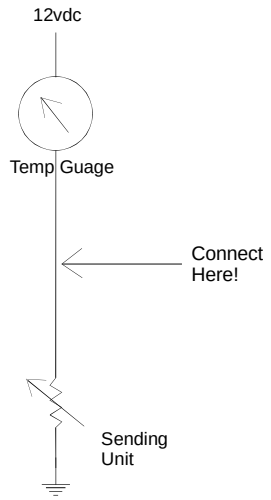
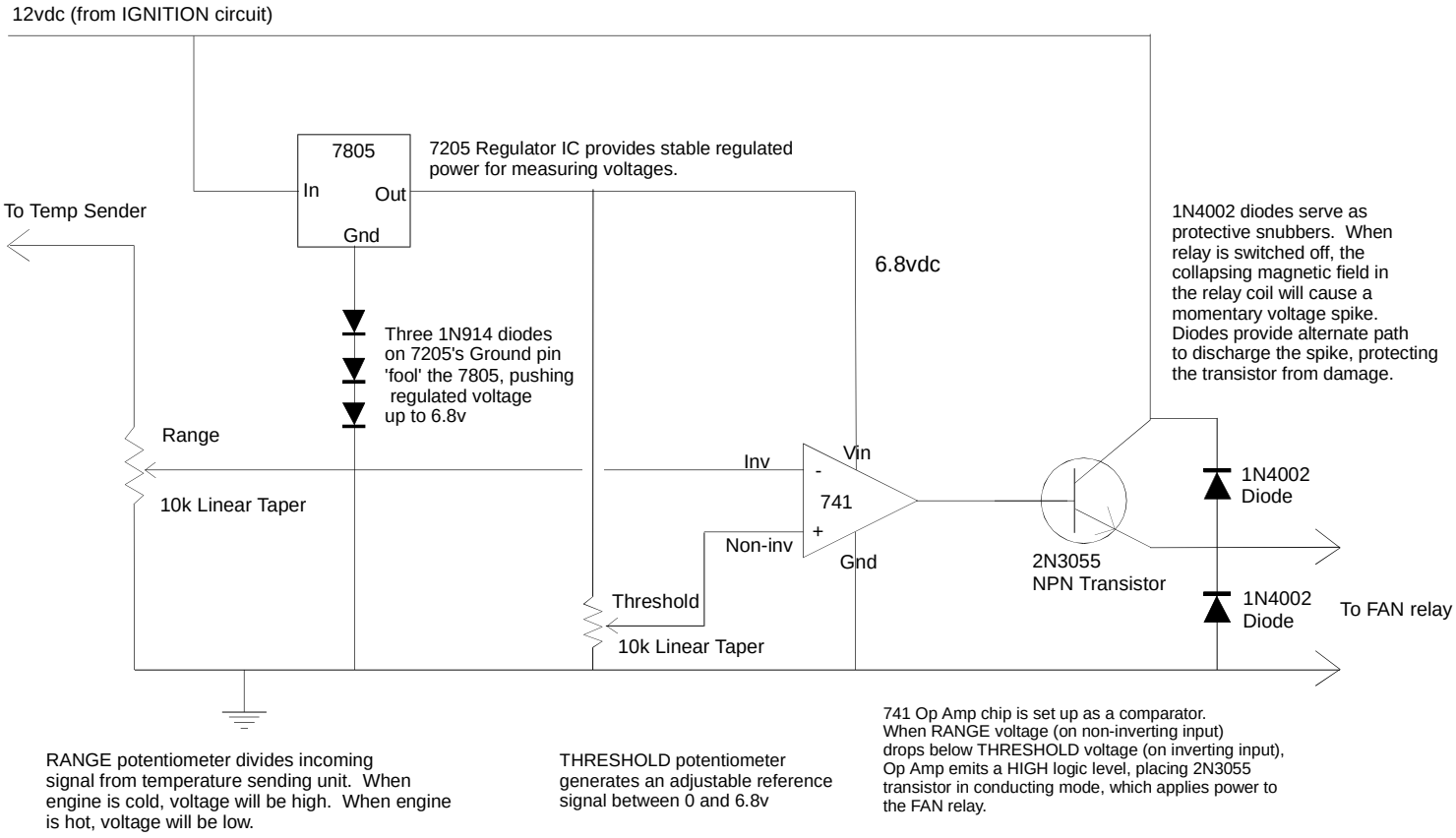
Typical Temp Gauge Circuit



Your engine's temperature gauge is a current meter. The sending unit is a variable resistor, typically with high resistance when the engine is cold, causing minimum current flow through the dash gauge. When the engine is warm, current is higher, pushing the meter's needle higher.
As a resistance bridge, this makes the voltage between the meter and sending unit HIGH when cold, and LOW when hot, hence, the Op-Amp is set up to INVERT it's output signal.



Mechanical mounting notes:
None of the parts shown require heat-sinks. Circuit is best assembled on a piece of etched circuit board, but point-to-point wiring on perfboard is okay too. None of the parts types are critical- close equivalents are fine.

This circuit is SIMPLE. All concepts of this circuit's operation can be found in the Forrest Mims III notebooks sold at Radio Shack, as well as in semiconductor reference guides and electronics textbooks. It is NOT protected by any patents, especially not by me. You can copy this diagram, build your own, and even sell 'em, for all I care. It is NOT a 'reverse-engineering' of any commercial product, so use it however you'd like... you can even use it for other applications.

Adjustable Thermostat Switch for Electric Engine Cooling Fans

by Dave Kamp, KWØD