Tom Hundt's Infomonger Pages

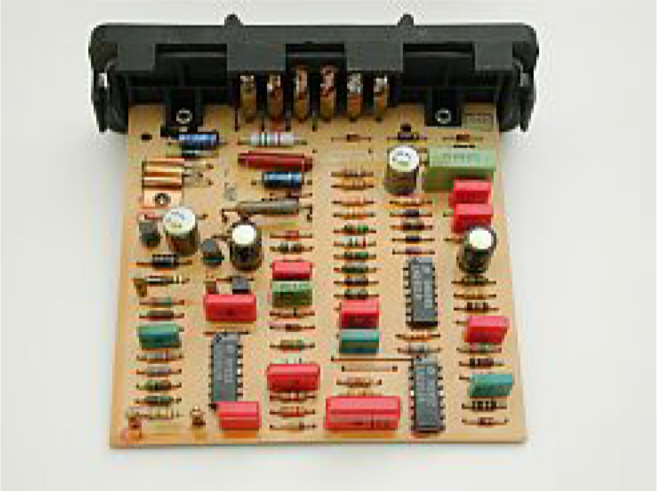
Mercedes-Benz Tinkering - High Idle Hell

I just went through *High Idle Hell* with my '83 380SL. It was idling at 1500, most of the time, and stalled on occasion. Here are some notes.

This is a common problem with these cars. Examples: example example example . (You may notice a common thread here: The computer.)

Components

For '83, the components to the electronic idle speed regulation are:



- Idle speed compensator (aka slide valve)
- Idle speed controller (aka "computer" although it's really an analog circuit)
- Overvoltage "relay"
- 16C temp switch
- The fuel pump relay is also involved, but if that was bad, probably you would not be driving at all.

Other years include other temperature switches and stuff. RTFM. (The factory cdrom describes this stuff under 07.3-112 "Testing electronic idle speed control".)

Normal operation

- Normal idle, warmed up, should be right around **500** rpm. It should stay there very solidly.
- When you start the car (and as with any fuel injected vehicle you should NOT have to touch the throttle at all to start it, just turn the key), it should briefly rev high as it starts (this is done by the cold start valve) and then may stay idling high for a short period (due to warm up compensator [20 sec max] and 16C temp switch) after which it should go to 500. In any case, it should NEVER be as high as 1500 by itself. The warm-up stuff brings it to 800-1000, something like that.

Abnormal Operation

Here's a typical pattern:

- Starts and idles about 800 rpm.
- As it warms up, idle goes up, finally hovering around **1500 rpm**.
- This causes "clunks" when shifting into gear -- not good for the trans!
- Stopped at traffic lights etc., it may stall.

Quick tests

- If your idle stays at 1500 all the time, most likely it is the electronic idle speed regulation. (If you want to simulate this in a properly working car, just yank the idle speed controller plug off.)
- Jiggle the connectors to the slide valve and the controller box. If it has an effect, the plugs can be opened and the connections re-soldered. The connectors can also be replaced.
- Check the slide valve. You can put 12V and ground on the slide valve's connectors, it should click smartly when you do. Remove the voltage, it should click back (there's a spring inside). This is a loud clack, very obvious. (Factory manual says don't leave 12V on more than 5 sec.)
- You might want to take the valve off the car and clean it out, as best you can. While you're at it, check the hoses attached to it.
- Check that there is power on the idle speed controller plug, pins 2 and 4, I think. (If this isn't the case, you have to work backwards: overvoltage relay, overvoltage circuit, etc.)
- Check continuity on the wires to the slide valve from the controller plug.

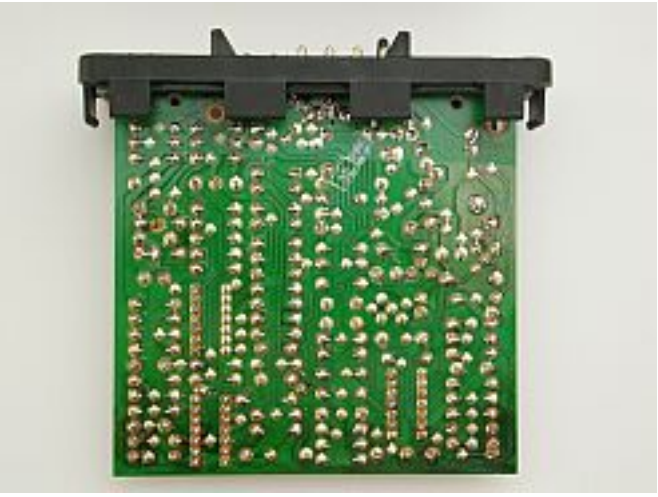
Other Things to Check

- Check that the plug connected to the idle speed controller isn't switched with that for the heater.
- Check for vacuum leaks (probably always a good idea).

If It's the Controller (Computer)

If everything else seems okay, it's probably the controller. From my research, this is it in most of the cases.

- Take the computer out of its plastic case.
- Plug it back in to the connector and let the board just dangle.
- Start the car and let it run at its high idle.



- Start monkeying with the controller circuit board. (It won't hurt you. You probably won't hurt it, either -- these are discrete linear components, pretty heavy-duty. Nowadays it would be all on a single chip.) Move the cable around, gently press on components and the solder side -- while listening to the engine. Your goal is to hear some change in speed. On mine, I had to actually flex (bend) the board slightly, and then, magically, the idle would go down. (The "Aha!" moment.)
- Once you you've located a likely spot, take the board out, and re-solder in that area. (Melt connections with your soldering iron, and let them re-solidify.) Here you're repairing "cold" or deteriorated solder joints. They may look okay but are not!
- Reconnect the board and see if it works any better. If not, keep monkeying. (It took me a little while to find it on mine.)
- This excellent article describes the procedure: "High-Idle Problem" [mbcoupes.com]

If you want to let someone else do the soldering, here are some places to buy remanufactured ones:

- benz-store.com.
- Beckmann Technologies 800-742-1021, 919-381-2700 (someday they may even have a website).
- Or, you can pay a lot at the dealer.

Once You've Gotten It Working Just Sitting In Park

- If it makes a difference whether you're in P/N or one of the drive gears, then check the wire on the computer's plug for that (pin 8).
- If it makes a difference whether the A/C compressor is on or not, check the connection for that.
