

GMCCER'S FIRE PREVENTION GUIDE



This document was created with the help of many individuals; I merely compiled and organized the comments received. For the most part, I did not edit them. I had intended on giving credit where credit was due but a fair number of individuals made the same or similar suggestions which made doing so virtually impossible. I thank those of you that contributed; hopefully GMC owners will read and heed the recommendations provided in this document.

*Rob Mueller
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ELECTRICAL

Install a good-quality switch on all batteries such as these Blue Sea on/off switches:
<http://www.gmcmhphotos.com/photos/showphoto.php?photo=39553>

Use proper conductor routing to keep wires from contacting a hot exhaust system or vibration and chafing against possible grounding points.

Use fusible links, circuit breakers, or fuses on components fed directly from batteries.

Verify that battery mounts, associated brackets and hold downs are sound to assure the batteries can't move and cause arcing between positive the positive poles and ground.

Verify all connections are tight and well insulated.

Check that critters have not built a nest in the heater box where the resistor network, located on the lower drivers side, can ignite it. It may be necessary to remove the front plate from the heater box to verify that it is clean.

http://gmcmotorhome.info/heat.html#heater_fire

Verify that Service Bulletin 77-TM has been performed on your MotorHome/TransMode.
<http://gmcmotorhome.info/chassis.html#Rear>

Power to electrical fuel pumps routed through a pressure safety switch as shown here.
<http://gmcmotorhome.info/engine.html#pump>

Prevent Nichrome charging circuit wire from melting wiring harness behind dash

- Install APC (alternator protection cable): <http://gmcmotorhome.info/APC.html>
- Modify pre 1977/78 coaches as per:
<http://www.gmcmhphotos.com/photos/showgallery.php?cat=3247>
- Modify 1977/78 coaches as per:
<http://www.gmcmhphotos.com/photos/showgallery.php?cat=3254>
- Modify circuit as per JimB:
http://www.gmccoop.com/alt_light_circuit_refit.htm

Note: It has been reported that the last modification listed above, can cause the alternator to be slow to start generating current.

FUEL

Rubber lines should not be used between a mechanical fuel pump and carb inlet or anywhere near the engine or hot surfaces.

Verify/install a QuadraJet inlet filter.

Install metal aftermarket filter at mechanical fuel pump inlet.

Cover rubber line from front crossmember to the inlet of the mechanical fuel pump with water hose to prevent damage from road debris..

Plastic fuel filters should not be used near the engine or in the generator compartment.

Fuel filters should be protected from being hit by road debris and be mounted away from exhaust system.



Verify that all fuel lines (supply and vent) are sound and that they are compatible with ethanol such as the Barricade product from Gates or the Goodyear product.

- Link to the Gates Barricade fuel hose:
http://www.gates.com/brochure.cfm?brochure=12468&location_id=5348
- Barricade is available at Napa Auto Parts:
<http://www.napaonline.com/Catalog/Result.aspx?Ntt=Barricade&Ntk=Keyword&Nty=1&Dn=0&D=Barricade&Dk=1&Dp=3&N=0>

- Barricade is available at O'Reilly's Auto Parts:
<http://www.oreillyauto.com/site/c/search/Bulk+Hose+-+Fuel+Hose/N0887/C0222.oap?keyword=fuel+line&page=1&sortBy=1&results=60>
- Link to the Goodyear fuel hose:
<http://www.goodyearrep.com/ProductListing.aspx?folderid=1036>

When replacing fuel supply lines consider using metal instead of rubber.

- Link to Poly-Armour: <http://www.agscompany.com/faq/10>
- Poly-Armour is available at AutoZone: <http://tinyurl.com/5ungtl3>
- Poly-Armour is available at O'Reilly's Auto Parts: <http://tinyurl.com/3crshv9>

OIL

Install a fitting in the transmission vent and run a line outside the frame to a catch can.

Inspect/verify rubber lines to/from engine oil cooler near exhaust manifold to be certain they are in good shape.

Replace rubber lines near exhaust manifold with a non-combustible type.

Repair oil leaks promptly.

Inspect transmission oil cooler (OEM and owner installed) lines regularly.

EXHAUST

Install metal pans above mufflers on early coaches without foam/aluminum sub floor.

Verify gasket between intake manifold and carb heat is not leaking.

Repair exhaust leaks so hot gasses can't impinge on flammable surfaces.

ONAN

Plastic fuel filters should *not* be used in the generator compartment.

Check the Onan muffler support bracket and exhaust system for integrity.

Insulate the plywood above the exhaust manifold with a suitable material.

MISCELLANEOUS

Inspect top of engine regularly to make sure critters haven't built nests.

Install screen across air filter intake so critters can't get in.

Keep top surface of the engine clean and free of debris as well as grease and oil.

Don't pull over on side of road if there is high or dry grass since it can come into contact with hot mufflers cause a fire.

Don't pull over to the side of the road if the coach IS on fire – the grass *will* ignite.

Block the crossover to stop gas from boiling out of the carburetor upon shutdown since this has been known to cause a fire.

Prevent coolant leaks misting/spraying on hot exhaust manifolds.

Provide access through the wheel well liners for fire extinguisher access.

Install a Fire Port in the step up to the cockpit:

http://www.marineeast.com/a_sch/sch_det.asp?cid=13&pid=13_01



FIRE WARNING

Install smoke detectors - test regularly and replace batteries as required - those with lights would be the best.

I have a fire detector on the ceiling just forward of the bedroom area and I have a CO detector on the wall in the bedroom area. I

figure the most danger is when you are sleeping and might have the furnace running.

As for detectors, I have a combo in the back bedroom. That is where you want to hear it first. If mine sounds while underway I can smell exhaust, so it's working. Probably need another up front by the engine.

FIRE EXTINGUISHING

Complying with every step under PREVENTION DOES NOT negate the need for a good fire extinguishing system in your GMC, be it automatic or manual! Murphy is alive and well and S#1T HAPPENS!

TYPES OF FIRES

Type A fires are solid combustibles like paper, wood, carpeting etc.

Type B fires are liquid / gaseous fires like gasoline, oil, propane, etc.

Type C fires are "ENERGIZED" electrical fires. If you turn off the electricity, then the fire is no longer a type C fire.

Note: Low voltage (12 volt) systems are NOT classified as Type C fires.

Type D fires are metal fires like magnesium.

FIRE EXTINGUISHERS TYPES AND COMMENTS

GAS

Gas extinguishers are good for instant suppressants, but hot metal can reignite that fuel.

The problem with gas type extinguishers, besides being non-environment friendly, is they need to fill a space to work longer than the minute or so that the gas blast can sustain. In most cases the fire is started because the metal is hot and the fuel or oil ignited from the heat. The gas does nothing to cool this.

CO₂

Gas (CO₂ and Halon) works by starving the fire for oxygen. In an open space, the oxygen returns quickly. It was used in closed computer rooms because it would not ruin the electronics the way dry chemicals or water would. In computer rooms, it comes with a warning before it deploys--starving the fire for oxygen also starves people for oxygen.

HALON

Halon (including Halon 1211 and Halon 1301), is a gaseous agent that inhibits the chemical reaction of the fire. Classes B&C for lower weight fire extinguishers (2.3 kg; under 9 lbs) and A:B:C for heavier weights (4.1-7.7 kg; 9-;17 lbs). It was banned from new production, except for military use, as of January 1, 1994 as its properties contribute to ozone depletion and long atmospheric lifetime, usually 400 years. Halon was completely banned in Europe and in Australia as well.

FOAM

AFFF is an organic, non-toxic, non-corrosive, water-based, hi-tech fire retardant recognized and used because of its qualities by the aircraft, military, marine, and professional, commercial community.

AFFF sounds like the “best” fire retardant. But, as it is currently understood, AFFF may have an issue with colder temperatures. It is not definitely known if there is a solution for GMC'ers who live where it freezes. However, the following paragraph may explain the situation adequately.

AFFF is a water-based liquid so yes, it will freeze but the cold does not effect the nitrogen propellant as much as an air propellant so as the cylinder heats up from the fire and thaws the AFFF. When 286° F is reached, the cylinder will deploy and the AFFF goes right back to it's fire fighting liquid state. So yes, it's OK to let it freeze because it will come back good as new.

Foams may work if they can extinguish and cool the metal before the foam falls off the fire location.

Foam is excellent on a fuel fire because it does not flow and the burning fuel can't float through it.

Foam is best, but you do have to remove it in the winter. The freezing point is not the problem, as it is understood, but rather the temperatures closer to the single digits (Fahrenheit) are.



DRY CHEMICAL

Dry chemical will always be followed up by water, and thus it will always cause corrosion damage. But it's better than nothing. As long, that is, as the chemical hasn't solidified in the bottom of the extinguisher tank.

I have repaired several early 70's VW busses that had engine compartment fires that were extinguished with dry chemicals. What a big mess it turned into. Minor fires that look to be simple to repair turn into wiring harness wild-goose chases, bearing failures in alternators and generators, carbs literally eaten up by the effects of dry chemical and water, etc.

You need to look at the damage caused by dry chemical fire extinguishers. Everything, and I mean everything, that came close to being contacted with the dry chemical was destroyed. The only thing I reused was the headers and they were full of deep pits.

SODIUM BICARBONATE (dry chemical variant)

America's Test Kitchen tested fire extinguishers and chose the Kidde FX10K (available at Lowes for \$18.97) as the best. It is baking soda and not the typical dry chemical variety. So after the fire is out, you clean up the kitchen without damage to the tools/skillet/range, etc. It is not destructive like other dry chemical extinguishers. See the following link for additional info on this extinguisher.

<http://www.kiddefireextinguishers.org/kidde-fx10k-kitchen-fire-extinguisher/>

According to Kidde, the self-extinguishing agent (which is rated 10-B:C) is a non-toxic, sodium bicarbonate powder which is electrically non-conductive. It is much easier to clean up after having been used in an emergency issue in a kitchen.

Other than having to vacuum up or clean up the powder the only other down side to the FZ10K is that it's not quite as effective at putting out the fire when compared to other dry chemical types. It was noted by a GMC owner that he'd use the baking soda extinguisher over the other type of dry powder any day. He had too much damage to deal after a fire when using a different dry powder extinguisher.

WATER

Water on a fuel fire is not a good idea, unless you can really bury it in water. In one owner's case, water carried the burning fuel to other parts under the coach.

A water spray/fog system would both put out the fire and cool the metal. Foam is intended to be sprayed over a fuel pool on the ground to cover it and extinguish it. With a typical small extinguisher supply, your aim will have to be pretty accurate because you will be out of extinguishant product pretty fast and if the metal does not cool enough to prevent re-ignition, the flame will come back.

Question: The coach carries a 30 gallon tank; would it be worth a hookup to a fogger or sprayer under the hood? Response: Even a hose would be helpful and 30 gallons will last a lot longer than the 20 second spurt of the fire extinguisher. Of course an automated fogger/spray would be best. By the time you think about what has to be done, it is already being done.

GENERAL

Hand held fire extinguishers should be located where they can be readily accessible.

Dry chemical will keep the fire out from your stove, genset, wheel well – you must keep a portable fire suppressant. Otherwise you may be fixing one problem while creating a new one.

If you don't suppress the fire in it's infancy with non-corrosive, fire fighting agents, you are in for a long, hard road. I have seen first-hand what Halon, and CO₂ and fire fighting foam can do and I have repaired damage from dry chemical. I will take door No. 1, 2, or 3 and leave the dry chemical to life saving purposes only.

For more information on fire extinguishers refer to the following website.

<http://www.fire-extinguisher101.com/>

FIRE EXTINGUISHER SOURCES

Listed alphabetically:

Applied GMC: <http://www.appliedgmc.com/level.itml/icOid/1033>

COOP: <http://www.gmccoop.com/index.htm>

Kidde: [http://www.kidde.com/utcfs/ws-384/Assets/Kitchen%20Fire%20Extinguisher%20\(Secondary%20Protection\).pdf](http://www.kidde.com/utcfs/ws-384/Assets/Kitchen%20Fire%20Extinguisher%20(Secondary%20Protection).pdf)

Mac The Fire Guy: http://www.macthefireguy.com/fire_safety_products.htm

FIRE ESCAPE

Get a glass punch or a rescue hammer with a hard point, etc., and make a dedicated holder for it right where it's needed. Hit the glass at the edge and it will shatter, push out the shattered glass with a pillow, then use your coaches ladder to safely step down to the ground and go to the rally point.

Just saw this post and it made me think of something I saw recently. I wonder if this would be worth it? It's cheap enough.

<http://www.thinkgeek.com/gadgets/car/8e0c/#tabs>

Last, but really important. Fire Drills!!! Underway, cooking, and asleep. Firemen don't panic because they train and train. When the real deal happens (hopefully never) they fall back on it. You and your travel partners can, too.

BURNED GMC'S

<http://www.gmcmhphotos.com/photos/showgallery.php?cat=5923>



The source material collected by Rob Mueller and submitted for redistribution has been edited only where doing so would help clarify information or for grammatical content.

We all owe Rob our appreciation for assembling this helpful document. I am trusting that you'll find it to be valuable.

*For additional information on fire extinguishers, go to the following web site:
<http://www.fire-extinguisher101.com/>*

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