

\*\*\*FOR COMPETITION USE ONLY per US EPA regulations\*\*\*

**Factory Pipe**  
**Bill of Materials**  
**800 SX-R Wet Pipe**

<b><u>Item#</u></b>	<b><u>Qty.</u></b>	<b><u>Part Number</u></b>	<b><u>Part Description</u></b>
1	1	COMCST0060	800 SX-R Wet manifold
2	1	COMCST0010	Reg headpipe 750 SX/650 SX-X2/650 SJ/800 SX-R
3	1	COMASM0977	800 SX-R Wet chamber assembly
-	1	COMASM0978	800 SX-R Wet hardware kit (includes items 4 - 17)
4	3	COMFAS0060	10 mm x 1.25 x 50 Flanged head cap screw
5	1	COMGAS0010	3 Bolt headpipe gasket
6	3	COMFAS0040	10 mm Lock washer (.691" OD) SS
7	2	COMCLP0050	100-120 mm SS Hose clamp (4")
8	1	COMHOS0100	4" Silicone coupler (2-1/16")
9	1	COMFTG0060	3/8" Plastic T
10	1	COMHOS0053	3/8" x 15" Waterline
11	8	COMCLP0010	#06 SS hose clamp (3/8")
12	1	COMIGN0016	SX-R Air temp bypass connector
13	1	COMFTG0045	1/4" NPT x 1/2" 90 Degree fitting
14	1	COMCLP0012	SS Hose clamp (1/2")
15	1	COMHOS0061	3/8" x 21" Waterline
16	1	COMHOS0040	3/8" x 12" Waterline
17	1	COMFTG0050	3/8" x 3/8" Hose mender

- > **CHECK CONTENTS AGAINST BILL OF MATERIALS. REPORT ANY SHORTAGES WHERE YOU PURCHASED YOUR FACTORY PIPE. SAVE THIS PARTS LIST FOR FUTURE ORDERS OF REPLACEMENT PARTS.**
- > **READ ALL INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.**  
**CARBURETOR ADJUSTMENTS MUST BE DONE PRIOR TO RUNNING THE ENGINE WITH THIS EXHAUST SYSTEM.**
- > **THE RUBBER "TRUMPETS" ON EACH END OF THE AIR BOX MUST BE REMOVED OR USE AFTER MARKET FLAME ARRESTORS WITH THE SUPPLIED JETTING SPECIFICATIONS.**
- > **2003 MODEL REQUIRES TIMING ADVANCE PLATE (6 DEGREE) WITH THIS EXHAUST SYSTEM ON STOCK ENGINES RUNNING 91 OCTANE PUMP GAS. SOME MODELS MAY REQUIRE GRINDING OF EXCESS GLUE ON THE INSIDE BOND FLANGE WHERE THE EXHAUST CHAMBER IS POSITIONED.**

**Factory Pipe**  
**Instructions**  
**800 SX-R Wet Pipe**

**This pipe requires the installation of a 6-degree timing advance plate for 2003 models only. This can be purchased from R&D Racing Products. 2004 models use item 12.**

Disconnect the battery cables. Remove the stock exhaust system. Remove the stock inlet waterline from the exhaust manifold. If you are going to replace your stock waterbox do so now, if not, do not remove it. Leave the stock 2 ½" black hose attached to the inlet of the waterbox.

Thoroughly clean all gasket sealant from cylinder and steel gasket, retain for reuse. Cut the stock water-in line to proper length and attach it to the ½" 90 degree barbed fitting on the Factory Pipe exhaust manifold using a ½" hose clamp (item#14). Apply sealant to the exhaust manifold gaskets (arrows pointing upward) and install the exhaust manifold onto the cylinders using the retained stock nuts and washers. Tighten to 22 - 25 ft.-lbs.

Cut the "water overboard" waterline in a suitable location (see figure #2) and install the 3/8" plastic T (item #9). Secure with two #6 hose clamps (item #11).

If you are installing this pipe on a 2004 model go to the next step. For 2003 models you will need to turn the ¼" 90-degree fitting on top of the rear cylinder so that it faces toward the front. Attach the ¼" water overboard line (previously attached to the top of the stock exhaust chamber) to the ¼" 90-degree fitting on top of the rear cylinder. Secure using the retained stock hose clamp.

Loosen the clamp on the 2 ½" black hose on the inlet of the waterbox. Push the black hose onto the inlet tube so that 1 ¾" of black hose is extending beyond the end of the inlet tube. Tighten the clamp to the inlet tube of the waterbox. Install the stock clamp to the other end of the black hose and tighten it just enough so that it stays in place and is accessible after the chamber is installed.

Attach the 4" silicone coupler to the headpipe using 4" hose clamp (item #7) and tighten. Install the 21" blue waterline (item #15) to the 90-degree fitting on the bottom of the headpipe using a #6 hose clamp. Lay the headpipe aside, toward the rear of the engine compartment.

Install the 3/8" x 15" blue waterline (item #10) to the stinger on the exhaust chamber using a #6 hose clamp (item #11). Place the chamber into the engine compartment. Spray the stinger end of the pipe with window cleaner and slide the stinger into the 2 ½" black hose on the waterbox. Make sure the hose clamp on the 2 ½" black hose is in a position in which you can tighten it once the chamber is installed. DO NOT tighten at this time. Slide the remaining 4" hose clamp (item #7) onto the 4" coupler on the headpipe. Spray the end of the chamber with window cleaner and slide the coupler onto the chamber. DO NOT tighten the 4" clamp at this time.

Install the headpipe to the manifold using the 3 bolt headpipe gasket (item #5), three 10 mm x 1.25 x 50 mm flanged head bolts (item #4), and three 10 mm lock washers (item #6). Secure all three bolts. Rotate the exhaust chamber so that there is clearance all around the chamber. Tighten the 4"

clamp on the coupler and the 2 1/2" clamp on the stinger. Attach the 3/8" x 15" waterline (attached to the chamber earlier) to the plastic T using a #6 hose clamp (item #11).

Attach the 3/8" x 21" blue waterline (coming from the bottom of the headpipe), to the stock 3/8" straight fitting on the top of the front cylinder head using a #6 hose clamp (item #11).

On **2004 models** route the stock 3/8" black water-out line (coming from the bottom right side of the bulkhead) up over to the 3/8" 90 degree fitting on the top of the headpipe, and secure with a #6 hose clamp (item #11). On **2003 models**, disconnect the 3/8" black hose from the heat sensor (located on the electrical box) and connect the 3/8" x 12" waterline (item #16) using the 3/8" brass hose mender (item # 17), and secure using two #6 hose clamps (item #11). Attach the blue waterline to the 90-degree fitting on the top of the head using a #6 hose clamp (item #11).

Remove the ride plate. Disconnect the 3/8" hose from the 90-degree, water-in fitting on the right side of the pump. Install the 1/4" NPT x 1/2" 90 degree fitting (item #13). Reinstall the 3/8" water-in line and secure the hose clamp. Reinstall the ride plate.

If you have a **2004 model**, disconnect the air temp sensor (green connector), and connect the supplied air temp sensor bypass connector (item #12). See figure #3. This advances the timing 6 degrees. **Note:** Do not use the air temp sensor bypass connector in conjunction with a 6-degree advance plate. This would raise the timing 12 degrees and cause severe engine damage.

If you have a **2003 model**, you need to install a 6-degree advance plate, available from R&D Racing Products.

## **CARBURETOR ADJUSTMENTS**

**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 carburetors. No jetting recommendations are given for limited or superstock applications as we cannot anticipate all the possible combinations and setups.**

**Removing the choke plates can cause the engine to run lean and engine damage can occur.**  
**RUNNING FUEL TANK EMPTY CAN CAUSE SEVERE ENGINE DAMAGE!!!!!!!!!!!!**

### **2003 and 2004 SX-R 800 Wet Pipe Jetting Specifications**

Main jet: 152.5 front, 152.5 rear

Pilot Jet: 80

High-speed screw: 1/2 turn out from closed

Low speeds screw: 1.0 turn out from closed

Needle: Stock

Spring: Stock

Note: Stock compression & timing +6 degrees

**Remove the rubber trumpets from each end of the air box or use aftermarket flame arrestors.**

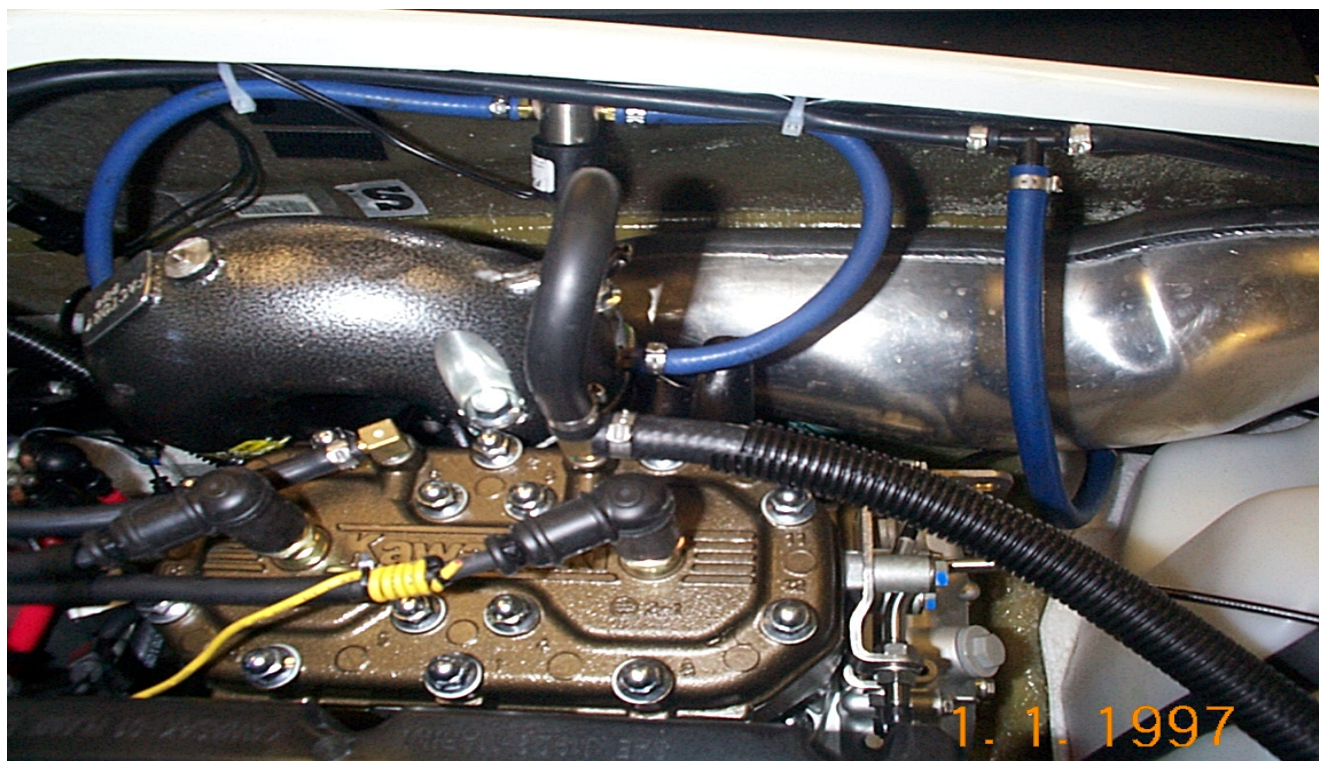


Figure 1 (Shown with optional water injection, not included in kit)

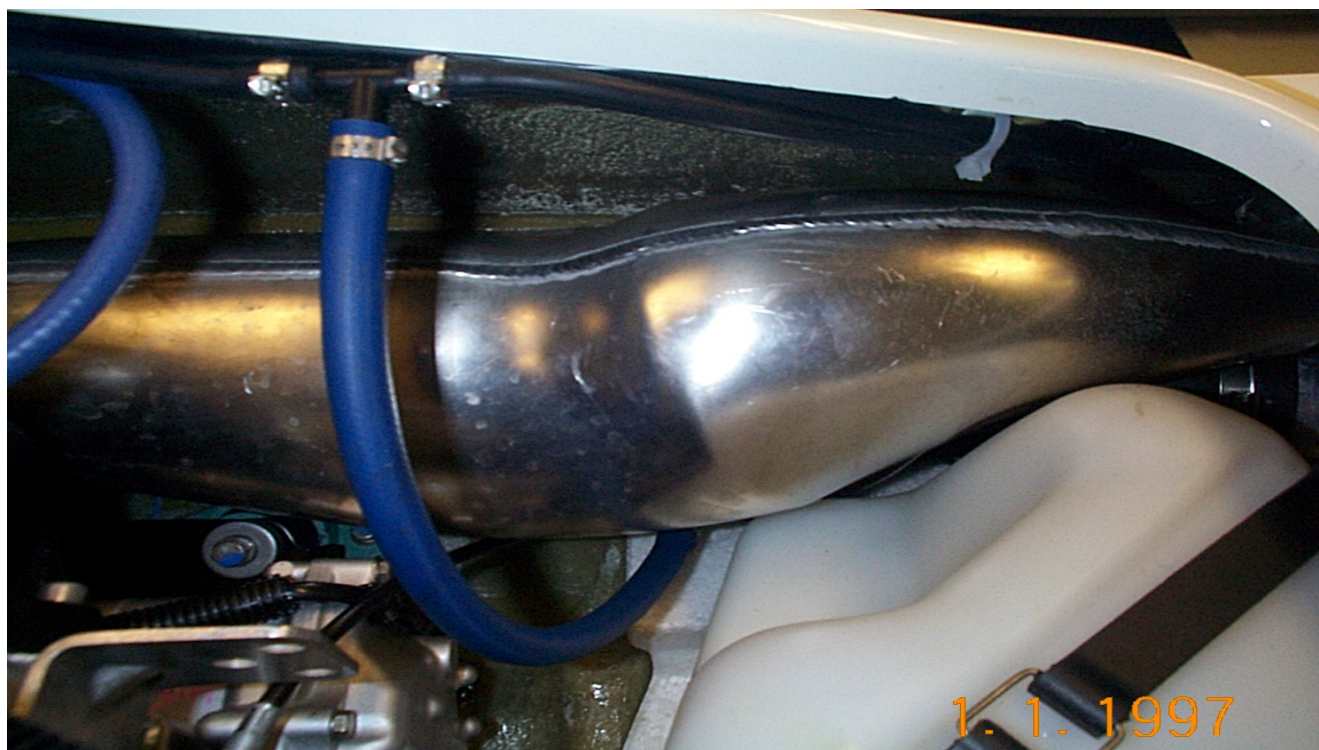


Figure 2



Figure 3 (2004 Models only)

## **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 “tunable” 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 “on-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 SuperJet 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.**