

How to Install a BG Speed Demon (basic)



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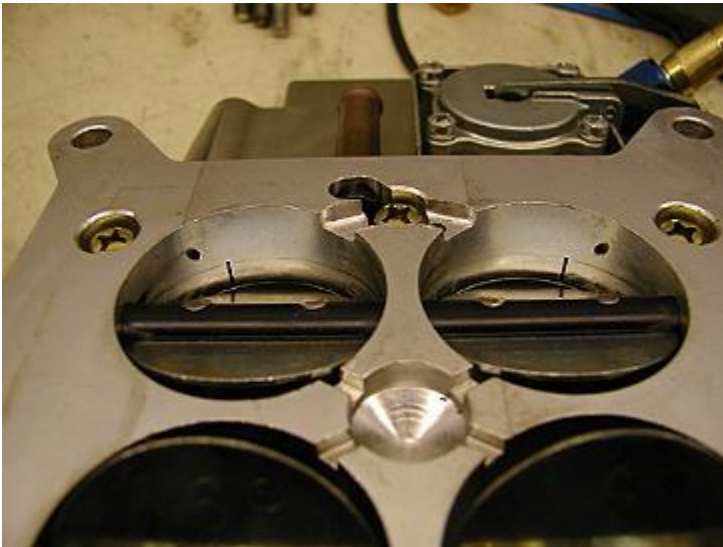
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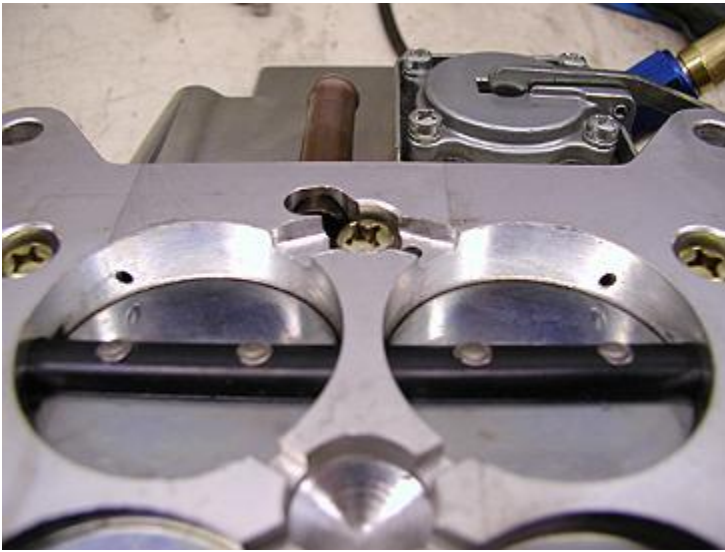
Rev. D 4-2-10

Getting a BG Speed Demon carb set up and running right on your engine is all in the prep work: A few bench settings are required, and it's important to use the right combination of modified parts and accessories to make the installation look good and perform properly. Here are the basic steps (these steps are also detailed in my Tech Paper, "How to Set up a BG Speed Demon." Drop me an e-mail request for a copy of this paper: V8FastCars@msn.com):

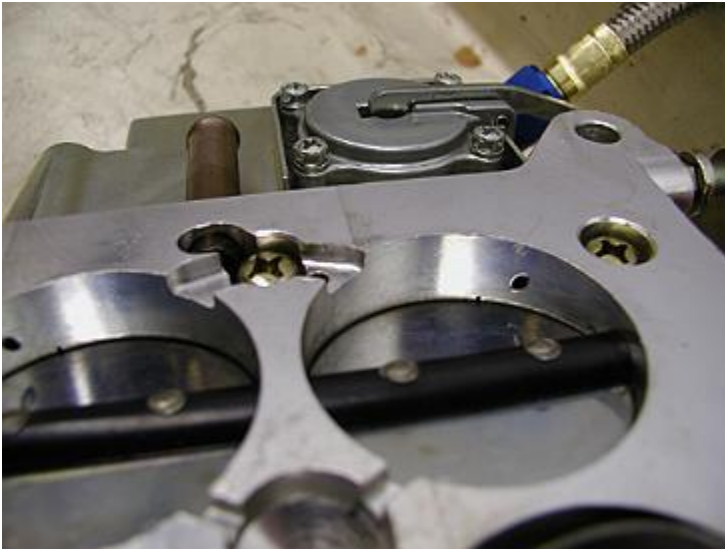
First, set the **throttle blade angles**. BG carbs (and Holley carbs, too) used in a performance applications need to meter equal air through both primary and secondary sides of the carb at idle. This is seldom set correctly on an out-of-the-box carb. To do this, flip the carb upside-down and adjust the primary and secondary idle speed screws so that .020" of the transition slot is exposed on all 4 throttle blades. Use a feeler gauge to check. (After you've done a few of these, you can do it by eyeballing it: The transition slots are .020" wide, so you can adjust the throttles so that the exposed part of the slot appears as a square hole under the throttle blade.) If your carb is equipped with the "Idle EZ" system, close the adjustment screw to eliminate airflow through this bleed hole: It is not needed for most mild and moderate street cars.



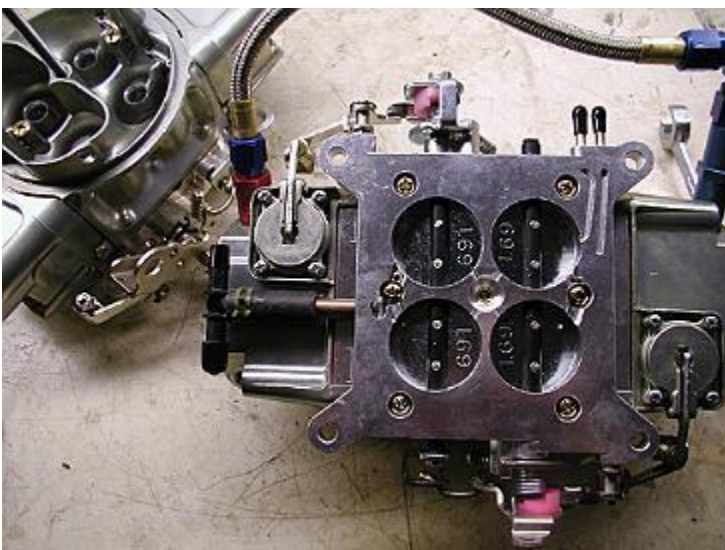
Throttle blades cracked open to show the vertical transition slots. These slots start metering fuel as you come off idle and as you go into the main discharge circuit. If too much of the slots are exposed, idle mixtures will be incorrect. .020" of the slots should be exposed below the edge of the throttle blades.



“Out-of-the-box” setting of the throttle blades shows secondary throttle closed completely – there is no exposure of the transition slot on the secondary side. Primary side had massive slot exposure to compensate for lack of adjustment on secondary side.



Correctly set throttle blade angle. .020” of the slots are exposed below the blades. Both primary and secondary throttles should be set exactly like this (except Holley – see the BG Setup Paper and Holley Paper for correct Holley secondary idle setting)



The BG carbs, and most Holleys, have only a single 3/8” vacuum port for connection of the PCV. If you’re running power brakes, you can install a “T” system like this to run PCV and brakes. I have made the “T” section short enough that it is hidden under the secondary bowl. This makes a very clean installation. Note twin vacuum nipples coming out of the side of the throttle plate: The forward nipple (right) is ported

vacuum. The rear nipple (left) is direct manifold vacuum. You can also use either of these ports for your distributor vacuum advance control unit depending on the tuning needs of your engine – see my tuning articles discussing these concepts. Most performance engines will respond best to manifold vacuum to the distributor vacuum advance, as long as the vacuum advance control unit is “soft” enough to pull its full range of advance in at idle.



BG and Holley carbs need a **reflective heat shield** installed under the carb: The accelerator pump wells are close enough to the hot manifold that the fuel in the pump wells will boil after hot engine shutdown. As the fuel boils and vaporizes, it pushes fuel out the accel discharge nozzles, flooding the engine after shutdown. Holley builds a shield, but it does not fit correctly. Seen here is a modified Holley shield: I have trimmed about an inch off the forward edge so it will clear the thermostat housing. The rear edge has been trimmed forward. The right side of the shield has been cut inwards to prevent the throttle shafts from binding on the shield. The right corners have been trimmed at a 45-degree angle to clear the carb inlet line. Finally, the shield has been bent downwards and “jogged” so that the accel pump levers will not hit the shield: If you install a flat shield, the accel pump levers will hit the shield, and will be partially depressed. This will cause an off-idle flat spot and stumble.



In order for the “jogged” shield to clear the base gasket, the gasket “ears” must be trimmed. Shown here is a trimmed base gasket that will allow the bent shield to fit properly.



Shields can be made in many ways. Shown here is the custom shield that I use on my own car. It's fabricated from a piece of aluminum sheet stock. Note forward and rear edges bent down to clear accel pump levers.



Important to safety and reliability is a good **fuel line**. Here, the owner of this carb has sent me his fuel line along with photos of his installation. Based on the photos, I have modified his line to accept a flared, screw-in filter (from Summit), and I have fabricated a flared steel upper line that will screw right into the BG carb inlet fuel line. All threaded steel connections with no rubber hose or clamps used anywhere. See my "How to Build a Fuel Line" article for detailed info on building fuel lines. Drop me an e-mail for a copy of the fuel line article.



Using the 1/4" thick insulating gasket under the heat shield requires use of long mounting studs. Note also that the vacuum fitting in the manifold to the rear of the carb has been removed and a flush allen-head pipe plug has been installed to clear the BG rear float bowl and allow installation of the jogged shield.



Complete setup bolted up and ready for test run. Note how heat shield clears all components and is nearly invisible. Steel fuel line keeps things safe and clean looking.



Left side view of completed installation showing dual throttle return springs and shield tucked under carb.

Note that the BG carb does not have a **positive throttle stop**: It is important that you adjust your cable so that wide open throttle (WOT) is achieved when your gas pedal hits and stops on the floor. If you rely on the carb to stop your gas pedal, you will bend and damage the throttle shaft with your foot pressure. Verify that the throttle returns fully to the idle position when the pedal is released – there should be some slack in the cable at idle. Install a throttle return spring. Verify that the throttle moves freely through its entire range. Adjust as required to achieve proper cable setup.

Prime the carb by pouring a “shot” of fuel down the cast vent tubes on the primary and secondary side. You can do this by pushing a 3/8" fuel line hose onto the vent towers and hooking the hose up to a small funnel.

Pump the gas pedal a few times and verify that fuel shoots out of the accel pump discharge nozzles. Start the engine. Without a choke, you will need to “feather” the gas pedal a little to keep the engine initially running. After 30 seconds or so the engine should run on its own, although at a slow or coarse idle. Check for fuel leaks. Shut down and correct the leaks if required. If no leaks, take the car out and drive it until it is fully warmed up. Once the engine is fully warmed up, perform final adjustments:

Float levels: With the sight glasses, float levels are easy to set up on the BG carbs. For street applications, set the levels to the lower sight line. For performance street and strip applications, go up the middle line.

Idle speed: It is IMPERATIVE that all idle speed adjustments be made by turning the primary AND secondary idle adjustment screws equally. I recommend turning each screw ¼ turn at a time, making sure both screws are turned the same amount in the same direction until desired idle speed is achieved. With the throttle blades set to .020” transition slot exposure, most cars, after warm-up, will have an excessively high idle speed. Lower the idle speed by equally adjusting the primary and secondary idle speed screws.

Idle mixture: I recommend an initial bench setting of all 4 screws at 1 full turn out from lightly seated. When adjusting idle mixture, all 4 screws MUST be turned the same amount and be kept equal. To test for proper adjustment for your application, play with the primary (forward) idle screw on the passenger side as follows: With the engine warmed up and running, turn this screw ½ turn IN. Note what the engine does (idle drops; idle gets better, etc). Bring the screw back out to the original setting. Now, turn the screw ½ turn OUT. Note what the engine does. If the idle quality improves with one of the settings (for example, if idle quality improves when you turned the screw OUT), adjust all 4 screws ¼ turn in that direction (turn all 4 screws ¼ turn OUT from the 1 turn base setting). Once completed, repeat the entire procedure by turning the one forward screw a little in and a little out to see what direction you need to equally move the 4 screws. As you keep doing this process, keeping all 4 screws equally adjusted, you can narrow down your adjustment to 1/8 turn increments of the screws. You may need to adjust idle speed as you optimize the mixture, keeping both idle speed screws adjusted exactly the same. I suggest running the idle mixture screws just a *tad* to the rich side of best idle: This will give you better cold-run characteristics and will reduce off-idle stumble tendencies.

Accelerator Pump Arm: To assure proper operation of the accelerator pump, make sure that the pump arm is properly set up against the pump arm screw (spring loaded screw on the lever). With the engine OFF, verify that there is no gap at all between the end of the screw and the pump lever – it should have a little bit of “pre-load.” Verify that the SLIGHTEST movement of the throttle produces an instant discharge of fuel out of the discharge nozzles. Now, open the throttle fully and verify that there is still a little bit of travel left in the pump arm (make sure it’s not bottomed out and jammed solid).

Once this is complete, take the car out and have some fun!

Part numbers used in this article (Jeg’s part numbers – Summit has discontinued BG carbs):

750 BG Speed Demon Mechanical Secondary Carb: **132-1402010**

Dual inlet fuel inlet line for BG carbs (for 3/8” fuel line): **132-140020**

Part numbers used in this article (Summit part numbers):

Holley Heat Shield (with gaskets): **HLY-108-70**

In-line fuel filter with threaded connections for 3/8” Fuel line: **SUM-G1517**

Adjustable Throttle cable bracket for C3 Corvette/GM “square hole” throttle cable: **CSI-630R**

Dual throttle return spring set: **SUM-G1320**

3/8” Aluminum Tube Nut: **EAR-581806**

3/8” Aluminum Tube Sleeve: **EAR-581906**