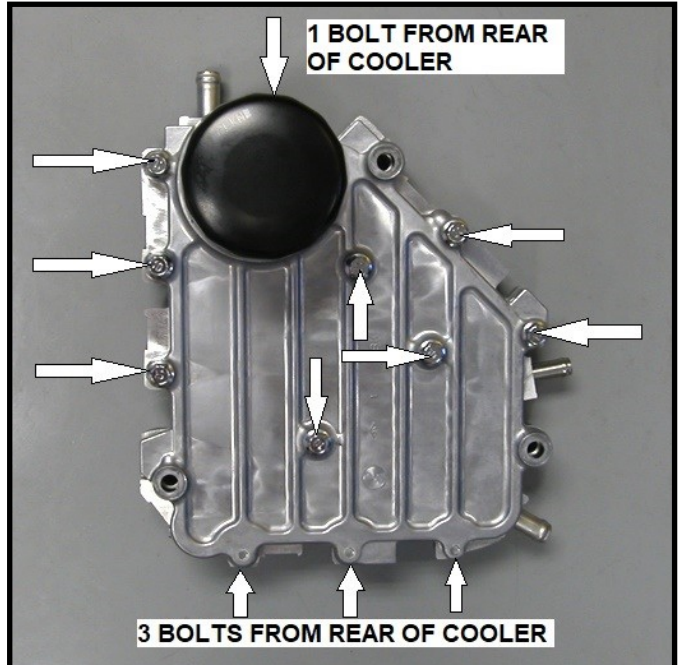
Figure 7



Pull oil cooler away from engine taking care not to damage or lose fittings and o-rings. Drain excess oil from cooler.

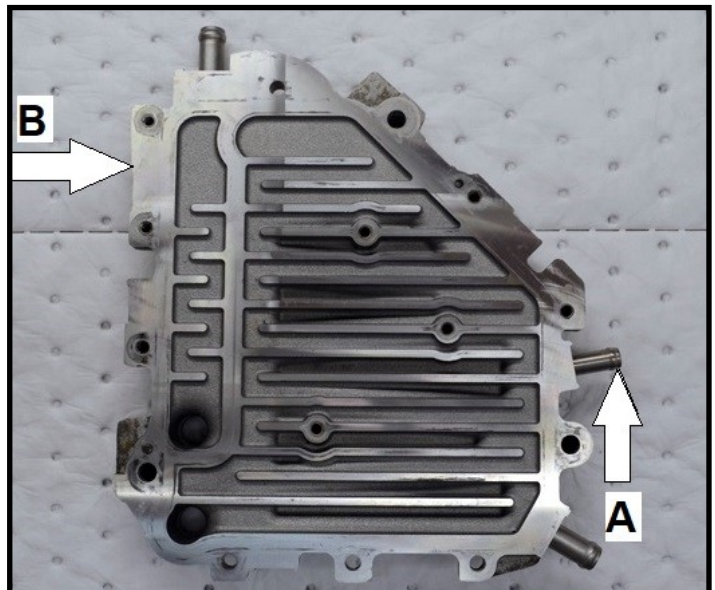
Remove oil cooler cover plate (12 bolts – 8 front/4 back). (Figure 8)

Figure 8



Remove cover. Locate fittings. (A and B, Figure 9)

Figure 9



Apply heat to each fitting in turn and remove. Use vice grip pliers to remove fitting A. Use a 6mm allen wrench to remove fitting B. **Caution: Parts will be hot. Use care when working.**

At location A drill into body of oil cooler using a 7/16" drill bit. Countersink hole. Tap using 1/4" NPT tap. (Figure 10)

Figure 10





## **- INSTALLATION INSTRUCTIONS -**

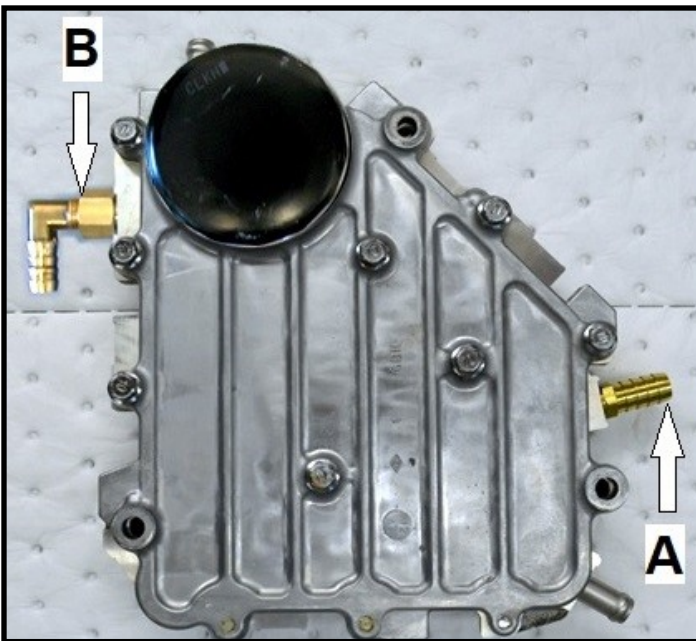
Flush cooling jacket thoroughly to remove metal shavings.

Replace oil cooler cover. Make sure o-ring is in o-ring groove in oil cooler cover and dowel pins (2) are in place.  
**NOTE: Apply blue Loctite to bolts. Torque bolts to 6 ft-lb / 8 N-m.**

Apply pipe thread sealant to threads on supplied 1/4" NPT x 1/2" barbed straight fitting and install into fitting location A. **NOTE: Do not over tighten.**

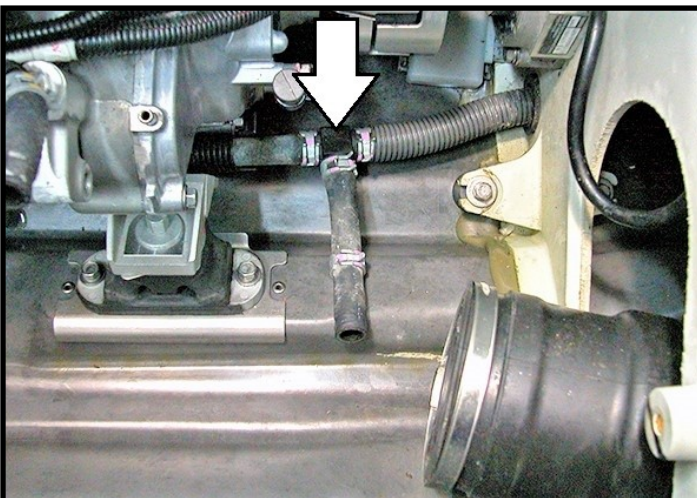
Apply pipe thread sealant to male threads on supplied brass coupler and install into fitting location B. Apply pipe thread sealant to threads on supplied 1/2" barbed X 1/4" NPT 90-degree fitting and install into brass coupler  
**NOTE: Do not over tighten. Fitting must face direction illustrated.** (Figure 11)

Figure 11



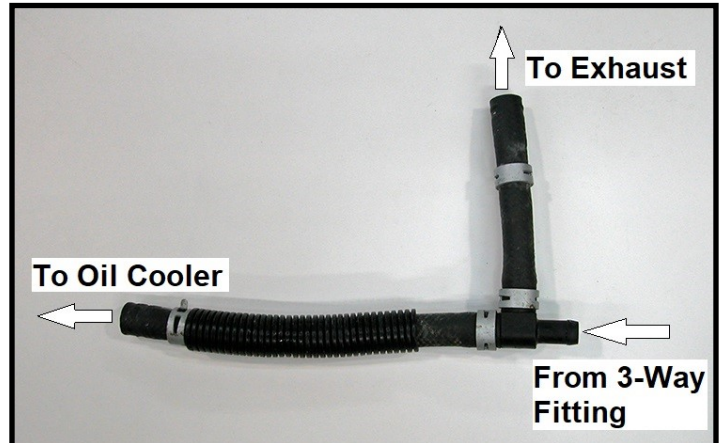
At rear of engine compartment on exhaust side locate plastic T fitting in cooling hose from 3 way joint to oil cooler. (Figure 12) (See also figure 4, page 3)

Figure 12



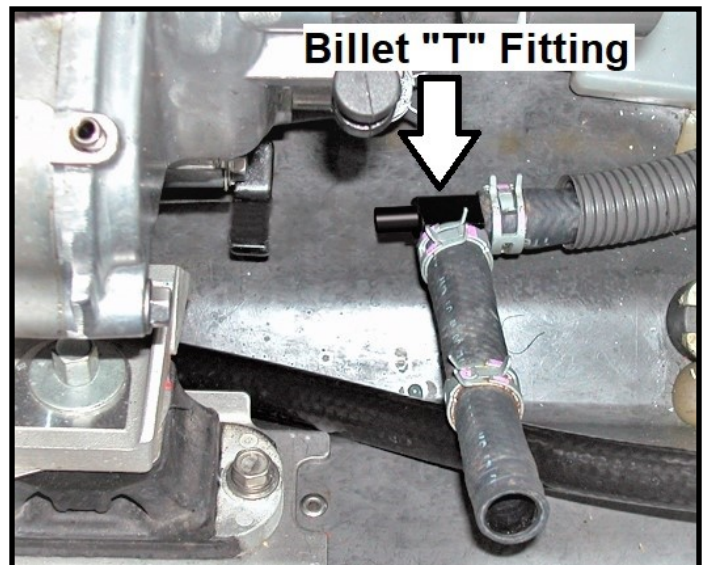
Disconnect "T" fitting and hose from line to 3 way water joint. Remove "T" fitting with 2 hoses attached from hull. Retain clamps for re-use.(Figure 13)

Figure13



Remove short line (to exhaust) from OEM plastic "T" fitting. Install onto upright leg of supplied billet "T" fitting. Re-install billet "T" fitting with short hose installed into line from 3 way water joint. Secure with OEM spring clamps previously removed. (Figure 14)

Figure 14



Remove 'oil cooler cooling line' from plastic 'T' previously removed. Cut line into two pieces measuring 6 inches each. 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 4 inches and slide onto one oil cooler line. (Figure 15)



## **- INSTALLATION INSTRUCTIONS -**

Figure 15



Attach cooling lines (with 'Y' fitting) to oil cooler with protective sheathing on upper hose. Secure using OEM spring clamps previously removed. (Figure 16)

Figure 16

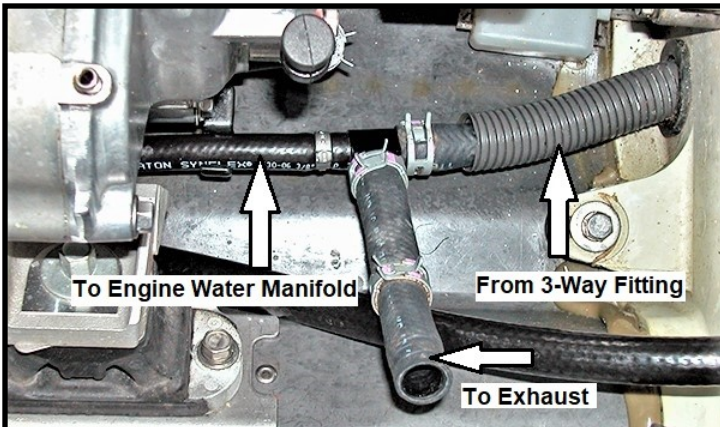


Replace oil cooler. **NOTE: Make sure oil cooler connector fittings are in place with o-rings. Apply blue Loctite to bolts. Torque to 15 ft•lb / 20 N•m.**

Reconnect oil cooler bypass cooling line (O in figure 7, page 4). Secure using OEM spring clamp previously removed.

Install supplied 3/8" cooling line onto billet 'T' fitting. Secure with supplied 1/2" hose clamp. **NOTE: Do not over tighten clamp.** (Figure 17)

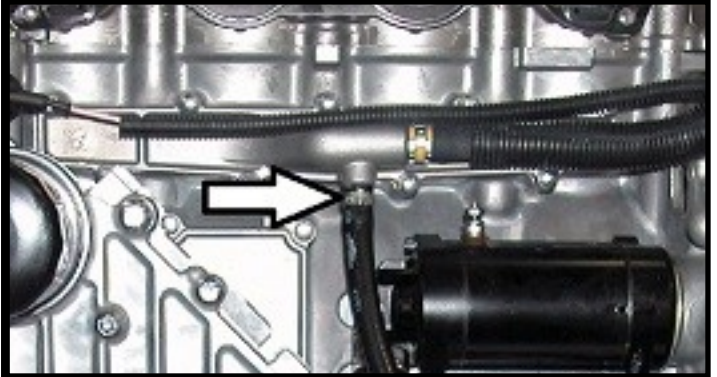
Figure 17



Connect free end of 3/8" hose to engine water manifold on left side of block. (Figure 18 )

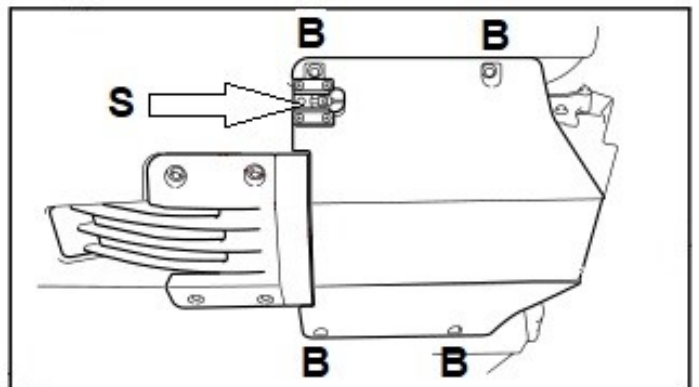
**IMPORTANT:** Do not install clamp just yet. Inspect waterline & make sure there are no tight bends or kinks that could cause loss of water flow. If necessary, cut hose to desired length. Once inspected/adjusted, secure waterline to water manifold using supplied 1/2" hose clamp. **NOTE: Do not over tighten clamp**

Figure 18



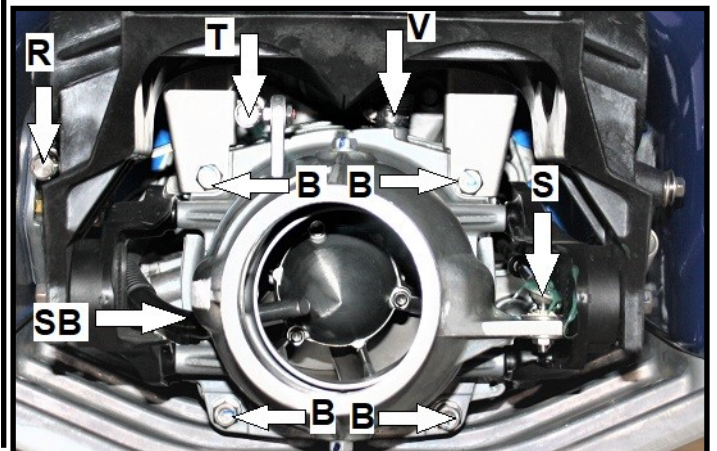
On models with speedometer sensor, remove bolts (4) securing speedo sensor to ride plate (S in figure 19). Remove bolts (4) securing ride plate to hull (B in figure 19). Remove ride plate.

Figure 19



Disconnect steering (S, Figure 20), reverse (R, Figure 20) and Q.S.T.S. trim rod (T, Figure 20)

Figure 20

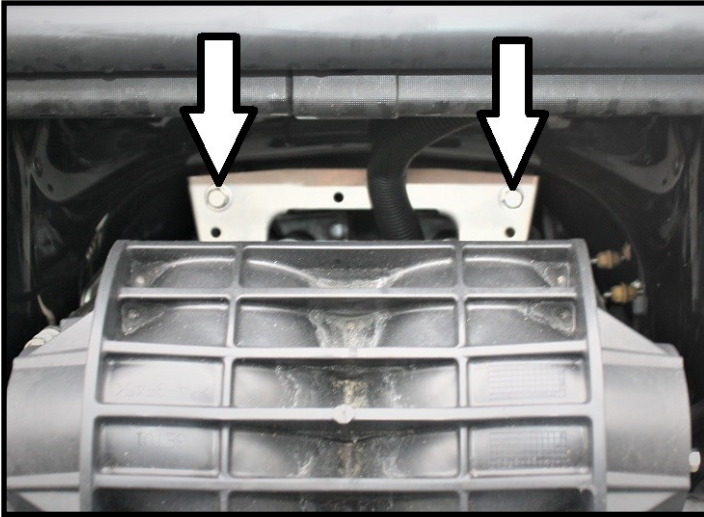




## - INSTALLATION INSTRUCTIONS -

Lower reverse gate and remove bolts (2) in pump bracket. (Figure 21)

Figure 21



Disconnect visibility spout hose (V, Figure 20, Page 6) from top of reduction nozzle and bilge siphon hose (SB, Figure 20, Page 6) from left side of reduction nozzle.

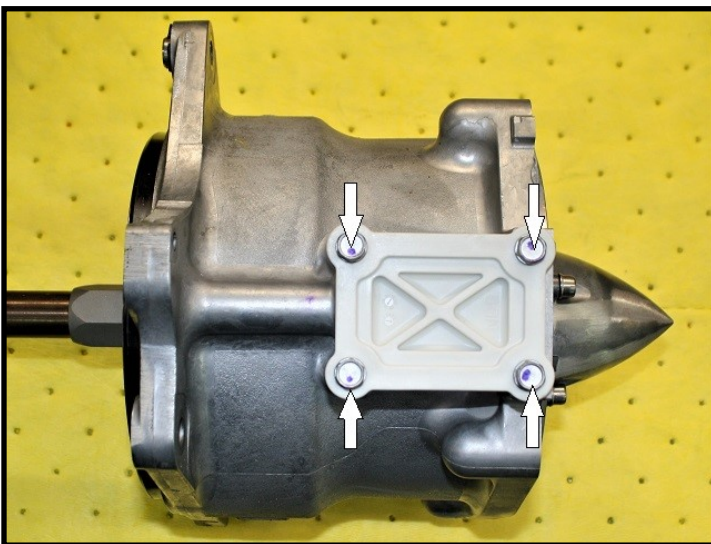
Remove the M10 bolts (4) securing reduction nozzle and reverse bucket assembly to jet pump. (Figure 20, Page 6)

Remove reduction nozzle assembly.

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

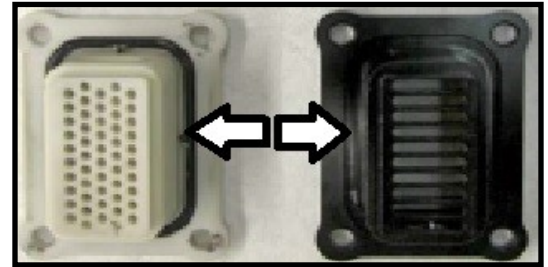
On left side of pump remove the bolts (4) securing water strainer assembly to pump. Remove strainer. Retain bolts for re-use (Figure 22)

Figure 22



Transfer o-ring from stock strainer to supplied billet strainer. Apply a thin layer of waterproof grease to o-ring. (Figure 23)

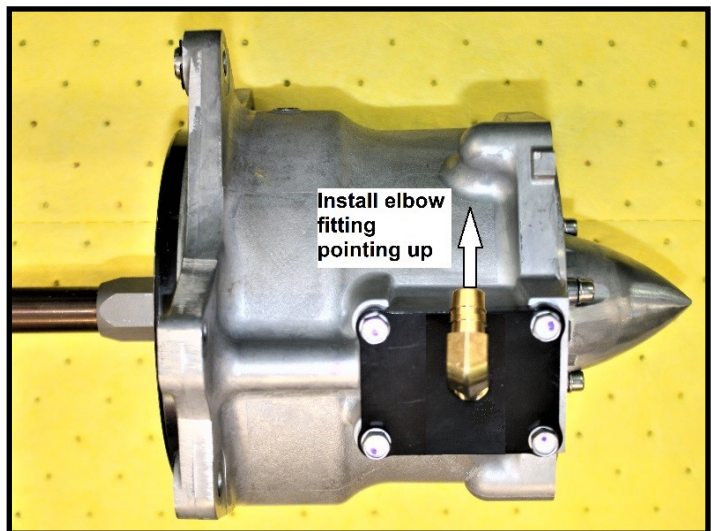
Figure 23



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

Install supplied 1/2" barbed 90-degree fitting into billet strainer cover. **NOTE: Fitting should point up. Apply pipe thread sealant to fitting. Do not over tighten fitting.** (Figure 24)

Figure 24



On right side of pump area, locate the top rear nut of the exhaust outlet. Measure 1-1/2" inches back from nut. Mark location & drill a 5/8" hole. (Figure 25)

Figure 25





## **- INSTALLATION INSTRUCTIONS -**

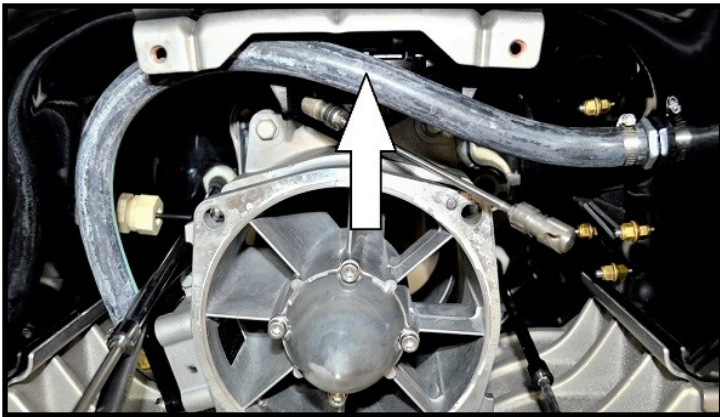
Install supplied 1/2" thru-hull fitting from pump side. **NOTE: Apply below waterline silicone sealant to fitting (including threads).** Install nut from inside and secure.

Apply below waterline silicone sealant to gasket mating surface on jet pump.

Cut 19 inch length of supplied 1/2" waterline. Connect waterline to 90 degree fitting on pump strainer & run waterline up & over pump. Connect other end to thru-hull fitting. **Do not tighten clamp yet.**

**Important:** Inspect waterline. Make sure there are no tight bends or kinks that could cause loss of water flow. If necessary, cut hose to desired length. Make sure waterline does not interfere with Q.S.T.S. trim rod. Once inspected/adjusted, secure waterline in place with supplied 3/4" hose clamps. **NOTE: Do not over tighten clamps.** (Figure 26)

Figure 26



Install nozzle and bracket onto pump and secure using stock hardware. **NOTE: Apply blue Loc-tite to bolts. Torque pump bolts to 40 N•m (30 ft•lb).**

Reconnect stock visibility spout hose and stock bilge siphon hose to reduction nozzle.

Reinstall upper pump bracket bolts **NOTE: Apply blue Loc-tite to bolts. Torque bolts to 17 N•m (13 ft•lb).**

Reconnect reverse, steering cable and Q.S.T.S. trim rod.

Replace ride plate and secure using stock bolts. **NOTE: Apply blue Loctite to bolts. Torque bolts to 12.5 lb-ft (17Nm).**

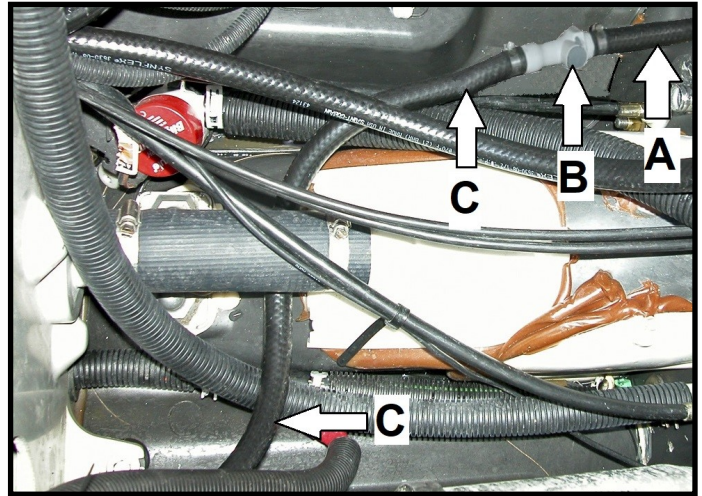
Reinstall speedo sensor and secure using stock screws. **NOTE: Apply blue Loctite to bolts. NOTE: Do not over tighten bolts.**

Inside craft install a 12" long piece of supplied 1/2" cooling line (A, Figure 27) onto billet thru-hull fitting. Secure using supplied 3/4" hose clamp. **NOTE: Do not over tighten clamp.**

Install supplied flush kit (B, Figure 27) and secure using supplied 3/4" hose clamp. **NOTE: Male connector into 12" long piece from billet thru-hull fitting.**

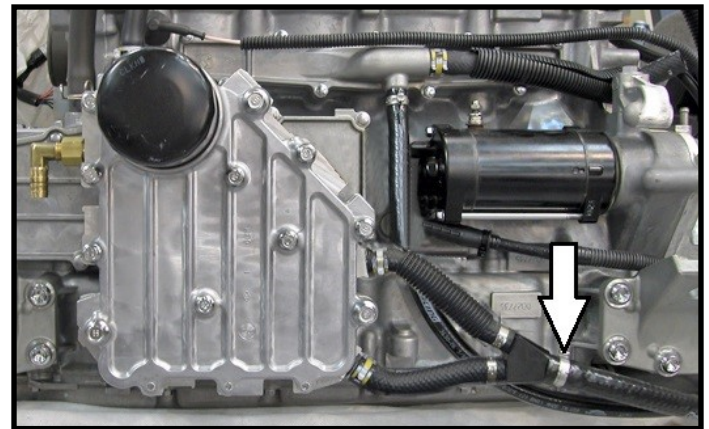
Install 45" length of supplied 1/2" waterline (C, Figure 27) onto female connector side of supplied flush kit and secure using supplied 3/4" hose clamp. **NOTE: Do not over tighten clamps.**

Figure 27



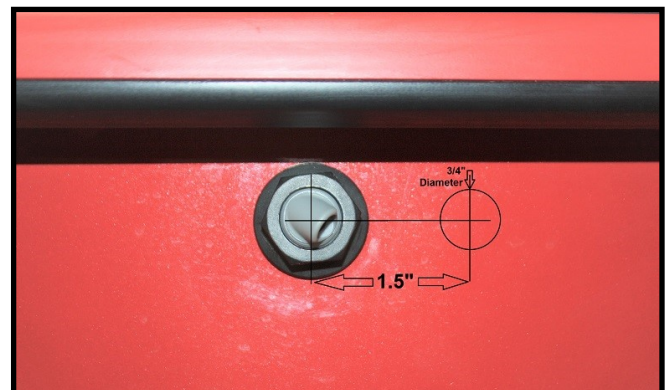
Attach 1/2" cooling line to open end of billet 'Y' fitting previously installed onto oil cooler. Secure using supplied 3/4" clamp. **NOTE: Do not over tighten clamp.** (Figure 28)

Figure 28



Measure 1.5" behind center of OEM bypass and drill 3/4" hole through hull. **Note: Work carefully to avoid chipping hull surface. It may be necessary to remove left front bumper on some models.** (Figure 29)

Figure 29





## **- INSTALLATION INSTRUCTIONS -**

Install supplied 1/2" billet bypass. **Note: Seal underside of head with below waterline silicone sealer. Apply blue Loctite to threads.**

Secure remainder of supplied 1/2" waterline to bypass with supplied 3/4" hose clamp. **NOTE: Do not overtighten clamp.** Route alongside OEM oil cooler outlet hose (O, Figure 7, page 4) and secure hose to OEM outlet hose with supplied zip tie.

Loop waterline down and up to 90-degree outlet fitting previously installed in oil cooler. Cut to length and secure with supplied 3/4" hose clamp. **NOTE: Do not overtighten clamp.** (Figure 30)

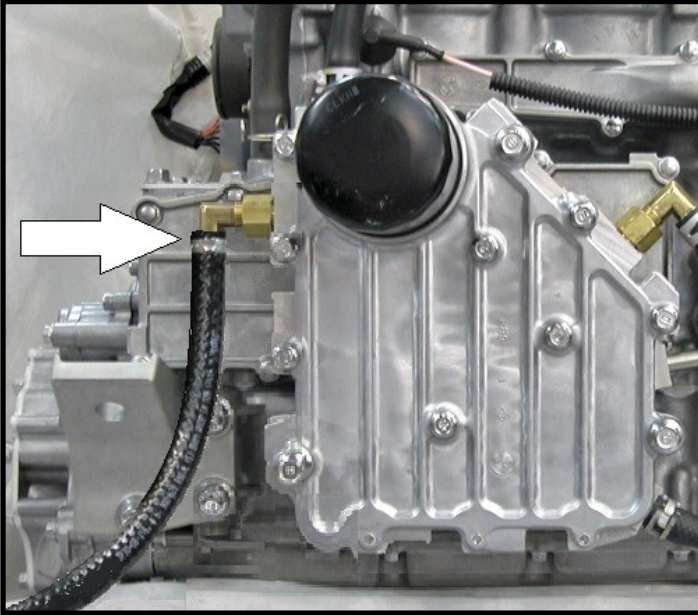


Figure 30

Reinstall exhaust assembly. **NOTE: Make sure the "6ET" marking on the exhaust gasket is facing out. If exhaust gasket is damaged, warped or corroded do not reuse.** Replace with Yamaha part number 6ET-14613-00-00 if needed.

**Apply Blue Loctite to bolt threads. Torque in two stages following sequence shown in Figure 5 (page 3).**

**First: 14 lbf•in / 20 N•m**

**Second: 25 lbf•in / 35 N•m**

Tighten hose clamp on exhaust outlet hose at tail pipe. (C in figure 4, page 3)

Reinstall exhaust tail pipe mounting bolt. **Apply blue Loctite to bolt. Torque to 31 lbf•in / 42 N•m.** (D in figure 4, page 3)

Connect waterline from black billet T fitting to underside of exhaust tail section. Secure using stock spring clamp. (B in figure 4, page 3)

Reconnect exhaust thermosensor on exhaust tail pipe. (Green connector, A in figure 4, page 3)

Reinstall rectifier/regulator (Figure 3, Page 3) **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 OEM spring clamps.

**Important: Cut a 17" length of 1/2" waterline and replace OEM hose from rectifier/regulator to exhaust tail pipe. Install with (2) supplied 3/4" hose clamps. (A1 in figure 3, page 3.)**

Reinstall exhaust outlet tube and waterbox hold down strap.

Reinstall rear grab handle & deck beam.

Reinstall engine cover.

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

Thoroughly inspect engine compartment and bilge for tools, rags, parts, etc. Run craft on stand using 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](mailto: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.

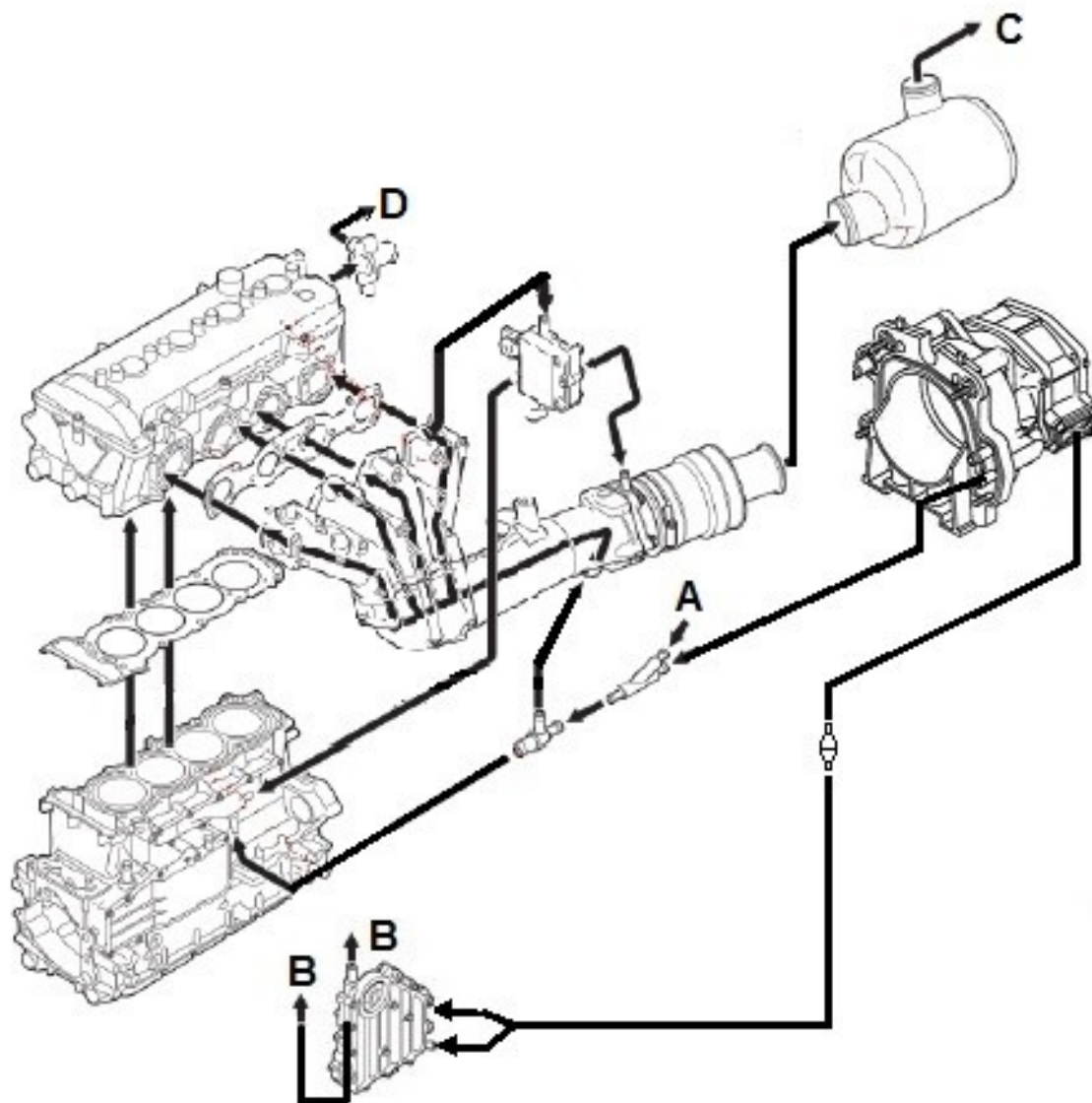
No other warranty, express or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose, applies. Various states do not allow for the limitation of incidental or consequential damages and therefore the above exclusion or limitation may not apply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



## Waterflow Diagram



- A. Flush Hose
- B. To Through Hull Bypass Fitting
- C. Exhaust
- D. To Drain Joint