

AUTOMATICS FAILURE TO START WHEN HOT

Suggested Cure For Non-Starting Hot Engine:

"Generous Motors"
||

Note:

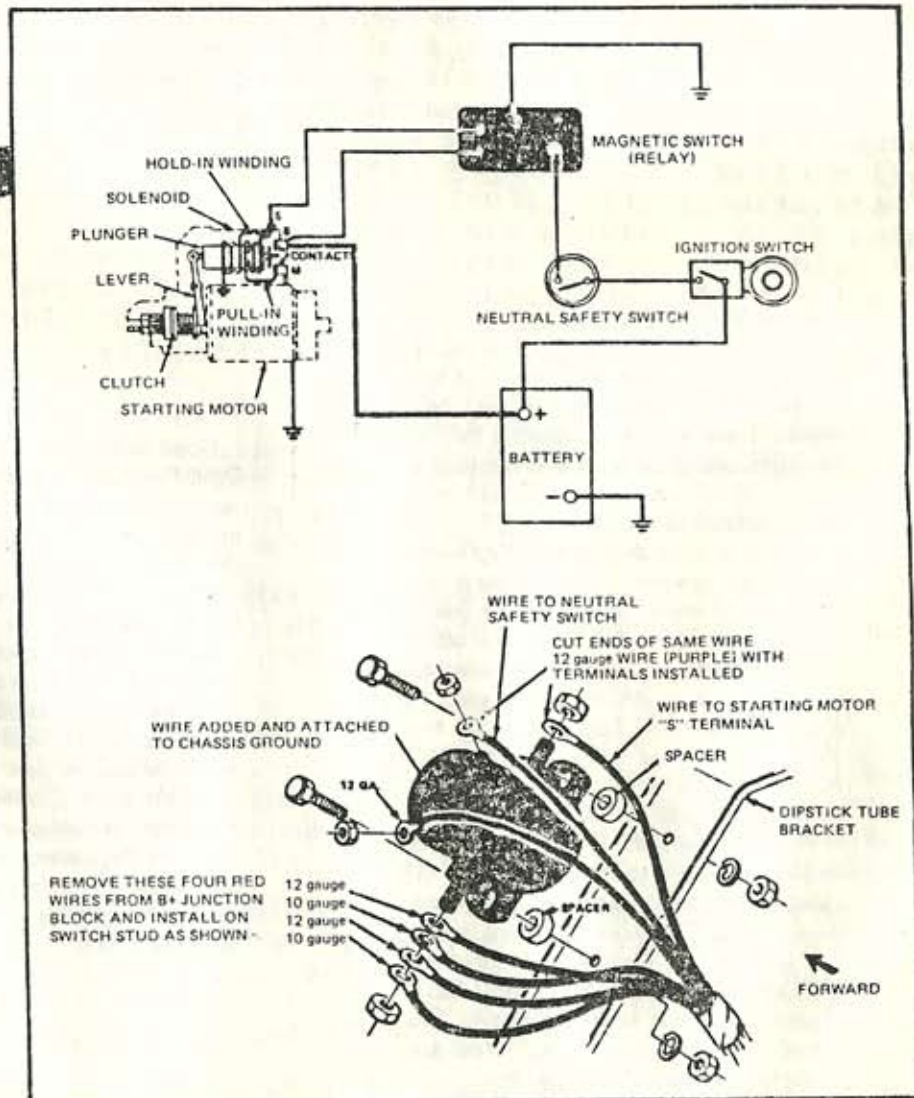
(Toronado wiring will differ slightly from Chevrolet)

3. Mount Switch to bracket with locking fasteners.
4. Unwrap tape from engine harness wire bundle (about 12") in area adjacent to switch.
5. Locate the #12AWG wire with purple insulation. This wire connects the neutral start switch to the starter motor solenoid "S" terminal.
6. Cut the wire at a point which will allow connection of the severed ends to the magnetic switch.
7. Crimp a suitable lug for one of the large studs on the switch, to the wire connected to the "S" terminal of the starter solenoid.
8. Crimp a lug to fit the small stud on the remaining end of the cut wire. (Refer to figure 2 to clarify wire hookup.)
9. Either disconnect all of the wires from the B+ junction block and attach them to the other large stud on the magnetic switch, or run a piece of #10-AWG wire from the junction block to the switch.
10. Connect the remaining small stud on the switch to a secure chassis ground.
11. Reconnect ground cable to the battery and test to determine if the repair works. (Factory time is 1.2 hours.)

MOTOR HOME MALADY

Chevrolet had the problem with their 1978 P-30 motor homes equipped with 350 or 454 C.I.D. engines, and they corrected it during the model run, by adding a new magnetic switch and harness. The problem is failure of the solenoid to engage, particularly after hot soak periods. This condition is due to a voltage drop caused by high ambient temperatures and the remote location of ignition switches. The use of a magnetic switch (relay), part number 001486 is recommended for vehicles already built before the change. The following steps make installation and connection easy.

1. Remove ground cable from battery negative (-) post.
2. Use holes in switch mount for template to drill holes in oil filler tube bracket. It may be easier to remove bracket to drill.



Subject: Engine Hard to Start When Hot

We have a '71 Cortez with the Olds. engine. It was very frustrating after a long run to find the starter would not turn the engine over to restart. We had a combination of things in the loop and had to eliminate them one by one. It seems that the addition of a relay, like the one used in the coach battery circuit, was the most effective.

The relay was attached to the frame near the starter by drilling and tapping 2 holes in the bottom frame flange and attaching with machine bolts. The wire from the switch was removed from the starter solenoid and attached to the side terminal of the relay. A 10-gage wire with loop terminals was connected from the heavy terminal on the relay to the starter solenoid post from which the switch wire was removed. Another 10-gage wire was connected from the other heavy relay terminal to the terminal on the solenoid that the battery cable was attached.

By this arrangement the electricity from the battery does not have to go through a number of connectors, switches and longwires to actuate the solenoid. This electricity now only actuates the relay which does not demand high current to close. When the relay closes the current from the battery cable goes to the relay and then to the solenoid on the starter through heavier wires (10-gage) providing more amperage to close the starter solenoid. This snaps the solenoid closed and through the tightly closed contacts provides the power to the starting motor.

However, this did not completely accomplish the task. An additional ground cable was added from the frame to the left rear of the engine behind the oil dip stick area. After all, the relay and solenoid were only on the positive side of the battery circuit. The ground cable assured a sufficient size conductor to carry the 300 plus amperes load needed to turn the starting motor.

Starting Problem Solved

Your item in the April 1978 issue helped me with a starting problem on my Southwind motorhome built on the GMC chassis. I got so tired of waiting half to three-quarters of an hour after shutting it off (before it would re-start) that I was ready to throw in the towel.

I took it to three dealers and they never heard of the problem. They told me it was in the coach wiring, and I said the coach doesn't start the engine. The zone office said the number for the magnetic solenoid switch was not a GMC number. I went to a Chevy dealer and they ordered me the part and it came back with a GMC number, which is the correct one you mentioned in your article.

My RV dealer knew of my problem and helped me, but it took some doing. I located a GMC dealer and they took more interest in it. The work was done and it has worked fine ever since. Incidentally, my warranty was out in March and I had it repaired in June, without charge. The moral is, "Keep after them." You are going to find a good dealer in time.

Dale Roseman
La Porte, Indiana

Good to know your problem is solved, Dale. For those of you who didn't see the item in the April 1978 issue, the problem involves some Chevrolet and GMC vehicles in which the starter solenoid requires more current than normal when it gets hot. Voltage drop in the 12-volt line to the solenoid doesn't provide the needed power and it's necessary to sit and wait while the solenoid cools. But the problem can be corrected with installation of a magnetic switch, part number 001486, available from Chevrolet dealers. The switch acts as a relay and feeds current direct from the battery to the solenoid. The wire which formerly provided the power to the solenoid is used to trigger the magnetic switch.

MORE ON THE AUTOMATIC'S HARD TO START WHEN HOT PROBLEM

In going from a '67 to a '77 Cortez, we encountered the perplexing problem of Hard To Start When Hot which left me using a number of Rube Goldberg remedies on ferries in order to get restarted with long lines of cars behind. One such was starting the generator to run the overhead air conditioner directing the cool air into the engine compartment.

This, by the way, was not unique to Cortez but to GMC and Chevy trucks as well in the 454 and 455 CID category. Other suggestions (1) Use a Bevil nut which is a nut with a small funnel attached that supposedly flattens and gives better contact...does not work; (2) Use shield between starter and engine block...this does not work either; (3) This one must have fractured their ego...place a Ford solenoid on frame and run 18 gauge wire to GM solenoid to cut down on voltage loss...this did not work; (4) Finally in 1980 GM came out with a tech blurb in the truck division (GMC & Chevy) change solenoid spring with part #1978281, cost about \$1.46, and trouble will be solved. This works. The spring is twice as thick and a bit shorter than the original equipment. It even makes sense because most of us know that a spring that is exposed to heat loses some of its tension, therefore, contact is broken. For those of you that are half-way handy with tools, do it yourself.

Lee Saucier '77 Cortez
Great Falls, Mt.

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Because the hot engine problem still exists for many Cortez owners, notable those with the 455 CID engines, I think it's time I relate my experiences and apparent cure of this curse.

Probably no one has had a more stubborn case of this kind than I, and after listening to a lot of so called expert advice, I did perform the following items, not actually correcting the fault. (1) Experimented with jumper wires & switches; (2) installed a new starter circuit relay unit; (3) installed new starter solenoid & starter switch assembly; (4) cleaned, tested, and checked all electrical connections; (5) paralleled the positive battery cable to the starter; (6) made and installed metal heat shield around starter solenoid; (7) had starter completely rebuilt into the so called high torque type using special field coils etc. I even kicked the tires and cursed, but because I'm too lazy to crawl under and pound the starter with a hammer, as some parties recommend, I did use the cooling off method which never fails to get a start after about 3 minutes. This involves using the roof air conditioner and directing the cold air down the open engine hatch.

Now, after five years of being used as a General Motors guinea pig, I decided to go whole hog and find the delicate heat sensitive unit that fails with under the hatch temperatures.

Ever drive down the road and suddenly notice that all the electrically operated gauges have gone dead on the panel? Well, this is caused by the failure of the same heat sensitive unit that must be energized to allow the starting circuit to function. This proves to be the starting circuit relay, that hand grenade-shaped thing with three wires mounted on the right side of the engine cradle, directly behind the alternator.

The solution to this bug was so simple that it now seems foolish that it should exist all this time. Splice about 3 ft. of #10 wire to each of the existing wires, then move this unit to a new location, ahead of and below the engine radiator where it will be exposed to a cool flow of air. Be sure it is properly grounded.

In my case this was done some time ago and I have had no start failures since.

Ralph Rehbine ('73 Cortez)
Farmington Hills, Mi. 48018

John Boll, Ironton, Ohio (1973 Cortez) sent along the following diagram on how he solved his problem with intermittent starting. After checking coils, changing starters, and neutral switches, he located the problem in the battery compartment. The relay there was so close to the wall that the positive terminal was arcing and grounding the positive, so no voltage to the starter. A piece of rubber was cut and glued to the back wall to insulate.

