

***** FOR COMPETITION USE ONLY Per US EPA Regulations *****

Factory Pipe
Bill of Materials
701 WaveRunner III

<u>Item#</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Part Description</u>
1	1	COMCST0040	B style headpipe -701 Yamaha all/ XIR
2	1	COMCH70105	701 WaveBlaster/ Blaster MOD chamber
3	1	COMCST0210	701 WaveBlaster/ SJ/FX-1 manifold
-	1	COMASM0090	701 Waverunner III hardware kit (Items 4-31)
4	1	COMHOS0100	4" Silicone coupler (2-1/16")
5	2	COMCLP0050	100-120mm SS hose clamp (4")
6	1	COMHOS0004	3/8" x 4" Waterline
7	1	COMHOS0045	3/8" x 13" Waterline
8	2	COMHOS0061	3/8" x 21" Waterline
9	1	COMBRK0090	Front engine bracket Raider/ Blaster Mod
10	1	COMBRK0080	L bracket Raider/Blaster Mod
11	4	COMFAS0211	15" Zip tie
12	1	COMFAS0210	4" Plastic zip tie
13	2	COMCLP0020	#32 SS hose clamp (2")
14	1	COMFAS0120	1/8" Vinyl cap
15	8	COMCLP0010	#06 SS hose clamp (3/8")
16	1	COMFTG0060	3/8" Plastic T
17	1	COMFTG0110	Side squirter (3/8" hose)
19	1	COMFTG0009	7/32" Waterline restrictor
20	1	COMGAS0010	3 Bolt Headpipe gasket
21	1	COMGAS0050	701 Yamaha manifold gasket
22	3	COMFAS0090	3/8"-16 SS nut
23	4	COMFAS0070	3/8" Ext. Tooth washer S.S.
24	2	COMFAS0200	Fiber insulating washer
25	1	COMMNT0040	#J-11729-123 Lord mount
26	1	COMMNT0030	#J-11729-177 Lord mount
27	1	COMFAS0045	10mm x 1.25 x 20mm Flanged head cap
28	3	COMFAS0050	10mm x 1.25 x 40mm Long flanged bolt
29	4	COMFAS0040	10mm Lock washer (.691"OD) S.S.
30	1	COMFAS0100	3/8-16 x 3/4" Hex head bolt SS
31	1	COMTUB0001	2" Aluminum tube splice

- < **CHECK CONTENTS AGAINST BILL OF MATERIALS. REPORT ANY SHORTAGES WHERE YOU PURCHASED YOUR FACTORY PIPE.**
- < **READ ALL INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.**
- < **WATER INJECTION SET SCREWS ON TUNABLE HEADPIPES ARE PRE-ADJUSTED AND LUBRICATED. HOWEVER, YOU SHOULD DOUBLE CHECK ADJUSTMENT PRIOR TO INSTALLATION AND RE-LUBRICATE THEM ON A REGULAR BASIS TO PREVENT BINDING IN HEADPIPE.**

**Factory Pipe
Instructions
701 WaveRunner III**

Remove the complete stock exhaust system excluding waterbox. Remove the stock hose and clamps from the waterbox to the pipe and retain. Do not remove rear waterbox hose. Clean all gasket material from cylinder. Attach the stock 3/8" cooling line from the pump to barbed fitting on the Factory Pipe exhaust manifold (item #3) and secure with a #06 hose clamp (item #15). Install the supplied manifold/cylinder gasket (item #21) using two stock bolts in the top center holes of the cylinder. Thread these bolts in halfway and then install the Factory Pipe exhaust manifold using remaining stock bolts and Loctite 242, torque to 13 ft.-lb.

Note: Never use oil on hoses or couplers during assembly! Make sure they are free of oil or dirt.

Attach the 3/8" x 21" waterline (item #8) to the bottom (near 4" opening) barbed fitting on the Factory Pipe headpipe (item #1) using a supplied #06 hose clamp. Install the 4" silicone coupler (item #4) to the headpipe and secure with a 100-120mm hose clamp (item #5). Position the clamp so that it will be accessible after installation in the hull. Now would be the time to check the water injection screws in the headpipe. We recommend starting with the top and middle screw closed and the bottom screw open 3/4 turn. You may adjust this later on to suit your riding style. Install the Factory Pipe headpipe to the manifold using the 3 bolt headpipe gasket (item #20). Secure with the 10 x 1.25 x 40mm flanged bolts (item #28) and 10mm star washers (item #29) using Loctite 242 and torque to 32 ft.-lb.

WARNING! Never close all 3 screws simultaneously! This will cause the pipe to overheat and may cause damage.

Install the mag cover bracket "FRT" (item #9) to the right side of the flywheel cover with slot facing up using the stock bolts and Loctite 242, torque to 5 ft. lbs. Install the cylinder bracket "L" (item #10) to the front 10mm hole above exhaust manifold on cylinder. With the 3/8" slot facing up, secure bracket with the 10 x 25mm bolt (item #27) and 10mm star washer (item #29) using Loctite 242, torque to 29 ft. lb. Loosely install the lord mount 177 (item #26) into the front mag bracket slot using the 3/8"-16 hardware (item #22,23). Install the lord mount 123 (item #25) on the cylinder AL@ bracket with the same hardware. Install a fiber insulating washer (item #24) on the Lord mount 123 stud but do not put hardware on at this time.

Slip the remaining 100-120mm hose clamp over the 4" headpipe coupler. Using some water or windex, install the chamber into the 4" coupler on the headpipe. Rotate and adjust chamber until the brackets align with the lord mounts and chamber body is flush against headpipe.

IT IS VERY IMPORTANT THAT THE CHAMBER BODY AND HEADPIPE SEAT FLUSH AND TIGHT INSIDE THE COUPLER. OTHERWISE, LOSS OF PERFORMANCE AND COUPLER FAILURE MAY OCCUR.

Tighten the 100-120mm clamp. Secure the chamber bracket to Lord mount 123 with 3/8"-16 hardware. Insert remaining fiber washer between Lord mount 177 and chamber bracket. Secure with 3/8-16 x 1" stainless bolt (item #30) and 3/8" lock washer. Do not over tighten lord mount hardware or use Loctite.

Cut 2" from stock waterbox hose as per drawing AWRIII hose@. Install aluminum tube splice (item #31) into stock hose as per drawing and loosely install two #32 hose clamps (item #13). Install the modified stock hose onto Factory Pipe chamber outlet and waterbox with stock clamps and leave loose. Adjust hose for proper alignment and clearance then tighten all clamps

Install one end (not middle leg) of the 3/8" plastic "T" (item #16) onto the remaining end of the 3/8" x 21" waterline from the headpipe and secure with a #6 hose clamp. Attach the 3/8" x 4" waterline (item #6) to the middle leg of the "T" and secure with a #6 hose clamp. Install the supplied side squirter (item #17) in desired position if you do not already have one. Attach the remaining 3/8" x 21" waterline to the side squirter and remaining end of plastic "T" and secure with #6 hose clamps. Install the 7/32 restrictor (item #19) into remaining end of the 3/8" x 4" waterline from "T" and connect to the inlet on chamber body. Secure hoses with a #06 hose clamp. Attach the 3/8" x 13" waterline (item #7) to the top fitting on the Factory Pipe headpipe and the remaining end to the front fitting on the cylinder head and secure both with a #6 hose clamp. Install 1/8" vinyl cap (item #14) on stock outlet on cylinder head and secure with 4" zip tie (item #12).

Use long zip ties (item #11) to secure the left side breather hose and drain tube to hull and away from chamber body. Relocate the stock spark plug wire holder to front left bolt on cylinder head to keep wires clear of chamber body.

Carb Adjustments:

These adjustments are for sea level on a stock engine with aftermarket flame arrestors. Your specific adjustments may vary depending on engine modifications, fuel, altitude and other variables. Please consult a qualified technician if you are not familiar with tuning your carburetor.

Main jet : 145

Pilot Jet - 120

High speed screw : 1 turn out from closed

Low speed screw : 1 1/4 turns out from closed

Needle & Seat : Stock

Spring : 95 gram

Factory Pipe Performance Exhaust 101

The purpose of an expansion chamber is to return to the exhaust port a negative sound wave then a positive sound wave at precisely the right time. If the pressure wave returns too late, you lose some of the fresh fuel charge in the combustion chamber and performance. If the wave returns too soon, it pushes hot exhaust gas back into the combustion chamber contaminating the fresh charge and creating hot spots on the piston. The challenge to the pipe designer is to arrive at the proper exhaust tuning that will return the sonic waves at the correct time. This challenge is made all the harder by many impeller/nozzle combinations, engine configurations, riding conditions and rider preferences.

Traditionally, if you wanted low RPM torque and high RPM horsepower, it required several pipes. A few of our competitors cast rings into their pipes to achieve pipe tuning by cut and try. In 1992 Factory Pipe introduced the first truly tunable pipe using our variable water injection system. This system allows you to modify where and how much water injects into the exhaust by the turn of a set screw. Where our competition had you change the length of the pipe, the Factory Pipe allows you to vary the exhaust gas temperature which in turn changes the sonic wave speed within the pipe. **Changing the sonic wave speed within the pipe has the same tuning affect as changing the length of the pipe.**

Factory Pipe Tuning Your Exhaust System

Most Factory Pipe systems have our exclusive Atunable® headpipe which allows you to custom tune the pipe to your riding style. The following page gives a general overview of how this system works and how each adjustment will affect the performance of your watercraft.

Double check all hoses, bolts and clamps from your installation. For the first Aon-water® test of your new Factory Pipe we recommend closing the top and middle adjustment screws and opening the bottom screw 3/4 turn out from closed. This setting will be more water than is required but will provide a good starting point to test the pipe.

Ride the watercraft for several minutes while varying the throttle position. Open the engine cover as quick as possible after the ride and check the pipe temperature by splashing water on the chamber body directly after the headpipe coupler. **The water should lightly sizzle for the first few inches on the chamber body.**

If the water **does not** sizzle, close the bottom adjustment screw 1/8 turn and retest. If the water **sizzles rapidly**, open the bottom screw 1/4 turn and retest.

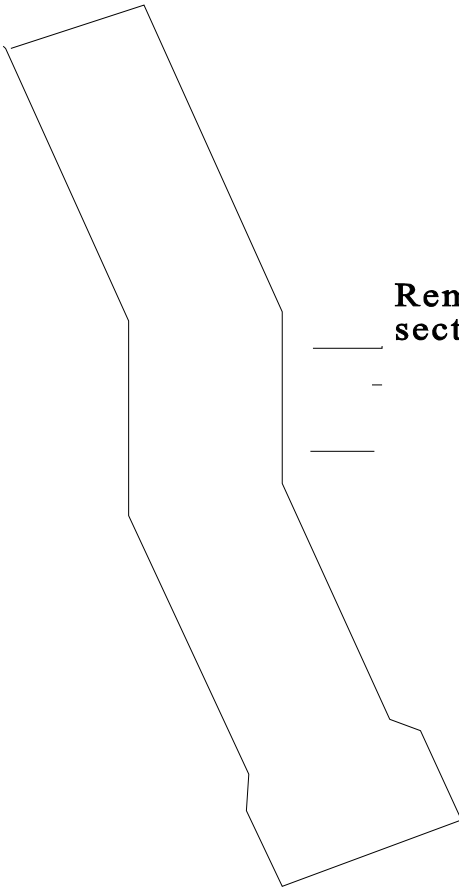
This set up will provide the best top end performance of your watercraft. With the pipe adjusted as stated above, open the top screw 1/4 turn. This will cool the exhaust in the headpipe and provide better bottom end performance at the expense of some top-end. This would be an ideal setting for running slalom or a tight buoy course.

If you want a change that is somewhere in the middle of the two settings, close the top screw and open the middle screw 1/4 turn or add another 1/8 turn to the bottom screw.

Some engines may react differently from the above. For example, while testing the 650 Super Jet we found that we gained top end performance by running the top screw open and the others closed. You may use any combination of the three screws to achieve the desired performance. However, **AT LEAST ONE SCREW MUST REMAIN OPEN AT ALL TIMES TO PREVENT DAMAGE TO THE PIPE.**

701 Waverunner III Hose

This end to pipe



Remove 2" of straight center
section of stock hose



Aluminum tube
splicer. Install
in cut stock
hose

This end to waterbox

Note:

1. Zip tie the battery leads to the left side engine bed plate
2. Zip tie the left side air inlet tube against the side of hull to clear pipe