



## Yamaha 'GEN-3' Power Cooler Kit with TiAL BOV

RY17120-PC-TV



**Applications:** Yamaha FX SVHO (2019+) & GP1800R SVHO (2019~20)

**Approximate Installation Time:**

3.0 Hours

**Recommended Specialty Tools:**

Oetiker Plier  
21/64" drill bit  
1/8" NPT tap

**Part #**

C-48550347  
N/A  
N/A

**Required Materials:**

RIVA Engine Cooling Upgrade Kit  
  
RIVA Power Filter Kit

**Part #**

RY10080-ECUK-PC-2 (SVHO)  
RY10041-ECUK-PC (SHO)  
RY13120-3 (2019+ FX SVHO)  
RY13110-3 (2019~20 GP1800)

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 \*\*\***



## **Yamaha 'GEN-3' Power Cooler Kit with TiAL BOV**

*RY17120-PC-TV*

### **COMPONENT LIST**

<u>Item</u>	<u>Description</u>	<u>RIVA Part #</u>	<u>Qty. Req.</u>	<u>Notes</u>
A	Intercooler to Throttle Body Hose	GT-RY17081-A	1	
B	Supercharger to Intercooler Hose	GT-RY17160-B	1	
C	Hose Clamp SS	53404-0090-052	1	For Throttle Body Connection
D	Hose Clamp SS	53404-0075-052	3	
E	TY26MX	TY26MX	1	
F	Hose Support Bracket	FSM-RY17081-B	1	
G	Intercooler	WUX-RY17081	1	
	Anode, 1/4" Pencil	PK-RY17040-PA	1	Assembled in Intercooler
	Quick Disconnect, Female End	RY8500B	1	Assembled on Intercooler
	1/2" x 90-Degree Barbed Fitting		2	Assembled in Intercooler
H	Quick Disconnect, Male End	RY8500A	1	
I	Intercooler Bracket	FSM-RY17081-B1	1	
J	TiAL 50mm Blow-off Valve	002573	1	In TiAL Valve Kit
K	O-Ring		1	In TiAL Valve Kit
L	V-band Clamp		1	In TiAL Valve Kit
M	7/32" Vacuum Line	27043-1	3	In TiAL Valve Kit
N	Banjo Bolt		1	In TiAL Valve Kit
O	Sealing Washer		2	In TiAL Valve Kit
P	1/4" Barbed X 1/8" NPT STR FTG	220C	1	In TiAL Valve Kit
Q	1/4" Banjo Fitting		1	In TiAL Valve Kit
R	Nut, SS Nyloc, 8 mm	561040SS	4	
S	Washer SS, 8 mm	410.8.24	4	
T	Vinyl Cap, 3/4" x 1/2"	9753K45	2	

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@rivaracing.com](mailto:tech_support@rivaracing.com).

## **- INSTALLATION INSTRUCTIONS -**

Installation of this intercooler requires that the craft be equipped with the appropriate RIVA Power Filter Kit and Engine Cooling Upgrade Kit. Reference is made to those kits during the installation process.

Remove lanyard and disconnect battery cables. **NOTE: Negative (black) first. Positive (red) second.** Remove seats and rear storage bin. Remove two screws holding plastic engine cover and pull cover up off rubber mounts. (Figure 1)

Figure 1



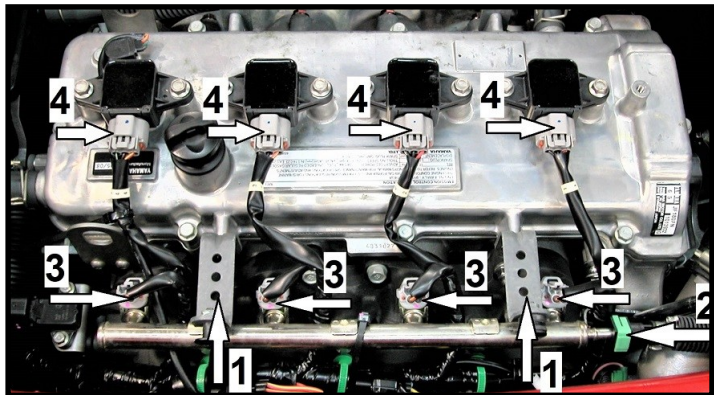
If craft is equipped with OEM air intake follow instructions in appropriate RIVA Power Filter Kit to remove OEM air intake parts. **Remove Air Cleaner Bracket from hull. Retain hardware.**

If RIVA Power Filter Kit is already installed on craft, disconnect silicone coupler from plastic velocity stack on supercharger. Remove bolt in lord mount and remove RIVA intake tube and filter from engine compartment.

**If using a RIVA Vacuum Port Adapter Kit, follow those installation instructions now. Otherwise, follow the next steps for the Blow-off Valve Vacuum Line connection.**

Remove bolts (2) holding brackets (2) on left side of valve cover for plastic engine cover. Remove brackets. (#1 in figure 2)

Figure 2



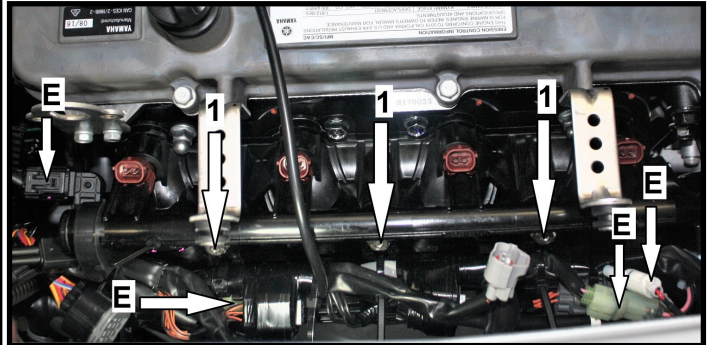
While holding a heavy shop rag under fitting disconnect fuel supply hose from front of engine fuel supply rail. (#2 in Figure 2)) **NOTE: Fuel system is under pressure. Use care when disconnecting.**

Disconnect electrical connectors from injectors (4) (#3 in figure 2)

Disconnect electrical connectors from ignition coils (4) (#4 in figure 2)

Remove bolts (3) securing fuel rail to intake manifold. (#1 in Figure 3)

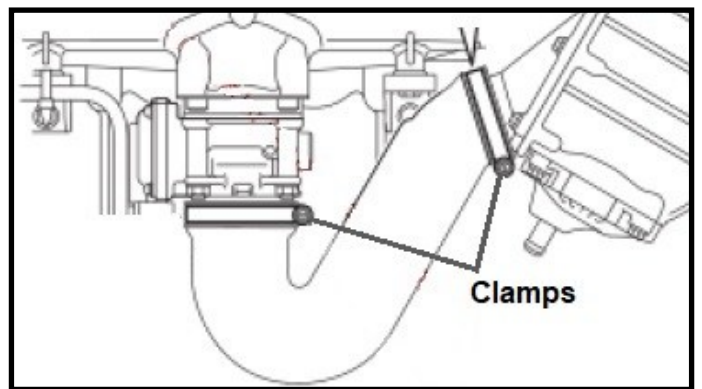
Figure 3



Lift up on fuel rail to remove fuel injectors from intake manifold. Raise front of fuel rail up and move towards back of engine. You will need to disconnect several electrical connectors during this step. (E in Figure 3) Store fuel rail assembly vertically in engine compartment to right of electrical box.

Reach down alongside intake manifold to locate hose clamp connecting throttle body to 'J' pipe. (Figure 4) Loosen clamps securing 'J' pipe to throttle body and intercooler.

Figure 4

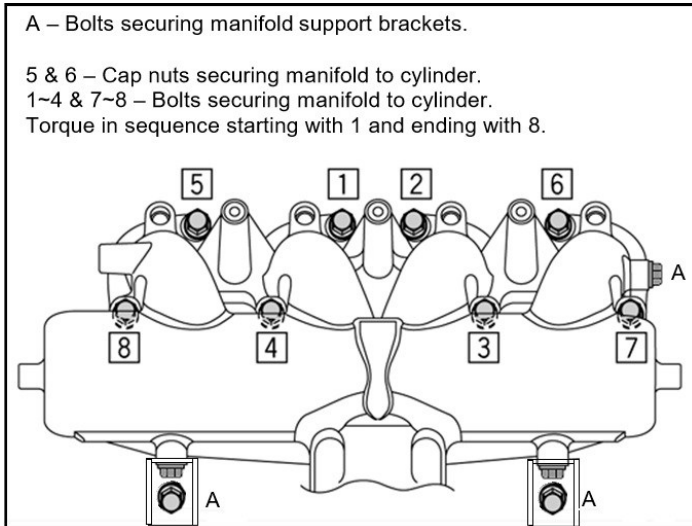




## - INSTALLATION INSTRUCTIONS -

At top of intake manifold remove bolts (6) and cap nuts (2) securing intake manifold to engine. Remove bolts (2) securing brackets at bottom of manifold to engine. (Figure 5)

Figure 5



Remove intake manifold by lifting up and away from motor. Remove & discard 'J' pipe & hose clamps.

If your craft is equipped with an aluminum intake manifold, remove zip tie clip from boss at front of intake manifold. Carefully drill a hole into center of boss and into intake manifold using a 21/64" drill bit. **Note: It is important to use the proper size drill bit.** (Figure 6)

Figure 6

If your craft has a plastic intake manifold, Locate center of finless area on front of intake manifold. Carefully drill a hole into center of boss and into intake manifold using a 21/64" drill bit. **Note: It is important to use the proper size drill bit.** (Figure 7)

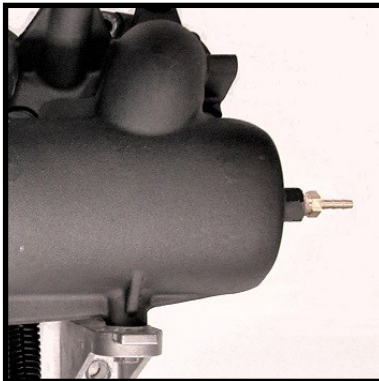


Figure 7

Whether your manifold is aluminum or plastic tap newly made hole using a 1/8" NPT Tap. **Note: Thoroughly clean intake manifold inside and out.**

Install supplied brass vacuum fitting. **Note: Apply pipe thread sealant to threads. Do not over tighten fitting.**



**If installing RIVA Intake Manifold Upgrade Kit do so at this time.**

At front of engine remove hose between supercharger and OEM intercooler. (Figure 8)

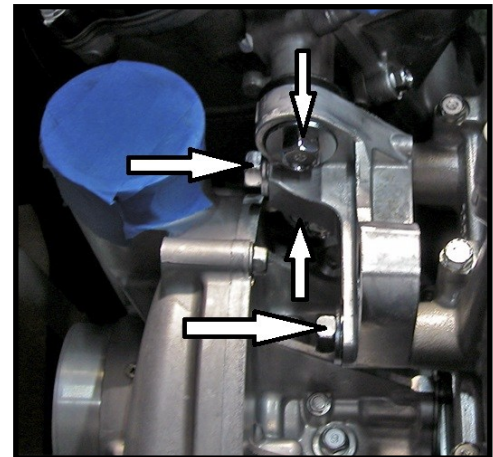
Figure 8



Cover supercharger air outlet with masking tape to prevent debris from entering.

Remove intercooler support bracket. Note: Remove bolts (2) securing intercooler to bracket first and bolts (2) securing bracket to engine second. (Figure 9)

Figure 9



Remove bolts (6) securing supercharger to crankcase. (Figure 10)

Figure 10



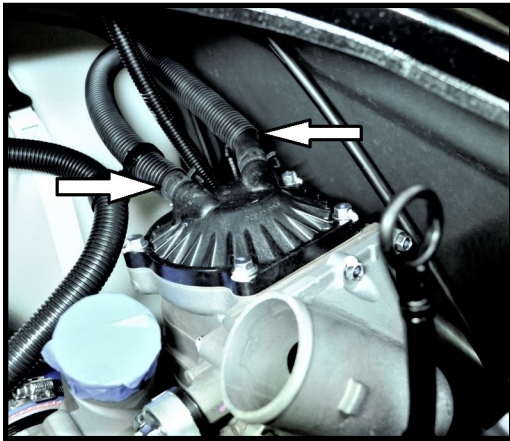


## - INSTALLATION INSTRUCTIONS -

Cover opening on crankcase where supercharger was removed to prevent debris from entering.

At top of OEM intercooler disconnect cooling outlet hoses(2). (Figure 11)

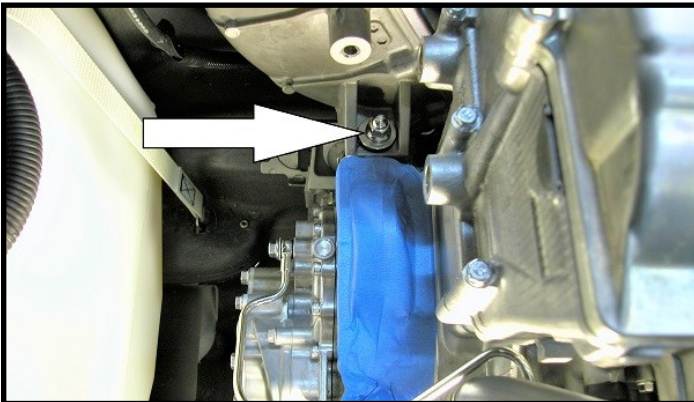
Figure 11



Remove supercharger. Remove o-ring gasket from bottom of supercharger to prevent loss or damage.

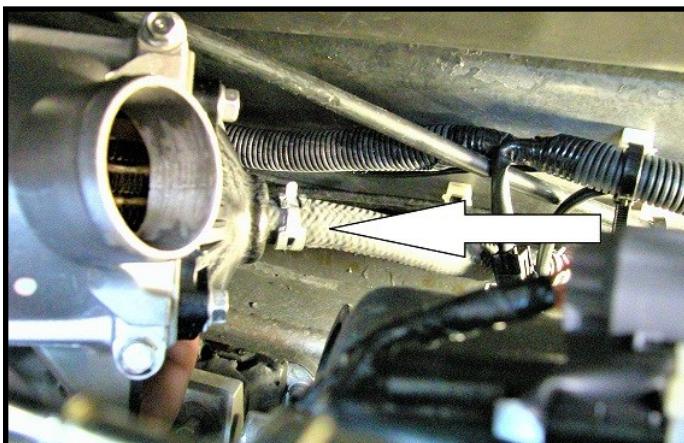
At bottom of OEM intercooler remove cap nut securing intercooler to engine mount stud. (Figure 12)

Figure 12



Lift intercooler up and lean forward. Remove cooling inlet hose from bottom of intercooler. (Figure 13)

Figure 13



Remove intercooler. Remove shim on intercooler stud. Locate intercooler cooling outlet fittings. (Outside hull below bond line directly below steering at right). (Figures 14 and 15) Remove both nuts securing outlet fittings to hull. Remove intercooler cooling outlet hoses with fittings from inside of hull.

Figure 14



Figure 15



Remove cooling lines from fittings. Install supplied light duty (shiny black) vacuum caps on outlet fittings. Secure caps on fittings using stock spring clamps. (Figure 16) Reinstall fittings in hull. **NOTE: Do not over tighten nuts.**

Figure 16



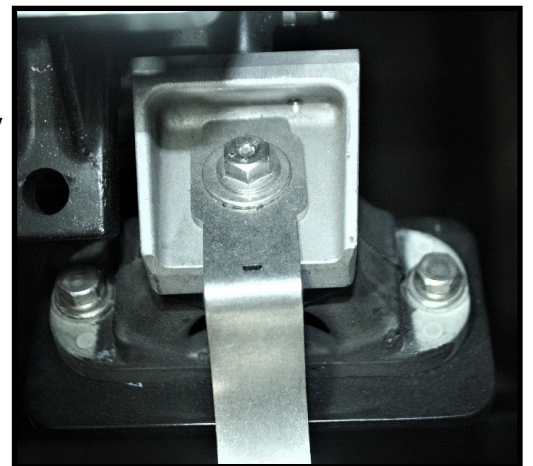
**Install appropriate RIVA Engine Cooling Upgrade Kit at this time.**

Remove bolt from right front engine mount. Install supplied Hose Support Bracket onto engine mount stud. Reinstall OEM bolt through bracket into mount. Torque to 12.5 lb.-ft. (17 NM) **Note: Apply red Loctite to bolt threads.** (Figure 17)

Figure 17

Reinstall intake manifold assembly using OEM hardware. Tighten to specification in Yamaha Service Manual for appropriate model following sequence shown in Figure 5. **Note:**

**Apply Blue Loctite to bolt threads.**





## **- INSTALLATION INSTRUCTIONS -**

Install supplied intercooler bracket onto air cleaner case mounting studs. Mount holes are slotted to allow bracket to be moved front to rear to accommodate difference in hulls. For most craft, pushing the bracket as far forward as possible will work best. Secure bracket using supplied 8mm nyloc nuts (4) and washers (4). (Figure 18)



Remove grommets and spacers from OEM filter case and install into mounting holes of supplied intercooler. Use OEM filter case bolts to install supplied intercooler onto intercooler bracket. **Note: Apply blue Loctite to bolt threads.** (Figure 19)

Figure 19

Complete installation of engine cooling kit by connecting 1/2" cooling line from intercooler water inlet to through hull fitting of kit and Intercooler water outlet to oil cooler water inlet. (Refer to water routing diagram on last page.)

Slip clamps onto intercooler to throttle body hose and install hose. **Note: Lubricate inside of hose and outside of fitting with glass cleaner to ease installation. Do not overtighten clamps.** Secure hose to support bracket with supplied TY26MX Zip Tie. (Figure 20)

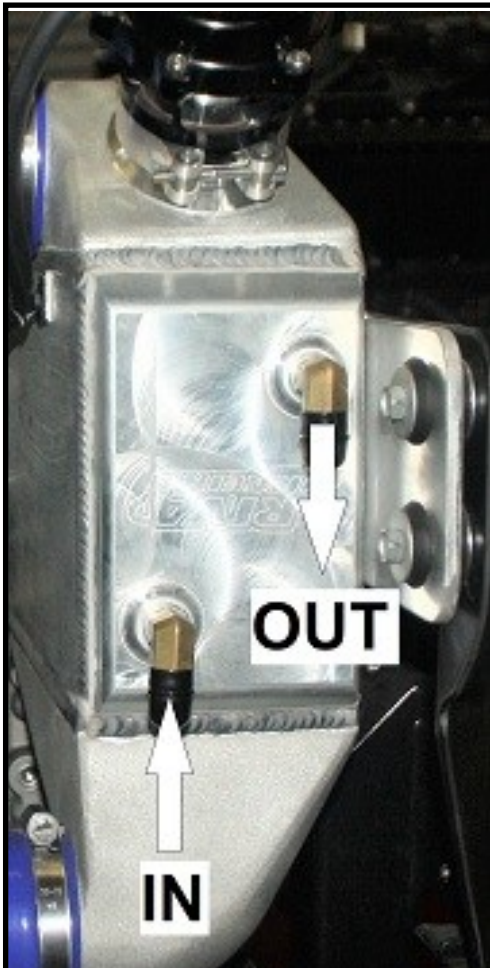


Figure 20



Inspect underside of supercharger shaft housing. Reinstall o-ring in groove. Make certain all is clean and there are no foreign objects present. Apply a thin layer of grease onto o-ring.

Install supercharger unit onto engine. **NOTE: Make sure locator pins (2) are in place between supercharger and motor.**

Secure using OE hardware. **NOTE: Apply blue Loctite to bolts. Torque the four M8 bolts to 14.8 ft-lb and the two M6 bolts to 7.4 ft-lb.** (Figure 10, page 4)

**Complete installation of appropriate RIVA Power Filter kit at this time.**

Remove screw in supplied V clamp (included in BOV Kit) and slip onto BOV adaptor on intercooler. Place supplied o-ring (included in BOV Kit) onto BOV adaptor. Place supplied TiAL BOV onto adaptor and secure by tightening screw in V clamp. **Note: Be sure o-ring is properly centered on adaptor. Do not over tighten clamp.** (Figure 21)

Figure 21



## **- INSTALLATION INSTRUCTIONS -**

Install supplied banjo fitting, banjo bolt, and sealing washers onto top of TiAL Blow-off Valve. (Figure 22)

Figure 22



Using supplied vacuum line connect barbed fitting on manifold with barbed fitting on TiAL blow-off valve. Secure at both ends with supplied small zip ties (2).

Slip clamps onto supercharger to intercooler hose and install hose. **Notes: 2018 and later superchargers have an installation limiter block on the supercharger outlet. Do not install or clamp hose over installation limiter block. Lubricate inside of hose and outside of fitting with glass cleaner to ease installation. Do not overtighten clamps.** (Figure 23)

Figure 23



Reinstall fuel rail using OEM hardware. **Note: Apply blue Loctite to bolt threads.**

Reconnect electrical connectors previously disconnected.  
Reinstall engine cover brackets using OEM hardware.  
**Note: Apply blue Loctite to bolt threads.**

Check bilge for rags, tools etc.

Run craft on a flush hose to check for proper operation.

Replace engine cover, bodywork and seat(s) previously removed.

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### **Flush Procedure for RIVA Power Cooler**

The RIVA Power Cooler on your craft should be flushed after each use. After flushing your craft's engine following the normal factory recommended procedure you must flush the Power Cooler separately. Attach the supplied male quick disconnect fitting to the female quick disconnect fitting on the RIVA Power Cooler. Flush the Power Cooler using Salt-Away or a similar product for 1~2 minutes. It is not necessary to run the engine while flushing the Power Cooler. If the engine is running you must use the normal factory engine flushing method to prevent the engine from overheating.

***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@rivaracing.com](mailto:tech_support@rivaracing.com).

### **Limited Warranty**

RIVA Power Cooler 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.

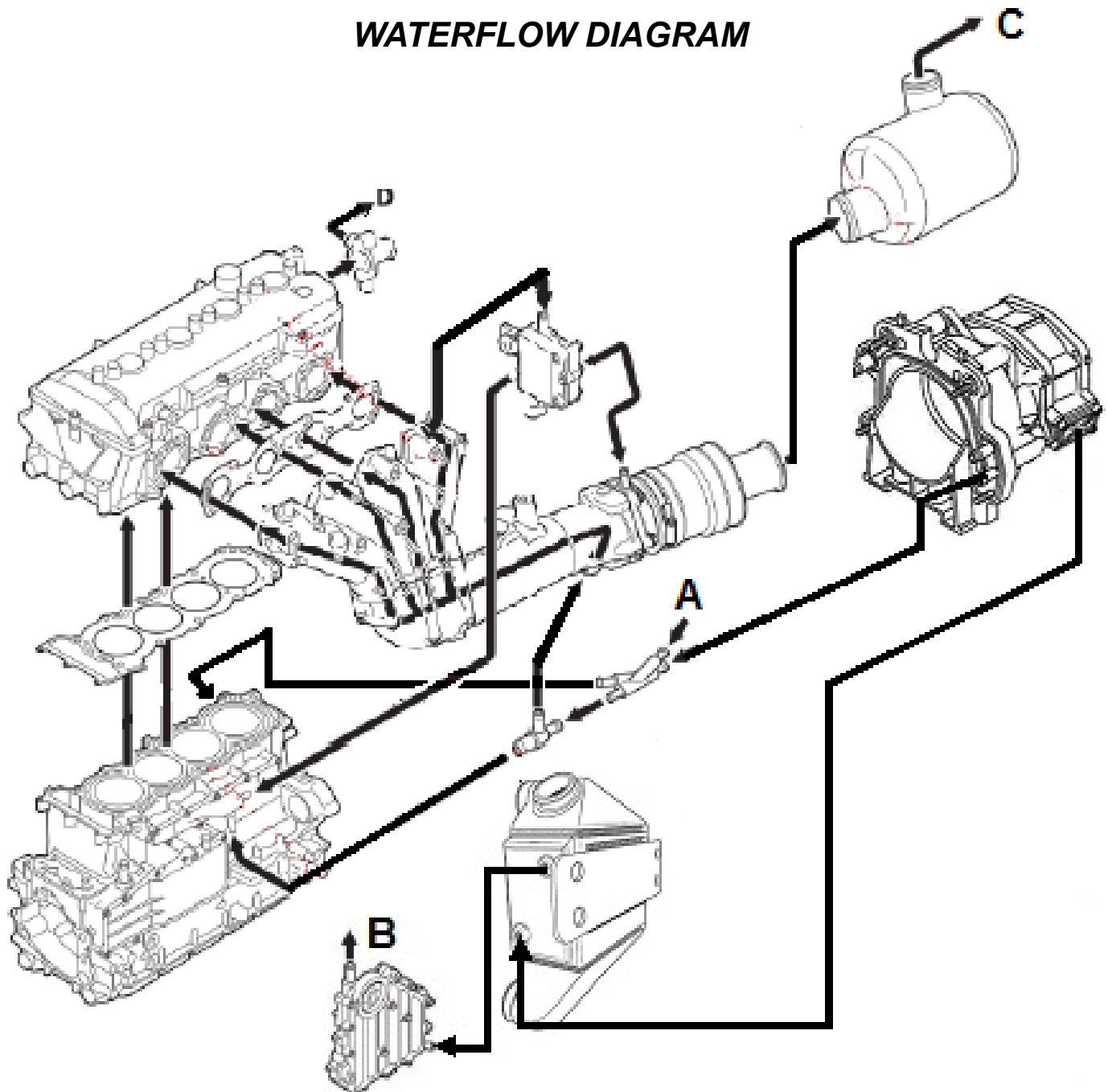
Warranty does not include the expenses related to freight or transportation of parts or compensation for any inconvenience or loss of use while being repaired. A copy of the original invoice and a Return Authorization Number (RA#) must accompany all warranty claims.

Warranted replacement parts will be returned freight collect.

## Yamaha 'GEN-3' Power Cooler Kit with TiAL BOV

RY17081-PC-TV

### **WATERFLOW DIAGRAM**



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