# Thompson Performance, LLC™ - POWERBLAST SPACER™

PBS-H4LD - INSTALLATION INSTRUCTIONS AND LIMITED WARRANTY FOR MOST 4150/4160 MODEL 4BBL CARBURETORS

IMPORTANT NOTE: Proper installation is the responsibility of the installer. Improper installation will void any warranty and may result in poor performance and engine or vehicle damage.

WARNING: WHEN WORKING AROUND GASOLINE, ALWAYS WORK IN A WELL VENTILATED AREA AND KEEP ALL OPEN FLAMES, SPARKS AND OTHER SOURCES OF IGNITION AWAY FROM THE WORK AREA. FAILURE TO DO SO COULD RESULT IN A FIRE OR AN EXPLOSION.

### **TOOLS NEEDED**

- Medium sized flat-head screwdriver
- 1/4" nut driver and various allen wrenches
- Tools necessary for proper removal and re-installation of the carburetor, including fire extinguisher.
- Safety Glasses
- Work Gloves
- Absorbent rags for gas spillage.

## ADDITIONAL TUNING AIDES WHICH ARE NOT REQUIRED BUT ARE USEFUL:

- Engine analyzer OR a remote tachometer
- Vacuum gauge
- Note pad and pen or cell phone/tablet to keep track of settings as you go.

## **PARTS NEEDED**

- POWERBLAST SPACER with required fittings, hoses and clamps. **PROVIDED**
- Crankcase breather filter with single 3/8" hose inlet: Diameter: 2 in, Height: 1.5 in. **PROVIDED**
- 4-Barrel Square Bore base gaskets; 4150 model carburetor, 4 hole style with 1.716" dia. holes. Quantity of 2 one for under carb and one for under POWERBLAST SPACER. **PROVIDED**
- Carburetor Stud Kit, 2 Inch universal Fit, 2.00" Overall Length, .31" Diameter, 5/16"-24 Thread Pitch, 1.23" Thread Length. *NOT* PROVIDED

### BEFORE PURCHASING THE POWERBLAST SPACER

- Check hood clearance from the air cleaner assembly (including the stud and nut) to the engine hood before purchasing and installing the POWERBLAST SPACER.

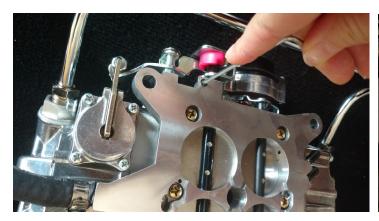
# **CARBURETOR REMOVAL**

- Make sure the engine and carburetor temperatures are cool and the fuel pressure is low to prevent fire or explosion.
- Remove the carburetor per your automobile/carburetor manufacturer's procedures.
- Plug the end of open fuel lines to prevent leaks.
- -Keep the carburetor level to prevent fuel from spilling out of the carburetor. Move the carburetor from the engine to a flat work surface that is away from sparks or other sources of ignition, in a well-ventilated area. Have a fire extinguisher at hand just in case.
- Keep the intake manifold opening(s) covered to prevent any foreign objects from entering the engine.
- Note down the current adjustments of the carb:
  Screw the idle mixture screws in and count the number of turns in (do not crank on them past stopping point, just turn in until they gently bottom-out.) Now, note down the current primary idle speed screw position (and secondary speed screw position as applicable), by counting the number of turns to the left until the throttle linkage fully closes and stops moving. You may need to refer these settings when you install the POWERBLAST SPACER in order to properly adjust it.
- Safely drain gasoline from the carburetor bowls into a gasoline safe container. Turn the carburetor over and note down the amount of transfer slot exposure for both the primary and the secondary throttle blades as shown here:



### **SPECIAL NOTES:**

For most **mild street applications**, it is best to confirm that the secondary throttle blades are set so that the rear throttles are open no more than ½ turn of the screw, with no transfer slot showing.





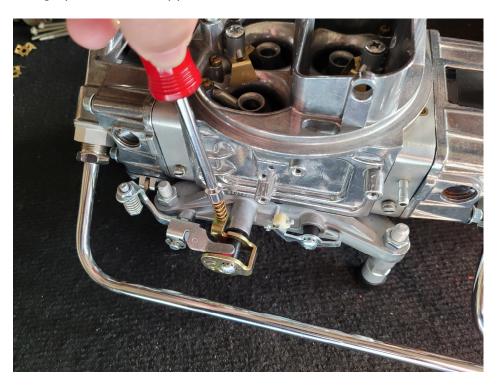
If you are running a **high performance or "Rumpy" camshaft**, which requires a higher engine idle speed (around 900-1000 rpm), your carburetor could possibly have larger than normal transfer slot exposures on the primary venturis, with the throttle blades at the previously required idle position - as shown in the photo below left.

In this case, after noting down the current amount of Transfer Slot exposures (phone photos work well), the **Secondary Idle Speed Screw** (which can be accessed form the underside of the base plate in most cases as shown) should be set to expose the secondary transfer slots just a little, prior to reinstallation of the carburetor.





Some high performance carburetors come with an exterior **Secondary Idle Speed Screw** that you can adjust from the top with the carb installed, just like the Primary Idle Speed Screw. This will make equalizing the throttle opening amount between primary and secondary much easier, which should be done in high performance applications with 4 Corner Idle carburetors.



Several manufacturers also sell a kit to retrofit your mechanical secondary carburetor that does not come from the factory with this accessible secondary adjustment screw (shown below).



# **POWERBLAST SPACER INSTALLATION**

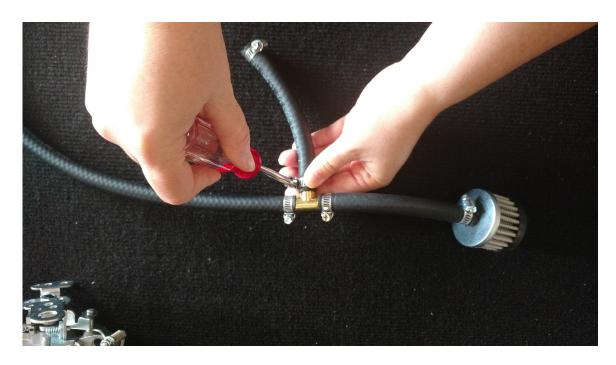
1. Verify you already have, or install, 2" long carburetor studs into intake manifold. Or procure 1½ long bolts with washers (not provided) to attach carb and POWERBLAST SPACER to intake manifold. Be careful not to drop anything down the intake manifold openings, and cover them whenever possible.



2. Install a new base gasket onto the intake manifold. Make sure all meeting surfaces are clean, flat and dry. Cover the intake manifold openings until the next steps are complete and you are ready to install the SPACER. (On a single plane manifold, an open bottom gasket can be used)



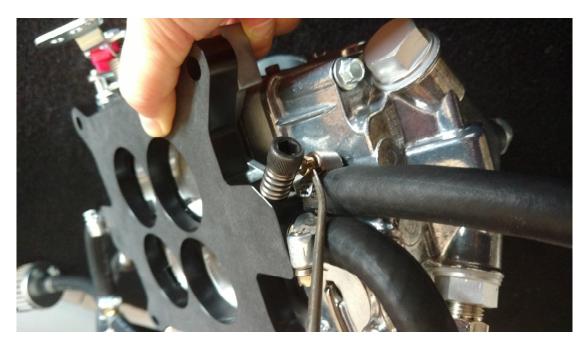
3. Attached the air inlet hoses to the "TEE" fitting and filter, with the 2 short hose sections, as shown here:



4. Attach the other ends of the inlet hoses to the POWERBLAST SPACER with the clamps installed as shown here, so that the tightening screw body of the clamps are on the underside of the inlet hoses so that they don't interfere with any carburetor lines, and also so that the clamp screw heads are **opposite** of the allen adjusting screw of the SPACER.



5. Check to ensure that the POWERBLAST SPACER fits flat to the bottom of the carb with a 4-hole gasket in between them, and with no interference caused by the hose and clamp connections. If you are running a hose to the rear of the carburetor's base plate, you will need to rotate the clamp for that hose so that it does not interfere with the POWERBLAST SPACER's extension, hose and clamp per this photo.



6. If required, reduce the size of the hose and clamp to the back of the carb base as needed (3/8" hose recommended for best fit). Ensure there is no gap created between the carburetor bottom and the POWERBLAST SPACER with a gasket between them, as this could damage to your carburetor when tightening it down to the manifold and cause vacuum leaks. Relocate the hose to the carburetor base if needed, and connect it directly to a manifold fitting, then plug carburetor

base port.



7. Install the complete POWERBLAST SPACER assembly onto the intake manifold with new base gasket and with the air channels of the SPACER facing up.

NOTE: The POWERBLAST SPACER can be installed with the filter hose running to the rear or to the front as shown, or on either side of the engine, depending on what works best for your application.





8. Place another large 4-hole gasket in top of the POWERBLAST SPACER and use Zip Ties to secure the inlet hoses to heater core hose (or other line or bracket) to ensure the inlet hoses do not bend so much that they collapse at any point.



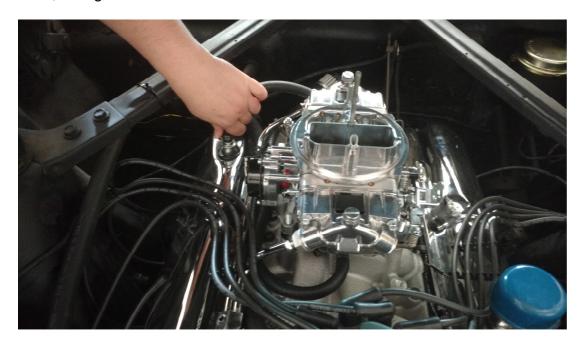
<u>SPECIAL NOTE</u>: The POWERBLAST SPACER comes to you with its air induction inlet screws already at the correct setting for most applications. There is no need to adjust these in most cases but adjustment has been provided for the few applications that may need it. Please contact us prior to adjusting the allen screws in the SPACER.

## CARBURETOR RE-INSTALLATION

9. Install the carburetor on top of the new gasket on the POWERBLAST SPACER, remembering to keep the carburetor level to prevent fuel spillage. Make sure all surfaces are clean, flat and dry. Make sure that the carburetor sits flat on the SPACER and manifold, and does not rock. Readjust hoses and clamps if required so that the carb and spacer sit together flush so there is a good seal between carb, SPACER and manifold.



10. Continue installation of the carburetor as is specified by its manufacturer, including reconnecting all vacuum lines, linkages and PCV line as needed.



- 11. Confirm all linkages are working properly, and that all 4 barrels fully open when the accelerator is depressed fully (need someone to help you with this one.)
- 12. Make sure all fuel lines are properly hooked up and tightened so they will not leak when the fuel system is pressurized.

<u>SPECIAL NOTE</u>: The POWERBLAST SPACER will raise the height of your carburetor in relation to the intake manifold and throttle linkage. If you were not running a ½" spacer previously, you should check to see if the installation of the POWERBLAST SPACER has created a need for your accelerator linkage to be adjusted so that it functions properly and that the carburetor's throttles fully open.

### ADJUSTING THE CARBURETOR

14. **Before starting the engine**, adjust the Primary Idle Speed Screw on the driver's side of the carburetor until it is about <sup>3</sup>/<sub>4</sub> of a turn less (counter clockwise) than the previous setting when you removed the carburetor. As you back it out (counter-clockwise) the idle RPM setting will go down.

<u>SPECIAL NOTE</u>; On HP style carbs equipped with idle air bypass, close the bypass fully. The POWERBLAST SPACER will act like the idle air bypass, and perform this function instead.



Some carburetors will have 2 Idle Mixture Screws – one on each side of the primary metering block (which is called a 2-corner idle).



Some carburetors will have 4 Idle Mixture Screws, 2 in the primary metering block and 2 in the secondary metering block like this (which is called a 4-corner idle).



15. Turn each Idle Mixture Screw clockwise just until they gently bottom-out. DO NOT TIGHTEN PAST THIS POINT. Turn each Idle Mixture Screw counter-clockwise until they are 2 turns out from the bottom-out point on a 2-corner idle application, and 1 turn out from the bottom-out point on a 4-corner idle application. This is the starting point to find final idle mixture adjustment from. As you turn these screws in (clockwise) you lessen the amount of fuel and lean the air/fuel mixture. As you back these screws out (counter-clockwise) you add more fuel and richen the air/fuel mixture.

Connect a vacuum gauge to a full manifold vacuum port at the base of the carburetor (or other manifold port) and connect a remote tachometer if you have them, as they will greatly assist you in finding the best setting for the Idle Mixture Screws – best vacuum and best idle rpm quality. If at any time the engines RPM increases significantly while adjusting the Idle Mixture Screws, reset it to the normal range for your engine.

<u>SPECIAL NOTE:</u> When making adjustments to the idle mixture screws, make as close to the exact same amount of change to each screw as you can, so they are all balanced and all end up the same number of turns out from zero (seated shut). The engine will tell you what it wants, if you listen.

- 16. Start the engine and allow it to fully warm-up. If the idle rpm is too fast or too slow, turn the Primary Idle Speed Screw (or balance both primary and secondary Idle Speed Screws as applicable), to change the idle speed to a normal range for your engine.
- 17. Starting with one of the primary Idle Mixture Screws, turn it in slowly clockwise while listening for change in engine rpm (and using the engine analyzer/RPM gauge and/or vacuum gauge if you have them). Keep turning this first screw slowly, paying attention to how far you are turning it from where you started, until the engine RPM goes up and stays up. Note down how far you have turned the screw in from where it started, to arrive at that peak rise in RPM  $-\frac{1}{4}$  turn,  $\frac{1}{2}$  turn,  $\frac{3}{4}$  turn... whatever it was.



18. Your engines idle RPM is probably now much higher that when you started tuning, so you should adjust the Idle Speed Screws again as needed to set the idle speed to a normal range for your engine.



19. Now set all of the Idle Mixture Screws to the same point – one by one, as this first Idle Mixture Screw's new setting arrived at in step17.



20. If when turning any one of the remaining Idle Mixtures Screws in, the RPM goes up and then back down again, back-off this screw until the RPM goes back to the point when it was highest. Then, go back to the earlier Idle Mixture Screws and turn them back out slightly to match this new setting, so that they are all the same.

21. As a final step, fine tune the Idle Mixture Screw settings for best idle rpm/highest vacuum with small adjustments if needed, keeping all if the screws the same number of turns out from zero – this may be accomplished with small turns either way from the setting in earlier steps. If at any time the engines RPM increases significantly, reset it to the normal range for your engine. Make sure to maintain as close as possible to equal settings of all screws out from zero and the appropriate engine idle RPM. Time spent dialing-in the Idle Mixture Screws will pay off in greatly improved overall engine performance.



## **TEST DRIVE**

Once the idle mixture screws and idle speed have been correctly set, take your vehicle on a test drive noting the performance change. Give your engine slow tip-ins from idle and slightly faster throttle hits in different gears, noting the engines response. Also notice how it runs at cruising speed, around town and on the highway. **Get used to the responsiveness before you stab the gas very hard and very quickly.** 

If you notice any hesitation, first recheck the idle mixture screws to ensure they are correctly set and all balanced by the same number of turns out, then retest on the road. If you need further tuning assistance call us directly at (916) 529-4379 before making any adjustments to the POWERBLAST SPACER's inlet adjustment screws.

### LIMITED WARRANTY

Thompson Performance, LLC, warrants the *POWERBLAST SPACER* to be free from defects in material or workmanship. The warranty is valid provided that the product is properly installed, subjected to normal use and is not modified or changed in any way. This warranty is extended to the original consumer purchaser and has a duration of 30 days from the date of original purchase by such consumer. Thompson Performance, LLC's sole responsibility is to replace the defective part. No cost of removal or installation, or shipping of the product is covered.

Thompson Performance, LLC will not warranty products which have been modified or altered outside our specifications: subjected to misuse, neglect, accident, improper installation or adjustment, dirt or other contaminants, weather or corrosion, gum or varnish, use of improper or poor quality fuel or fuel additives, improper fuel pressure and repair or use other than intended.

Thompson Performance, LLC nor any of its managers, members or employees, shall not be responsible for actual or alleged labor, transportation or other incidental charges, or actual or alleged consequential or other damages incurred by use of the Thompson Performance, LLC, *POWERBLAST SPACER*.

This general limited warranty supersedes any other warranty statements. The purchaser assumes all responsibility for use and compliance with all pertinent laws.

NO OTHER WARRANTY BEYOND THOSE STATED HERE, EXPRESSED OR IMPLIED, ARE APPLICABLE TO THE PRODUCTS OR *THOMPSON PERFORMANCE, LLC*. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN. *THOMPSON PERFORMANCE, LLC* SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE PRODUCT OR FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO THIS PRODUCT

#### WHAT YOU MUST DO FOR THE WARRANTY SERVICE:

In the event that the original purchaser detects a defect in the material or workmanship, the product(s) in question must be returned by the original retail purchaser to the place of original purchase for warranty determination. In the event that the purchaser does not receive satisfaction from the place of original purchase, or if you purchased directly from Thompson Performance. LLC, or in the event there are any questions with regard to this limited warranty, please contact us by email sent to: thompsonperf@gmail.com . Do not send alleged defective parts to Thompson Performance, LLC, without prior approval to do so. If such approval is obtained, the defective part and proof of purchase must be sent, postage prepaid, to the address provided by Thompson Performance, LLC along with the provided return number.

All retail purchasers are fully responsible for filing and paying any and all taxes that should be collected, as required in their local jurisdiction. All resale purchasers are fully responsible for collecting, reporting and paying, any and all taxes required in their local jurisdiction.