



## Pro-Flo Series Competition Carburetors

**WARNING!** These instructions must be read and fully understood before beginning installation. Failure to follow these instructions may result in poor performance, vehicle damage, personal injury, or death. If these instructions are not fully understood, installation process should not be attempted.

**DANGER! DO NOT SMOKE WHEN WORKING AROUND GASOLINE OR GASOLINE VAPORS. EXTINGUISH ALL OPEN FLAMES. AN OPEN FLAME, SPARK, AND/OR EXTREME HEAT COULD RESULT IN A FIRE AND/OR EXPLOSION CAUSING SERIOUS INJURY, DEATH, AND/OR PROPERTY DAMAGE.**

BLP Racing Products, LLC. Cannot and will not be responsible for any alleged or actual engine or other damage, or other conditions resulting from misapplication of the carburetor described herein. However, it is our intent to provide the best possible products for our customers, Should you need information please contact Technical Service Department, Monday through Thursday, 7 a.m. to 5:30 p.m. Eastern Time; or via email at [tech@blp.com](mailto:tech@blp.com); please have your serial number and /or invoice information available when you call.

**WARNING!** Prior to and after installing your new carburetor, manually operate the throttle lever, checking for any sticking or binding. Failure to do so may result in a runaway engine or a wide open throttle condition, which could result in engine damage personal injury, and/or death.

**NOTE:** Please take a moment to conduct a visual inspection of your carburetor and check for any shipping damage. **Please report any and all damages within 48 hours of receipt.**

**NOTE: I have highlighted all the changes recommended. If you don't understand why I made the changes then discuss it with me.**

1. Remove the air cleaner.
2. Label all connections to the carburetor.
3. After labeling all connections to the carburetor, carefully disconnect all hoses and lines. When removing the fuel line, place a rubber cap plug over the end to prevent fuel from running out, which may create a fire hazard. Use a clean metal container to collect any spilled fuel.
4. Remove the throttle linkage from the throttle lever. Disconnect and save the throttle return spring.
5. Remove the attaching manifold flange nuts and washers. Remove the throttle cable bracket. Remove the carburetor by lifting it upward. Before removing carburetor, double check to ensure all the carburetor attaching bolts and connections have been disconnected.

6. Place clean shop towels into the manifold opening to prevent dirt or debris from entering the engine. Keep exposed ends of vacuum and fuel lines free from dirt.

**WARNING! Failure to cover the intake opening with a clean towel could result in dirt or debris entering the engine. Dirt or debris in the induction system can cause significant engine damage.**

7. Remove the carburetor gasket from the intake. Remove any gasket material that may have adhered to the manifold.

8. Remove the shop towels from the intake and vacuum out the intake channel to ensure no dirt or debris is left in the intake system. Place a clean shop towel over the entire intake opening until you are ready to install the new carburetor.

#### **FLUSHING YOUR VEHICLES FUEL LINE:**

During fuel line installation, be careful to avoid introducing any debris particles, which could enter the fuel inlet and hold open the needle & seat resulting in the carburetor flooding, and/or possible engine fire. To prevent contamination from entering your new carburetor, the fuel line must be flushed of dirt, and other debris.

**DANGER! FLUSH FUEL LINES ONLY IN A WELL-VENTILATED AREA AND AWAY FROM ALL SOURCES OF HEAT OR FLAME. USE ONLY A CLEAN METAL CONTAINER TO COLLECT THE FUEL.**

**Before spinning the engine over with the starter; make sure the ignition is off so no spark is created in the engine compartment.**

2. Remove the shop towel placed over the intake manifold before spinning the engine over with the starter.

3A. **Mechanical Fuel Pump:** Place the end of the fuel line in a clean metal container and spin the engine over with the starter. When approximately 1 pint (16 ounces) of fuel has been flushed, examine the fuel for contamination, i.e. dirt, rust, rubber flakes, etc. Repeat process, if necessary, until the fuel is free of contamination.

3B. **Electric Fuel Pump:** Place the end of the fuel line in a clean metal container. Activate the pump by turning on the ignition switch. When approximately 1 pint (16 ounces) of fuel has been flushed, examine the fuel for contamination, i.e. dirt, rust, rubber flakes, etc. Repeat process, if necessary, until the fuel is free of contamination.

#### **INSTALLATION OF NEW CARBURETOR:**

**WARNING! It is highly recommended that a quality fuel filter be installed with any replacement carburetor to catch any dirt that may still remain in the system. Any dirt that may enter the carburetor can cause the carburetor to flood or malfunction. A carburetor that**

has a malfunction caused by dirt in the system due to negligence of the owner will void ANY warranty(s).

#### **CARBURETOR MOUNTING GASKET**

It is recommend using a good quality carburetor mounting gasket. Using gaskets that are too soft can cause issues and if not tightened very carefully can create a linkage binding problem. We prefer a .040" thick gasket such as a BLP 8050 series gasket.

1. Install a carburetor gasket on the manifold. If a spacer is being used the order will be carburetor gasket, spacer, and another carburetor gasket over the manifold stud bolts.
2. Place the carburetor in position over the four stud bolts and secure in place. **Use a good quality flat washer between the carburetor and nut. Tighten in a cross pattern and avoid over tightening WARNING! Overtightening the carburetor manifold flange hold-down-nuts may result in a warped or cracked carburetor throttle body**
3. Connect the fuel lines, throttle linkage, and return springs. Operate linkage to assure correct travel by fully opening and closing the throttle by hand. Make sure the return springs have adequate tension; the coils are not stretched and the mounting bracket is adequate.
4. Attach all vacuum lines where necessary.

#### **STARTING:**

1. Without operating the throttle, spin over the engine with the starter. It may take 15 to 30 seconds of cranking to allow the fuel bowls of the carburetor to fill. Pump the throttle or manually push down on the accelerator pumps a couple of times to put some fuel into the intake. The engine should now start.

**WARNING! DO NOT crank the engine for more than 15 seconds at a time. Cranking longer than 15 seconds can overheat the starter, resulting in premature starter failure.**

2. After starting the engine, check fuel lines and inlet fittings for possible fuel leaks.

**WARNING! If any fuel leakage or weeping is detected, shut off the engine immediately, and wipe up any fuel. Locate the source of the leak and repair before proceeding any further.**

#### **TUNING AND ADJUSTMENT:**

Before you begin to tune your carburetor for your particular vehicle, you must get a "FEEL" for your vehicle's performance, so that any changes you make (good or bad) will be readily apparent. Be patient and make only one change at a time, so that only that change can be fully analyzed. This cannot be overemphasized, as there are no "short-cuts". Recording each change and the resulting performance increase or decrease will provide you with a "Handbook" of how vehicle performance is affected by individual carburetor adjustments. This may be helpful in the future or on other applications.

#### **FLOAT LEVEL ADJUSTMENT**



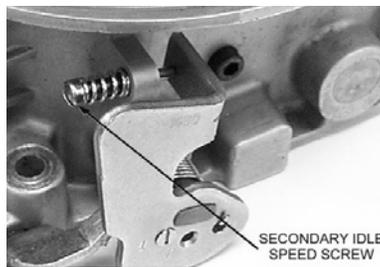
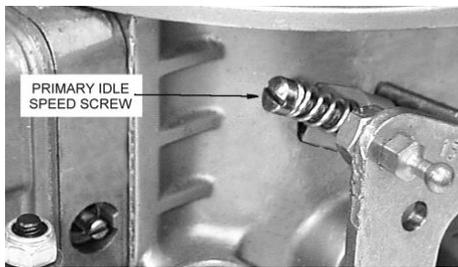
The float level adjustment can be checked and adjusted if necessary. BLP equips its carbs with the large sight glass fuel bowls, so it is easy to check the fuel/float level. The way to do this is to have your vehicle on level ground and with the engine running at an idle. The fuel level should be exactly half way up the window. To adjust the fuel level, first shut the engine off, loosen the locking screw and adjust the large nut that raises and lowers the float on the top of the bowl. To lower the float level; loosen the lock screw and turn the nut clockwise. To raise the level loosen the lock screw and turn the nut counter clockwise. After you lock down the screw you can start the engine and re-check the fuel level. If you need a minor adjustment, be sure to shut the engine off and go through the adjustment procedure again. **NOTE: When you make an adjustment you must start the engine; check for leaks and let the**

**engine idle long enough for the needle and seat to drop and refill.**

**Adjusting fuel pressure with the engine running could cause a fire.**

### **IDLE SPEED SCREW:**

1. Start the engine and allow it to warm up.



2. Connect a tachometer, if your vehicle is not so equipped.

3. **If you have an automatic transmission then make sure the**

parking brake is on and the wheels are blocked. Place the automatic transmission in drive or the manual transmission in neutral.

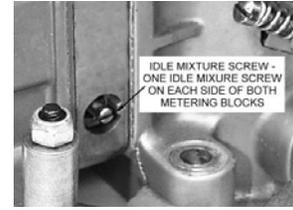
4. If the idle speed is slower than recommended, turn the screw clockwise to speed up the rpm. If the idle speed is too fast, turn the idle screw counter clockwise to slow down. This adjustment should be made to both the primary and secondary screws in equal amounts, so that the throttle plates are opened the same amount. **NOTE: Because race convertors can affect the idle quality sometimes it is easier to set the idle at 1800 RPM and then drop it in gear to check the preferred idle speed. To adjust the speed put the transmission in neutral and raise or lower the idle speed and then put back in gear.**

### **IDLE MIXTURE NEEDLES:**

Idle mixture needles control the air/fuel mixture at idle. The amount of air/fuel mixture used at idle is controlled by engine vacuum. So when tuning the idle mixture, you are actually tuning for best manifold vacuum. Idle mixture needles are found on the metering blocks. Your carburetor will have four idle mixture needles, one for each Venturi, this is known as four corner idle.

1. Attach the vacuum gauge to the manifold vacuum port, usually at the rear of the carburetor and on the throttle body.

2. Adjust each idle mixture screw the same amount to achieve the highest possible vacuum.



3. Now that the idle mixture is set, it may be necessary to go back and reset the idle speed using the idle speed screw. Continue back and forth between the tuning of the idle mixture needles and idle speed screws, until little change is noticed in manifold vacuum and idle speed is correct.

#### **MAIN JETS:**

1. BLP works diligently to ensure proper calibrations based on information provided to us via our carburetor information form. If you have any questions concerning your calibration, please call our tech line before making any changes.

2. In most cases, it will be unnecessary to increase or decrease jet size more than four numbers greater than out of the box jetting. However, exceptions could arise.

4. BLP jets are reamed, flowed, and stamped according to actual decimal size. **Never drill jets**, this seriously alters flow characteristics. As all BLP jets are reamed to final size for consistent flow and accurate sizing.

5. Spark plugs provide the best indication of proper jetting. Allow plugs to cool before making unneeded changes.

#### **AIR BLEEDS:**

Experimenting with air bleeds is not recommended and should only be attempted by an expert carb tuner. Many hours of testing have been performed to obtain the proper bleed size for a given calibration. It is unlikely that a better air bleed calibration can be obtained, however BLP carburetors are equipped with removable air bleeds. Here is some basic knowledge of how air bleeds work.

The main or high-speed air bleeds affect the entire range of the main-metering-system. The purpose of the main metering system and main air bleeds is to emulsify the fuel before entering the discharge nozzle to be outlet into the air stream in the Venturi. The fuel/air mixture becomes leaner as air bleed size is increased. Decreasing the size of the main air bleeds will decrease pressure across the main jet, which in turn will pull more fuel through the main system creating a richer fuel/air mixture. The main or high speed air bleeds also act as an anti-siphon or siphon breaker, so fuel does not continue to discharge or dribble into the Venturi after airflow is reduced or stopped. At high speeds the fuel/air mixture must be on the rich side to prevent damage to the engine.

The idle system supplies fuel at idle and low speeds. The idle system requires a richer mixture than at cruise speed. Unless the idle mixture is richer, a slow and irregular combustion will occur know as a rough idle. Decreasing the idle air bleed size richens the idle mixture by increasing the pressure drop in the system. Increasing idle air bleed size leans the idle mixture

by reducing the pressure drop across the idle air bleeds. The same conditions can be created by backing out the idle mixture screws, which will increase the pressure across the idle air bleeds, pushing more fuel from the idle well creating a richer fuel/air ratio. The Idle mixture screw is the only adjustment recommended for controlling the idle fuel/air mixture richness or leanness.

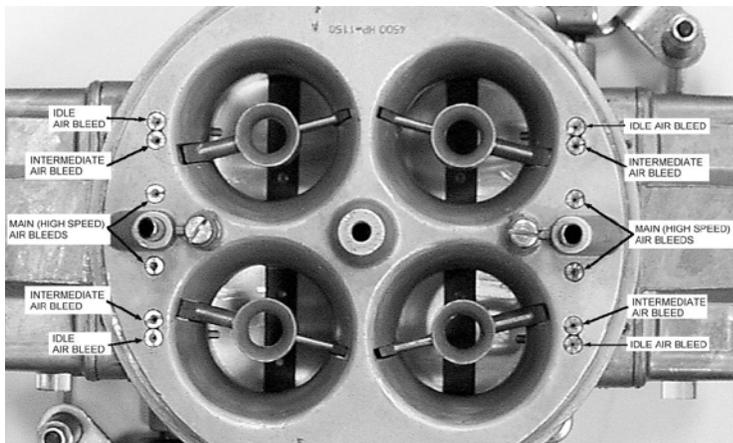
The intermediate idle system (if equipped) is designed to provide extra fuel between idle and the main system operation. As the throttle is opened past idle transfer slot, the manifold vacuum that was being applied to the idle system is greatly reduced. Because of the large Venturi in these carburetors, air flow is not sufficient enough to start the main system, the intermediate system fills this gap eliminating any flat spots in transition from idle to wide open throttle. One thing to note about the intermediate system is that it will continue to operate even at wide-open throttle. This must be considered when tuning the main jets. Since the intermediate system is activated by pressure, changing the air bleeds will adjust the richness of the fuel/air mixture. Decreasing the intermediate air bleed size richens the intermediate idle mixture by increasing the pressure drop in the system. Increasing the intermediate air bleed size leans the intermediate idle mixture by reducing the pressure drop across the intermediate air bleeds.

**ADJUSTMENT OF THE AIR BLEEDS IS NOT RECOMMENDED. AIR BLEED ADJUSTMENTS SHOULD ONLY BE PERFORMED BY A COMPETENT CARBURETOR TUNER WITH A COMPLETE AND THOROUGH KNOWLEDGE OF CARBURETORS, FUEL SYSTEM AND ENGINE REQUIREMENTS.**

**(FAILURE TO FOLLOW THESE RECOMMENDATIONS MAY RESULT IN A LEAN ENGINE CAUSING SEVERE ENGINE DAMAGE, PROPERTY DAMAGE, SERIOUS INJURY, AND/OR DEATH.**

**WARNING! AIR BLEED SIZES SHOULD NOT BE ADJUSTED MORE THAN SIX (6) SIZES IN ANY ONE DIRECTION FROM THE ORIGINAL AIR BLEEDS AS SHIPPED. AIR BLEED ADJUSTMENT BEYOND SIX (6) SIZES COULD RESULT IN A LEAN ENGINE, CAUSING SEVERE ENGINE DAMAGE, PROPERTY DAMAGE, SERIOUS INJURY, AND/OR DEATH.)**

**NOTE:** See air bleed locations and identification. It is recommended that all jet sizes be documented before any tuning of the air bleeds or main jets is started. Below is a chart for



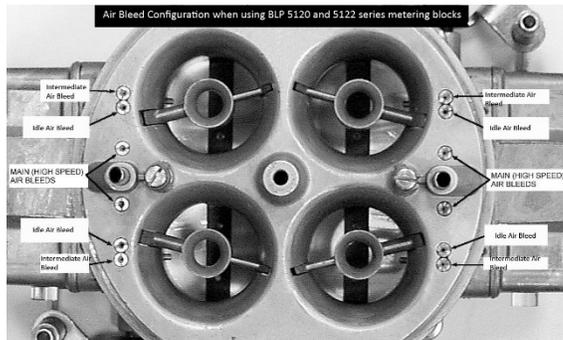
recording the jet and air bleed sizes. Should you adjust the air bleed size or main jet size, this chart will allow the tuner to return the carburetor to the original jetting. Please place this information in a safe place along with any other documentation for your carburetor.

Primary	Size	Secondary	Size
Idle Air Bleed		Idle Air Bleed	
Main Air Bleed		Main Air Bleed	
Intermediate Air Bleed		Intermediate Air Bleed	

Main Jet		Main Jet	
Pump Nozzle		Pump Nozzle	

**See Below:**

**Note: Many BLP 4500 and 3-circuit 4150 style carburetors use a thicker metering block than normal. They are .850" thick compared to the normal .600" thick metering blocks. The 5120 series metering blocks are used for race gas applications and the 5122 metering blocks are for methanol. In either case the air bleeds use the same main body location. On these type carburetors the idle air bleeds are now located in the center and the intermediate air bleed have been moved to the outboard position. The high speed or main air bleeds remain in the inboard location.**



**WARRANTY**

BLP Racing Products, LLC. ("BLP") warrants to the original purchaser only that its new and remanufactured products shall be free from defects in material and workmanship for a period of **90 days from date of purchase**, except for certain fuel pumps which are covered by such limited warranty for one year from date of purchase. In the event of a defect in material or workmanship, BLP Racing Products, LLC. . Will, at its option, repair or replace the product, or any defective part or parts thereof, without charge to the original purchaser.

This warranty does not apply to products that have been modified or altered, subjected to misuse, neglect, accident, improper installation or adjustment, dirt or other contaminants, water, corrosion, faulty repair or used in other than those applications recommended in the current BLP Racing Products, LLC. Catalog or on the website. Purchaser's remedies under this Limited Warranty are strictly limited to the repair or replacement of the defective product or parts. BLP shall not be responsible for any actual or alleged labor, transportation, shipping or other incidental charges or actual or alleged consequential or other damages incurred due to an alleged defect under this warranty. In no event shall BLP's maximum liability under this Limited Warranty exceed the original cost of the alleged defective product to the consumer.

This warranty is exclusive and in lieu of all others, oral or written, and express or implied. Any implied warranties, including implied warranties of merchantability and fitness for a specific purpose, are hereby disclaimed. This Limited Warranty supersedes all prior warranty statements.

**RETURNS**

To initiate the warranty return process, purchaser must return the allegedly defective product to the original place of purchase, along with the dated purchase receipt. BLP can reject a warranty claim if purchaser cannot establish date of purchase. Warranty can be rejected if the consumer cannot establish date of purchase. If purchaser bought a product directly from BLP and (a) BLP shipped the incorrect product, or (b) the purchaser believes product received is defective under BLP's Limited Warranty, please contact our Customer Service Team immediately at

BLP Racing Products, LLC. 1015 West Church Street Orlando FL 32805 Toll Free 800-624-1358 Fax 407-422-2741  
[Sales@blp.com](mailto:Sales@blp.com). [www.blp.com](http://www.blp.com)

407-422-0394 for complete product return instructions, and to request a Return Goods Authorization (RGA). Final warranty determination is at the sole discretion of BLP.

