

So you've got a Bendix Pressure Carburetor....

Editor's note: This article was found on the Aero Commander Website (www.aerocommander.com). Following these guidelines will insure a long and peaceful life with the PS5-BD. Especially follow the rule about putting the mixture in "park" when the engine is not running. Many thanks to Chris for the most useful information.

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If you own an airplane built in the 40's or 50's you just might also be the owner of one of aviation's most bizarre pieces of hardware - the Stromberg (Bendix) pressure carburetor.

This little marvel of engineering is the predecessor of fuel injection. Although technically classified as a carburetor, it has no float system, and meters pressurized fuel much like a throttle-body injection system.

The PS5 series carburetor can operate installed at any angle, and may even be used on turbo-supercharged engines. I have heard that it is even possible that it may have been configured for a "blow through" system although I can't find any literature on that application.

Some interesting notes

The Bendix pressure carburetor has several unique traits.

It has an airflow-operated auto-enrichment valve, which provides an extra rich setting at full power. It is important to maintain full throttle during the initial climbout using this carburetor. A reduction in throttle will cause higher EGT/CHT than desired because the carburetor is designed to provide an optimum lean mixture except at full throttle.

Many models have an automatic mixture control. The mixture knob is left in the full rich position for all flight operations. A nitrogen-filled bellows assembly automatically compensates for both altitude and temperature!

Complex too!

I've yet to see any carburetor as complicated as a pressure carburetor. It has more little chambers, diaphragms, and passageways, etc. than would seem reasonable. That noted, they run remarkably well when in good condition. They are also quite reliable once rebuilt with the new synthetic diaphragms.

To tell if you have the new diaphragms, look at the edges of many pieces of the carburetor. If you see what looks like black rubber gaskets, you have the older rubber diaphragms. If you see orange, then you have the new synthetic ones.

Don't leave the mixture at idle cutoff!

A pressure carburetor needs to have the mixture control placed at the "park" position after shutdown. If left in the "idle cutoff" position for any length of time, the diaphragms will be damaged! (Ed. note: After speaking to Mike's Metering Service, below, the mixture can be left in ANY position after shut down as long as the new 'orange' diaphragms are installed.)

Fuel pressure is also critical for a pressure carburetor. Most are set at 14 psi \pm 1 psi. Outside of this range the carburetor will fail to meter correctly.

If you get more than a 10 RPM rise during shutdown, the carburetor needs to go to a shop. Also, if your bird isn't VERY easy to start, get the carburetor to a shop. My experience is that engines with a Bendix carburetor should be VERY easy to start - hot or cold. A very slight problem with the carburetor will cause hard starting.

There are only two principal adjustments that may be made without a flow bench: the **metered fuel pressure**, **idle mixture** and **idle speed**. Don't mess with ANYTHING on this carburetor if you don't know what you're doing. Turning almost anything affects something else....

If you'd like a reference for a pressure carburetor guru who really knows his way around a PS-series carburetor, feel free to drop me a note. A PS5BD carburetor exchange is about \$1200 (\$1600 now!). The diaphragm kit is VERY expensive, and it takes a lot of time to properly set one up on a flow bench...

Chris

PS- The reference Chris mentions above is:

Mikes A/C Fuel Metering Service, Inc. (\$60/hr)
9406 E. 46th Street North
Tulsa, OK 74117
(918) 838-6217
(918) 838-7047 fax

or

PRECISION AIRMOTIVE (\$75/hr)
3220-100th Street, SW #E
Everett, WA 98204
(360) 651-8282
(425) 347-2800 Manuals