

THE STORY OF A THIRD FACTORY FUEL TANK

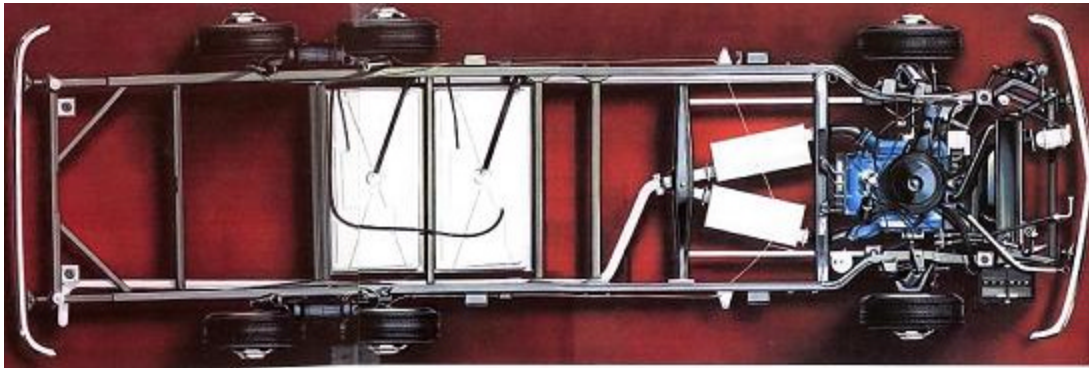
By Chuck Garton

This article does NOT apply to 23 Foot GMC's.

My first GMC Motor home was a 1974 26 foot Sequoia purchased on 2 November 1977.

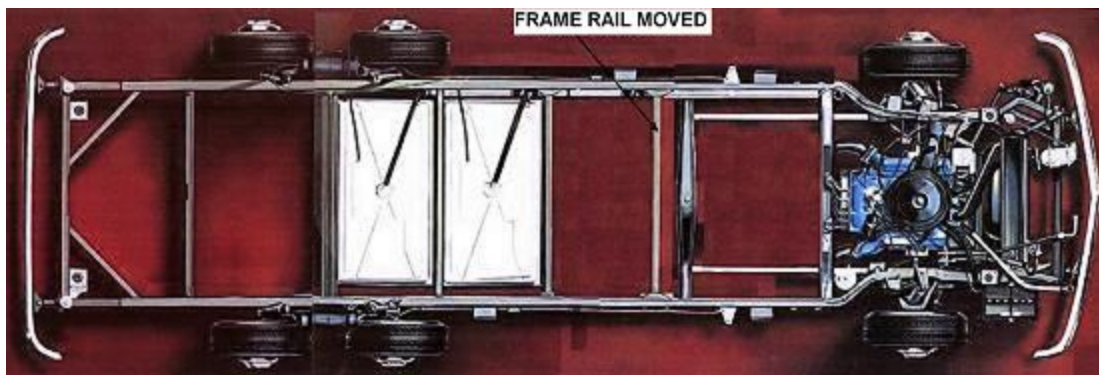
I did not find out about the GMC Clubs until the fall of 1991.

In 1973 the first Arab Oil Embargo took place. The second took place in 1979 and at the time, seemed endless. One could by gas on even or odd days determined by the last digit of the license plate, and frequently only 10 gallons at a time.



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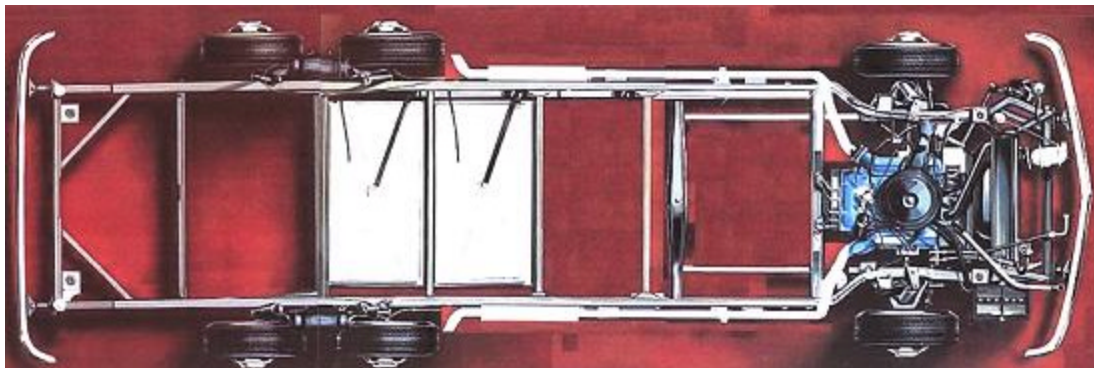
This got me thinking about additional fuel storage. Picture 1 is copied from a sales brochure. After measuring, I removed the exhaust system, and moved the bolted in frame rail for proper fuel tank spacing and ended up with Picture 2 and decided this could be done. Next, I crawled under the Coach and measured the real components and verified that it would work.



2

The exhaust system was showing its age, plus the fact that 1973 and 1974 coaches had bare plywood floors (no insulation between the floor and whatever was beneath, including the exhaust system) convinced me to replace it. New to Ridgecrest, CA was a repair shop with an exhaust pipe bender.

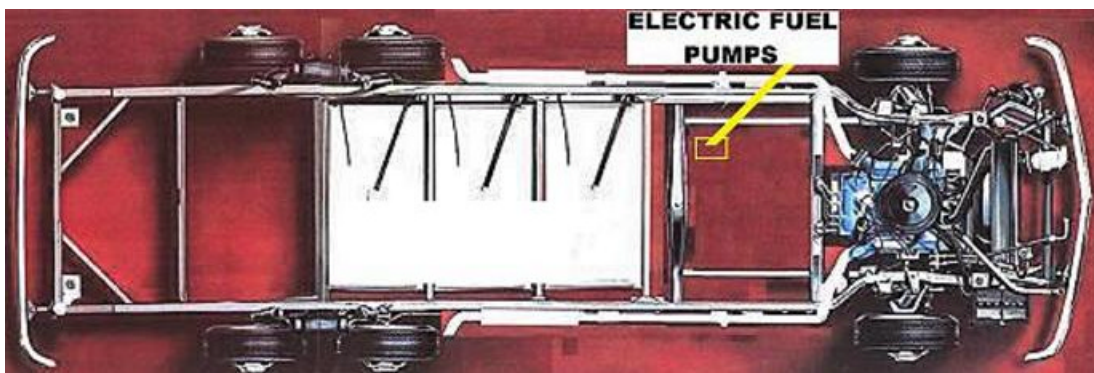
The result is shown in picture 3.



3

During this time frame, I operated the coach with all the windows open and discovered exhaust would come in either open rear side window. After installing the duel exhaust system, no exhaust came in any open window. I was unaware of the exhaust flow through the intake manifold. The first symptom was a hole burned through the choke heat sensing tube in the intake manifold. Three months after replacing the tube, it burned through again. This time, I capped off the port and installed an electric choke, an elegant solution to a symptom, ignoring the real problem.

With the exhaust system working adequately, I proceeded with the third tank installation. Prior to installing the tank, I installed a “tee kit” (GM Part Number 723309) to fill the third tank. Next I installed the tank (picture 4). There is no difference when filling the tanks, except it takes more gas.



4

Getting the gas to the carburetor with no mechanical fuel pump, each tank has its own electric fuel pump. Selecting the fuel pump selects the tank and hooks the fuel gauge to that tank. I used three LED's to indicate which tank was in use (1 LED on = Tank 1 (rear), 2) LED's on = Tank 2 (middle) and 3 LED's on = Tank 3 (front).

On Sunday, 6 June 1993, disaster struck. While driving on the Naval Weapons Center China Lake in 105° heat at 6:00 PM, the coach caught on fire and burned completely (pictures 5 and 6). The

fuel tanks were full and after the fire, they were intact but empty. There was no trace of the propane tank. Further investigation revealed a wet spot (Gasoline) aft of the left front wheel where the coach was parked just before the trip home. Evidently, after 15 years, the exhaust heat from the left header pipe had baked the fuel filler hose enough to cause a fuel leak. A local chemist had invented "Beerstone". This was supposed to be fireproof, and I had installed it in the engine compartment. The stuff worked, but the fire started in the wrong place (fires do that). It was intact laying on the remains of the engine.

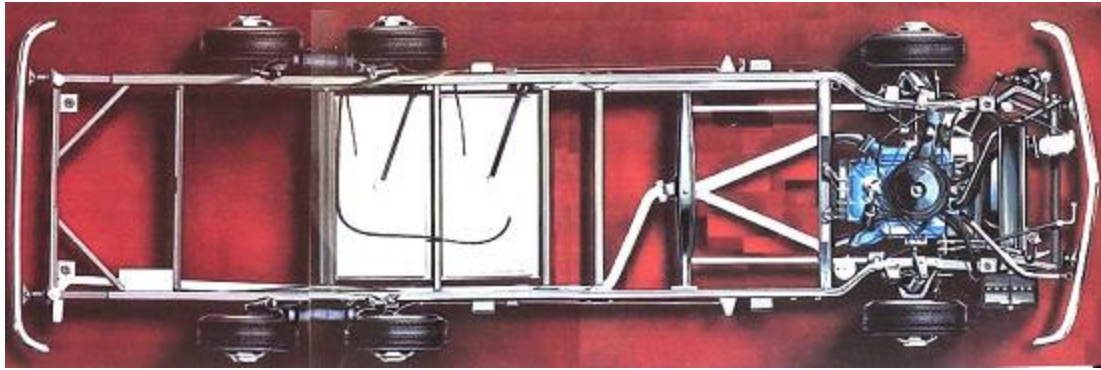


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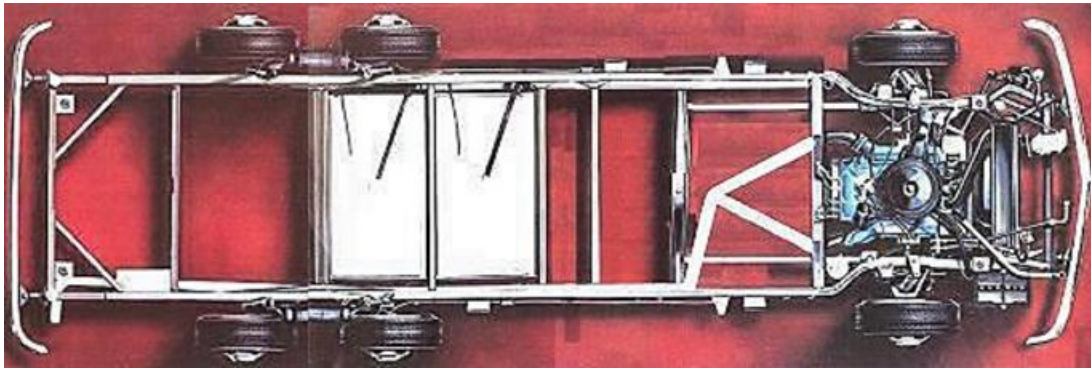
6

In August of 1993, I acquired an early 1977 Kingsley with a 455 engine. At that time, I decided against installing a third tank because of the duel exhaust system disaster. Then I heard Emory Stora's seminar at the Estes Park Western States Rally (September 2005). It had to do with engine breathing (both intake and exhaust) and he talked about a single rear muffler exhaust system with three inch tubing and mandrel bends that he had designed and Jim Kanomata was selling in kit form (picture 7).



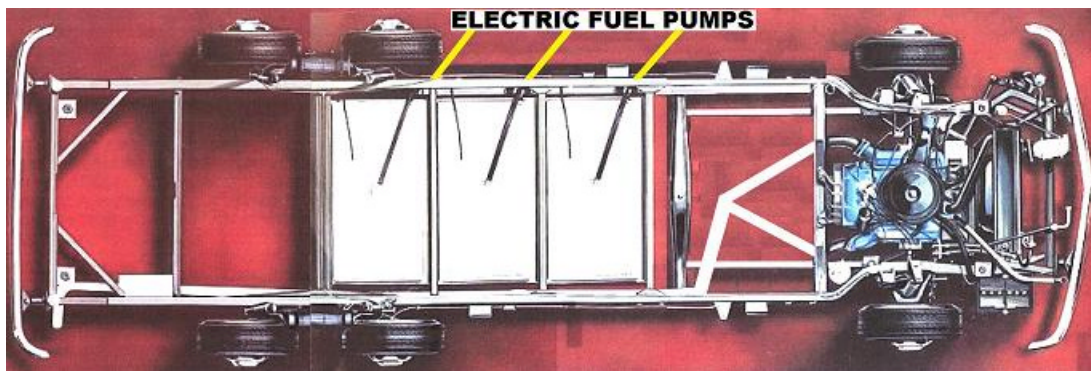
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He had an example of Emory's design at the rally. After the seminar, I talked with Jim and he agreed to alter the design (picture 8) and build it, also in kit form.



8

I moved the frame rail and installed the third tank, which is how the coach looks today (picture 9). The exhaust system is quieter than the previous system and the GMC moan is gone. I plan to add the heat shields between the exhaust pipes and fuel tanks (California coaches came this way) and insulate them. I also plan to add an insulated heat shield between the front fuel tank and the torsion bar anchor cross member to keep more exhaust heat out of the fuel tanks.



9

I did things differently this time. Pictures 10 and 11 show the use of steel fuel lines on top of the tanks. The tanks flex enough, so that I had to use two inches of rubber fuel line (100 PSI Fuel injection) on the supply and vent lines. The supply, vent and vapor control lines are soldered to the tank. I have found that running separate 3/8" vent lines to the top of the left front fender well and then combining them into the 1/2" stock vent (picture 12) allows faster and more complete filling.



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I mounted the fuel pumps (again, one for each tank) outside of frame rails (picture 13). By mounting them this way, I was able to get each pump closer to its tank (electric fuel pumps are

better pushers than pullers). Also on 100°+ days the area outside the frame rails is about 25° cooler than the fuel in the front tank.

Picture 14 shows the fuel tank temperature sensor installed. All three tanks have temperature sensors. When a fuel tank is selected to pump from, the temperature sensor for that tank is also selected. The hottest temperature observed was 148° F in August 2005 on I-15's sixteen-mile climb just north of Baker, CA on the way to Las Vegas.



14

Prior to the third fuel tank installation, I was using a Westach duel fuel gauge (picture 15). Prior to the duel fuel gauge installation, I was using a single fuel gauge (picture 16). After the third fuel tank installation, I re-installed the single fuel gauge, so that each fuel tank now has its own gauge.



15



16

Last summer, during a trip to the east coast, I experienced vapor lock problems when forced to idle on 100°+ days for more than three minutes. When I returned home, I abandoned the stock steel fuel line that ran inside the frame around the engine and ran a new steel line outside the frame. When I finished this task, it was 105° in Ridgecrest and I drove to a large empty black asphalt parking lot and idled for thirty minutes with no vapor lock problems.

INSTALLING THE TEMPERATURE SENSORS

After marking the sensor location, drive a round punch (picture 17) in just far enough to start a 1/8" pipe tap (picture 18) and thread the hole (picture 19).



17



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Coat the sensor with some properly mixed JB Weld, screw the sensor into the tank and tighten securely (picture 20). Let it set for 24 hours before adding gasoline.

The muffler (Picture 21) and tail pipe (Picture 22) installation shows the muffler shield, which is between the frame and body.



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