

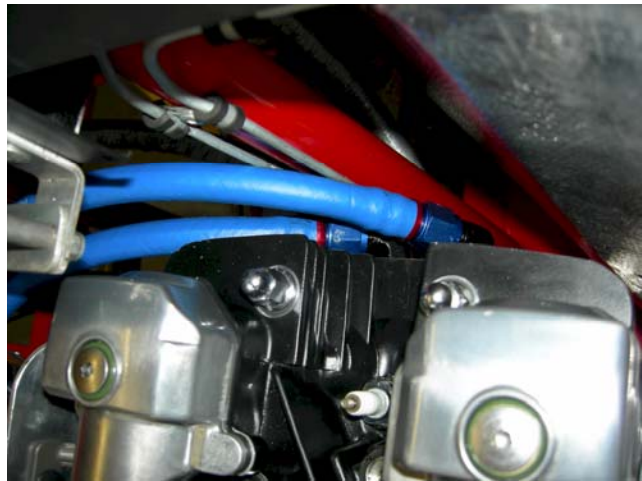
Baby Grands Water Cooling Installation Instructions

These instructions are designed to help an “average” racer install a water cooled engine in their Baby Grand racecar. This assumes that the engine is already assembled and ready to place in the chassis. Baby Grand engines are complex and should only be assembled by qualified, experienced builders.

Enclosed in this kit is a hose routing diagram which shows the way to properly hook up this system. Please follow these guidelines for best performance and even temperatures throughout your engine.

1. Remove any old oil coolers from the front of the car. You may also need to remove oil cooler mounting tabs that extend behind the basic mounting bracket to provide room for the water radiator later. These same tabs can be re-attached to the front of the bracket to re-mount the oil cooler later.

2. Install the 90 degree O-Ring fittings in the cylinders. For best results, orient the rear fittings up and toward the passenger side of the car. Orient the front fittings toward the passenger side of the car. To avoid a tight workspace later, you may also want to attach one end of hose #1 to the exhaust side at the back of the engine and one end of hose #4 to the carburetor side of the rear of the engine. These fittings will be hard to reach once the engine is in the chassis. Set the engine in the chassis as usual.



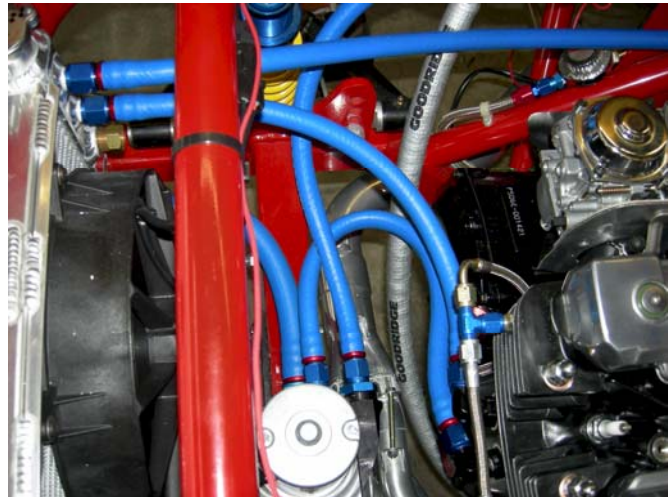
3. Install the water pump on the flat plate of the water pump bracket, and then bolt the bracket into the top two holes of the driver side upper control arm mount. Be sure the water pump outlets are all pointed toward the passenger side of the car. If not, the bottom of the pump can be removed and the outlets rotated correctly.



4. Install the radiator between the front frame rails by coming up from below the car. The two flanges on the side of the radiator go up against the bottom of the frame rails. The radiator should be mounted toward the left side frame rail to provide clearance for the radiator cap – and better left side weight. Using a 3/8” drill bit, drill upward through the flange and frame rail. Place the rubber grommets between the radiator and the frame and install using the included bolts and nylock nuts. Watch for clearance between the fan shroud and the steering rack. This should be minimal – but not touching. Use the top flange on the radiator to attach to the old oil cooler brackets on the car. You may need to bend this flange.



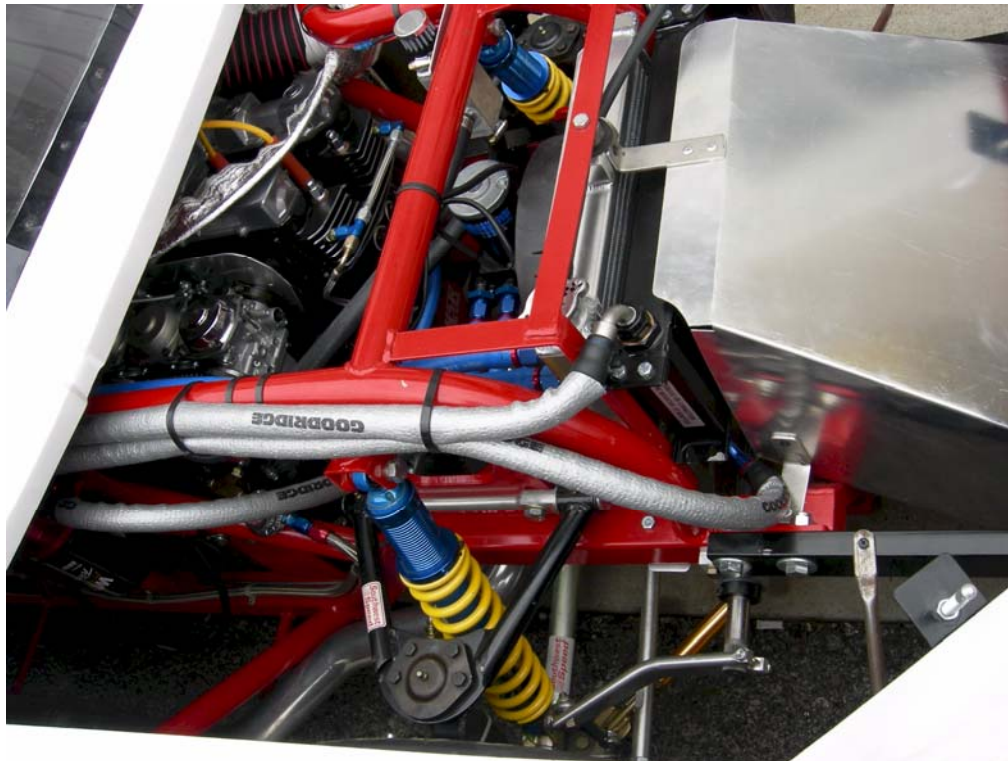
5. Install the included blue hoses according to the diagram on the last page of these instructions. Be sure the water pump outlets go to the exhaust side of the cylinders – this will ensure more even temperatures throughout your engine.



6. Install the adapter and temperature gauge probe in the radiator. Run the lines back to the interior of the car and install the water temperature gauge. One good location is where the tach recall used to go, as shown to the right. The tach recall can be placed on the side panel below the fan switches.



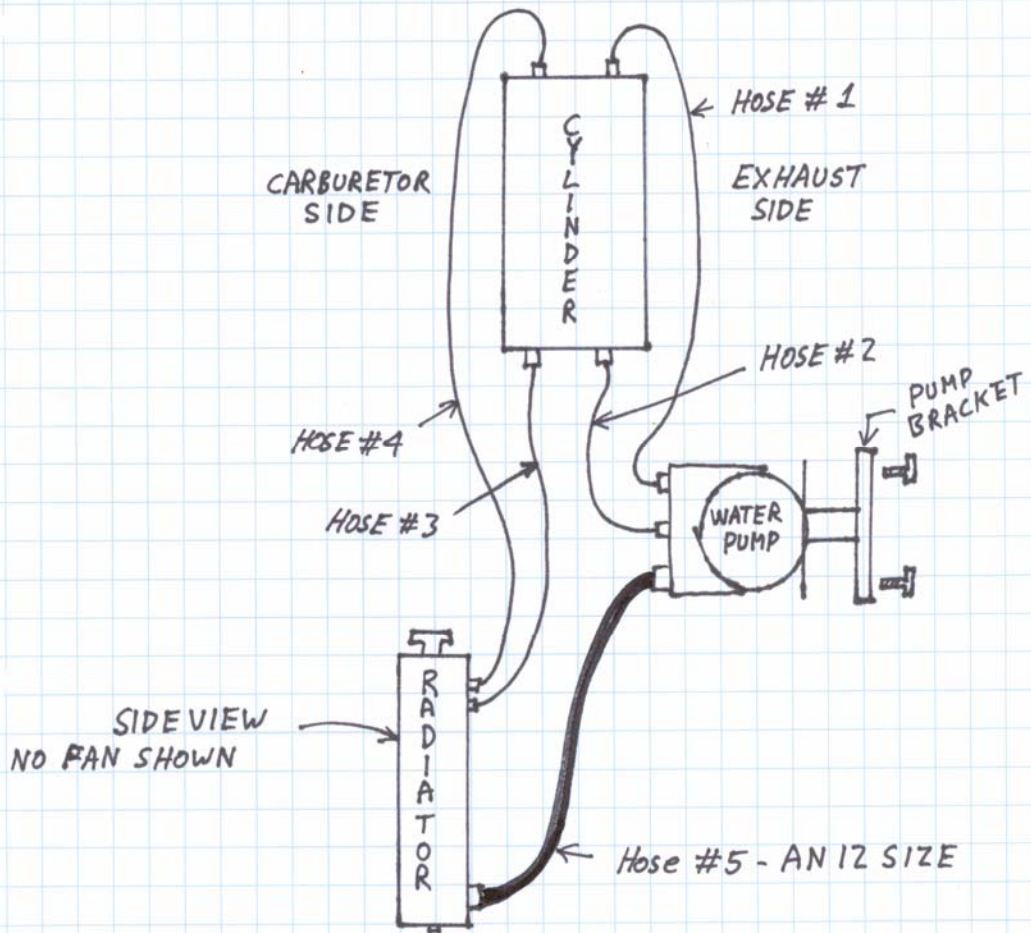
7. Wire up the fan and water pump. The water pump should be wired so that anytime the ignition is on, the pump is on. This is the best way to ensure that the pump is always running whenever the engine is on. The fan should be on a circuit with a 30 amp fuse. A 20 amp fuse may not be enough – especially if you have other fans on the same circuit.
8. Your old oil cooler should be re-installed in front of the water radiator as shown below. This will probably require trimming of your aluminum airbox in the front of the car. This will help even out the temperatures between oil and water in your engine. This configuration should produce water temps of approximately 180 degrees and oil temps of approximately 210 degrees on a hot day.



Notes:

1. Be sure to run an overflow line from the radiator cap to the base of the right side of the windshield. Then, if your radiator should ever boil over, you will see the fluid on the windshield and be able to correct the problem before damaging the engine.
2. Most tracks will not allow you to run antifreeze in your radiator because of clean up issues. Try using distilled water and water wetter for best results.
3. After racing, simply leaving on the water pump and fans will quickly cool down your engine – no more need to rush and grab fans from the trailer!
4. If you are seeing temperatures that are too low – you can add duct tape to partially cover the front of your air intake just like most NASCAR teams.
5. Replacement parts are always available from Baby Grands. Only the original water pump and radiator are allowed – no aftermarket or homemade parts.
6. Your engine builder should torque the head on your engine to 32 ft lbs. This is higher than a “stock” engine. Check the torque regularly – it should not change. If your head does loosen – check for any failure in your cooling system and consult your engine builder. Note – if the cylinders are being installed on a used engine, the case may not be able to handle 32 ft lbs of torque without pulling the threads out of the case. In this case, heli-coils or equivalent are necessary.
7. Water cooling is not magic – you still need to perform proper maintenance on your engine to make it last. Be sure to change oil regularly, blow the debris off the top of your engine, and keep the oil coolers and radiator clear of debris. Also be sure to check the water level regularly.

BABY GRANDS LIQUID COOLED HOSE DIAGRAM



<u>HOSE #</u>	<u>FROM</u>	<u>TO</u>
1	PUMP OUTLET	REAR ENGINE - EXHAUST SIDE
2	PUMP OUTLET	FRONT ENGINE - EXHAUST SIDE
3	RADIATOR INLET	FRONT ENGINE - CARB SIDE
4	RADIATOR INLET	REAR ENGINE - CARB SIDE
5	RADIATOR OUTLET	PUMP INLET