There is a particular type of overheating which takes place in pre-war straight-8 Buicks that this solution addresses. The problem is difficult to diagnose unless you're intimate with the intent and operation of the by-pass valve.  Please note that the procedure and approach described here is for large series engine in a 1937 Century. The smaller series engine, used in Specials, also uses this type of coolant by-pass valve and the procedure outlined here is applicable. If you are working on a small series engine you may observe some minor differences in the images of the casting and valve from those pictured here.

* The symptom is that the Buick gradually overheats when being run at high RPM (like an extended drive on the highway).  For normal city-type driving, or lower speed continuous driving no overheating takes place.
* When diagnosing, on the highway when you begin to observe increasing temperature, reducing your speed quickly mitigates the problem, with the operating temperature returning to the thermostat set point and remaining constant thereafter as long as the lower speed is maintained.  Increasing your speed again, you again observe gradually increasing engine temperature.  The temperature will continue to climb as long as the higher speed is maintained.

The following three files which make up this documentation are:

* Logan\_ByPass\_Procedure.docx:  This is the article Harry Logan provided from a club in California.  It exactly described the symptoms I encountered, and the fix resolved them.
* Bypass\_Original\_Bottom1.jpg:  This is the original by-pass valve, in place in my Century.  It appeared to be working properly, although I had the overheating problem as described.  My educated guess is that the spring was too weak to prevent it from opening at high RPM.
* Bypass\_Mod\_Bottom\_Inserted.jpg:  This is the completed modification.  I used a 1/4" hole in the freeze plug.  This fix has fully resolved my overheating issue.

This casting which carries the by-pass valve was changed in the later versions of the Straight-8 (I examined one from another member's 1948 Roadmaster).  The bypass valve was removed, and the casting is solid with a small opening.  The factory approach to solving this problem is essentially identical to the fix described in the article.

**An alternate cause of overheating:**

When I first completed my restoration, I had an issue that the Buick would overheat after about 5 minutes of operation, only for the first use of the day.  I would stop, shut it off, then if listening carefully would suddenly hear a rush of steam and hot water into the radiator.  I determined that I had initially installed the thermostat upside down, so it was exposed to the cooler water in the radiator and did not open.  Only after stopping was enough heat conducted to the thermostat to open it up.  Once the thermostat opened, no more overheating for the duration of that day.

Please feel free to contact me at your convenience should you have any further questions or concerns

**Best Regards,**

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