

VINTAGE CARBURETION NORTH Inc.  
P. O. Box 459  
SOMERS, MT 59932

OVERVIEW:

On March 18, 2009, a SPEEDWAY MOTORS Stromberg "9 Super 7," S/N 0783 0109, was delivered to this facility for the purpose of obtaining an objective review of its appearance, functionality, applicability, and readiness for use.

SCOPE:

Among the parameters examined were its authenticity when compared to an original Stromberg 97, a visual examination directed at the functional aspects of the carburetor, measurement of the critical components and passageways, suitability of the materials for their various applications, and the correctness of the Air/Fuel ratios when the carburetor was operated under various flow rates and load conditions. This facility did not attempt to perform any volumetric or air flow analysis on this carburetor.

VISUAL OBSERVATIONS:

At first glance it becomes obvious that the Speedway "9 Super 7" is intended to be a low cost version of the venerable Stromberg Model 97 carburetor. Apparently little or no attempt was made to make these carburetors closely resemble an authentic Stromberg.

Should anyone having a vehicle equipped with one of these carburetors attempt to have it judged to Early Ford V-8 Club of America standards, they would immediately be docked several points for use of non-authentic parts. A detailed inspection revealed at least 70 non-authentic conditions. At that point the authenticity inspection was abandoned and efforts moved on to a visual inspection of the functional aspects of the carburetor.

FUNCTIONAL INSPECTION:

The most obvious of the visual problems is the use of aluminum for the base casting. The use of aluminum is highly problematic from a wear and distortion standpoint in this application. (Please see Author's Footnote below for further details.) While aluminum is definitely less expensive to cast and machine than is cast iron, it is approximately four times as efficient as cast iron at conducting heat. Also, it has roughly three times the thermal co-efficient of expansion. Within the normal temperature ranges encountered during a carburetors operation, the fuel in the bowl casting will either have the tendency to percolate, or become so cold that it will not atomize the fuel properly. (Note: during our dynamic testing on the dyno, well over 1/4 inch of ice developed on both the aluminum base casting and the bottom of the bowl castings. This "freeze up" anomaly had a noticeably negative effect on the engine's idle characteristics due to poor fuel atomization.) The fluid level adjustment in the bowl cavity was set at least 1/4 of an inch lower than the 15/32 inch recommended by Stromberg.

An unusual and unsafe modification to the Speedway carburetor was the addition of an oversized accelerator pump fulcrum spring. Presumably, the increased spring pressure was intended to make the throttle shaft snap back to idle, and it does that, **SOMETIMES**. An unintended result of this “mis-engineering” comes when the short stroke position for accelerator pump is used. Under these conditions, the throttle shaft will go “over-center” and cause the throttle to lock in the WIDE OPEN POSITION. (THIS IS NOT GOOD.) Of less danger, but still a problem, is the fact that if someone were trying to run a multi-carburetor configuration with these oversized springs, they would definitely run into foot fatigue problems after a short period of driving.

It appears likely that whoever copied the bowl casting unknowingly used a carburetor that had been modified for methanol operation as a pattern. This error provides a totally improper geometry for both of the booster venturi openings, and there is insufficient material left in the casting to correct the problem. This problem, coupled with the fact that emulsion tubes do not extend deeply enough into the boost venturi, and that the high speed air bleed orifices are incorrect causes serious performance problems. Unfortunately, these three factors render the bowl casting just about useless. It is next to impossible to repair these flaws without substituting a properly designed casting.

While the carburetor was disassembled for inspection, the main jets were measured and the power valve was tested. The interior surface of the main metering orifice of both of the main jets was CRUDE. It appears that these critical orifices were drilled and not reamed to their final size. The power valve that came installed in the carburetor was defective in that it was fully open under all conditions. This condition, if not corrected, would have caused excessively rich engine operation and probably damaged to the engine over time. The defective power valve was replaced with a known good part, and its proper operation was then verified. The throttle shaft fit within the base casting bushings was measured at over .010 of an inch oversized which falls into the sloppy category.

#### FUNCTIONAL OPERATION:

Knowing that the fluid level in the bowl was still very low, the 9 Super 7 was installed on the dyno and starting was attempted. As would be expected, the cold engine tried to start but would not continue to run for more than a revolution or two. The purpose of this test was to attempt to duplicate a typical “Out of the Box” installation, but was judged to be unsuccessful. The Speedway carburetor was replaced with a known good Stromberg 97 and the cold dyno engine started easily. The engine was warmed up to 150 degrees F., and then shut off. The Speedway 9 Super 7 was reinstalled on the warmed up engine and started. While it did remain running this time, it would not run smoothly and required adjustment. The engine would not run above 2,200 R.P.M. even without a load applied. These results were not unexpected, and can be attributed to the fuel level being set so low. Anyone simply taking this carburetor out of the box, installing it on an engine, and expecting it to run would be very disappointed.

After resetting the float to the proper level, the “9 Super 7” was reassembled and installing back on the dyno, and a complete set of air/fuel ratio diagnostic tests, with varying load conditions, were undertaken. In general, the carburetor idled well until ice started to form on both the base and bowl castings. The air/fuel ratios at R.P.M. and under load were disappointing and could not be completely carried out due to erratic readings.

The instability of the test data appears to be due to a combination of the improper and inconsistent sizing of the high speed air bleeds, the improperly shaped venturi mouths, and the improperly positioning of the emulsion tubes within the boost venturi. Only by extrapolation could an average Air/Fuel ratio of 11.2 +/- 0.5, be determined. An Air/Fuel ratio of 14.7 is generally considered optimal for most internal combustion engines at sea level. It is obvious that there is something wrong with the main jet to venturi diameter relationship in this carburetor.

#### SUMMARY:

The Speedway “9 Super 7” carburetors do bear a marginally acceptable physical resemblance to the original Stromberg 97s. However, anyone expecting an authentic appearing part will be disappointed. Unfortunately, the functional similarity to one of the original Stromberg 97s is a much bigger stretch of the imagination. The use of aluminum for the base casting material is very problematical, and the defects in the design and manufacturing of the bowl casting place both of these parts in the “JUNK” category.

For anyone expecting to take one, or more, of these carburetors out of the box, install it on an engine, and have it run, much less perform properly, would be much better off to spend a little more money and purchase a quality part in the first place.

### **CAVEAT EMPTOR!!**

Jere A. Jobe

Vintage Carburetion North Inc. March 23, 2009

AUTHOR'S FOOTNOTE:

Over the past year or so, I have received at least a dozen of the Stromberg Speedway aluminum base assemblies for repair. Judging by the butterfly to base casting wear patterns found within those bases, I estimate that these bases have been operated for several hundred miles or more. The owners of all of these assemblies complained that the idle characteristics had become unstable, and that the butterflies had developed a tendency to bind or stick when in the closed throttle position.

Careful inspection revealed relatively that deep, .005 to .015; groves had been worn into soft aluminum of the base casting bores. In one case, it took a hammer to free up the butterflies.

Opinion:

It is a shame that this attempt to develop a good "ECONOMY" type replacement carburetor has fallen so far short of its goal. There is a big difference between "Inexpensive" and "Cheep."

**What ever happened to good old basic engineering and quality control?**

**Yes it cost more to do something right, but it is well worth it in the long run.**